

Review Article

The Integration of 21st-Century Skills into the Higher Education Curriculum: Practices and Perspectives Systematic Review

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Abstract

There is a need to enrich higher education to meet future challenges by integrating 21st-century skills into the curriculum and by applying new teaching methods. Numerous studies have examined the integration of 21st-century skills into the higher education curriculum in various countries. This systematic review intends to analyze articles published on the integration of 21st-century skills into higher education. Three overarching questions identified for the systematic review were formulated and refined by PICO. A search for relevant articles was conducted using keywords from electronic databases. The study identified relevant published articles between 2014 and 2023 from Google Scholar, ERIC, and Semantic Scholar electronic databases. Eighteen articles were identified and included in the study by applying eligibility criteria fixed for the systematic review study. The Preferred Reporting Items for Systematic Reviews (PRISMA) criteria were used to organize the articles search and to prepare the systematic review paper. EndNote software was used for reference management. The articles were analyzed and findings were presented by qualitative systematic review. The review findings reveal that the 21st-century skills include learning and innovation skills; information, media, and technology skills; life and career skills to equip the students for future workplaces. The findings also indicate that the integration of 21st-century skills into the curriculum enables the development of students' creativity, critical thinking, communication, collaboration, flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility. Moreover, teachers play a significant role in assisting students to develop 21st-century skills by applying different methods of teaching that increase higher education students' abilities. The study suggests there is a high need for enriching the higher education curriculum by focusing on 21st-century skills to meet the twenty-first-century challenges. Modernizing the curriculum for higher education in Ethiopia by incorporating 21st-century skills will be viewed as a critical national policy intervention issue, as many of the graduate programs that are currently offered were created several years ago and require current knowledge and radical teaching techniques.

Keywords

21st-Century Skills, Integration of 21st Century Skills into the Curriculum, Methods of 21st Century Instruction

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1. Introduction

Higher education plays a vital role in any country's socio-economic development. Its role is to equip the youth with the required norms, values, knowledge, skills, and abilities that will prepare them for greater challenges ahead of them and make a positive impact on the country's development [1].

The curriculum is key in helping students keep up with the speed of changing trends, technology, and skills needed in the future. How do we design curricula to prepare graduates for an uncertain world, equip them with the knowledge and skills of their chosen profession, and give them a competitive advantage in a globalized and competitive workplace? These issues are emerging as significant challenges for universities and teachers of today [8].

The above citations indicate that the curriculum is a powerful tool for preparing a self-confident generation that is competent locally and globally. In addition, the curriculum design and development process should be carried out with very high attention to prepare graduates to keep up with the speed of changing trends, technology, and skills needed in the future.

The strong pull of the forces of rapid changes, the predominance of ICT, and the pervasive socio-economic uncertainty of the twenty-first century would pose serious survival challenges for higher education [1]. Hence to remain afloat (competitive) in a world in which "competitive advantage" has replaced "comparative advantage". Higher Education would have to enrich their curriculum to enable them to tackle the 21st-century challenges. This can be achieved through innovation in content and delivery methods, integration of practical skill acquisition, and practical application of Information and Communication Technology (ICT) in all facets of teaching and learning.

There is a need to enrich the higher education curriculum to meet the twenty-first-century challenges. The curriculum and instruction design for the 21st-century learning environment should stress the development of higher education students' potential with special concern on skills such as creativity, critical thinking, communication, collaboration, flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability and leadership and responsibility, etc. to prepare students for future challenges.

The study intends to conduct a systematic review on integrating 21st-century skills into the curriculum since the curriculum is at the core of any higher education program requiring frequent updates with newly emerging knowledge, skills, and attitudes to prepare graduates to cope with the rapid change. The researcher witnessed from the experience of working with higher education institutions that numerous graduate program curriculums have been prepared for several years, lacking contemporary courses. The curriculum is an ever-changing process helping education become more advanced and appropriate. Hence, conducting a study on the

integration of 21st-century skills into the higher education curriculum in various countries is vital to examine the practices and perspectives.

Therefore, this systematic review aims to explore the 21st-century skills and integration of 21st-century skills in the curriculum and instruction. Based on the rationale and objective, this systematic review aimed to answer the following three overarching questions:

What are the 21st-century skills required in the higher education system to meet the challenges in the 21st century?

How the curriculum be designed by the Integration of 21st-Century Skills into Higher Education?

How the instruction be designed to meet the 21st-century skills expectations?

2. Method

2.1. Systematic Review Approach

The systematic review study was guided by three overarching research questions already mentioned above and PICO (Population, Intervention, Comparison, and Outcome) was used to refine the questions. Relevant articles search was conducted in the electronic databases using the keywords. Relevant published articles from ten years between 2014 and 2023 from Google Scholar, ERIC, and Semantic Scholar electronic databases. Eighteen articles were identified and included in the study by applying eligibility criteria (inclusion and exclusion of articles) fixed for the systematic review study. The Preferred Reporting Items for Systematic Reviews (PRISMA) criteria were used to organize the articles search and to prepare the systematic review paper. EndNote software was used for reference management. The articles were analyzed and findings were presented by qualitative systematic review.

2.2. Identifying Articles

A relevant articles search was conducted from electronic databases using the keywords 21st-century, integration of the 21st-century skills into the higher education curriculum, and instructional design for the 21st-century learning environment. Hence, relevant articles were found in three databases (Google Scholar, ERIC, and Semantic Scholar). Based on the eligibility criteria finally, 18 relevant published articles were identified for the systematic review.

2.3. Filtering Articles/ Inclusion and Exclusion of Articles/

For the systematic review, inclusion and exclusion criteria are set to narrow the articles' search. The inclusion criteria

were: 1) the articles focused on 21st-century skills 2) the articles were published between 2014 and 2023, 3) the articles are published in academic journals, 4) the articles are written in the English language and 5) the articles are original or empirical. The exclusion criteria were: 1) Excluding articles that did not focus on the integration of 21st-century skills into higher education 2) excluding duplicated articles 3) excluding non-English articles.

Therefore, the articles search was limited to 2014-2023

since the issues of 21st-century skills are contemporary. Moreover, only original or empirical articles published in academic journals were considered. Finally, articles that did not mainly concentrate on higher education such as 21st-century skills curriculum integration into primary and secondary education were excluded as these articles were not related to the systematic review questions. All the previous criteria were used to improve the quality of the systematic review.

Table 1. Articles search results.

Database	Identified Articles	Articles identified using precise search	Articles identified by checking the topic	Articles identified after abstract review	Final Articles identified after full document review
Google Scholar	648000	18700	20	18	16
ERIC	443	65	1	1	1
Semantic Scholar	119,000	1020	7	2	1

3. Results

The results are presented in the order of three fundamental systematic review questions. The questions specifically, focused on what are 21st-century skills, how the curriculum is designed by the integration of 21st-century skills into higher

education, and how the instruction is designed to meet 21st-century skills expectations.

The articles selected and reviewed to answer the three overarching systematic review questions could be summarized in the following table:

Table 2. Selected and reviewed articles summary.

Articles	Authors	Major findings from the article
Enriching higher education curriculum to meet the challenges of the 21st century in Nigeria. <i>Journal of Educational and Social Research</i> , 4(3), 21.	[1]	This article studies restructuring and integration of higher education curriculum through the delivery method, skill acquisition integration, and ICT integration is a vital tool and an engine that drives the social and economic development of a country through their activities for job creation and growth inducement.
Enhancing 21st Century Skills Through Integrated STEM Education Using Project-Oriented Problem-Based Learning. <i>Geo Journal of Tourism and Geosites</i> , 53(2), 421-430.	[2]	The study focuses on how integrating Project-Oriented Problem-Based Learning in STEM education effectively enhances 21st-century skills like problem-solving, creativity, collaboration, and communication, benefiting higher education curriculum development.
21st century standards and curriculum: Current research and practice. <i>Journal of Education and Practice</i> , 6(6), 150-154.	[3]	This article explores 21st-century skills, as they are defined, and describes methods that allow students to enhance these skills. It also highlights how educators can link higher education students' current knowledge with authentic experiences that motivate, as well as allow them to create and collaborate using the latest technologies.
Curriculum 5.0 for the Twenty-First Century Higher Education: A Way to Move Forward. In <i>International Handbook on Education Development in Asia-Pacific</i> (pp. 1-15). Singapore: Springer Nature Singapore.	[4]	This study advocates the adoption of Curriculum 5.0 to foster a more relevant and effective educational framework. It emphasizes the importance of adaptability and innovation in preparing students for the future world of work.
Reflections on the 21st century skills into the curriculum	[5]	The results have shown that the main components of 21st-century

Articles	Authors	Major findings from the article
of social studies course. <i>International Journal of Education and Literacy Studies</i> , 9(2), 90-101.		skills are not included in the curriculum.
The difference between emergency remote teaching and online learning."	[6]	The article emphasizes the importance of recognizing the distinctions between emergency remote teaching and online learning, particularly for improving educational practices by enhancing future online learning initiatives.
21ST CENTURY SKILLS IN HIGHER EDUCATION EMPIRICAL ANALYSIS OF CURRENT CHALLENGES AND POTENTIALS AT A UNIVERSITY OF EXCELLENCE. In <i>INTED2023 Proceedings</i> (pp. 1542-1553). IATED.	[7]	This study aims to determine the status quo of competence-oriented teaching in higher education regarding teaching and examination offerings and the associated student satisfaction.
Curriculum Models for the 21st Century: Using Learning Technologies in Higher Education. Springer New York Imprint: Springer, New York, NY, 2014.	[8]	This study provides insights concerning the integration of learning technologies within curriculum design that prepare students for the complexities of the modern world.
Fostering 21st-century skills of the students of engineering and technology. <i>Journal of Engineering Education Transformations</i> , 75-88.	[9]	The study implies the importance of enhancing the higher education students' skill set and the study eventually recommends the integration of 21st-century skills in English classrooms of engineering and technology to meet the demands of the workplace.
"The current status of faculty members' pedagogical competence in developing 21st-century skills at selected universities in Ethiopia." <i>Cogent Education</i> 10(2): 2228995.	[10]	This article provides valuable insights into the current state of pedagogical competence among faculty members in Ethiopia, emphasizing the need for improvements to develop students' 21st-century skills.
Approaches to assessment of twenty-first-century skills in East Africa. <i>The Contextualization of 21st Century Skills: Assessment in East Africa</i> , Springer International Publishing Cham: 99-116.	[11]	The study provides a comprehensive overview of the approaches to assessing 21st-century skills in East Africa, emphasizing the need for contextualized and innovative assessment strategies.
Framework for 21st Century Learning. http://www.battelleforkids.org/networks/p21/framework-ks-resources	[12]	The Framework emphasizes what 21st-century skills are and the importance of equipping students for success in the 21st century.
INTEGRATING PROJECT-BASED LEARNING IN HIGHER EDUCATION AND FOSTERING 21ST-CENTURY SKILLS. In <i>International Scientific and Current Research Conferences</i> (pp. 179-183).	[13]	This study focused on the contribution of the Project-based learning method to the advancement of 21st-century skills of students in higher education settings.
Preparing students with twenty-first-century skills for the future post-pandemic Era. <i>Reimagining Education-The Role of E-Learning, Creativity, and Technology in the Post-Pandemic Era</i> , IntechOpen.	[14]	The Book chapter advocates for a reimagined approach to education that prioritizes technology, creativity, and e-learning as central components in preparing students for future challenges.
Robot-ready: human+ skills for the future of work.	[15]	The Book emphasizes the critical need to develop human-centric skills that complement technological advancements.
The Future of Jobs Report 2020. https://www.weforum.org/reports/the-future-of-jobs-report-2020	[16]	The report offers insights into the evolving job landscape and the skills necessary for future employment.
Transforming pedagogies: Integrating 21st-century skills and Web 2.0 technology. <i>Turkish Online Journal of Distance Education</i> , 15(1), 166-173.	[17]	This article emphasizes teaching practices by integrating 21st-century skills and Web 2.0 technologies to prepare students for the demands of the modern world.
21 Lessons for the 21st Century, Vintage.	[18]	This Book discourses issues related to "21 Lessons for the 21st Century" and serves as a thought-provoking guide for navigating the complexities of modern life, encouraging readers to reflect on their roles in society and the future.

3.1. The 21st-Century Skills

The 21st-century skills refer to the aptitudes and attitudes demanded of employees to be widely demonstrated in the global workplace. Partnership for 21st Century Skills (P21) has developed a 21st-century skills framework to equip students for the future workplace. The P21 framework classifies 21st-century skills set into Learning and Innovation Skills, Information, Media, and Technology skills, and Life and Career skills [9].

"21st Century Skills" are abilities and skills that are required for success in society and the modern workplace following current changes in society [7]. 21st-century skills enable students to navigate complex challenges, collaborate effectively, and continuously learn and grow. These skills are essential for success in the rapidly changing post-pandemic world of work and society. Key 21st-century skills include creativity, communication, collaboration, critical thinking, problem-solving, and digital literacy [14].

Correspondingly, 21st-century skills include not only basic learning skills but also top-level thinking skills. Skills form in consideration of social dynamics and the skills that people should have in future life [4].

In the USA, some leading institutions of the country (Apple, Adobe, Walt Disney, Dell, Intel, Lego, AOL, Microsoft, Cisco, and National Education Association) and educators who were successful and specialized in their field, particularly the ministry of education came together to make the students ready for a more competitive global economy and include the 21st-Century skills in their education environment and they identified the criteria for the Partnership for 21st Century Skills [12].

The skills determined by the P21 platform are a whole built on interdisciplinary themes. Those skills are divided into three groups, which are "Life and Career Skills", "Learning and Innovation Skills" and "Information, Media, and Technology Skills" and they are integrated.

Life and career skills among the main components host sub-skills such as flexibility and compliance, initiative and self-management, social and intercultural skills, productivity and accountability, leadership, and liabilities.

Learning and innovation skills comprise critical thinking and problem-solving, communication, collaboration, and creativity sub-skills. These skills are deemed as key to life-long learning and creative thinking. Learning and innovation skills are also related to life and career skills and knowledge, media, and technology skills.

The important skills determined by the P21 platform include information, media, and technology literacy sub-skills. Information forms a comprehensive whole with media and technology literacy skills. These skills are not constant but change according to time conditions. Individuals who have these skills can provide information flow from different sources and investigate and evaluate the accuracy of the information published through media.

Integrating the CCSS with P21 can help to complement the 3Rs which are reading, writing, and arithmetic, and 4Cs (critical thinking, communication, collaboration, and creativity) [4]. Hence, the P21 framework and the Common Core State Standards support each other to achieve the future skills that students need.

The new way of looking at skills and skill acquisition is that in a world of work that promotes the knowledge worker, with a set of employability skills that values personal qualities much more than qualification, skills are no longer seen as simply handling hammers and fixing nuts and bolts. There is now greater emphasis on a tripartite set of skills (Hard, Soft, and Go-Getting) that defines the knowledge person and consequently an appropriate curriculum guide for persons who can fit neatly into the demands of the knowledge economy [1].

Therefore, the studies illustrate 21st-century skills in different approaches by classifying them into hard, soft, and go-getting skills which focus on cognitive, imaginative, and emotional intelligence. The 21st-century skills stated by this author are similar to the (P21) framework.

In today's rapidly changing world, 21st-century competence and the desire for high-quality education are more important than ever [10]. Higher education institutions are facing the pressing need to shift their focus from the acquisition of 20th-century skills to the development of 21st-century skills, which include critical thinking, problem-solving, creativity, communication, collaboration, and digital literacy [12].

The new job roles will require a new set of skills. These skills are analytical thinking and innovation, active learning and learning strategies, complex problem-solving, critical thinking and analysis, creativity, originality and initiative, leadership and social influence, technology use, monitoring, and control, technology design and programming, resilience, stress tolerance and flexibility, reasoning, problem-solving and ideation, emotional intelligence, troubleshooting and user experience, service orientation, system analysis and evaluation, and persuasion and negotiation [4]. Thus, the 21st skills stated above focus more on thinking skills rather than content or subject matter knowledge.

3.2. Integration of 21st Century Skills into the Higher Education Curriculum

According to Paige (2009) as cited in [4] adopting a 21st-century curriculum should blend knowledge, thinking, innovation skills, media, Information and Communication Technology (ICT) literacy, and real-life experience in the context of core academic subjects. To achieve authentic learning that is demanded in the 21st century, students should engage in a learning environment where they can effectively develop 21st-century skills such as critical thinking, problem-solving, and collaboration.

Therefore, curriculum in the 21st century should focus on the construction of knowledge and encourage students to produce the information that has value or meaning to them to

develop new skills. Preparing a curriculum that can connect students with the real world can support their participation, motivation, and understanding of academic subjects, as well as prepare them for adult life.

Additionally, Ellis (2004) as cited in [4] states, "The knowledge-centered curriculum is an academic curriculum where students are expected to acquire knowledge of their world as a foundation for adult life". Today, curriculum and educational decisions should be reviewed and redesigned to integrate future skills explicitly. In the 21st-century curriculum, educators must integrate over 75% of future skills. Ackerman and Perkins (1989) as cited in [4] claimed that thinking skills should be taught as a "meta curriculum" intertwined with traditional core subjects. Herrington and Kervin (2007) as cited in [4] argued, "A thinking curriculum provides a deep understanding of the subject and the ability to apply that understanding to the complex, real-world problems that the student will face as an adult".

Moreover, by integrating cognitive learning and skills into the curriculum, students can obtain a deeper understanding of the subject and try to solve complex problems in the real world. The partnership for 21st-century skills prepared educational standards for the next generation to present an appropriate strategy to apply them [4]. The 21st-century standards of P21 includes:

- Focuses on 21st-century skills, content knowledge, and expertise;

- Builds understanding across and among core subjects as well as 21st-century interdisciplinary themes;

- Emphasizes deep understanding rather than shallow knowledge;

- Engages students with the real-world data, tools, and experts they will encounter in college, on the job, and in life;

- Allows for multiple measures of mastery;

According to this study's findings, deep knowledge, focusing on 21st-century skills, and engaging students are among the essential issues to be addressed for integrating the curriculum.

In today's globally competitive knowledge economy, updating curricula needs to be an almost permanent undertaking [1]. Clark (2001) as cited in (1) suggests that universities will need to change their curricula every two or three years to ensure that the content of their teaching reflects the rapidly advancing frontiers of scientific and information knowledge. Moreover, [1] Encyclopedic knowledge (stuffing the curriculum with as many facts and figures as possible) is no longer valuable, as there has been a paradigm shift from "how much you know" to "how well you have learned to learn". In addition, broad general knowledge has taken the place of narrow and early specialization.

The requirements for university graduates in the labor market have changed significantly since the end of the 20th century. Instead of traditional academic knowledge, employers in business, academia, and government institutions increasingly value interdisciplinary competencies not primarily

based on content knowledge. Many worker's jobs require the integration of complex cognitive and social/interpersonal competencies, also referred to as twenty-first-century skills, such as problem-solving skills, complex communication, skills, critical thinking, teamwork, cultural and diversity awareness, multilingualism, and use of digital technologies [7, 11, 17].

Futurists estimate that up to 85 percent of the jobs that will exist in 2030 haven't been invented yet [16]. The twenty-first century is going to be different due to the growing pace of change. You will need to work hard to get to know your operating system better to succeed in such a daunting task. To know who you are, and what you want from life [18].

Hence, the studies suggest frequently updating the curriculum and integrating 21st-century skills into the curriculum by focusing more on thinking skills and knowledge specialization to prepare the graduates for the future world of work. In the Ethiopian context modernizing the higher education curriculum timely by including 21st-century skills shall be taken as a national crucial policy issue since there are several graduate program curriculums offered currently that were designed several years ago requiring up-to-date knowledge and method of teaching.

3.3. Instruction Design to Meet 21st-Century Skills Expectations

The sudden shift to remote and blended learning models has highlighted the importance of digital literacy, flexible learning options, and the ability to adapt to rapidly changing circumstances [6].

The study findings describe the instruction design from the standpoint of pedagogy, expanded access and higher participation rates mean that student populations will become increasingly diverse in terms of their academic preparation, means, capacities, motivation, and interests [1]. At a global level, these changes are fueling a shift in pedagogical emphasis from staff teaching to student learning (El-Khawas 2001; Salmi 2001) as cited in [1].

The medium of instruction plays a crucial role in the teaching and learning process. Hence, the possibilities of the medium of instruction influencing the higher education students' competence in 21st-century skills are high. It is noticeable that the P21 framework encompasses the overall views of the skill set entailed in the 21st-century workplace. Teachers should employ the constructs of learning, innovation, life, and career skills in their teaching methodologies to capacitate the higher education students' potential and empower them in the world of work [9].

Congruently, teachers can use and coalesce different pedagogical approaches and methods like problem-based approach, project-based approach, collaborative teaching method, and task-based approach in their classroom to augment 21st-century skills [9].

Integrating Project-Oriented Problem-Based Learning in

STEM education effectively enhances students' skills by immersing them in authentic, real-life problem-solving experiences through project work. The study emphasizes that integration enhances critical skills such as problem-solving, creative thinking, collaboration, and effective communication. Project-based learning in higher education enhances students' 21st-century skills making them valuable assets for future industries [2, 13].

The study findings indicate that the instruction design for 21st-century skills emphasizes that teachers can use and coalesce different pedagogical approaches.

The students need 21st-century skills to improve their achievement and promote cognitive processes and the construction of knowledge that prepares them to be successful in their future careers [4].

As a result, teachers should apply different strategies and methods for teaching these skills because there is not one specific strategy or model to achieve this goal. Moreover, teachers should use innovative strategies and modern learning technologies that help integrate cognitive and social skills with content knowledge as well as increase student participation in the learning environment to promote these future skills. Many strategies enhance both learning content and skills while also allowing students to engage in real life. One such approach is problem-based learning. In this model, students can discuss and analyze different issues and topics that are related to the real world.

Another pedagogy that enhances 21st-century skills is cooperative learning. Additionally, linking knowledge with the real world is an important component in the 21st-century teaching model. This achieves the goal of authentic learning.

Developers of curriculum and instruction have claimed the essential part of learning in this century is integrating multimedia tools into teaching. Jacobsen (2001) as cited in [4] argued that many technological tools can support different skills such as problem-solving, critical thinking, collaborative learning, and the learning environment. For example, portfolios, WebQuests, Quizizz, Wiki, Google site, Digital Storytelling, ePortfolios, SoftChalk, LessonBuilder, Blog, etc., support these skills. Technological tools offer students the option of working in collaborative groups, which may increase student motivation and develop critical thinking.

Thus, the findings of the studies [1, 2, 6] suggest applying a problem-based approach, project-based approach, collaborative teaching method, task-based approach, integration environment, digital tools, etc. in teaching that increases higher education students' abilities because there is not one specific strategy or model employed. Teachers should use innovative strategies and modern learning technologies since the essential part of learning in this century is integrating multimedia tools in teaching.

Apart from the rise of new courses in higher education, demand for new skill sets challenges the statuesque traditional pedagogies as students lose interest in traditional lectures and crave a more interactive way of learning new things. Finally, it

was during this era that we witnessed a dramatic increase in the popularity of online education, whether formal or informal, academic or professional. Despite all these developments in education, it is still safe to posit that the digital revolution has not fully transformed the whole educational landscape yet [4].

Thus, the findings of the study depict the importance of the transformation from the traditional approach into the digital revolution by applying various technological tools.

Teachers can create a 21st-century context for learning by taking students out into the world, bringing the world into the classroom, and creating opportunities for students to collaboratively interact with each other. Helping them make vital practical, social, and emotional connections to content and skill is of the utmost importance. Educators must adapt so that the instruction infuses Web 2.0 technology through the use of collaborative tools such as wikis, blogs, and social networks with 21st-century skills. These skills are essential due to increased global competition, rising workforce capabilities, and accelerated technological change [15].

Moreover, a 21st-century learning paradigm shift is occurring theoretical interest in viewing education as an ecosystem is gaining popularity. The term 'learning ecosystem' is a term that conveys new views about the educational environment in the digital age. The role of a learning ecosystem is to unite participants through cooperation, sharing, reflection, publishing, development, and learning, and resources and participants, in a wide educational environment [15].

Thus, it can be concluded that the ecology of learning is related to Web 2.0 through the use of collaborative tools such as wikis, blogs, social networks, etc.

A review of literature on educational uses of blogs suggested "the following categories of educational blogs:

- Online course management tool,
- Discussion forum,
- E-portfolio,
- Group blogging,
- The project-based learning environment, and
- Research tool" (Web 2.0).

Other Web 2.0 technology includes VoiceThread. It is a multimedia tool that can be incorporated into an online collaborative project. Synchronous technology such as Centra can be used to have students discuss assignments. There are free Web 2.0 technologies such as Engrade, Elgg, PodBeam, Eduslide, Writeboard, Webchops, Yugma, Knowitall.org, Arcademic Skill Builders, Edublogs, Read Write Think, Intel-Tools, MakeBeliefsComix, TerraClues, AjaxTrans, Museum Box, Comic Creator, Google News feeds, etc.

Therefore, the study findings explain that the application of multimedia tools that can be incorporated into an online collaborative project like Web 2.0 technology is very crucial for the instruction design of a 21st-century learning environment.

4. Discussion

The findings from the analysis of the articles specify that

the Partnership for 21st Century Skills (P21) based in the USA has developed 21st Century skills framework that includes learning and innovation skills, information, media and technology skills, and life and career skills to equip the students for the future workplace. This framework has been adopted in many countries across the globe and has been successful in improving higher education students' skill sets. These skills include analytical thinking and innovation, active learning and learning strategies, complex problem-solving, critical thinking and analysis, creativity, originality and initiative, leadership and social influence, technology use, monitoring, and control, technology design and programming, resilience, stress tolerance and flexibility, reasoning, problem-solving and ideation, emotional intelligence, troubleshooting and user experience, service orientation, system analysis and evaluation, and persuasion and negotiation.

The findings also indicate that the integration of 21st-century skills into the curriculum should blend knowledge, thinking, innovation skills, media, Information and Communication Technology (ICT) literacy, and real-life experience in the context of core academic subjects. The courses integrated into the curriculum should enable students to develop creativity, critical thinking, communication, collaboration, flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility. A thinking curriculum provides a deep understanding of the subject and the ability to apply that understanding to the complex, real-world problems that the student will face as an adult. In the 21st-century curriculum, educators must integrate over 75% of future skills. Today, curriculum and educational decisions should be reviewed and redesigned to integrate future skills explicitly i.e. universities will need to change their curricula every two or three years to ensure that the content of their teaching reflects the rapidly advancing frontiers of scientific and information knowledge.

Moreover, regarding the 21st-century instruction design the finding indicates that the teachers play a significant role in helping students develop 21st-century skills by applying different methods such as problem-based approach, project-based approach, collaborative teaching method, task-based approach, integration environment, digital tools, etc. in teaching that increase higher education students' abilities. The finding also notifies that there is not one specific strategy or model to be employed in the 21st-century instruction design. Teachers should use innovative strategies and modern learning technologies since the essential part of learning in this century is integrating multimedia tools in teaching.

5. Conclusions and Implications

From the systematic review conducted it is possible to conclude that the integration of 21st-century skills in the higher education curriculum and instruction provides an im-

perious approach to achieving success for students. The integration and effective implementation of 21st-century skills in the curriculum and instruction of higher education contribute a lot to preparing students who can deal with the complex challenges of the future.

The review also indicates that the major 21st-century skills identified by P21 include learning and innovation skills, information, media and technology skills, and life and career skills which enable to development of students' creativity, critical thinking, communication, collaboration, flexibility, and adaptability, initiative, and self-direction, social and cross-cultural skills, productivity and accountability and leadership and responsibility. The curriculum design which prepares graduates for an uncertain world that can equip them with the knowledge and skills of their chosen profession and give them a competitive advantage in a globalized and competitive workplace should be conducted with curious attention by studying and integrating the 21st-century skills in the higher education curriculum.

Moreover, teachers play a significant role in helping students develop 21st-century skills by applying different methods that increase higher education students' abilities because there is not one specific strategy or model.

The study suggests there is a high need for enriching the higher education curriculum by focusing more on thinking skills and knowledge specialization (thinking curriculum) to meet the twenty-first-century challenges. In the Ethiopian context modernizing the higher education curriculum timely by including 21st-century skills shall be taken as a national crucial policy intervention issue since there are several graduate program curriculums offered currently that were designed several years ago requiring up-to-date knowledge and methods of teaching.

6. Limitations and Future Research

The systematic review relied on reachable relevant articles. As with any systematic review, it is difficult to ensure that every relevant article was included in the analysis, however, eighteen relevant articles from the well-known and reliable databases were included. Thus, while the review offers some insights about the integration of 21st-century skills into the higher education curriculum and instruction, it is difficult to pinpoint the outstanding practices of the integration of 21st-century skills into the higher education curriculum and instruction as the issue is contemporary.

Therefore, further studies will be required to investigate the practice and perspectives on the integration of 21st-century skills into higher education in Ethiopia since the issue is contemporary and very relevant. Moreover, the effects of 21st-century skills on the student's cognitive, academic, and social capacities, as well as measuring the effects across different fields of studies and courses require further studies.

Abbreviations

PICO	Population, Intervention, Comparison, and Outcome
ERIC	Education Resources Information Center
USA	United States of America
ICT	Information and Communication Technology
AOL	America Online
CCSS	Common Core State Standards

Author Contributions

Yonas Tefera Birru is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

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