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Student Teachers' Perceptions of Their Development of 21st Century Competencies in Jordan

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Abstract

The purpose of the study was to examine Jordanian student teachers' perceptions of whether their Teacher Education had prepared them for 21st-century competencies, and how well they applied these competencies to their classroom teaching. The study also identified best practices, major obstacles, and suggestions for achieving these competencies. The study was conducted in two universities in the South and three universities in the North of Jordan that offer teacher education programs. A mixed-methods approach was used for this study. The sample consisted of 457 Student teachers who completed a structured questionnaire with open-ended questions to assess 21st-century competencies. Quantitative data analysis relies on descriptive statistics and correlations, while qualitative data analysis relies on content analysis. Despite differences in competency, the student teachers achieved 21st-century competencies based on their self-assessment. Students' perceptions of whether they succeed in implementing 21st-century competencies in their classrooms were documented in this study. The best-achieved competency was collaboration, and the least well-achieved competency was global connections. Answers to open-ended questions provided convincing evidence that courses involving collaborative and interactive learning, high quality, sufficient support, relevant 21st-century competencies, and integrating theory and practice can contribute significantly to the development of student teachers' 21st-century competencies.

Key words: Student teachers; 21st century competencies; Teacher education; Learning teaching practice; Jordan

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1. INTRODUCTION

The essential need for students' 21st century skills has been recognized around the world. Many scholars (Anderson & Krathwohl, 2001; Bandura, 1997) have emphasized the necessity of instructors being prepared and educated to help their pupils' gain 21st century skills. Teachers must be knowledgeable with these skills and allowed to apply them in their classrooms. We studied student teachers' perceptions of their performance in obtaining 21st century competencies in their teacher education programs, as well as how well they implemented these qualities in their classrooms, in this study. Furthermore, the survey requested students' opinions on the best practices, main roadblocks, and recommendations for acquiring 21st century.

2. THEORETICAL FRAMEWORK

2.1 Teaching and Learning Skills for the Twenty-First Century

Changes in science and technology and future employment competencies are needed for lifelong learning necessity cultivating students' development and progress in 21st century competencies. Cisco, the OECD, and the EU are just a few of the big information and communication technology (ICT) companies and international organizations that have started programs connected to 21st-century skills. These projects are designed to prepare students for job in the twenty-first century. The importance of defining future competencies

has been emphasized (Greenstein, 2012; Hyslop, 2011; Beers, 2011; Darling-Hammond, 2006). This concept isn't new. Even in the 1970s, UNESCO published a report on 'Learning to be' (Faure et al. 1972 as cited in Pantic and Wubbels, 2010), sparking a debate on how vital it is to educate people for future needs. However, the situation is difficult, and there have been some critical voices voiced (Toom, 2017; Voogt and Roblin, 2012). The dominance of technology firms in education without actual linkages to local teaching and learning contexts, as well as the growth of neoliberal policies in education, has been major issues. Skills and competencies have limitations as well: they might be too broad or too limited, and they may not fully comprehend human growth and development. However, politicians and educators in most countries recognize the necessity of preparing people for change. As a result, Jordanian curricula use terms like 21st-century competencies, generic skills, transferable skills, and transversal competences to describe 21st-century competencies (Bani Amer, 2021; Voogt and Roblin 2012; Westera, 2001). Regardless of nomenclature, all countries strive to equip students with 21st-century skills in order to cope with current and future changes, which set high expectations for the entire educational system (Whitty and Willmott, 1991).

There has also been fear that these abilities will become normative curriculum standards, demanded and controlled by today's politicians, without a deeper examination of their value for people's lives and well-being, and without significant reforms in schools. Because 21st-century competencies are not discrete abilities but are integrated with all teaching subjects and activities in schools, according to Westera (2001, he necessitate fundamental reforms in schools and teaching culture. As a result, the teachers' ability to work toward these goals in practice is critical, and reforms in teacher education are also required. Our research intends to offer new insights into how these skills might be learnt and acquired in teacher education.

Future competencies are viewed as broad and inclusive in this study, encompassing more than just a direct link to technology and the market economy. As a result, both teachers and students are finding it increasingly difficult to teach and learn. Teachers are supposed to do more than just impart knowledge to pupils; they are also required to assist students in developing into self-sufficient, responsible citizens with future competencies and capabilities.

Researchers (Ravit, 2014; Shavelson, 2013) examined the main programs focusing on 21st-century competencies; and key competencies of the European Union. Despite their differences in emphasis and focus, the frameworks share common competencies in four areas: (1) technology, ICT literacy; (2) relating to others, including communication and collaboration; (3) personal abilities, including creativity, critical thinking, and self-direction; and (4) in relation to society and the world, including global and local citizenship, social and civic responsibilities, and so on.

In this study, competency conceptualization relates to Niemi (2015) and Struyven & Meyst (2010)'s work on professional development in project-based learning and support for students' development of 21st-century skills. The eight categories in the research above encompass a wide range of critical competencies that can be found either officially or implicitly in the definitions of 21st-century competences. On request, the associated author can provide more information, including definitions, as well as other specifics of the findings specified in the text with a Teachers' opinions of how successfully they gained 21st-century abilities and how well they used them to their teaching were two significant components of the study. The same poll was used to assess teaching in the twenty-first century (Lee and 2018).

Critical thinking, collaboration, communication, creativity and innovation, self-direction, global connections, local connections, and using technology as a tool for learning were among Korthagen's (2017) skills. Almost all of the 21st-century frameworks discussed before define the first four competencies. Self-direction is an important competency that entails guiding oneself, regulating one's own behaviors, and accepting responsibility. It is referenced openly or implicitly in several 21st-century competency frameworks. ICT literacy is a broad notion that is described in all 21st-century paradigms as the ability to use technology as a tool for learning (Bani Amer, & Al-Khataybeh, 2022).

Other 21st-century competency frameworks did not expressly specify global and local connections competencies, but they were implicitly indicated in all 21st-century frameworks' social responsibility and citizenship (local and global) competences (Lee and Tan 2018; Voogt and Roblin 2012). The world is highly interconnected as a result of the rapid development of telecommunications, modern transportation, and the global economy. Students' global and international perspectives can be shaped by education (Häkkinen et al, 2017; UNESCO 2013, 2014; Hixson and Whisman, 2012; Korthagen, 2004). The necessity of internationally competent citizens who communicate productively and respectfully with others and take responsible action towards sustainability and collective wellness has been highlighted by the (Caena, 2014).

2.2 Integrating Theory and Practice in the Development of Teacher Competency

Various techniques to developing teacher competency exist, both during TE and in the profession as a whole (ATC21S, 2012; Blömeke and Delaney, 2012; Ball, 2000). Teacher competences, according to Westera (2001), have two dimensions: a knowledge component and a skillful behavior component. It includes the ability to put such

information and skills into practice in the workplace (Toom 2017). The willingness to apply competencies appropriately in real-life circumstances is also important (Blömeke & Delaney 2012). Performance - the capacity to know and be able to act or perform - was identified as a significant aspect of competency by White (2013). The ultimate purpose of TE programs is to prepare teachers to apply what they've learned to a variety of situations. Blömekeet et al (2015) and Caena (2014) stated that the ultimate purpose of TE programs is to prepare teachers to be able to apply their knowledge to a variety of teaching contexts. The importance of putting theory to practice in teacher professional development was stressed by Snape (2017) and Darling-Hammond (2017). Schulz (2008) emphasizes the need of combining knowledge and action. Others noted the integrative idea, which encompasses knowledge, skills, decision-making, and the ability to respond in professional tasks and situations, as well (Griffin and Care, 2012; Weber, 2011; Deardorff, 2009). As a result, learning theories can help student teachers build their competency; nevertheless, increasing and deepening their learning through practice is equally vital. Teachers internalize competences through absorbing knowledge and theories and implementing what they've learned(AL-Khataybeh& AL-Awasa2016) .

This study looked into student teachers' perspectives of gaining 21st-century TE competencies as well as how they used those competencies in their classrooms. Gender inequalities as well as variations in student teacher perceptions at universities and universities of applied sciences were explored. In addition, we looked at the best practices and main roadblocks to gaining 21st-century skills.

2.3 Teacher Competency Development in Jordanian Education

This research focuses on Jordanian Teacher Education. Programs equip student teachers to implement Jordanian educational objectives, encourage learners' growth as ethically responsible members of society, and facilitate the attainment of future skills (Al-Khataybeh & Al-Tarawneh, 2017). Transversal competencies, which are a more extensive form of 21st-century competencies, are included in the most recent national core curricula for various educational levels. This means that student teachers' and teachers' 21st-century skills are critical in assisting students in reaching their goals. In the Jordanian teacher education program Bellanca& Brandt (2010) offered a theory-based pedagogical framework for teacher education's 21st-century learning practices, which included the process and tactics for collaborative problem-solving skills and strategic learning skills. According to Niemi (2018), student teachers rated themselves as skilled learners, particularly in the areas of collaboration, teamwork, and learning methodologies.

All primary school teachers in Jordan must complete a five-year academic master's degree program. The term university refers to colleges and universities that offer bachelors, masters, and doctoral degrees in a variety of subjects (Bani Amer & Baarah, 2021). Academic studies, pedagogical studies, including teaching practice, communication, and ICT, and research studies for bachelor's and master's these are all part of university TE programs (Al-Khataybeh, 2020). Pedagogical studies are also available at universities of applied sciences, mostly for vocational school and adult education teachers.

These students have completed academic subject studies in their previous BA and MA studies at universities or applied universities of applied sciences, or have a tertiary-level degree of three or three years of relevant studies in their field in some situations. Furthermore, they must have at least three years of work experience before applying to TE in most situations, which is not required of university student instructors. As a result, university student teachers are frequently younger. At both sorts of universities, teaching practice is divided into numerous phases that widen and strengthen student teachers' competences while being overseen by qualified teacher educators. Both sorts of institutions' 60-credit pedagogical courses have the same goals: to help student instructors become self-sufficient and responsible professionals. Institutions, on the other hand, are more concerned with research and the discovery of new knowledge, whereas universities of applied sciences are more concerned with practical projects with regional partners.

2.4 Questions of Study

Using the following research questions, this study sought to determine how Jordanian student teachers evaluated their learning of 21st-century competencies and how successfully they used these competencies to their teaching.

• What are student teachers' perceptions of their 21st-century competency development in TE, and are there any gender or university type inequalities among student teachers?

• What are student teachers' opinions of how well they implemented their 21st-century abilities in practice, and are there any gender or university type differences among student teachers?

• What are the connections between TE competencies and teaching practice, as well as between TE competencies and practice competencies?

• What are the student teachers' thoughts on best practices, main roadblocks, and suggestions for assisting their learning of 21st-century skills?

3. METHODOLOGY

3.1 Data Collection and Participants

A mixed technique approach was adopted in this investigation. Between December 2021 and June 2022, data was voluntarily collected online from student teachers at two Jordanian institutions and three universities of applied sciences. Participants were informed about confidentiality and autonomy at the start of the data gathering process. There were 457 total responders, with 55 percent from the two participating universities and 45 percent from the three participating universities of applied sciences; 24 percent were male student teachers and 76% were female student teachers. 12 percent of the student teachers wanted to be kindergarten teachers, 14 percent wanted to be class teachers, 21 percent wanted to be subject teachers, 8 percent wanted to be special education teachers, 30 percent wanted to be vocational education teachers, and 15 percent wanted to be other teachers, mostly in higher education.

3.2 The Study Instruments

The questionnaire had already been validated using scores ranging from 1 to 5 in previous studies. The questionnaire for this study was translated from English to Jordanian, and the translation was double-checked by three experienced researchers who are fluent in both Jordanian and English. The number of competencies and item questions, as well as their definitions, remained unchanged. As in prior studies, the scale for student teachers' self-assessment of their competences ranges from 1 to 5. However, because the original instrument was designed for schoolteachers, the major questions were changed to suit student instructors, and background information questions were added. Greenstein agreed to let the questionnaire be used in this study. The instructions for the questionnaire were as follows:

Part A: How effective were the TE program studies (including pedagogical and subject matter studies) in assisting you in achieving the following competencies?

Part A of the critical thinking competency has six items, one of which is: 'Has assisted in comparing information from various sources when completing tasks or assignments.'

Part B: Based on your own teaching experience, please assess your competencies (e.g. from teaching practice or other teaching situations).

Part B of the critical thinking competency has three elements, one of which is: 'I can use ways to help my students improve their critical thinking skills.'

'I do not have any teaching experience yet,' is an option in Part B.

Open-ended questions about best practices and main barriers to obtaining 21st-century abilities, as well as suggestions for helping student teachers' learning of 21st-century competences in TE, were used to collect qualitative data. All of the inquiries covered both subject matter research and pedagogical studies that included teaching practice:

Question 1: Please tell us about your best or most memorable experience learning 21st-century skills.

Question 2: Please describe any notable challenges or roadblocks you encountered when learning these skills.

Question 3: How can your institution or teacher educators assist and support you in the development of those skills?

Cronbach's Alpha analysis of our study's reliability analysis revealed that the reliability scores for teacher education ranged from.886 to.926, while the scores for teaching in practice ranged from.828 to.912. For each skill, a complete item reliability analysis was also calculated. Before collecting data, the questionnaire was pre-tested and double-checked with five student teachers. The questionnaire was uploaded to the web system after many linguistic checks.

3.3 Analysis Methods

The mixed method strategy was adopted in this investigation. Descriptive statistics and correlations were employed in quantitative data analysis. The mean value and standard deviation of the student teachers' perceptions of how well they mastered their competences are determined by descriptive statistics. Gender disparities among student teachers, as well as differences between student teachers from universities and universities of applied sciences, were compared using the t-test. Correlations were used to describe the relationships between the student teachers' competencies learned in TE and their teaching in practice.

Content inductive analysis was used to extract crucial information from qualitative data; this analysis complements quantitative data by allowing students to better comprehend their quantitative assessments (Nitko & Brookhart, 2007). Two experienced researchers used content analysis to analyze the qualitative data and then discussed the findings to arrive at a synthesis in the data interpretation. Courses, teacher educators, teaching method/learning settings, and learning techniques were identified as key contributors to student teachers' development of 21st-century competences through inductive content analysis. We wanted to see how these factors influenced the student teachers' ability to develop 21st-century skills. We also wanted to figure out what was preventing them from learning.

4. FINDINGS

4.1 Competencies learned in Teacher Education and Disparities in Demographics

The first research question was about student teachers' perceptions of their 21st-century abilities gained through TE and teaching practice. Six of the eight competences had mean values ranging from 3.20 (SD =.84) to 3.73

(SD =.78) based on descriptive statistics analysis [*]. Collaboration (M = 3.73, SD =.78) and critical thinking (M = 3.50, SD =.71) were the best-achieved competences. 'Global connections' (M = 2.58, SD =.94) and 'Local Connections' (M = 3.01, SD =.92) were the least well-achieved competencies.

The t-test [*] was performed to discover gender and institution differences using the means and standard deviations. Male student teachers had somewhat higher mean values than female student teachers, but no significant gender differences in any of the eight competences emerged. Collaboration (p =.04*), communication (p =.02*), creativity & innovation (p =.02*), self-direction (p =.00**), and using technology as a tool for learning (p =.02*) were shown to be significantly different among student instructors from both types of universities. Student teachers from universities of applied sciences had greater perceptions of competencies than student teachers from universities.

4.2 Demographic Variations and the Competencies Used in Teaching

For the second research question, we discovered that when instructing students in a classroom, student teachers successfully implemented almost all of their 21st-century abilities [*]. Seven of the eight competences had mean values ranging from 3.24 (SD =.78) to 3.78 (SD =.65). 'Collaboration' (M = 3.78, SD =.65) and 'Using technology as a tool in learning' (M = 3.6, SD =.78) were the most commonly used competencies. 'Global connections' (M = 2.9, SD =.95) were the least used competencies in practice, as previously stated. All mean values were slightly higher than the student teachers' views of what they had learnt in their TE when it came to competency application.

We used the t-test to examine the means and standard deviations of competences to see if there were any variations by gender or institution. Male student instructors had slightly higher mean values than female student teachers. Except for self-direction (p =.01**) and using technology as a tool for learning (p =.04*), there were no significant gender differences in most of the eight competences. Significant differences in five competences were found when student teachers from both types of university were compared: critical thinking (p =.01**), communication (p =.02*), self-direction (p =.00**), global connections (p =.02*), and local connections (p =.00*). The discrepancy in impressions could be due to the fact that student teachers in institutions of applied sciences are expected to have at least three years of work experience, which facilitates familiarity with particular competences in the field.

4.3 Relationships Between TE Learned Skills and Their Use in Practice

The third study topic focuses on the connections between TE competencies and teaching practice, as well as the connections between TE skills and practice competencies. The eight competencies gained in TE (ranging from.41** to.74**) and applied in practice (varying from.31** to.58**) have high linkages. Between the eight competences learned in TE studies and the eight competencies implemented in practice, statistically significant correlations (ranging from.34** to.42**) were discovered [*]. As a result, student teachers' study of 21st-century TE abilities and their application in the classroom are significantly connected. The domain of global connections had the strongest competency correlation between competency obtained in TE and competency applied in practice (r =.42, p 0.01).

4.4 Best Approaches for Developing 21st-Century Competencies

The following are the categories that emerged from our review of best practices: (U-ST represents student teachers from universities, and UAS-ST represents student teachers from universities of applied sciences in Jordan).

Collaborative learning is when students learn with and from one another in a group setting.

Collaborative learning, which includes group work, teamwork, peer learning, co-teaching, learning communities, networking, and sharing, was cited by 82 respondents as the greatest way to enhance their 21st-century competencies. Students learned best when they interacted with one learning both from and with one another. As two comprehensive universities (U-ST) student instructors put it:

'It is most rewarding to work as a group.' (U-ST1)

"The most satisfying aspect of collaboration... [You] share ideas and seek guidance from fellow students and lecturers... "(U-ST2)

"The best experience is studying in diverse groups" according to another comment. A strong sense of belonging exists. We help and support one another. For me, this type of learning opportunity was quite valuable." (U-ST3)

The same observation was confirmed by a number of student teachers from universities of applied sciences (UAS-ST).

For many years, teacher education in Jordan has emphasized the value of collaboration and shared learning, which appears to be especially helpful for developing 21st-century skills.

4.5 Practicing and Deepening Competencies

Teaching practice, according to several student teachers (n = 79), is the best practice for gaining 21st-century competences. "The best practice is during the training period [teaching practice time]!" said a student teacher. There, you can experiment and get practical instruction [from a supervising teacher]." (U-ST4)

"I got the essentials [of those competences] via classes, then deepened [them] in teaching experience," said another student teacher. (U-ST5)

4.6 There Are Several Courses That Are Essential

The quality of the courses on offer was complimented by several students (n = 76). Technology applications, media, the internet, animations, and coding classes were all deemed essential.

"We employed several different digital tools in one pedagogical course," one student instructor said. The animation was engaging, entertaining, and motivating." (U-ST6)

"ICT skills have been this kind of 'aha' experience that I still appreciate and remember," she says of learning to utilize digital tools (U-ST7).

Learning about digital tools was seen by several students as "the most valuable thing I have experienced during my education" (UAS-ST1).

Certain teaching approaches and subject, such as didactic, educational psychology, history, art, and handicraft, were mentioned by student teachers as being beneficial in developing their 21st-century competences. The importance of collaboration, which includes intensive talks and sharing, such as via group chat, was emphasized in the course descriptions, which included comments on teaching approaches. The value of learning communities was emphasized through student teachers' experiences. Student teachers appreciated active learning procedures such as recording films, audio essays, analyzing past teaching situations, and project- and problem-based learning as a result of the opportunity to engage and integrate knowledge and practice.

4.7 Major Roadblocks to Student Teachers' Development of 21st-Century Skills

We also looked at the primary roadblocks to student teachers developing those skills. 188 student teachers out of 272 detailed their experiences, with 8.5 percent (16 out of 188) claiming there were no hurdles. The three major issues that were identified are listed below.

4.8 Time, Practice, and Resources Are in Short Supply

The most frequently reported stumbling block was a lack of time (25 of 188 respondents). Insufficient practice and resources, such as computers, cameras, 3D printing, software licenses, various programs, digital skills, and a lack of resources, were also noted. 'It's either a lack of time or a lack of resources.' (UAS-ST2), (UAS-ST3), (UAS-ST4), (UAS-ST5), 'What is taught is not put into practice.' (U-ST8).

4.9 Some Educators Lack the Necessary Resources and Skills

Barriers to learning were also highlighted, which were related to teacher-educator abilities such as insufficient competency or motivation, old-fashioned teaching methods, and mass lectures. Teacher educators would have needed to provide additional assistance to student teachers, particularly in regards to their unique needs or differences. Too many things happening at once, too much course content, too little training, unclear information, and a lack of skill integration were all cited as issues in some courses. Students also highlighted poorly organized group work, such as extremely large groups, inadequately clear group work instructions, continually changing study groups, too much time spent on group meeting scheduling, and delivering feedback in a large group.

Some claimed that 21st-century skills were not adequately taught. "...these talents are not taught in a systematic, consistent, or thorough manner, but rather through the acquisition of other skills... and abilities aren't properly assessed... "(UAS-ST9)

4.10 Fear, a Negative Attitude, a Lack of Confidence, and a Lack of Desire

One intriguing conclusion is that student instructors' self-reflective comments on their own progress are as follows: 7 individuals lacked drive, 5 lacked courage or initiative, and 2 lacked self-confidence in their ability to learn or were unsure of their own abilities.

"The largest roadblock is my own fear of putting [those skills] to the test in a fresh environment." (UAS-ST8)

"It's likely that your own self-perceived attitude is the largest impediment [to obtaining 21st-century skills]." (UAS-ST9)

4.11 Suggestions for Acquiring 21st-Century Skills

The student teachers were asked for advice on how to support their students' learning of 21st-century skills in TE. 191 responses were received from the 272 respondents, and 191 of them fit into the following categories, supporting our previous conclusions.

4.12 Collaboration in the Classroom and Learning

More cooperation with colleagues/peers, co-teaching opportunities, and opportunities to share experiences with other student teachers were among the ideas, which aligned with prior best practices.

"Small groups can practice 21st-century learning and teaching competencies." (U-ST9)

4.13 Courses and Teaching Techniques Those Are Specific

More courses in 21st-century competencies, psychological aspects of learning, using various technology/ICT/digital tools in various teaching situations, online learning and teaching, dealing with challenging situations at school (e.g. bullying at school, interaction with parents), and interaction skills, as well as more teaching practice, were requested by student teachers.

"Learning and teaching of such competencies in a more detailed, systematic, or complete manner" (UAS-ST6). "How to teach those competencies that is intertwined with a certain subject/field" (U-ST10)

"Some university teaching is outdated; it needs to be updated for the twenty-first century." (U-ST11)

"Learning by teaching those competencies could be a good approach to learn them; this could be tried out in small groups." (U-ST12)

4.14 Bringing Theory and Practice Together

"I expect that we will have more concrete tools and procedures in building those competencies," said one student teacher, "I hope that we will have more concrete tools and methods in developing those competencies... Not only do us need to know why and what, but we also need to know how... We understand the theory, but we don't learn how to put it into practice in the classroom."

"Exams do not aid in the acquisition of competencies; they should be based on real-life scenarios." (U-ST13)

"Those competencies should be included into instructional methods and exercises so that student teachers may put them into practice in the classroom later." (U-ST14)

"More practical approaches and ways of putting the theory into practice" (U-ST15)

4.15 Continual Education

Student instructors emphasized the need of continuing education and growth, including additional training, more particular competency courses, more practice, and a deeper dive into the competencies.

"It takes time to develop those skills; it's a never-ending process." I'd like to delve deeper into studying and teaching such skills." (U-ST16)

'After graduating from university, more training is still required.' (UAS-ST13)

"The TE program taught me that there is no such thing as too much or too little learning; there is always something fresh to learn." (U-ST17)

"You can constantly progress and never be so-called ready in any competency!" I'm eager to learn new things and to improve on what I've already learned." (U-ST18).

5. DISCUSSION

According to the student teachers' self-evaluations, TE provided excellent training in 21st-century skills. Many variables may have played a role in this excellent outcome, including the Jordanian education system's strong focus on 21st-century capabilities in the most recent national core curriculum (Hyslop, 2011) and teacher education programs. Another issue to consider is the quality of teaching practice, which involves several stages and is linked to theoretical research. A third likely element is the long history of Jordanian TE in supporting the development of competences and social-emotional skills, as teaching entails daily interaction with people. The high caliber of candidates admitted to TE in Jordan is a fourth possible cause (Schulz, 2008). On a theoretical and teaching practice level, however, the competencies of 'Local connections' and 'Global connections' remain lower than other competencies. In the future, these two skills will require more development. By integrating the learning in TE and in teaching practice, this study proved the value of student teachers' competency learning. Caena (2014) emphasizes the significance of combining knowledge with action. Several other researches (Korthagen, 2017; Hixson & Whisman, 2012; Westera 2001) agree that integrating knowledge and skills in professional tasks and circumstances is critical. This was evident in the comments of the student instructors. The greatest strategy to learn and improve competencies is to combine theoretical learning with practical application.

The most efficient form of learning, according to both quantitative and qualitative evidence, is to combine theoretical learning with the application of 21st-century competencies. This is a never-ending process. High relationships between competences obtained in TE studies and in practice were discovered. This necessitates that the entire TE system, as well as its culture, actively nurture these skills (Lee & Tan, 2018).

We determined that student teachers learn from and with one another through group work, teamwork, peer learning, collaborative learning, co-teaching, learning communities, networking, and sharing based on the qualitative data. This discovery is consistent with Lee & Tan (2018) social-cultural theory, which states that learning is a socially and culturally connected process that occurs when people interact. The competency of collaboration was assessed with the highest scores among the eight competencies in this study, according to both quantitative and qualitative data based on student teachers' self-assessment. This backs up previous research on Jordanian student teachers' acquisition of 21st-century skills (Häkkinen et al, 2017).

Many positive aspects of TE were mentioned by student teachers, including how group work helped pupils gain 21st-century skills. Smaller group numbers, clearer directions for group work, and finding appropriate time slots for group work are still needed to maximize the benefits. More integration of theory and practice, (2) more courses containing 21st-century competencies and (3) courses with teaching methods that include students in active roles and collaboration were also suggested as enhancements. More time for student teachers to enhance their skills is also required. Student teachers gained knowledge from both their courses and their teacher educators; yet, one barrier to their learning was a lack of assistance from teacher educators.

In conclusion, the Jordanian student teachers successfully attained their 21st-century skills in both TE and instructional practice, according to self-assessment. There was no difference in perceptions between female and male student teachers. In terms of university types, student teachers from universities of applied sciences had slightly higher views of practically all competences and significantly higher perceptions of certain competencies than student teachers from universities. Furthermore,

student teachers believed that group work, in which they learned from and with one other, certain courses and teacher educators, and teaching practice were the greatest places for them to develop 21st-century competencies. Too little time, insufficient resources, insufficient support from teacher educators, and insufficient teaching approaches in some courses were the biggest roadblocks.

6. CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

Paying more attention to competencies of Local and Global connections, facilitating effective group learning opportunities; improving teacher educators' own competencies; integrating theoretical learning and practice; making competency development more visible by defining them in learning outcomes and offering more specific courses are some implications and suggestions for teacher educators that may support the development of student teachers' 21st-century competencies. This study demonstrates the importance of teacher education programs in developing student teachers' 21st-century abilities. Through group work and instructional practices, teacher educators play a critical role in assisting student teachers in learning competences and enabling them to be engaged learners. Although this research was conducted in Jordan, the concepts can be applied overseas to improve student teachers' 21st-century abilities, such as students learning from and with one another through group work, combining knowledge and action through teaching practice. Student teachers must also become aware of competence learning, develop good attitudes toward continuous learning, and develop learning to learn skills so that they can always begin learning a competency when needed.

7. FUTURE RESEARCH AND LIMITATIONS

This study's conclusions are exclusively based on self-reports. External observation and assessments from other parties would aid in the verification of the outcomes. Because only the most active student instructors replied, the voluntary and online replies may be skewed. Further research could track the development of student teachers after graduation, while they are teaching in schools. Similar studies could be carried out in other nations to acquire a better grasp of how 21st-century skills emerge.

REFERENCES

Al-Khataybeh, M. (2020). Female representation in EFL elementary stage textbooks in K.S.A. *The Asian ESP Journal*, *16*(1), 20-37. https://www.elejournals.com/download?code=6074612c77d2d

Al-Khataybeh, M. M., & Al-Tarawneh, S. (2017). The effect of using Renzulli learning system and SCAMPER strategy on developing tenth grade writing English composition skills at Mu'tah Model School. *Al-Manarah* 23(3), 555-588.

AL-Khataybeh, M., & AL-Awasa, A. (2016). The effect of using web quests on improving seventh grade female students' writing skills in Southern AL-Mazar directorate of education. *Journal of Education & Social Policy*, 3(1), 1-112.

Anderson, L., & Krathwohl, D. (Eds.). (2001). *Taxonomy for learning, teaching and assessing: A revision of bloom's taxonomy of educational objectives.* New York: Longman

ATC21S. (2012). *Assessment and teaching of 21st-century skills*. http://www.atc21s.org

Ball, D. L. (2000). Bridging practices: Intertwining content and pedagogy in teaching and learning to teach. *Journal of Teacher Education* 51 (3), 241-247.https://doi.org/10.1177/0022487100051003013.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: W.H. Freeman.

Bani Amer, M. A. (2021). Lexical density and readability of secondary stage English textbooks in Jordan. *International Journal for Management and Modern Education, 2*(2), 11-20. https://drive.google.com/file/d/10J1tue4xaFB8mzRHJWd-Jh3kNNcTS86_/view

Bani Amer, M. A., & Baarah, H. A. (2021). Readability and Lexical Density of Reading Sections of Tenth Grade English Textbooks in Jordan and Sultanate of Oman: A comparative Study. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, 4(3), 1138-1148. https://www.bircu-journal.com/index.php/birle/article/view/2438/pdf

Bani Amer, M., & Al-Khataybeh, M. (2022). Analyzing the content of 2nd secondary school grade English language textbooks in light of life skills in Jordan, *Britain International of Linguistics, Arts and Education* ,4(1), 28-41. DOI: https://doi.org/10.33258/biolae.v4i1.635

Beers, S. (2011). *21st century skills: Preparing students for their future*. https://www.mheonline.com/mhmymath/pdf/21st_century_skills.pdf

Bellanca, J. & Brandt, R. (2010). *21st century skills: Rethinking how students learn.* United Kingdom: Solution Tree Press.

Blömeke, S., & S. Delaney. (2012). Assessment of teacher knowledge across countries: A review of the state of research. *ZDM Mathematics Education , 44*(3), 223-247. https://doi.org/10.1007/s11858-012-0429-7.

Caena, F. (2014). Teacher competence frameworks in Europe: Policy-as-discourse and policy-as practice. *European Journal of Education, 49*(3), 311-331. https://doi.org/10.1111/ejed.12088.

Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education, 57*(3), 300-314. https://doi.org/10.1177/0022487105285962.

Darling-Hammond, L. (2017). Teacher education around the World: What Can We Learn from International Practice? *European Journal of Teacher Education, 40*(3), 291-309. https://doi.org/10.1080/02619768.2017.1315399.

Deardorff, D. K. (2009). *UNESCO manual on developing intercultural competence based on human rights*. Paris: UNES.

Greenstein, L. (2012). *Assessing 21st century skills: A guide to evaluating mastery and authentic learning*. California: Thousand Oaks Publishers.

Griffin, P., McGaw, B., & Care, E. (2012). *Assessment and teaching of 21st century skills*. Dordrecht: Springer.

Häkkinen, P., Järvelä, S., Mäkitalo-Siegl, K., Ahonen, A., Näykki, P., & Valtonen, T. (2017). Preparing teacher-students for twenty-first-century learning practices (PREP 21), a framework for enhancing collaborative problem-solving and strategic learning skills. *Teachers and Teaching, 23*(1), 25-41. https://doi.org/10.1080/13540602.2016.1203772.

Hixson, N., Ravitz, J., & Whisman, A. (2012). *Extended professional development in project-based learning: Impacts on 21st century teaching and student achievement*. Charleston, WV: West Virginia Department of Education. Retrieved on 10th of July, 2022 from https://www.academia.edu/1999374

Hyslop, A. (2011). CTE and 21st century skills in college and career readiness. *Techniques: Connecting Education & Careers, 86*(3), 10-11. https://eds-aebscohost-com.libproxy.chapman.edu/ehost/pdfviewer/pdfviewer

Korthagen, F. A. J. (2004). In search of the essence of a good teacher: Towards a more holistic approach in teacher education. *Teaching and Teacher Education, 20*(1), 77-97. https://doi.org/10.1016/j.tate.2003.10.002.

Korthagen, F.(2017). Inconvenient truths about teacher learning: Towards professional development 3.0. *Teachers and Teaching, 23*(4), 387-405. https://doi.org/10.1080/13540602.2016.1211523.

Lee, W. O., & Tan, P. L. (2018). The new roles for twenty-first-century teachers: Facilitator, knowledge broker, and pedagogical weaver. In H. Niemi, A. Toom, A. Kallioniemi, & J. Lavonen (Eds.), *The teacher's role in the changing globalizing world: Resources and challenges related to the professional work of teaching* (pp.11-31). Leiden: Brill Sense.

Niemi, H. (2018). Teacher professional development in Jordan: Towards a more holistic approach. *Psychology, Society & Education, 7*(3), 279-294. https://doi.org/10.25115/psye.v7i3.519.

Nitko, A., & Brookhart, S. (2007). *Educational assessment of students.* London: Pearson.

Pantic, N., & Wubbels, T. (2010). Teacher competencies as a basis for teacher education - Views of Serbian teachers and teacher educators. *Teaching and Teacher Education, 26*(3), 694-703. https://doi.org/10.1016/j.tate.2009.10.005.

Ravit, J. (2014). *A survey for measuring 21st century teaching and learning: West Virginia 21st century teaching and learning survey* [WVDE-CIS-28]. https://doi.org/10.13140/RG.2.1.2246.6647.

Schulz, B. (2008). The importance of soft skills: Education beyond academic knowledge. *Journal of Language and Communication*, *5*(22), 146-154. https://doi.org/10.1016/0006-3207(93)90452-7

Shavelson, R. J. (2013). On an approach to testing and modeling competence. *Educational Psychologist, 48*(2), 73-86. https://doi.org/10.1080/00461520.2013.779483.

Snape, P. (2017). Enduring learning: Integrating C21st soft skills through technology education. *Design and Technology Education: an International Journal*, *22*(3), 48-59. https://files.eric.ed.gov/fulltext/EJ1164214.pdf

Struyven, K., & De Meyst, M. (2010). Competence-based teacher education: Illusion or reality? An assessment of the implementation status in flanders from teachers' and students' points of view. *Teaching and Teacher Education, 26*(8), 1495-1510. https://doi.org/10.1016/j.tate.2010.05.006.

Toom, A. (2017). Teacher's professional and pedagogical competencies: A complex divide between teacher's work, teacher knowledge and teacher education. In D. J. Clandinin and J. Husu (Eds.), *The SAGE handbook of research on teacher education*, (Vol. 2, pp.803-819). Los Angeles: Sage.

UNESCO. (2013). *Intercultural competencies: Conceptual and operational framework*. Paris: UNES.

UNESCO. (2014). *Global citizenship education: Preparing learners for the challenges of the 21st century*. Paris: UNES.

Voogt, J., & Roblin, P. N. (2012). A comparative analysis of international frameworks for 21st century competences: implications for national curriculum policies. *Journal of Curriculum Studies, 44*(3), 299-321. https://doi.org/10.1080/00220272.2012.668938.

Weber, A. S. (2011). The role of education in knowledge economies in developing countries. *Procedia-Social and Behavioral Sciences*, *15*, 2589-2594. Retrieved May 23, 2021 from http://www.criticalthinking.org/pages/professional-development-model-college-anduniversity/435.

Westera, W. (2001). Competences in education: A Confusion of tongues. *Journal of Curriculum Studies, 33*(1), 75-88. https://doi.org/10.1080/00220270120625.

White, M. (2013). *The real reason new college grads can't get hired*. TIME.com, from https://business.time.com/2013/11/10/the-real-reason-new-college-grads-cant-get-hired/

Whitty, G., & Willmott, E. (1991). Competence-based teacher education: Approaches and issues. *Cambridge Journal of Education, 21*(3), 309-318. https://doi.org/10.1080/0305764910210305