



Research Article

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Soft Skills of Students in University: How Do Higher Education Institutes Respond to 21st Century Skills Demands?

Omar M. Muammar

Kawla A. Alhamad

Special Education Department, College of Education,
Imam Abdulrahman Bin Faisal University, King Faisal Ibn Abd Al Aziz,
King Faysal University, Dammam 34212, Saudi Arabia

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Abstract

The World Economic Forum has recognized soft skills as a global personal quality of the twenty-first century within the global economy (Soffel, 2016). Gifted and talented students at universities are not necessarily future leaders who can thrive in the challenging global environment. Because most graduates' soft skills are primarily developed at universities, higher education institutes are expected to support students' personal growth, preparing them to fit in the twenty-first century's work context. This study aimed to examine how a subset of 21st-century soft skills are developed in higher education as perceived by gifted students from most health clusters in comparison to other students at academic programs in Saudi Arabia. The researchers investigated students' perceived mastery level of these skills within a public university across various ability groups, genders, and years of schooling. The collected over four years. Five questionnaires were developed to measure 21st-century soft skills: problem-solving, communication, planning, leading self, and leading others. A total of 834 students from various academic clusters were surveyed: health, science, engineering, and humanities. The findings provided supporting evidence that students' perception of owning 21st-century soft skills did not fit with university expectations of their mastery level, although these skills had improved slightly throughout students' university education. Moreover, the findings indicated that there were no significant differences between university students' perceptions of owning soft skills regarding gender and ability, except in the case of gifted and talented group's problem-solving ability.

Keywords: intellectually academic gifted students; 21st-century soft skills; university students; higher education

1. Introduction

Soft skills have been recognized as a global personal quality of the twenty-first century within the global economy. The Human Capital Index (2020) stated that the key to improving economic growth is investing in skills that people develop over the course of their lives. Human capital theorists have indicated that higher education plays an essential role in developing and enhancing workers' capacities and skills (Tholen, 2019). Higher education is a global phenomenon that serves the knowledge economy. The rate of participation in higher education increased at the start of the 1960s in the United States and Canada, during the 1980s in Western Europe and Japan, and more recently

in South and East Asia (Parkes et al, 2020). Even though higher education plays a range of roles in society, preparing students for work is widely seen as the key function of educational institutes (Tholen, 2019; Hastings et al., 2020).

It is presumed that most graduate working' skills are primarily developed at universities or are at least related to university education (Tholen, 2019). Thus, universities are being understood as providers of vocational education that enable graduates to move into professional practice in a smooth manner (Billett, 2009). However, "the gap between education and employment is daunting" (Fettes et al., 2020, p. 148). Sarkar et al. (2020) stated that employers seem dissatisfied with graduates' soft skills since these skills are insufficient to contribute effectively to the workplace. Moreover, many graduates assume that universities do not prepare them with sufficient soft skills but merely serve as a starting point of their skill development (Tholen, 2019). Universities are expected to avoid treating students as consumers or mere statistics and focus more on supporting their personal growth and preparing them to meet the twenty-first century's requirements (Parkes et al., 2020). Improving soft skills for gifted students is vital because this student group will presumably lead future global development.

Gifted and talented students are a remarkable part of universities' population in various domains. Universities have recognized academic ability as one domain for identifying gifted students. Universities tend to select students who would benefit from their academic programs (Peters and Engerrand, 2016). However, lately, the academic aspect is not the only area that universities seek to improve. They now not only teach students to develop proficiency in academic skills but also prepare them for the real world where soft skills are in high demand (Dixon, 2017).

Saudi Arabia Vision 2030 sets out strategic objectives that aim to increase the employment rate and "create a more diverse and sustainable economy" (Vision 2030, n.d.) Human capital is the driving force for economic development. However, according to the Global Human Capital Report (2017), "The world has developed only 62% of its human capital. Or, conversely, nations are neglecting or wasting, on average, 38% of their talent" (p. vii). This issue is exacerbated among the gifted population because little care is devoted to them in educational systems. The rate of unemployed graduates from universities increased in Saudi Arabia by 11.9% between 2014 and 2016 (General Authority for Statistics, n.d.). As Sarkar et al. (2020) reported, "Within the next 10–20 years, more than five million jobs will be replaced or eliminated by the rapid advancement of computer technology" (p. 346). Without a doubt, jobs that are most likely to be replaced are those that involve less social interaction and creativity. Thus, graduates are expected to demonstrate soft skills to maximize their potential for employability in the 21st century (Sarkar et al., 2020). At the same time, the female segment of the population is a major part of the workforce in Saudi Arabia. Vision 2030 emphasizes more empowerment for females, greater participation in the workforce, and successful engagement in the workplace. Thus, studying their readiness in terms of soft skill development is in alignment with the agenda of Vision 2030.

2. Literature Review

2.1 Theoretical Framework

To prepare individuals for work, their qualities and skills required for success in the workplace must be identified (Fettes et al., 2020). Universities are expected to prepare young adults to enter the workforce (Hastings, et al., 2020). However, in past decades, universities have overemphasized hard skills, resulting in an underestimation of the value of soft skills (Marques, 2013). An evaluation of some undergraduate programs showed that they did not emphasize soft employability skills (Sarkar et al., 2020). Historically, hard skills have been considered the only necessary skills for one's career. However, these skills are no longer enough to keep individuals employed in today's workplace (Robles, 2012). Bourn (2018) argued that there is a need to go beyond hard skills toward soft skills. As Robles (2012) reported, university curricula need to emphasize soft skills to help graduates master

these skills throughout their academic programs.

Considerable attention has been paid recently to the importance of 21st-century soft skills (Robles, 2012). Bourn (2018) indicated that 21st-century soft skills emerged from knowledge-based and post-industrial societies. *Collins English Dictionary* defined soft skills as “desirable qualities for certain forms of employment that do not depend on acquired knowledge: they include common sense, the ability to deal with people, and a positive flexible attitude” (Robles, 2012, p. 457). According to De Villiers (2010), soft skills are defined as the “interpersonal, human, people or behavioral skills needed to apply technical skills and knowledge in the workplace” (p. 2). Distinguishing between hard and soft skills, Marques (2013) argued that hard skills refer to technical skills that can be measured whereas soft skills refer to skills with intra-interpersonal or social aspects. Soft skills vary from discipline to discipline and from context to context (De Villiers, 2010). However, scholars have attempted to introduce numerous skills that fall under that term, aiming to determine what skills employers value in the 21st century (Hastings et al., 2017). Robles (2012) stated that the top 10 soft skills employers admire are “integrity, communication, courtesy, responsibility, social skills, a positive attitude, professionalism, flexibility, teamwork, and work ethic” (p. 453). Additionally, soft skills entail qualities such as problem-solving, critical thinking, creativity self-awareness, self-regulation, motivation, and empathy (Hewett et al., 2020; Marques 2013). Care and Griffin (2010) and Dixon (2017) stated that there has been a change in employment trends, with collaboration and interaction between people becoming essential for employment opportunities in today’s world. For the current study, six soft skills that are critical to the National Qualification Framework in the Kingdom of Saudi Arabia (NQF-KSA) were selected: problem-solving, communication, planning, leading self, leading others, and leadership. These skills are valuable for NQF-KSA to ensure alignment university education and labor market requirements; increase confidence in qualified citizens; and equip graduates with the skills they need for lifelong learning in the field of study, work, and profession (Education & Training Evaluation Commission, 2020).

In the 21st century, the gap between soft skills that are valued in the workplace and those acquired at university seems considerable (Chytiri et al., 2020). In addressing the value of 21st-century skills from the perspective of education, Bourn (2018) argued that there is a demand for programs that target and develop these skills. In line with employment practice changes, the education system should teach and assess students with a focus on the acquisition of 21st-century skills (Care & Griffin, 2010). Tholen (2019) questioned whether higher education prepares graduates with the required skills for modern occupations. There is a need to develop a better understanding of higher education’s role in developing graduates’ 21st-century skills.

For instance, communication is one of the most fundamental soft skills needed in today’s workplace (Robles, 2012). Wesley et al. (2017) found that students, faculty, and industry leaders recognized communication as the most important soft skill. In gathering data to discover skills needed for university presidency in the 21st century, Freeman Jr. et al. (2016) learned that the communication skill is essential because it includes qualities such as “flexibility, versatility, accessibility, and ability to interact in various and diverse groups” (p. 57). In the 21st century, new graduates are more likely to work in and interact with diverse groups where team members come from different backgrounds and cultures. In this complex environment, the communication skill is critical to be successful (De Villiers, 2010). It is assumed that all graduates already obtained communication skill during their school years. However, in recent years, the lack of communication skill has been recognized as a reason for the many tragedies occurring in workplaces (Robles, 2012).

In investigating the value of leadership skills for postgraduates in their second year of a pharmacy residency, Smith et al. (2018) found that “leading self” and “leading others” were the most common themes postgraduates valued. Leading self includes skills such as self-awareness, time management, realistic self-assessment, and goal setting (De Villiers, 2010). What makes leading self essential is that it is an integral part of lifelong learning, the practice of keeping up with recent developments in one’s field to upgrade one’s skills (Tholen, 2019). Because leadership skills can be developed, universities should focus more on enhancing graduates’ leadership skills (Marques, 2013).

Further, planning is a decisive skill because it not only anticipates students' academic achievements but also enables students to succeed in their careers and follow an independent lifestyle (König et al., 2020; Boyer et al., 2018). Moreover, as the literature shows, problem-solving skills are in demand because of changes in employment trends (Care and Griffin 2010). Problem-solving requires skills such as "creativity, analytical skills, framing issues, asking questions, probing, and awareness of ambiguities and complexities" (De Villiers, 2010, p. 4). As Anderson (1993) reported, the problem-solving skill bridges the gap between learning and performance. Leadership is an overarching skill that encompasses various subsets of skills, including cognitive skills, interpersonal skills, and intrapersonal skills. Cognitive skills include planning, problem-solving, creative and critical thinking, and decision-making. Interpersonal skills include communication, team building, conflict management, organization and motivation of others, and listening and speaking. Meanwhile, intrapersonal skills include emotional intelligence, intuition, and imagination.

Graduates today are expected to be prepared for multiple occupations and for moving across and between several industries and career paths (Rowland, et al., 2020). As Fettes et al. (2020) reported, compared with technical or hard skills, soft skills have a long shelf life because those skills can be applied not only to a specific job but across a wide variety of occupations (De Villiers, 2010). Indeed, there is inadequate knowledge of how 21st-century skills can be taught in the best way in classrooms (Hewett et al., 2020). Although previous studies have examined the value of soft skills in the workplace, relatively few studies have explored how these skills are developed at university. Fettes et al. (2020) found that "less attention has been given to how skills can be best developed" (p. 194). To rectify this lack of scholarly attention, the objective of the current study is to examine how 21st-century soft skills are developed as perceived by students at university with regard to their abilities, gender, and years of schooling. The current study focuses on a subset of soft skills emphasized in the NQF-KSA as desired outcomes in academic institutes: (1) problem-solving, (2) communication, (3), planning, (4) leading self, (5) leading others, and (6) leadership skills.

2.2 Purpose and Research Questions

The current study aims to (a) examine how a subset of 21st-century soft skills are developed as perceived by students at university, (b) investigate how various ability and gender groups perceive their soft skill development during university education, and (c) explore the development trends of soft skills at university. Academic institutes are being criticized for not preparing general students or gifted and talented students for the workplace. Even though academic programs in Saudi Arabia have been designed according to NQF-KSA to empower students with soft skills, researchers are unsure whether these skills are well integrated in academic programs. Thus, the research questions guiding this study are as follows:

Q1: What are the differences between students' perceptions of possessing a 21st-century soft skill set and the proposed perception criterion used in this study?

Q2: How do intellectually gifted students' perceptions of possessing 21st-century soft skills vary compared to their average classmates' perceptions?

Q3: What are the gender differences between males' and females' perceptions of 21st-century skills?

Q4: How do students' soft skills increase during their university experience?

3. Quantitative Methodology

This research article examined quantitative data collected over six years from a higher education institute in Saudi Arabia's eastern province. A cross-sectional research design was considered suitable for the study because it is based on data collection at a point in time. Ability, gender, and years of school experience were the independent variables, whereas perception of these skills was the dependent variable. Students were surveyed on the following set of soft skills: (1) problem-solving, (2)

communication, (3), planning, (4) leading self, (5) leading others, and (6) leadership skills.

3.1 Participants

Participants were selected through convenience sampling. The students came from four academic clusters (humanities, engineering, sciences, and health) and were invited to participate in a leadership training program. As part of their invitation, they were asked to complete a survey with six different scales related to 21st-century skills. A total of 834 students were sampled. They represented around 2.7% of university-enrolled students from various colleges and clusters. As Table 1 shows, most students were female and nongifted. This was in alignment with universities' demographic representation. Gifted students were defined as those who scored above the 95th percentile on the General Ability Test. They mostly came from top colleges in the health cluster because those colleges only recruit top-tier students.

Table 1: Gender and Ability Distributions of the Sample during Years of 2012-2017

Ability Group	Gender		Total
	Male	Female	
Gifted	111	61	172
Average	181	481	662
Total	292	542	834

3.2 Instrument

The author developed the five scales to measure 21st-century soft skills (problem-solving, communication, planning, leading self, and leading others) based on Northouse's (2012) framework and Birkenholz and Schumacher's (1994) scales. A native speaker of Arabic who was very proficient in English translated the questionnaires from English to Arabic. The leadership scale provided the composite scores of the five sub scales of problem-solving, communication, planning, leading self, and leading others. Three experts in the relevant fields checked the scales' content validity. Alhattami and Muammar (2016) validated the scales. The results showed that the four-model factor analysis explained 42% of the total variance. The sub-scales consisted of 44 items covering the five essential 21st-century skills, and the overall leadership scale provided the composite score of the sub-scales (examples of items listed in Table 8). The internal consistency as indicated by the reliability statistic Cronbach's alpha was as follows (Table 2): problem-solving (9 items), $\alpha = .87$; communication skill (8 items), $\alpha = .78$; planning skill (9 items), $\alpha = .87$; leading self (8 items), $\alpha = .80$; leading others (10 items), $\alpha = .77$; and leadership skills (5 subscales), $\alpha = .93$. Participants were asked to rate each item on a scale of 1 (very minimally applied to me) to 4 (very highly applied to me).

Table 2: Internal Consistency Estimates of 21st Century Soft Skills Scales

Soft Skills Scale	N	Number of Items	α
Problem solving skill	821	9	.87
Communication skill	818	8	.79
Planning skill	820	9	.87
Leading self	835	8	.80
Leading others	795	10	.77
Leadership (Composite score)	866	5	.94

3.3 Procedure and Data Analysis

Participants were asked to complete the survey before joining a leadership training program as part of their eligibility requirements for the program. They were asked for consent to use their data for research purposes. Data were collected over five years from 2012 to 2017. Using SPSS, various statistical procedures were conducted, including *t*-tests and ANOVA, to find the significant differences between the averages of the various scales. Post hoc procedures were followed if needed (Kirk, 1995). Effect sizes were computed to determine the extent to which the results were practical. Type I error was controlled at ($\alpha = .05$) after conducting a two-tailed test, and type II error (β) was controlled at the .80 level. A *t*-test for all comparisons was used, and effect size was determined by Cohen's *d* guidelines (Cohen, 1988). All scores were converted to percentage score to ensure the scale provided a meaningful result.

4. Results

Q1: What are the differences between students' perceptions of possessing a 21st-century soft skill set and the proposed performance criterion used in this study?

$H_0: \mu_x = 80; H_1: \mu_x \neq 80$

To answer the research question and test its hypothesis, a one sample *t*-test was performed on the set of skills, (1) problem-solving, (2) communication, (3) planning, (4) leading self, (5) leading others, and (6) leadership scores, with a criterion reference score of 80% to determine whether significant differences existed between the criterion reference and the average scores for various skills. The one sample *t*-test examines whether the mean of a population is statistically different from a known or hypothesized value. This reference score or hypothesized value was set based on the minimum acceptable level of the Quality and Academic Accreditations Department of that institute in which the data were collected. We were interested in comparing means to hypothetical scores, not to other means of different skills. A nondirectional hypothesis was developed because of the researcher's knowledge that 21st-century soft skills are not assumed to be impeded within academic programs. As Table 3 shows, the *t*-test revealed a significant difference between all means and the criterion score of 80%, $p = .000$. The differences in the means ranged from 3.39 points for leading others, the least wanted skill, to 8.88 points for problem-solving, the least developed skill. No single mean exceeded the criterion score set as an acceptable level of students' perception. The bar graph in Figure 1 shows that average students' perceptions were lower than the criterion reference across all assessed soft skills. The proportion of variance accounted for, as indicated by Cohen's *d*'s (1988) guidelines, ranged from medium (0.79) to high (1.19). Notably, the effect size was mostly at a high level, indicating the greater need to improve these critical 21st-century soft skills for all students. Therefore, the data revealed that students' perceptions of mastering 21st-century soft skills were not satisfactory.

Table 3: Mean Difference of Soft Skills between the Criterion (80%) and Students' Perceptions (N=834)

Soft-Skills	<i>M</i>	<i>SD</i>	<i>M</i> _{Difference}	<i>t</i>	<i>p</i>	Cohen's <i>d</i>	<i>r</i> ²
Problem Solving	71.1	14.9	-8.9	-17.18	.000	1.19	.51
Communication	73.2	13.7	-6.9	-14.42	.000	1.00	.45
Planning	71.9	15.6	-8.1	-14.95	.000	1.04	.46
Leading Self	74.4	14.0	-5.6	-11.63	.000	0.79	.37
Leading Others	76.6	11.7	-3.4	-8.35	.000	0.80	.28
Leadership	73.4	11.8	-6.6	-16.09	.000	1.11	.49

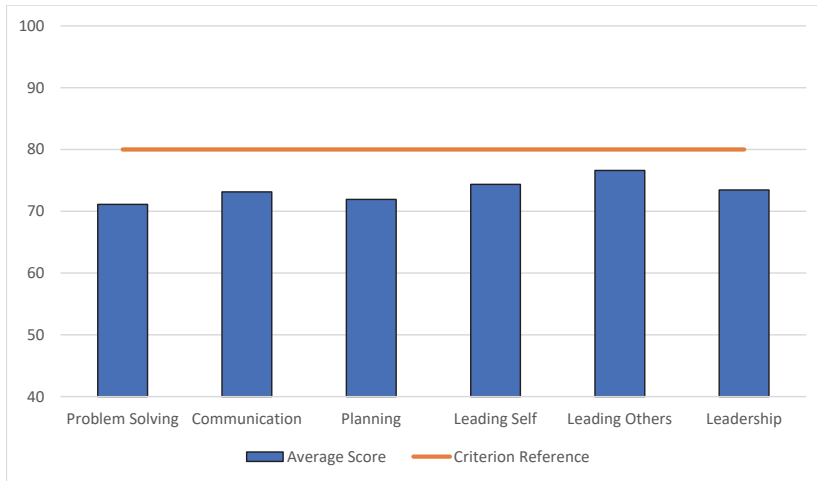


Figure 1 : Students' Perceptions Average Scores on Soft-Skills

Q2: How do intellectually gifted students' perceptions of possessing 21st-century soft skills vary compared to their average classmates' perceptions?

$$H_0: \mu_{\text{average}} = \mu_{\text{gifted}}; H_1: \mu_{\text{average}} \neq \mu_{\text{gifted}}$$

A one-way multivariate analysis of variance (MANOVA) was conducted to test the hypothesis that there would be one or more mean differences between ability levels (average, gifted) and soft skill scores. Assumptions of MANOVA, including normality with sufficient sample size, independence, outliers, and equality of variance of MANOVA, were met. Levene's test of equality of variance across groups was greater than $P = .001$. A statistically significant MANOVA effect was obtained, $F(5, 828) = 2.641, p < .002, \text{partial eta squared} = 0.016$. Because we had only two independent groups, a t -test was performed on (1) problem-solving, (2) communication, (3) planning, (4) leading self, (5) leading others, and (6) leadership scores as dependent variables, and ability (average and gifted) as the independent variable to determine whether a significant difference existed between abilities' perception scores for various soft skills. As Table 4 shows, the t -test revealed a significant difference between average and gifted students on problem-solving ability scores in favor of gifted students. No other significant effect of the ability group was found for other skills. The data revealed that gifted students outperformed average students on problem-solving scores, indicating that they perceived a higher level of problem-solving skills than average students.

Table 4: Descriptive and Inferential Statistics of Average and Gifted Students on Soft-Skills ($n_{\text{Gifted}} = 172, n_{\text{Average}} = 662$)

Soft Skills	$M_{\text{Gifted}}(SD)$	$M_{\text{Average}}(SD)$	M_{Diff}	t	p
Problem Solving	74.1(13.8)	70.4(15.1)	3.8	-3.11	.002
Communication	73.5(12.6)	73.1(14.0)	0.4	-.40	.692
Planning	73.3(14.1)	71.5(16.0)	1.8	-1.42	.157
Leading Self	75.8(12.9)	73.0(14.3)	1.8	-1.60	.110
Leading Others	76.7(10.2)	76.6(12.1)	0.0	-.05	.961
Leadership	74.7(10.3)	73.1(12.1)	1.6	-1.76	.089

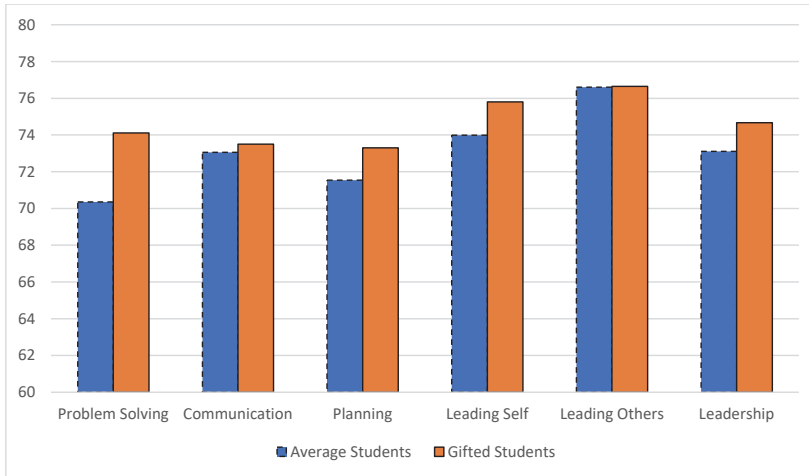


Figure 2: Differences in Means Scores Between Gifted and Average Students on Soft-Skills

As Figure 2 shows, the largest difference between average and gifted students was only in the problem-solving skill.

Q3: What are the gender differences between males' and females' perceptions of 21st-century skills?

$$H_0: \mu_{\text{Male}} = \mu_{\text{Female}}; H_i: \mu_{\text{Male}} \neq \mu_{\text{Female}}$$

MANOVA was conducted to test the hypothesis that there would be one or more mean differences between gender (male, female) and soft skill scores. MANOVA's assumptions were met. Levene's test of equality of variance across groups was greater than .001. MANOVA results showed that no significant effect was obtained, $F(5, 828) = 1.34, p = .246$. Therefore, the data revealed that male and female students' perceptions were nearly the same regarding mastering 21st-century soft skill levels (Figure 3).

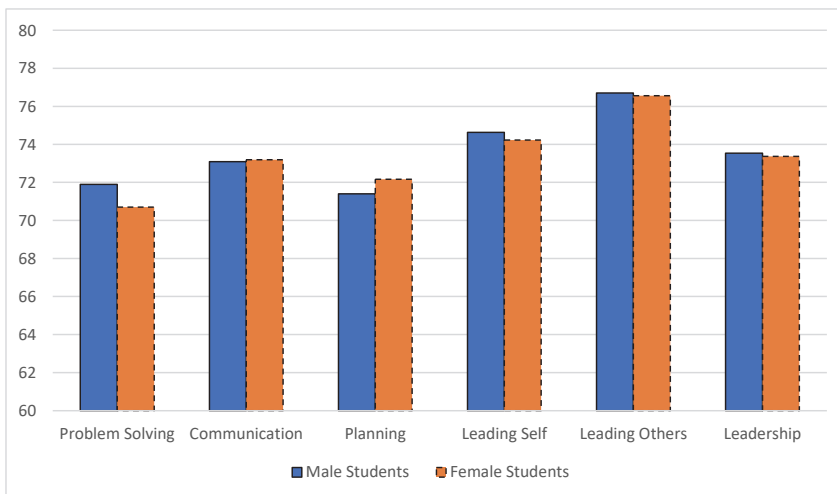


Figure 3: Differences in Average Scores of Gender Perceptions of Soft-Skills

Table 5: Descriptive and Inferential Statistics of Soft Skills (n_{Male}= 292, n_{Female}= 542)

Soft Skills	M _{Male} (SD)	M _{Female} (SD)	M _{Diff}	t	p
Problem Solving	71.9(14.9)	70.7(14.9)	1.2	1.11	.27
Communication	73.1(13.5)	73.2(13.9)	-0.1	-1.10	.92
Planning	71.4(16.0)	72.2(15.4)	-.77	-.68	.50
Leading Self	74.6(13.7)	74.2(14.1)	.40	.39	.70
Leading Others	76.7(11.7)	76.6(11.8)	.13	.16	.88
Leadership	73.5(11.8)	73.4(11.8)	.17	.20	.84

Q4: How do students' soft skills increase during their university experience?

$$H_0: \mu_{y1} \leq \mu_{y2} \leq \mu_{y3} \leq \mu_{y4} \leq \mu_{y5}; H_1: \mu_{y1} > \mu_{y2} > \mu_{y3} > \mu_{y4} > \mu_{y5}$$

ANOVA was performed on (1) problem-solving, (2) communication, (3) planning, (4) leading self, (5) leading others, and (6) leadership scores as dependent variables and number of years in university as the independent variable to determine whether a significant linear trend existed for various soft skills. Because we had six levels of students' experience at university, Holm-Bonferroni, a post hoc procedure, was conducted only if the omnibus *F* test was significant. A directional hypothesis was adopted based on the assumption that with more years of university education, students' soft skills increased. All ANOVA assumptions were met. Levene's test of homogeneity of variance across groups was greater than .001.

Table 6: Descriptive Data of Soft Skills, Across Years of Schooling in University

	0 <1 y n=205	1 1-2y n=187	2 2-3y n=200	3 3-4 n=129	4 4-5 n=81	5 >5 n=32
Problem Solving	69.4(15.5)	72.0(14.5)	69.4(15.0)	72.6(13.8)	72.8(16.2)	77.0(12.3)
Communication	73.4(14.1)	75.3(13.4)¹	69.8(12.9)¹²	73.0(14.7)	73.3(12.9)	80.1(11.9)²
Planning	71.3(16.0)¹	73.5(15.6)²	68.4(15.4)²³	72.4(15.5)	74.4(14.5)	80.1(13.5)¹³
Leading Self	73.5(14.0)	74.4(14.9)	72.8(13.4)¹	74.7(13.3)	77.4(13.8)	81.1(13.1)¹
Leading Others	75.5(12.4)	76.8(11.6)	75.3(11.4)	77.7(12.1)	79.0(10.4)	80.8(10.3)
Leadership	72.6(12.0)¹	74.4(11.8)	71.1(11.4)²	74.1(11.7)	75.4(11.7)	79.8(10.2)¹²

Note: all pair comparisons are significant $p < .05$ using Holm-Bonferroni procedure.

As Table 6 shows, ANOVA revealed significant linear trends for soft skills subscales across the years of schooling. All trends were significant; however, effect sizes were at a low level (Table 7). Therefore, the data showed that soft skills increased 1.1% on average throughout students' experience at university. The authors followed up with Holm-Bonferroni procedure to identify in which pairs of years were experience across all skills significant. As Table 6 shows, although ANOVA was significant across all subskills, Holm-Bonferroni revealed significant differences only between a limited number of years of university experience for the following subskills: communication, planning, leading self, and leadership.

Table 7: ANOVA Analysis of Soft Skills Across the Years of Schooling (N=834)

Soft Skills	MS	SS	df	MS	F	p	η^2	(1- β)
Problem Solving	Between Groups	1784.2	1	1784.2	8.1	0.005	0.01	.82
	Within Groups	182422.4	828	220.3				
	Total	185411.1	833					
Communication	Between Groups	880.2	1	880.2	4.8	0.029	0.01	.99
	Within Groups	152054.4	828	183.6				
	Total	156774.2	833					

Soft Skills	MS	SS	df	MS	F	p	η^2	(1- β)
Planning	Between Groups	2375.9	1	2375.9	9.9	0.002	0.01	.98
	Within Groups	198125.5	828	239.3				
	Total	203819.2	833					
Leading Self	Between Groups	2226.1	1	2226.1	11.5	0.001	0.01	.85
	Within Groups	160182.6	828	193.5				
	Total	163015.2	833					
Leading Others	Between Groups	1183.3	1	1183.3	8.7	0.003	0.01	.81
	Within Groups	112690.1	828	136.1				
	Total	114466.3	833					
Leadership	Between Groups	1635.9	1	1635.9	12.0	0.001	0.01	0.97
	Within Groups	112722.2	828	136.1				
	Total	115750.7	833					

Table 8: Examples of items in soft skills sub scales

Construct	Examples of Items
Leading Self	<ul style="list-style-type: none"> I realize my strengths and weaknesses I express my ideas easily
Leading Others	<ul style="list-style-type: none"> I can motivate other to achieve tasks I understand that others have feelings, needs, and goals
Communication	<ul style="list-style-type: none"> I solve the problems that the group may have I easily make friends
Problem Solving	<ul style="list-style-type: none"> I give many new ideas I can convince others with my vision
Planning	<ul style="list-style-type: none"> I put a deadline to do things and abide by them I achieve my goals as the end of the year approaches

5. Discussion

This study aimed to determine to what extent 21st-century soft skills are developed at university for various gender groups, ability groups, and years of experience. The findings showed that students' perception of possessing 21st-century soft skills was not a good fit for university expectations of skill mastery level, even though students' skill level increased slightly throughout university. This incremental increase was trivial because the development of soft skills was left to chance. The rate of 21st-century soft skill development at university seems insufficient. As Fettes et al. (2020) reported, graduates find it difficult to transition into workplaces despite an increase in schooling years. Because of the high demand for soft skills in workplaces today, universities tend to have high expectations regarding preparing graduates with critical soft skills. However, universities' practices may not match these expectations. As the finding indicated, there is a real need to improve critical 21st-century soft skills for all students in undergraduate programs in a more systematic way. These findings are consistent with those of Sarkar et al. (2020), who showed that several soft employability skills were not highlighted in many undergraduate science programs. Additionally, the findings are in line with those of De Villiers (2010), who showed that soft skills should be the highest priority to be successful in one's career according to graduating students. These students felt soft skills had not received adequate attention during their degree programs compared with technical skills. Further, students at universities are used to receiving grades that reflect their technical skill level because these skills can be easily measured in a quantitative manner (Marques, 2013; Balcar, 2016). In contrast, students tend to build their own perceptions of their soft skill level based on their expectations. The informal feedback they receive on these perceptions may not always be accurate. Thus, university students' expectations of achieving mastery level in soft skills tend to unfulfilled because they are still at the acquisition phase and have not tested their soft skills in different settings.

Next, the findings showed that male and female students' perceptions of possessing 21st-century soft skill levels were nearly the same. This finding is interesting and in alignment with that of Balcar (2016), who examined gender differences in wage returns with regard to hard and soft skills. Balcar found that there was a significant gender difference in returns with regard to hard skills but not soft skills.

Furthermore, Balcar (2016) and similar authors found that intellectually academic gifted students outperform average students on problem-solving scores. This confirms that gifted students possess a higher level of problem-solving skills. Gifted students can find novel solutions and come up with new and multifaceted ways to solve problems (Anaguna and Suhendra, 2019). Gifted students are expected to have a high level of problem-solving skills compared with their nongifted peers (Mammadov, 2019; Tas, 2019). However, the results of the current study indicated that the problem-solving skill is the only skill that distinguishes between gifted and average students. Interestingly, even though there was a significant difference between average and gifted students on problem-solving ability scores in favor of gifted students, gifted students' perception of possessing problem-solving skills was not a good fit with university expectations of students' skill mastery level. As the findings indicated, problem-solving skill is the least developed skill among all students. Hence, all students at university, whether gifted or nongifted, must be given opportunities to practice 21st-century skills. These skills will positively impact their future careers (Hewett et al., 2020).

Additionally, even though students' soft skills increase throughout university, the data indicated that the increase rate was only 1.1% on average. As Tholen (2019) reported, many graduates view university as a starting point for their soft skill development given that the rate of their development seems inadequate. Thus, universities should maximize their efforts to improve students' level of soft skill development in each year. Paying more attention to improving soft skills does not mean that hard skills are unimportant; rather, it means that these two types of skills must complement each other, especially for students with high potential (Robles, 2012).

6. Conclusion

The purpose of this study was to gain a better understanding of how 21st-century soft skills are developed as perceived by students at university. In summary, students' perceptions of possessing soft skills were below acceptable levels throughout their university experience. Further, students' perceptions of their soft skills for both gender and ability groups' variables were almost the same, with the exception that gifted students perceived their problem-solving skills to be higher than those of average students. Finally, the results showed that soft skills were not improved systematically at university. These findings indicated that students' perception of possessing 21st-century soft skills does not fit with university expectations of students' mastery level, even though these skills increase slightly throughout university. Moreover, the findings indicated that there was no significant difference between university students' perception of possessing 21st-century soft skills in the context of gender and ability, except in the case of problem-solving.

Students are supposed to demonstrate soft skills to maximize their potential for employment in the 21st century. Thus, the findings of this study have some potential implications for higher education. Awareness of 21st-century soft skills should be raised among university students and faculty, and adequate opportunities to develop these skills at university should be provided. These results should be considered with caution, however, because most participants in this study came from the health field. Including participants from diverse majors would provide a broader perspective. In future research, it would be useful to explore how universities can effectively develop 21st-century soft skills and how these skills can be smoothly embedded in undergrad programs.

7. Limitations and Future Work

Although the cross-sectional design employed in the current study has several strengths, including

quick observation of the phenomenon being investigated, the ability to study multiple outcomes, and easy data collection, it has several limitations. The most important limitation is related to the difficulty of making causal inferences. Additionally, the results cannot be generalized to the population as the sample was not randomly selected, and neither were the participants representative of university demographics in all clusters across various academic levels. Participants took part in the study voluntarily. Thus, it is recommended to study the development of soft skills using the stratified random sampling method. A third possible limitation is that the current study focused on students' perceptions of a subset of soft skills and did not cover all skills. Further, students tend to select socially desirable answers to reflect their mastery level of these skills. Therefore, future research might focus on other skills and competencies that are critical to NQF-KSA using assessment methods beyond surveys to avoid the social desirability effect.

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