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INCLUSION OF 21st CENTURY SKILLS IN TEACHER PREPARATION PROGRAMS IN THE LIGHT OF GLOBAL EXPERTISE

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ABSTRACT

The present study aims to explore global expertise of including 21st century skills in teacher preparation programs and the reality of including (information and communication, thinking and problem solving, as well as interpersonal and self-directional) skills in these programs. It also highlights the differences in the reality of including 21st century skills in teacher preparation programs according to specialization, years of experience, and academic qualification. The author adopted the analytical-descriptive approach and applied a questionnaire to a randomly selected sample of 50 in-service teachers in Saudi Arabia. The results showed that the arithmetic means of the information and media literacy, critical and systematic thinking, self-direction, accountability and adaptability, and social responsibility skills were moderate. They were moderate and low in the communication, problem identification and solution formulation, and interpersonal and collaborative skills. The arithmetic means were low in creativity and intellectual curiosity. Moreover, there were no statistically significant differences in all domains due to specialization, years of experience, and academic qualification. The study recommends conducting training courses and workshops on 21st century skills for in-service teachers.

Contribution/Originality: The paper draws the attention of authors and planners to teacher preparation programs in the light of 21st century skills that help create an aware and educated generation. It provides distinguished global expertise. Thus, in implementing programs, we should reconsider having a teacher who masters the 21st-century skills.

1. INTRODUCTION

Teacher preparation has drawn global interest because it closely relates to the building of the individual and society and the development of educational systems and objectives. It is a key part of a comprehensive process of teacher development professionally, scientifically, and technically. To contribute to the 21st century society, a person should be able to learn fast to access knowledge, technology, creativity, and innovation (AlHariri, 2019). Therefore, high-quality educational systems are required to fit in the socio-economic nature of the century and equip students with skills that meet life and labor needs (Hofny, 2015). Teachers should master 21st century skills due to the difficulties raised during the knowledge explosion and communication revolution (Zanartn, Doerr, & Portmanm, 2015). Therefore, teachers need to focus on teaching and learning methods and to change students' role to be active learners who master critical thinking, teamwork, creativity, communication, and innovation. Moreover, educators argue that critical thinking and problem solving are the new basis of learning in the 21st century because applying them enhances motivation and improves learning outcomes (Trilling & Fadel, 2009).

Alharby (2013) considers it essential to prepare and empower teachers and students to interact with the input skills of the century. Bozalek et al. (2013) argue that a graduate should master digital skills, values, knowledge, and genuine learning to meet 21st century needs. Despite the need to develop the educational system, nothing can be achieved without prioritizing teacher development because the teacher is the backbone of the educational process (Hofny, 2015). Musa and Alhanan (2013)emphasized that any reform of education should begin with the teacher. In other words, the quality of education relates to the performance of the teacher (Alkhalili, 2006). The perspective of the teacher's job, roles, and responsibilities has changed to the practice of leadership, investigation, guidance, and counseling instead of mere transference of information to students. In the present era of fast change and knowledge information, a teacher should have several capabilities, skills, features, values, attitudes, and positive interests to be able to change the major global changes (Areshi, 2018).

Special interest has been given to 21st century skills in contemporary research studies. Shalabi (2014) reports that several organizations and institutions define the skills, such as the Organization for Economic Cooperation and Development, the North Central Regional Educational Laboratory, and the Partnership for 21st Century Skills-P21. The "skills of the 21st century" is a modern movement that began in 2002 to motivate and support students professionally in all fields based on a partnership between the Partnership for 21st Century Skills, Microsoft Corporation, and the National Education Association. This partnership resulted in five manuals to motivate education, i.e., standards, evaluation, professional development, curriculum and instruction, and work data to improve the cognitive, psychological, and skillful competence of students and help state leaders, principals, and teachers develop 21st century skills (Albaz, 2013).

Several studies, e.g., Abdelshafy (2013); Alghamdi (2015); Alharby (2013); Alkalthum (2013); Gut (2011); Osman, Soh, and Arsad (2010) agreed on the interest in 21st century skills and their inclusion in general education curricula. Alghanim (2009); Althueny (2010) and Dakhikh (2012) stressed the need for developing and activating supporting policies to promote the quality of teacher performance and equip them with the skills of self-learning, thinking, using the computer and the internet in the teacher preparation programs. Roles and tasks related to the creativity and knowledge industry are required. Moreover, more developed educational policies are required to attract and prepare the best competencies.

Many educational institutions have defined the frameworks, concepts, and integration of 21st century skills in basic study fields. For instance, the framework of the European Union aims to trigger learning skills and to promote life-long learning, whereas the Partnership for 21st Century Skill (2006) aims to promote creativity, entrepreneurship, and meeting the needs of the labor market (Aleid, 2019). Therefore, several countries endeavor to develop their educational systems and adopt skill-based learning to build human capital and knowledge society. For example, Saudi Arabia has carried many educational projects, e.g. the promotion of 21st century skills and development of mathematics and science curricula to develop public education (Ministry of Education, 2012). The officials of education in Saudi Arabia argue that teachers who have 21st century skills can integrate them into the academic content and transfer them to students using several applications and operations (Albalawy & Albalawy, 2019).

In the 21st century, teachers need skills for building and managing classroom activities efficiently, communicating well, using technology, and thinking about and improving learning practices continuously. Schools should design programs that help teachers understand learning and its socio-cultural contexts, enhance classroom communication, improve knowledge on the presentation and adjustment of the educational content, and understand the methods of delivering the content while considering individual differences (Katitia, 2015).

Therefore, the present study highlights the reality of including 21st century skills in teacher preparation programs in Saudi Arabia based on the expertise of some countries that equipped teachers with those skills as a basic requirement of all educational policies to meet the needs of the present era.

1.1. Statement of the Problem

Contemporary fast global transformation requires radical changes to teacher preparation programs to enable teachers to fulfill their roles adequately (Musleh, 2018). Studies report the importance of integrating 21st century skills systematically in the curriculum to achieve the educational objectives and provide a supportive environment for creativity and innovations (Shalabi, 2014). In other words, contemporary fast changes increase the responsibility of teachers to develop themselves, keep pace with 21st century challenges, and help students acquire these skills (Albaz, 2013). Laser (2014) argues that 21st century learning requires an educated, creative, and reflective teacher who can deliver these skills to students. Thus, Okogbaa (2017) stresses the importance of revising teacher preparation programs. Greenhill and Petroff (2010) report that teachers should be supported to master some competence of positive learning results, including the inclusion between technology, educational content, and 21st century standards to deliver 21st century skills to students.

International assessments show the low educational level and the poor skills of graduates in the Arab world that maximize the employment crisis. Some public and private organizations and companies report that graduates do not meet the labor market needs. Moreover, global changes and educational developments, as shown in the spread of information resources and communication means, require certain skills to meet their needs. According to Alghamdi (2015) and Alghamdi and Alqahtani (2016) teachers lack many 21st century skills that require educational life skills, a creative environment, creative thinking, communication skills, and ability to use modern technology and improve learning outcomes. Alhumel and Alanady (2015) illustrated the inadequate concentration of the Saudi teacher preparation programs on equipping pre-service teachers with research skills. In the same context, Alzahrani (2019) reported that pre-service teacher preparation programs should be developed, and a motivating school environment should be designed.

Many studies, e.g., Albalawy and Albalawy (2019); Alhumel and Alanady (2015); Al Refaa (2014); Bradshaw (2010); Brathwaite (2011); Buabeng (2012); Kayange and Msiska (2016); Massinga-Sanders (2010); Hansen, Forsman, Asporfs, and Bendtsen (2012) have shown an interest in 21st century skills. They have reported that professional teacher preparation should rely on the philosophy of the 21st century skills intentionally to develop the various components of education. Furthermore, Alghanim (2009) recommended the development, theoretical framing, and regular review of the Saudi teacher preparation based on the latest international practices. It was reported that there is a knowledge gap between teacher preparation institutions and the inappropriate content of teacher preparation curricula (Kamil, 2013).

The weak preparation of teachers is one of the most significant challenges in Saudi Arabia because they lack many new education-related skills and the teacher preparation colleges could not meet pre-service teachers' needs in the fast-growing knowledge society (Ministry of Education, 2012). Education indicators in Saudi Arabia suggest that the level of education is less than the desired despite the generous governmental expenditure. Moreover, few applicants pass the teacher competence test of the National Center for Assessment (Vice Rectorate for Planning and Development, 2018). Such low-quality education threatens the competitiveness and economic ability of the country. Several conferences, such as the Teacher and Knowledge Era at King Khalid University (2017) recommended updating the national professional standards of teachers and teacher preparation programs based on the global expertise (Altwejry, 2017).

Because of the significance of the issue, as shown by literature, and the recommendations of local and international conferences, the present study explores the reality of including 21st century skills in teacher preparation programs in Saudi Arabia based on global expertise, e.g., Finland and Malaysia. These two countries were chosen because Finland is ranked first worldwide concerning the quality of Education. It has a high position in teacher preparation. Malaysia has a developed and strong educational sector that was ranked 27th worldwide according to QS World University Rankings. Its educational system was ranked ninth according to the UNESCO. Moreover, it has provided comprehensive programs for teachers to enhance the professional instructional

competence. Therefore, the problem of the study is defined in the low level of teacher preparation program that hinders keeping pace with social changes due to scientific and technological progress and relying on theory more than practice.

The study raises the following major question: What is the reality of including 21st century skills in teacher preparation programs in the light of global expertise? It is further divided into following minor questions:

1. What is the global expertise in the inclusion of 21st century skills in teacher preparation programs?
2. What is the reality of including information and communication skills in teacher preparation programs?
3. What is the reality of including thinking and problem solving skills in teacher preparation programs?
4. What is the reality of including interpersonal and self-directional skills in teacher preparation programs?
5. Are there differences in the reality of including 21st century skills in teacher preparation programs based on global expertise according to (specialization, years of experience, and academic qualification)?

1.2. Significance

a. Theoretical significance

It is a significant study because the topic covered has drawn the attention of the educational institutions to develop the actions related to teacher preparation and skills. It paves the way for further studies on the availability of 21st century skills in teacher preparation programs to achieve the objectives of education.

b. Practical significance

The study can benefit course designers and developers, especially in Saudi Arabia, by considering and developing course design in the light of 21st century skills and requirements. It can help pre-university educational supervisors and teachers to identify and develop the required teaching practices in the light of 21st century skills. Moreover, it can help educational training centers develop training programs and plans to fit 21st century requirements.

1.3. Limitations

Object Limitations:

- Global expertise was limited to only Finland and Malaysia.
- 21st century skills chosen were limited to Information and communication (information and media literacy and communication) skills, thinking and problem solving (critical thinking and systems thinking; problem identification, formulation, and solution; creativity and intellectual curiosity) skills, and interpersonal and self-directional (interpersonal and collaborative, self-direction, accountability and adaptability, and social responsibility) skills.

Temporal limitations: The tool (questionnaire) was applied only in 2018/2019.

Spatial and human limitations: The study was applied to a group of primary, middle, and high school teachers working as principals in the Eastern, Western, Northern, Center, and Southern provinces in Saudi Arabia.

1.4. Definition of Terms

- *Teacher preparation programs* are "planned and organized programs according to the modern educational and psychological theories delivered by specialized educational institutions to provide pre-service teachers with academic, professional, and cultural experience to be the future teacher" (Albakry, 2018). They are procedurally defined as planned and organized educational programs provided by the colleges of education to equip teachers with knowledge, skills, and positive attitude to education to fulfill occupational tasks and carry out scientific research and knowledge development
- *21st century skills* are a set of skills required for the student to build competitiveness in the 21st century, including characteristics (digital knowledge and fast change) at the personal, social, professional, and academic life

(Zuniga, 2017). They support the student to develop in (thinking and work methods, work tools, and life skills). They include creativity and innovation, critical thinking, cooperation, adaptability, flexibility, curiosity and imagination, as well as access and analysis of information.

According to Shalabi (2014), 21st century skills are "sets of skills to ensure teacher and learner's readiness to learn, innovate, work, and optimize the use of information and technology means". They are procedurally defined as a set of programs to enable the teacher to acquire the necessary teaching skills and experience to develop professionally and meet 21st century requirements. They include information and communication (information and media literacy and communication) skills, thinking and problem solving (critical thinking and systems thinking; problem identification, formulation, and solution; creativity and intellectual curiosity) skills, and interpersonal and self-directional (interpersonal and collaborative, self-direction, accountability and adaptability, and social responsibility) skills.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1. Education in the Light of 21st Century Skills

Education is a long-term investment in the labor force. Thus, its development has considerable economic benefits. Contemporary work requires high-level knowledge and skills, e.g. communication, critical thinking, and productive thinking (Trilling & Fadel, 2009). The concept of 21st century skills is used to define what students should know and do to join the labor market and make decisions (Aleid, 2019).

a. The General Concept of 21st Century Skills

According to Scott (2015) 21st century skills are the basic competencies and skills of successful life and work, e.g. communication, cooperation, critical thinking, and creativity taught in the context of 21st century topics. Kayange and Msiska (2016) report that 21st century skills are the skills required by students to participate effectively and successfully, acquire knowledge, master communication, and handle information effectively and efficiently to keep pace with the latest updates. Specialists argue that all students should master these skills.

2.2. Classification of 21st Century Skills

2.2.1. Educators' Perspective

Metz (2011) classifies 21st century skills into flexibility, adaptability, innovation, critical thinking, creativity, non-routine problem solving, complex communication, collaboration, social, and cross-cultural skills. According to Rotherham and Willingham (2009), 21st century skills include communication, digital literacy, thinking and problem solving, as well as personal and self-directional skills. Moreover, Higgins (2008) classified them into four groups, namely digital and electronic culture, creative thinking, effective communication, and high productivity. Generally, 21st century skills include critical, systematic, creativity, and logical thinking. They also include knowledge survey, teamwork, communication and adaptability, self-directional, social responsibility, global awareness, metacognition, technology, and problem identification and solution. Hofny (2015) categorized 21st century skills into learning (creative thinking, critical thinking, and communication) skills, knowledge (information awareness, media literacy, and technological knowledge) skills, and life skills.

2.3. Classification of 21st Century Skills by Many Organizations

1. The Educational Laboratory North Central Regional (NCREL, 2003) classifies 21st century skills into four basic groups, namely digital age literacy (basic, scientific, economic, technological, visual and information, multicultural literacy and global awareness literacies) inventive thinking (adaptability, managing complexity, self-direction, curiosity, creativity, risk-taking, higher-order thinking, and sound reasoning), effective communication (teaming, collaboration, personal, social, civic responsibility, and interactive

communication), and high productivity (prioritizing, planning, managing for results, effective use of real-world tools, and ability to produce relevant and high-quality products).

2. European Union Frame explores the competence and skills of long-life learning by conducting field studies in many countries to measure these skills. Jerald (2009) categorizes them into the emotional domain (strategies and motivation for learning, attitude to change, self-esteem, and learning environment), the cognitive domain (making and testing suggestions, using and testing rules, and using mental tools), and the meta-cognitive domain (problem solving, accuracy, and trusting the metacognition).
3. The Frame of Arab League Educational, Cultural and Scientific Organization (ALECSO,(2014) divides 21st century skills into three main fields, namely advanced thinking skills (critical and analytical thinking, problem solving, creative thinking, and verbal intelligence), personal skills (communication, teamwork, cooperation, leadership, decision making, adjustment, self-management, self-confidence, work ethics, motivation to work, positivity, and estimating variation in the work environment), and information technology (digital literacy, printing, using the internet, using Microsoft office, computer literacy, and mass media literacy).
4. Other organizations have also developed frames for 21st century skills in education. According to Shalabi (2014) the Organization for Economic Co-operation and Development (OECD) developed a framework in 2005 that included using tools interactively, with different groups, and acting independently. The aforementioned frameworks show a strong agreement on 21st century skills, but the organizations differ in terms of organizing these skills. Moreover, there is no uniquely defined inventory of these skills because of the different learning objectives that the organizations seek to achieve.

2.4. Teacher Preparation under 21st Century Skills

The job of school has changed to develop students, including the development of curiosity, understanding, and concluding facts independently. Therefore, several Arab workshops and conferences were held to discuss teacher's roles and 21st century skills required, such as the Third Conference on Information Technology Applications in Education in 2002 at Ege University, the Conference on Teacher Preparation for the Millennium and the Requirements of the Development Plan in Kuwait in 2003, the Conference on Teacher Preparation for the Third Millennium at the United Arab Emirates University in 2003, and the 2004 Conference on Globalization and Education Priorities at King Saud University (Alharby, 2013). Teacher preparation according to 21st century skills is an important developmental issue. These skills help students learn and achieve higher levels of education and help teachers develop. Kayange and Msiska (2016) emphasizes to include these skills entirely in education. Alharby (2013) identifies these 21st century skills as higher-order thinking, evaluation system management, knowledge economy support, and student abilities' management.

Teachers have to include 21st century skills in classroom instruction to trigger student interaction with content and other students. They also have to master the use of technological devices and software in the classroom Hammond (2005). Shalabi (2014) argues that a teacher should master digital age literacy, inventive thinking, effective communication, and high productivity skills. Therefore, teacher preparation institutions should reconsider their programs to meet 21st century skills. Hofny (2015) argues that they should reconsider the content that can include a broader cognitive base and interdisciplinary topics in the various fields; skills that can cover learning and innovation, information and technology, and life and work; tools that help achieve these skills; occupational considerations that include psychological, educational, and technological considerations, such as teacher attitudes and motivation and optimal use of technology when designing instruction.

2.5. Global Expertise (Saudi Arabia, Finland, and Malaysia)

Saudi Arabia

The Ministry of Education (2004a) improved teacher performance through training and qualification across Saudi Arabia. Moreover, ministerial resolutions were taken to afford the material, human, or technical capabilities to build in teachers. The Department of Training and Teacher Qualification in Riyadh increased the number of trained teachers to 11,039 and training programs to 682 (Ministry of Education,2004b). According to Alzebyany (2014) teacher preparation in Saudi Arabia includes academic preparation, professional (educational) preparation, cultural preparation, and field education (training programs).

The General Department of Educational Supervision at the Saudi Ministry of Education developed various styles of in-service teacher training, e.g., theoretical training (lectures, discussions, workshops, and supervision bulletins) and practice (field training). The Ministry of Education (2018) also adopted the King Abdullah Project for the development of education under Saudi Vision 2030 that aims to improve teacher professional development and equip teachers with the best international practices to improve their performance and bridge the gap between theory and practice. The Saudi Vision 2030 covered 21st century skills in many aspects related to teachers, including higher-order thinking, training students in appropriate thinking and problem solving. Additionally, the teacher provides a motivating classroom environment using the best methods that develop understanding and flexibility and help use information effectively to collaborate learning and experience (Saudi Arabia, 2016).

The most significant 21st century skills that a teacher should possess to build a knowledge society include higher-order thinking skills, life skills, management of students' abilities, supporting knowledge economy, management of information technology, management of teaching, and management of the evaluation system. A few activities were conducted in this regard.

- Higher-order thinking skills: Saudi Arabia adopted a project entitled (development of thinking skills) and linked it directly to educational development to promote thinking among teachers, principals, and students (Ministry of Education, 2004a).
- Management of life skills: The Ministry of Education categorized skills into personality-related, such as communication and cooperation and general skills, e.g. time management and safety and security requirements (Alghamdi, 2011).
- Management of student abilities: Saudi Arabia adopted the diagnosis test project to help teachers identify student weaknesses to handle them (Ministry of Education, 2004b).
- Supporting knowledge economy: According to Alzahrani and Ibrahim (2012) the Ministry of Education defined the roles of teachers to support the knowledge economy, e.g., effective learning, considering student individual differences, linking learning to life, and using life skills.
- Management of information technology: Saudi Arabia developed 21st century skills using technology, integrating technology in schools, and training teachers in mastering technology skills (Alzahrani, 2013).
- Management of teaching: A teacher should consider the educational context and results. Thus, a teacher should be trained in full classroom management, awareness, attention, and providing a motivating environment (Alzahrani, 2013).
- Management of the evaluation system: The Ministry of Education established the General Department of Total Quality to develop educational programs and handle evaluation-related educational problems and fit the public attitudes to total quality (Alrawqy, 2012).

Finland

Recently, Finland has become a pioneering country in academic achievement, especially in the international tests of reading, mathematics, and sciences (Alhumel & Alanady, 2015) because of the good preparation of teachers, learning and professional development, assessment and evaluation, and decision making (Sahlberg, 2016). Teacher

preparation in Finland aims at the balanced development of the personal and professional competence of teachers, as well as building the educational thinking skills to enable teachers to manage the educational knowledge and contemporary practices. Nominated teachers for the basic stage study three basic fields, i.e., education theory, knowledge of the educational content, as well as education and practice. Having attained these skills, they can pursue master's degrees (Westbury, Hansén, Kansanen, & Björkvist, 2005).

Education is the most prominent profession in Finland. Consequently, a teaching position in a basic school is highly competitive (Sahlberg, 2016). According to Hannele (2015) a teacher in Finland has clear visions and objectives in the school. Teacher preparation relies on academic components, theoretical studies, and practices (Hansen et al., 2012). Finland has also developed pre-service teacher preparation programs to meet the 21st century requirements. Table 1 Shows 21st century skills in Finland adopted from Valli, Perkkilä, and Valli (2014).

Table-1. 21st century skills in Finland.

21st century learning skills		
Information and communication skills	**Thinking and problem solving skills**	**Interpersonal and self-directional skills**
Information and media literacy skills - Accessing and managing information - Integrating and creating information - Evaluating and analyzing information Communication skills Understanding, managing, and creating effective communication - Orally, - In writing, - Using multimedia	Critical thinking and systems thinking - Exercising sound reasoning - Making complex choices - Understanding the interconnections among systems Problem identification, formulation, and solution Ability to - Frame, - Analyze, - Solve problems Creativity and intellectual curiosity - To develop, - Implement, - Communicate new ideas to others	Interpersonal and collaborative skills - Demonstrating teamwork and working productively with others. - Demonstrating the ability to adapt to varied roles and responsibilities. - Exercising empathy and respecting diverse perspectives. Self-Direction - Monitoring one's own understanding and learning needs. - Locating resources. - Transferring learning from one domain to another. Accountability and adaptability - Exercising personal responsibility and flexibility in personal, workplace and community contexts. - Setting and meeting high standards and goals for oneself and others. Social responsibility - Acting responsibly with the interests of the larger community in mind. - Demonstrating ethical behavior in personal, workplace and community contexts

Source: Valli et al. (2014).

According to Urbani, Roshandel, Michaels, and Truesdell (2017) the most important 21st century skills of teacher preparation in Finland are creativity, critical thinking, communication, cooperation, as well as use of information and media technology. Teacher preparation programs focus on self-learning and developing various skills. Learning to learn is a basic skill in the Finnish teacher preparation to develop student knowledge, skills, and abilities. Moreover, teacher preparation programs develop a teacher professionally in relation to psychology, sociology, special education, curriculum, and educational evaluation (Mora & Wood, 2014). The Finnish National Agency for Education approves a set of competencies that should be mastered by teachers, especially those involved in basic education, e.g., life-long learning, knowledge, guidance-based knowledge, and predicting future educational requirements and competence (Rajakaltio, 2014).

In short, the Finnish education is one of the best systems worldwide, especially in teacher preparation and professional developments. Exporting Finnish expertise is highly recommended. However, it shall be adjusted to the culture and the environment of the importing country.

Malaysia

Malaysia adopted the slogan of professional competence for teachers and carried out a comprehensive teacher development program by allocating resources and approving a set of training courses based on the concept of the training of trainers. Considerable efforts were made to develop teachers, such as promoting qualifications to obtaining specialized diplomas and enhancing salaries. Malaysia is highly interested in equipping teachers with 21st century skills by developing a distinguished teacher preparation program, enhancing the effectiveness of teachers, and giving more authority of decision making in the school and the classroom. Furthermore, Malaysia has endeavored to equip teachers with 21st century skills and has defined it to be a developed country in the improvement of education and society (Thang et al., 2010).

Pre-service teacher preparation at teacher training colleges and public universities is the major source of teacher preparation. Recently, teachers have been equipped to meet the challenges and requirements of the age (Ministry of Education, 2004a) such as developing curriculum, providing a collaborative learning environment, school-based enterprise, emotional intelligence competence, information and communication technology, scholarships, and research and development. Asariah (2009) argues that the Ministry of Education takes many initiatives to make teacher's practices more effective by developing research culture among teachers, involving distinguished teachers in curriculum design, publishing good practices of teachers, holding annual competitions for creative educational practices among teachers and students, and establishing a unit of research and development in each teacher training college.

The Ministry of Education seeks professional development of teachers by developing their 21st century skills. In doing so, Lee (2006) the Ministry employs many techniques and practices, e.g., implementing the accredited pre-service teacher preparation program, continuous professional development, and integrating active and creative information technology in education and learning activities. It carries out new in-service training every five years to meet the latest instruction methods. The training programs aim to provide the necessary in-service training, assessing teachers' training, providing guidance and instruction to teacher institutes regarding the Ministry's educational policy, providing teachers with the latest instructional methods.

Institut Perguruan Perempuan Melayu (IPPM) is a pre-service teacher training program. It aims to solve existing programs on projects, comprehensive technology, and teacher resources' management; encouraging effective use of technology to promote learning based on research and communication; promoting self-learning and higher-order thinking skills among students (Asariah, 2009). It builds skills to enable teachers to face global challenges under a knowledge-based economy, provide professional development, promote educational competence, motivate job satisfaction, integrate technology, and develop higher-order thinking skills (Abdullah, 2007).

To apply continuous professional development of teachers, the Ministry of Education in Malaysia adopted a set of reformation procedures to develop teachers, including giving professional development and continuous training to teachers (Jamil, Razak, Raju, & Mohamed, 2010). The Malaysia Qualification Agency developed some standards that define the quality of teacher professional development while preparation. It recommended reforming professional preparation by adopting 21st century skills. For instance, the teacher is a professional expert in evaluation. According to Salleh et al. (2013) professional training includes 21st century skills, such as teaching, communication, and technological skills. Almalwla (2011) identifies the most important competence among teachers. They include general competence (e.g., computer culture), special competence (e.g., computer use), related to information culture (e.g., using the internet and multimedia in education), and preparing curriculum electronically. Rusdin (2018) argues that teachers in Malaysia are ready to implement 21st century learning in the

classroom. Therefore, actions should be taken to encourage teachers to continue a higher level of learning and improve their understanding, knowledge, and instructional skills. In short, the Malaysian expertise in teacher development is a model to be adopted internationally. Malaysia is currently an advanced country, especially in education because of being keen on teacher development and promoting education.

Benefits to Saudi Arabia

In this section, the author discusses major features of the Finnish and Malaysian expertise of 21st century skills in teacher preparation programs and examines how Saudi Arabia could benefit from such expertise.

Finland is ranked first internationally in education, especially in teacher preparation, technology, textbooks, and curricula. Its modern educational system is developed logically. The Finnish expertise adopts a clear philosophy that accommodates society's development. It makes the teacher the cornerstone of education development. Additionally, it has developed clear strategies to promote education and adjusted them to the cultural and technical norms of Finland. Finland focuses on promoting the educational thinking skills of teachers to enable them to manage education according to educational background and contemporary practices. It succeeded in developing teacher preparation programs according to the inventory of scientific research in teacher preparation, including instruction and education theories, huge funding, professional development, and developing a supportive environment. The most important 21st century skills in Finland are information and communication, thinking and problem solving, interpersonal communication creativity, critical thinking, and cooperation. Moreover, the Finnish National Agency for Education approved a set of competencies that should be mastered by teachers, e.g., life-long learning, knowledge, guidance-based knowledge, and predicting future educational requirements and competence.

Malaysia is also a good model because it has implemented a comprehensive teacher preparation program to develop teachers professionally and promote teacher development mechanisms. It established training units at public schools to employ technology in the classroom to empower teachers of classroom management and promote education in general. To develop teacher preparation programs under 21st century skills, Malaysia adopted a set of skills, including developing curriculum, providing a collaborative learning environment, school-based enterprise, emotional intelligence competence, information and communication technology, scholarships, and research and development. The Organization of the Professional Reformulation of 21st century teacher provides a clear description of the teacher based on professionalism and giving the teacher free management within a set of performance standards. Moreover, Malaysia provides pre-service teacher training to enable the teacher of confronting global challenges under a knowledge-based economy, professional development, and building technical and educational competence.

Education in Saudi Arabia can benefit from the expertise of Finland and Malaysia in teacher preparation according to the 21st century skills by integrating 21st century into the curriculum. New methods of organizing education according to the needs of the students and the community shall be developed by reviewing the perspective of experts to highlight shortcomings in the existing curricula and developing a comprehensive system that meets 21st century skills. Pre-service teacher preparation shall be carried out in learning environments that meet the 21st century like the case of Finland. Furthermore, focus on learning should not be limited to the contents of the curriculum. Rather, the contents are tools to achieve the skills by arranging learning contexts and real environments. Training units can be established in public schools to use technology in the classroom and enable teachers to manage classrooms and handle modern skills. In-service training shall be carried out every five years to meet the latest requirements of teaching, as is the case of Malaysia. National standards of technology use in teacher preparation are developed to promote teachers' cognitive capabilities, meet the needs of education, and express creative ideas. Additionally, a set of quality standards of teacher professional development shall be considered to prepare 21st century teachers.

3. METHODOLOGY

3.1. Method

The author adopted the analytical descriptive approach as the most appropriate to the nature of the study. A questionnaire was developed on the reality of including 21st century skills (information and communication, thinking and problem solving, as well as interpersonal and self-directional) skills in the teacher preparation programs in the light of global expertise.

3.2. Sampling

The study covered five main cities across Saudi Arabia and the sample comprised (50) principals selected randomly from the population. Table 2 highlights the characteristics of the sample.

Table-2. Description of the sample.

Variable	Category	Frequency	Percentage
Specialization	Scientific	20	0.4
	Humanities	30	0.6
Years of experience	Less than 5 years	9	0.18
	5 to less than 10 years	19	0.38
	10 years and more	22	0.44
Academic qualification	Bachelor	42	0.84
	Post-graduate studies	8	0.16

Table 2 shows that the humanities and scientific sections were rated 60% and 40%, respectively. Concerning years of experience, (10 years and more) was ranked first and rated 44%. Moreover, 84% of the participants have bachelor's degrees.

To analyze the collected data, the author utilized Pearson's correlation coefficient for validity, Cronbach's alpha for reliability, as well as arithmetic mean and standard deviation to identify the responses of the participants. The one-way analysis of variance (ANOVA) was used to determine the significance of differences in the responses to the domains according to variables. Moreover, the "T" test was used to define differences in the arithmetic means.

3.3. Tool

The author reviewed the relevant literature, e.g., Albalawy and Albalawy (2019); Alghamdi and Alqahtani (2016); Alhumel and Alanady (2015); Alshamri (2017); Alzahrani (2019); Hannele (2015); Kayange and Msiska (2016) and Rusdin (2018). She also reviewed some international expertise of 21st century teacher preparation (Finland, Malaysia, and Saudi Arabia). The questionnaire aimed to determine the reality of including 21st century skills in teacher preparation programs in the light of international expertise. The preliminary form of the questionnaire included (3) main skills, (9) sub-skills, and some indicators. It was presented to (9) reviewers specialized in the foundations of education and comparative education. The sub-skills were approved by 93% of reviewers, whereas the significance of skills was approved by 99%.

The instructions were clearly stated on the first page. They included the options of performance, performance levels, and degree of each level. The final form of the questionnaire included two sections. Section I comprised the preliminary personal data of the teachers (principals), i.e., specialization, years of experience, and academic qualifications. Section II consisted of (54) items distributed to (3) domains: Information and communication skills (12 items), thinking and problem solving skills (18 items), and interpersonal and self-directional skills (24 items), as shown in Table 3.

Table-3. Domains and items of the questionnaire.

Domains	Sub-skills	No. of items
Information and communication skills	Information and media literacy skills	6
	Communication skills	6
Thinking and problem solving skills	Critical thinking and systems thinking	6
	Problem identification, formulation, and solution	6
	Creativity and intellectual curiosity	6
Interpersonal and self-directional skills	Interpersonal and collaborative skills	6
	Self-Direction	6
	Accountability and adaptability	6
	Social responsibility	6
Total		54

The scores were scaled using a five-point Likert scale (strongly agree, agree, undecided, disagree, and strongly disagree).

3.4. Validity and Reliability

The validity of the questionnaire was estimated using the correlation coefficient between each domain and the total score by applying to a pilot sample of (10) teachers, as shown in Table 4.

Table-4. Validity between each domain and the total score (n= 10).

Correlation coefficients	
Information and communication skills	
Correlation coefficient	0.85**
Thinking and problem solving skills	
Correlation coefficient	0.86**
Interpersonal and self-directional skills	
Correlation coefficient	0.88**

Note: ** significant at the level of 0.01.

The correlation coefficients of the information and communication skills, thinking and problem solving skills, and interpersonal and self-directional skills scored (0.85), (0.86), and (0.88), respectively. They are statistically significant at the level of (0.01), indicating the internal consistency of the domains.

To estimate the reliability of the questionnaire, the author used Cronbach's alpha, as shown in Table 5.

Table-5. Values of reliability between the tool and the domains.

Tool	Cronbach's alpha
Total	0.89**
Information and communication skills	0.78**
Thinking and problem solving skills	0.81**
Interpersonal and self-directional skills	0.83**

Note: ** significant at the level of 0.01.

Table 5 illustrates that all reliability coefficients of the tool and its domains are significant at the level of 0.01, indicating its high reliability.

4. RESULTS AND DISCUSSION

1. The first question was answered based on this study's theoretical framework.
2. To answer the second question, the arithmetic means and standard deviations of the responses to the reality of including information and media literacy skills and communication skills in teacher preparation programs were calculated, as shown in Tables 6 and 7.

Table-6. The responses of the participants to the reality of including information and media literacy skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
4	The programs focus on using technology creatively and effectively in various learning environments.	2.82	1.33	1	Moderate
6	Teachers are qualified for new functions under fast technology development.	2.8	1.35	2	Moderate
5	Teachers are trained in cooperation, communication, and critical thinking using modern means of technology.	2.74	1.15	3	Moderate
1	Teachers are trained in accessing and managing information.	2.68	1.16	4	Moderate
3	Teachers are trained in the evaluation and analysis of information	2.64	1.32	5	Moderate
2	The programs focus on the ability to integrate and generate information.	2.56	1.21	6	Moderate
		2.71	1.06	Moderate	

Table 6 illustrates that the means of the domain are moderate with an arithmetic mean of (2.71) and a standard deviation of (1.06). The author argues that educational institutions and teachers increasingly use social media websites and computers to communicate with students and provide electronic educational content. The teacher preparation programs are the right platform to include the skills of technology use and media because the generation of the knowledge age always uses technology, but it needs the guidance of teachers on the best use of the digital tools in learning skills and evaluating the dangers of social media. However, this finding shows that Saudi Arabia has not employed the Finnish expertise adequately, in which technology is used effectively and actively. Moreover, Finland carried out pre-service teacher professional development that meets 21st century skills to help pre-service teachers adjust to future requirements. Saudi Arabia has not also utilized Malaysian expertise adequately. Malaysia established training units in public schools to use technology in the classroom, carried out projects to promote Malaysian education, and carried out professional development programs for teachers. This finding does not match the results of Alghamdi and Alqahtani (2016) that showed the low degree of mastering the information and media literacy skills among primary mathematics teachers.

Table-7. The responses of the participants to the reality of including communication skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
2	The programs focus on using interpersonal skills and reading and writing components successfully.	2.90	.95	1	Moderate
1	Teachers are trained in understanding, managing, and creating effective communication orally and in writing using multimedia.	2.76	1.06	2	Moderate
3	The teacher is trained in processing and discussing verbal and non-verbal information.	2.62	1.04	3	Moderate
5	The programs focus on using a large group of shapes and contexts for several purposes.	2.44	.88	4	Low
4	Teachers are trained on the ability to define basic points to be expressed verbally and non-verbally.	2.20	.92	5	Low
6	The teacher is trained in using mass media and several techniques to broaden communication.	2.14	1.03	6	Low
		2.51	0.57	Moderate	

Table 7 illustrates that the means of the domain are low and moderate with an arithmetic mean of (2.51) and a standard deviation of (0.57). The author argues that mastering communication skills is essential for the teacher who communicates with students, guardians, and others. Communication skills affect positively the individual

performance of students and promote the various aspects of education. Furthermore, they help teachers obtain and handle information effectively and efficiently to keep pace with the latest developments. Education has paid attention to basic communication skills, such as speaking and writing, whereas the digital tools and current era require personal communication skills and broader cooperation to motivate learning in person or virtually. This finding does not agree with the results of Alharby (2013); Alhumel and Alanady (2015); Kayange and Msiska (2016) and Khyo (2011). It indicates that Saudi Arabia has not employed the expertise of Finland and Malaysia adequately in this regard. While Malaysia and Finland paid great attention to these skills, Saudi Arabia did not give much weight to these skills.

3. To answer the third question, the arithmetic means and standard deviations of the responses to the reality of including critical thinking and systems thinking skills, problem identification, formulation, and solution, as well as creativity and intellectual curiosity in teacher preparation programs were calculated, as shown in Tables 8, 9, and 10.

Table-8. The responses of the participants to the reality of including critical thinking and systems thinking skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
4	The programs provide the ability to use higher-order thinking skills effectively for planning, instruction, and thinking in educational practices.	2.98	.99	1	Moderate
3	The teacher is trained in understanding the correlation between the systems.	2.88	1.09	2	Moderate
5	The teacher is trained in thinking about the learned concepts.	2.74	1.08	3	Moderate
6	The programs promote the application of the learned concepts.	2.74	1.06	4	Moderate
2	The teacher is trained in making complex choices.	2.70	1.01	5	Moderate
1	The programs promote sound thinking.	2.71	2.40	6	Moderate
		2.74	.70	Moderate	

Table 8 illustrates that the means of the domain are moderate with an arithmetic mean of (2.74) and a standard deviation of (0.70). The author argues that teacher preparation programs consider critical and systems thinking as basic life requirements in the era of the knowledge economy. These skills are important because modern technology helps access, search, and scrutinize information.

Table-9. The responses of the participants to the reality of including problem identification, formulation, and solution skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
3	The programs equip the teacher with the ability to solve problems using an adequate method.	2.88	1.15	1	Moderate
1	The teacher is trained in the ability to contextualize.	2.80	1.24	2	Moderate
2	The teacher is trained in logical analysis to solve problems.	2.78	1.01	3	Moderate
4	The teacher is trained in design and choosing the appropriate evidence.	2.64	1.06	4	Moderate
5	The programs focus on finding, analyzing, and using the information to solve problems.	2.49	1.16	5	Low
6	The programs develop problem solving skills.	2.47	.97	6	Low
		2.67	.68	Moderate	

They can be learned through various activities and programs that promote inquiry and problem-solving, and inference according to the educational context. Students should learn analyzing and evaluating alternatives and

perspectives of learners, linking and discussing information, making conclusions, analyzing problems creatively, as well as asking questions and concluding the best solutions. This finding agrees with Alharby (2013) that higher-order thinking is the most important skill for teachers. It also agrees with Gustafsson (2013) that teachers should master critical thinking skills. It shows that Saudi Arabia has not benefited from Finnish and Malaysian expertise because these skills have not been accomplished in Saudi Arabia.Table 9 shows that the means of the domain are low and moderate with an arithmetic mean of (2.67) and a standard deviation of (0.68). The author argues that the teacher preparation programs equip teachers with problem identification, formulation, and solution skills to generate new ideas and solutions, solve problems creatively, promote self-confidence, and get knowledge. This finding agrees with Alghamdi and Alqahtani (2016) that showed a moderate degree of life and adaptability skills among primary mathematics teachers in the light of 21st century skills. Unlike Finland that equips teachers with the required skills and knowledge to confront difficulties in a changing society, Saudi Arabia does not employ these skills appropriately, as their score is moderate. Moreover, Saudi Arabia has not benefited from the Malaysian expertise that provides training programs for pre-service teachers to encounter global challenges under a knowledge- based economy.

Table-10. The responses of the participants to the reality of including creativity and intellectual curiosity in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
6	The programs focus on supporting the teacher in applying theories to real situations.	2.50	1.11	1	Low
4	The teacher is trained in implementing new and creative ideas.	2.46	1.29	2	Low
5	The teacher is trained in using higher-order thinking skills effectively for planning, teaching, and thinking about teaching practices.	2.36	1.17	3	Low
1	The programs play a part in the development and creation of new ideas.	2.26	1.06	4	Low
2	The programs focus on supporting the teacher in sharing new ideas with others.	2.22	1.18	5	Low
3	The teacher is trained in communication and identifying new ideas.	2.18	.98	6	Low
Total		2.33	.85	Low	

Table 10 illustrates that the means of the domain are low with an arithmetic mean of (2.33) and a standard deviation of (0.85). The author argues that the classrooms are overcrowded and the teaching burden of a teacher is high. Thus, the teacher could hardly fulfill the course and could not do other activities. Moreover, teachers do not look for new instruction methods but adopt traditional ones. 21st century requires continuous development and creativity, which can be promoted in learning environments that motivate questions, openness to new ideas, and finding solutions to real problems. Additionally, creativity helps deliver and apply new ideas effectively to contribute to the field in which innovation or development takes place. This finding agrees with Alghamdi and Alqahtani (2016) that showed the moderate degree of creativity and learning skills among primary mathematics teachers in the light of 21st century skills, indicating the low inclusion of creativity and intellectual curiosity in teacher preparation programs in Saudi Arabia. In contrast, Finland and Malaysia trigger these skills among teachers for more creativity and innovation.

4. To answer the fourth question, the arithmetic means and standard deviations of the responses to the reality of including interpersonal and collaborative skills, self-direction skills, accountability and adaptability skills, and social responsibility skills in teacher preparation programs were calculated, as shown in Tables 11, 12, 13, and 14.

Table-11. The responses of the participants to the reality of including interpersonal and collaborative skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
2	Teachers are trained in adjusting to various roles and responsibilities.	2.80	.98	1	Moderate
4	Teachers are trained in taking responsibility.	2.68	1.16	2	Moderate
6	The programs focus on supporting teachers to work effectively in various teams.	2.64	1.32	3	Moderate
3	The programs promote sympathy and respecting other opinions.	2.60	.83	4	Moderate
5	The teacher is trained in efficient interaction with others.	2.56	1.21	5	Low
1	The programs focus on supporting the teacher in fruitful teamwork.	1.38	.60	6	Very low
		2.44	.65	Low	

Table 11 shows that the means of the domain are moderate and low with an arithmetic mean of (2.44) and a standard deviation of (0.65). The author argues that the teacher preparation programs give more weight to professional teaching skills than other skills, such as the personal and social aspects that are important for 21st century teachers. Furthermore, cooperation helps learners demonstrate teamwork capabilities and achieve objectives because of flexibility and desire to help others. This finding does not agree with the results of Alharby (2013); Alhumel and Alanady (2015); Kayange and Msiska (2016) and Khyo (2011). It indicates that Saudi Arabia is not interested in student training in interpersonal and collaborative skills like the case of Finland that balances the interpersonal and collaborative and professional competences. Furthermore, Malaysia trains teachers in the emotional aspects with other aspects of the course.

Table-12. The responses of the participants to the reality of including self-direction skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
5	The teacher is trained in developing self-learning skills.	2.90	.95	1	Moderate
1	The teacher is trained in monitoring personal understanding and learning needs.	2.82	2	2	Moderate
3	The teacher is trained in transferring learning from a field to another.	2.80	1.35	3	Moderate
4	The teacher is trained in time and goal management.	2.76	1.06	4	Moderate
2	The programs focus on supporting the teacher in defining resources.	2.74	1.15	5	Moderate
6	The teacher is provided with a strategy for developing and achieving goals related to learning.	2.62	1.04	6	Moderate
		2.77	.85	Moderate	

Table 12 illustrates that the means of the domain are moderate with an arithmetic mean of (2.77) and a standard deviation of (0.85). The author argues that the teacher preparation programs aim to provide continuous learning skills and habits to play a role in the renaissance of the society and long-life development by developing the teacher's feeling of the responsibility to learning and training in self-direction skills and using innovative means of instruction. This finding shows that Saudi Arabia has not clearly reviewed teacher preparation programs in Finland, especially in self-direction skills to guide students to improve their programs, develop professional plans, and seek more objectives. Moreover, Malaysia focuses on making the teachers able to meet the needs to support the teacher in guidance processes.

Table-13. The responses of the participants to the reality of including accountability and adaptability skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
6	The teacher is trained in project management, as well as prioritizing, planning, and managing work.	2.88	1.09	1	Moderate
5	The teacher is trained in ethical work and collaboration with workmates.	2.70	1.01	2	Moderate
2	The teacher is provided with a strategy to develop and meet higher standards and objectives.	2.44	.88	3	Low
4	The teacher is trained in prioritizing needs and time management.	2.40	1.14	4	Low
1	The teacher is trained in personal responsibility and flexibility in personal contexts, workplaces, and society.	2.20	.92	5	Low
3	The programs focus on teacher support in defining and achieving goals.	2.14	1.03	6	Low
		2.46	.55	Low	

Table 13 illustrates that the means of the domain are moderate and low with an arithmetic mean of (2.46) and a standard deviation of (0.55). The author argues that the teacher preparation programs focus on developing professional teaching capabilities and teaching the teacher lesson planning and implementation, as well as compatibility with the environment. This finding shows that Saudi Arabia has not benefited from the expertise of Malaysia and Finland adequately that are keen on teacher professional development to work in the learning environments, which fit 21st century skills.

Table-14. The responses of the participants to the reality of including social responsibility skills in teacher preparation programs.

No.	Item	Arithmetic mean	Standard deviation	Rank	Degree
1	The programs focus on supporting the teacher to take more responsibility in the interests of society.	2.98	.99	1	Moderate
4	The programs focus on supporting the teacher in using differences to develop new ideas and solutions for problems.	2.80	1.24	2	Moderate
5	The teacher is trained in effective interaction with others and act politely and professionally.	2.78	1.01	3	Moderate
2	The teacher is trained in ethical behavior in personal contexts, workplaces, and society.	2.75	1.08	4	Moderate
3	The teacher is trained in respect and adopting sociocultural differences.	2.73	1.06	5	Moderate
6	The programs focus on supporting teachers to work effectively in various teams and respond rationally to different ideas and values.	2.70	1.01	6	Moderate
		2.79	.67	Moderate	

Table 14 illustrates that the means of the domain are moderate with an arithmetic mean of (2.79) and a standard deviation of (0.67). The author argues that the teacher preparation programs believe that the school is the primary social institution that provides students with the knowledge and develops social skills. Providing an adequate level of freedom to students to practice self-guidance and initiatives is a challenge that can be resolved through plays, role-play, internship, and fieldwork. Therefore, the teacher plays an effective role in promoting social responsibility. This finding does not agree with the results of Alharby (2013); Alhumel and Alanady (2015); Kayange and Msiska (2016) and Khyo (2011). It indicates that Saudi Arabia is not interested in including social responsibility skills like Malaysia and Finland.

5. To answer the fifth question, the "t" test and the ANOVA were used to define statistically significant differences in the responses according to specialization, years of experience, and academic qualification.

a. Specialization Variable

Table-15. ANOVA analysis of defining differences in responses according to specialization.

Domain	Source of variance	Arithmetic means	Standard deviation	Freedom degree	T value	Significance level
Information and communication skills	Scientific	2.71	.68	49	1.12	0.662
	Humanities	2.45	.70			
Thinking and problem solving skills	Scientific	2.64	.58	49	0.708	0.696
	Humanities	2.51	.55			
Interpersonal and self-directional skills	Scientific	2.68	.53	49	1.01	0.812
	Humanities	2.50	.49			

Table 15 shows no statistically significant differences in all domains according to specialization with a statistical significance of more than (0.05). The author argues that the participants believe that specialization does not affect the reality of including 21st century skills in teacher preparation programs because they are important and benefit both teachers and learners. This finding does not match the results of Khyo (2011) that there were statistically significant differences in the importance of teacher competence in the light of 21st century skills in favor of curriculum and instruction specialization.

b. Years of Experience Variable

Table-16. ANOVA analysis of defining differences in responses according to years of experience.

Domain	Source of variance	Sum of squares	Freedom degree	Square means	T value	Significance level
Information and communication skills	Between groups	.621	2	.311	.909	.410
	Within groups	16.071	47	.342		
	Total	16.693	49			
Thinking and problem solving skills	Between groups	1.647	2	.824	1.672	.199
	Within groups	23.148	47	.493		
	Total	24.795	49			
Interpersonal and self-directional skills	Between groups	.161	2	.080	.283	.755
	Within groups	13.360	47	.284		
	Total	13.521	49			

Table 16 illustrates no statistically significant differences in all domains according to years of experience with a statistical significance of more than (0.05). The author argues that the participants have long years of experience in teaching. Moreover, pre-service teacher preparation programs have bridged the gap between teachers of various experiences. The teachers are well aware of the reality of including 21st century skills in teacher preparation programs. This finding matches the results of Khyo (2011) that there were no statistically significant differences in the importance of teacher competence in the light of 21st century skills according to years of experience.

c. Academic Qualification Variable

Table-17. ANOVA analysis of defining differences in responses according to academic qualification.

Domain	Source of variance	Arithmetic means	Standard deviation	Freedom degree	T value	Significance level
Information and communication skills	Bachelor	2.59	.60	49	0.153	0.879
	Post-graduate	2.63	.98			
Thinking and problem solving skills	Bachelor	2.55	.54	49	0.480	0.634
	Post-graduate	2.64	.69			
Interpersonal and self-directional skills	Bachelor	2.62	.42	49	.263	0.793
	Post-graduate	2.58	.76			

Table 17 shows no statistically significant differences in all domains due to academic qualifications. The author argues that the bachelor and post-graduate preparation programs are similar in which teaches receive almost the same adequate information on 21st century skills. Therefore, the responses of the participants to the reality of including 21st century skills in the light of some international expertise were largely similar. This finding does not agree with the results of Alharby (2013); Alhumel and Alanady (2015); Kayange and Msiska (2016) and Khyo (2011) and Rusdin (2018).

5. RECOMMENDATIONS

The study recommends adopting the teacher's development map of developed countries, such as Finland, making it a priority of teacher preparation in Saudi Arabia. Teacher preparation programs should be reformulated to qualify and train students in the latest developments to fit 21st century requirements and needs. Moreover, training courses and workshops of teacher preparation should be offered to train in-service teachers in 21st century skills. Saudi teachers should gain more freedom in choosing instruction methods, curriculum implementation, and learner evaluation because the freedom given to the Finnish teacher has triggered creativity and taking responsibility. Further studies should be conducted on the development of 21st century skills to help create awareness and educated generations. Additionally, 21st century skills should be included in pre-service teacher preparation programs.

6. CONCLUSION

The study concludes that in-service teacher preparation in the light of 21st century skills is a necessary educational objective to develop teachers. The success of the Finnish and Malaysian expertise in teacher preparation is motivated by the flexibility and creativity and the focus of teacher preparation programs on acquiring the latest educational updates and research skills in the two countries. Because of the fast educational development, in-service teacher preparation is an essential requirement in Saudi Arabia too as also stated in the Saudi Vision 2030, which stresses the importance of preparing modern curricula based on the basic skills related to 21st century skills. Saudi Arabia promotes the role of 21st century teacher and the interest in teacher roles and qualifications, as well as the indicators that measure education annually. Moreover, the Saudi government launched a broad-scale professional development project in 2008 as an integral part of educational reform. Therefore, any educational reform and development should rely on clear perspectives of the teacher roles and responsibilities of future education in the light of the fast-changing information and communication technology and the globalized human activity. The present study covers a significant part of the future skills that should be included in teacher preparation programs, namely 21st century skills benchmarked globally.

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REFERENCES

Abdelshafy, D. (2013). Basic skills of education and long-life learning: A proposal for the framework of the 21st century transformations. *Educational Sciences, 21*(1), 146-186.

Abdullah, N. (2007). *Malaysian teachers upgrade pedagogical skills, improve teaching outcomes with Intel Teach Program: Case study.* Malaysia: Institut Perguruan, Perempuan Melayu Melaka.

Al Refaa, M. (2014). Renewal of the Saudi teacher role to twin knowledge society "an analytical study. *Journal of Educational Sciences, 2*(2), 113-155.

Albakry, A. (2018). A proposal for developing teacher preparation programs in the light of Saudi Vision 2030 from the perspective of the faculty of Education at Saudi universities. *Journal of the Faculty of Education in Tanta, 72*(4), 413-445.

Albalawy, A., & Albalawy, A. (2019). A proposed training program of developing some 21st century skills among the teachers of mathematics for the primary stage in Tabuk. *Journal of Arab Studies in Education and Psychology, 107*(3), 378-433.

Albaz, M. (2013). Developing science curriculum for the 3rd preparatory grade in the light of 21st century skills. *Journal of Scientific Education, 16*(6), 191-231.

ALECSO. (2014). *Preparing Arab youth to the labor market: A strategy to include entrepreneurship and 21st century skills in Arab education.* Tunisia: PWC.

Aleid, S. (2019). *Analysis of technology textbooks in the light of 21st century skills and acquiring them among the tenth grade students.* M.A. Thesis, The Islamic University of Gaza, Palestine.

Alghamdi, M. (2011). *Effectiveness of educational activities in life skills development of Hadith course for the 3rd middle stage.* M.A. Thesis, Imam Muhammad bin Saud Islamic University, Riyadh.

Alghamdi, M. (2015). *Analysis of the contents of mathematics books for the higher primary grades in the light of 21st century skills.* M.A. Thesis, Imam Muhammad bin Saud Islamic University, Riyadh.

Alghamdi, M., & Alqahtani, F. (2016). *Evaluating the teaching performance of primary mathematics teachers in the light of the successful learning framework for the 21st century.* Saudi Arabia: Ministry of Education.

Alghanim, M. (2009). An analytical perspective of the reality of teacher preparation programs in some countries. *Journal of Arabic and Islamic Sciences, 2*(191), 1-163.

Alharby, A. (2013). A diagnostic study of the 21st century teacher's skills from the perspective of teachers and supervisors in Saudi Arabia. *Shaqra University Journal, 1*(1), 16-55.

AlHariri, R. (2019). 21st century skills. *International Journal of Pedagogical Innovations, 8*(1), 76-87.

Alhumel, I., & Alanady, A. (2015). Developing the teacher preparation system in Saudi Arabia in the light of the experiences of Japan and Finland. *International Interdisciplinary Journal of Education, 4*(2), 31-50.

Alkalthum, H. (2013). Analysis of the content of Fiqh I for the high school in Saudi Arabia in the light of 21st century skills. *Journal of Education of Al-Azhar, 154*(1), 224-243.

Alkhalili, K. (2006). *Preparation, qualification, and training of the Bahraini teacher.* Paper presented at the Paper Presented to the Subregional Workshop on Teacher Preparation and Training, UNESCO Office, Egypt.

Almalwla, H. (2011). *Education in the information age.* United Arab Emirates: Dar Alkitab Aljamey.

Alrawqy, M. (2012). *Development of the total evaluation system of public schools in the light of total quality management.* Ph.D. Dissertation, Imam Muhammad bin Saud Islamic University, Saudi Arabia.

Alshamri, A. (2017). Proposed mechanisms of developing basic teacher preparation in Kuwait based on the expertise of Finland. *Journal of Scientific Research in Education, 28*(2), 641-667.

Althueny, Y. (2010). Development of teacher preparation institutions in Saudi Arabia in the light of some international trends. *Journal of the Association of Arab Universities for Research in Higher Education*(55), 401-427.

Altwejry, H. (2017). *A proposal for the outcomes of teacher preparation programs in the light of the Saudi Vision 2030.* Paper presented at the Paper Presented at the Conference of the Role of Saudi Universities in the Activation of Saudi Vision 2030, Qassim University, Saudi Arabia.

Alzahrani, A., & Ibrahim, Y. (2012). *21st century teacher.* Saudi Arabia: Ministry of Education.

Alzahrani, G. (2013). *Teacher proficiency skills in technology.* Paper presented at the Paper Presented at the Conference of Digital Age Teacher, Princess Nourah Bint Abdulrahman University, Saudi Arabia.

Alzahrani, A. (2019). A proposal for developing teaching practices for mathematics teachers' perception of 21st century skills. *Umm Al-Qura University Journal of Education and Psychology Sciences, 11*(1), 1-47.

Alzebyany, M. (2014). Utilizing the expertise of some countries of teacher preparation and professional development to develop the Saudi experience. *Educational and Psychological Studies, 85*(2), 103-159.

Areshi, Z. (2018). Competence of the preparation of the 21st century teacher. *Journal of Scientific Research in Education, 19*(16), 176-190.

Asariah, B. (2009). *The next generation of teachers: The Malaysian perspective.* Malaysia: Ministry of Education.

Bozalek, V., Gachago, D., Alexander, L., Watters, K., Wood, D., Ivala, E., & Herrington, J. (2013). The use of emerging technologies for authentic learning: A South African study in higher education. *British Journal of Educational Technology*, *44*(4), 629–638.

Bradshaw, L. (2010). *An analysis of directors views on community learning center programs*. Ph.D. Dissertation, The University of North Carolina at Chapel Hill.

Brathwaite, A. (2011). *Impact of leadership on professional development programs on districts and schools implementation of 21st century skills*. Ph.D. Dissertation, University of Southern California, Los Angeles.

Buabeng, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology*, *8*(1), 136-155.

Dakhikh, S. (2012). *A proposal for a program of teacher development and training of knowledge society in the light of global educational applications of modernity and post-modernity*. Paper presented at the Paper Presented at the Conference of Curriculum in the Knowledge Society, Suez Canal University, Egypt.

Greenhill, V., & Petroff, S. (2010). *21st century knowledge and skills in educator preparation*. USA: American Association of Colleges of Teacher Education.

Gustafsson, J. (2013). *Selection and evaluation of teachers in Finland and Sweden*: University of Gothenburg.

Gut, D. (2011). Integrating 21st century skills into the curriculum. In: Wan G., Gut D. (eds), Bringing schools into the 21st century (pp. 137-157). New York: Springer.

Hammond, D. (2005). *Professional development schools: Schools for developing a profession* (2nd ed.). New York: Teachers College Press.

Hannele, N. (2015). Teacher professional development in Finland: Towards a more holistic approach. *Psychology, Society, & Education*, *7*(3), 279-294.Available at: https://doi.org/10.25115/psye.v7i3.519.

Hansen, S., Forsman, L., Asporfs, J., & Bendtsen, M. (2012). Visions for teacher education – experiences from Finland. *Acta Didactica Norge*, *6*(1), 1-17.

Higgins, M. (2008). *21st century learning skills: Global learning in an urban middle school*. Kansas, USA: Wichita State University.

Hofny, M. (2015). *Skills of the 21st century teacher*. Paper presented at the 24th Scientific Conference of the Egyptian Conference of Curriculum & Instruction, Egypt.

Jamil, H., Razak, N., Raju, R., & Mohamed, A. (2010). Teacher professional development in Malaysia: Issues and challenges. *CICE Series*, *4*(2), 85-102.

Jerald, C. (2009). Report of the center of public education in America- defining a 21st century education. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.460.8011&rep=rep1&type=pdf.

Kamil, R. (2013). A future perspective of the Arab teacher preparation in the light of knowledge society: Aswan as a case study. *Studies on University Education*(242), 26-123.

Katitia, D. M. O. (2015). Teacher education preparation program for the 21st century. Which way forward for Kenya? *Journal of Education and Practice*, *6*(24), 57-63.

Kayange, J. J., & Msiska, M. (2016). Teacher education in China: Training teachers for the 21st century. *The Online Journal of New Horizons in Education*, *6*(4), 204-210.

Khyo, R. (2011). *Teacher competence in the light of 21st century roles from the perspective of the faculty of education colleges at the Universities of Damascus, Aleppo, and Al-Baath*. M.A. Thesis. University of Damascus, Syria.

Laser, S. (2014). Teaching 21st century skills: Action tools (trans. M. Aljeusy). Retrieved from http://www.abegs.org/aportal/books/books_detail.html?id=5538192516186112

Lee, M. (2006). Centralized decentralization in Malaysian education. In: C. Bjork (Ed.), Education in the Asia- Pacific Region (pp. 150-151). Netherlands: Springer.

Massinga-Sanders, J. (2010). *Professional development for generalist teachers to meet the demands of 21st century instruction: A qualitative study of high school alternative education*. Ph.D. Dissertation. Capella University, Minnesota.

Metz, S. (2011). 21st century skills. *The Science Teacher*, *78*(7), 6-9.

Ministry of Education. (2004a). *Education development: National report (2000-2004)*. Saudi Arabia: Ministry of Education.

Ministry of Education. (2004b). *Handbook of educational training in Riyadh* (2nd ed.). Riyadh: Tybah Press.

Ministry of Education. (2012). Annual report. Saudi Arabia: Ministry of Education.

Ministry of Education. (2018). *King Abdullah project for the development of general education*. Saudi Arabia: Ministry of Education.

Ministry of Education. (2004b). *Handbook of educational training in Riyadh* (2nd ed.). Riyadh: Tybah Press.

Mora, J., & Wood, K. (2014). *Practical knowledge in teacher education*. New York, USA: Routledge.

Musa, O., & Alhanan, T. (2013). A proposal for developing the competence of Arabic language and history teachers in the light of the requirements of knowledge society. *Assiut Educational Journal*, *2*(1), 1-2.

Musleh, M. (2018). The reality of pre-service teacher preparation at AL-Quds Open University in the practicum of practical education from the perspective of school principals, teachers, and supervisors. *Jordan Journal of Applied Sciences*, *20*(63), 1-82.

NCREL. (2003). *Enguage 21st century skills: Literacy in the digital age*. USA: North Central Regional Educational Laboratory.

Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal of Education and Practice*, *8*(5), 81-86.

Osman, K., Soh, T. M. T., & Arsad, N. M. (2010). Development and validation of the Malaysian 21st century skills instrument (M-21CSI) for science students. *Procedia-Social and Behavioral Sciences*, *9*, 599-603.Available at: https://doi.org/10.1016/j.sbspro.2010.12.204.

Partnership for 21st Century Skill. (2006). Designed in cooperation with the National Science teachers Association 21st century skill map. Retrieved from http://www.p21.org/storage/documents/21stcskillmap_science.pdf.

Rajakaltio, H. (2014). *Towards renewing school: The action model of the school development- integrating in-service training and the development process*. Helsinki: The Finnish National Board of Education.

Rotherham, A. J., & Willingham, D. (2009). 21st century. *Educational Leadership*, *67*(1), 16-21.

Rusdin, N. M. (2018). Teachers' readiness in implementing 21st century learning. *International Journal of Academic Research in Business and Social Sciences*, *8*(4), 1293-1306.Available at: https://doi.org/10.6007/ijarbss/v8-i4/4270.

Sahlberg, P. (2016). *Finland's success: Teacher preparation*. Dubai: Al-Bayan Center for Planning and Studies.

Salleh, K., Othman, M., Radiman, S., Dakir, J., Tamuri, A., Alwi, N., & Badzis, M. (2013). Teachers' concerns, perception and acceptance toward Tauhidic science education. *Kyoto Bulletin of Islamic Area Studies*, *4*(1), 1124-1155.

Saudi Arabia. (2016). Saudi Vision 2030. Retrieved from https://vision2030.gov.sa/en.

Scott, C. (2015). *The futures of learning 2: What kind of learning for the 21st century?* Paris: UNESCO.

Shalabi, N. (2014). A proposal for the integration of 21st skills in basic education science curricula in Egypt. *International Interdisciplinary Journal of Education*, *3*(10), 1-19.

Thang, M. S., Murugaiah, P., Wah, L. K., Azman, H., Yean, T. L., & Sim, L. Y. (2010). Grappling with technology: A case of supporting Malaysian Smart School teachers' professional development. *Educational Technology*, *26*(3), 400-416.Available at: https://doi.org/10.14742/ajet.1083.

Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for our life in our times*. San Francisco, CA: Jossey-Bass.

Urbani, J. M., Roshandel, S., Michaels, R., & Truesdell, E. (2017). Developing and modeling 21st-century skills with preservice teachers. *Teacher Education Quarterly*, *44*(4), 27-50.

Valli, P., Perkkilä, P., & Valli, R. (2014). Adult pre-service teachers applying 21st century skills in the practice. *Athens Journal of Education*, *1*(2), 115-130.Available at: https://doi.org/10.30958/aje.1-2-2.

Vice Rectorate for Planning and Development. (2018). *The operational framework for the renewal of teacher preparation programs at Saudi universities*. Saudi Arabia: Ministry of Education.

Westbury, I., Hansén, S. E., Kansanen, P., & Björkvist, O. (2005). Teacher education for research-based practice in expanded roles: Finland's experience. *Scandinavian Journal of Educational Research*, *49*(5), 475-485.Available at: https://doi.org/10.1080/00313830500267937.

Zanartn, C., Doerr, P., & Portmanm, J. (2015). *Teaching thinking skills for the 21st century*. USA: Pearson Publishers Inc.

Zuniga, E. (2017). *The impact of globalization, economics, and educational policy on 21st century skills and education in science, technology, engineering, mathematics and the science fairs in schools in Ireland such as Fingal School*. Ph.D. Dissertation. University of Southern California, Los Angeles.