INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH
2021, Vol. 2, No. 2, 131 – 141
http://dx.doi.org/10.11594/ijmaber.02.02.08

Research Article

21st-Century Skills of Social Studies Students: Basis for a Proposed Training Program

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Article history:
Submission February 2021
Revised February 2021
Accepted February 2021

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ABSTRACT

Enhancing the 21st-century skills of learners will significantly help them become future-ready and globally-competent workforce in the global economy in the context of the fourth industrial revolution. This descriptive cross-sectional survey determined the 21st-century skills of junior high school learners as an input for a suggested training program. A total of 120 seventh grade learners of a public secondary school in Central Luzon, Philippines responded to the 21st-Century Skills Questionnaire (α=0.960). Results showed that the respondents have a moderate level of attainment of the 21st-century skills (M=3.46, SD=0.66). They moderately exhibit learning and innovation skills (LIS) (M= 3.32, SD=0.66), and highly exhibit information, media, and technology skills (IMTS) (M=3.53, SD=0.82), and life and career skills (LCS) (M=3.53, SD=0.74). Female students have higher overall 21st-century skills, and LIS than their male counterparts based on the independent sample t-test result. Furthermore, there is a significant correlation between LIS and IMTS (r=0.619, p=0.000), between LIS and LCS (r=0.560; p=0.000); and between IMTS and LCS (r=0.820; p=0.000). Learning institutions must adapt to the emerging Education 4.0 brought about by the new industrial era and the 21st-century society so that learners can thrive to the current and evolving challenges. A proposed training program is recommended for implementation to enhance the students' 21st-century skills.

Keywords: 21st-century skills, descriptive survey, ICT skills, junior high school, life and career skills, learning and innovation skills, social Studies

How to cite:
Jr., D. V. R., Gallardo, C. B., Lacaste, J. T., & Roque, D. J, A. (2021). 21st-Century Skills of Social Studies Students: Basis for a Proposed Training Program. *International Journal of Multidisciplinary: Applied Business and Education Research 2* (2): 131 – 141. doi: 10.11594/ijmaber.02.02.08

Introduction

The development of the 21st-century skills of the students in this knowledge-based society is crucial. As the educational landscape faces compounded transformations brought about by the fourth industrial revolution or FIRe (Rogayan & Macanas, 2020), students must acquire the relevant skills to thrive in the global economy. Educational institutions have pivotal roles to play in equipping the learners to become future-ready and globally competent human workforce who significantly contributes to the country's socio-economic development.

Schools worldwide must encourage 21st-century skills enhancement to their learners through formal schooling (Tindowen et al., 2017). With the new industrial era, students' 21st-century skills and competencies must be further strengthened to survive today's compounded uncertainties and challenges successfully. Several scholarly literatures pointed out that students need 21st-century attributes and abilities to achieve success (Bellanca, 2010; Larson & Miller, 2011; Rotherham, & Willingham, 2010). However, Sadera et al. (2020) stated that at the helm of the 21st-century learning landscape and the onset of the FIRe, education remains to be confronted with numerous challenges.

The Partnership for 21st Century Skills (2009), a group that encourages the integration of 21st-century skills in education, crafted a framework for 21st-century learning. Such framework depicts the capabilities, understanding, and proficiency learners need to enter the global labor force successfully. Larson and Miller (2011) defined-21st century skills as a set of competencies that reiterate "what students can do with acquired knowledge and how they apply what they learn in real-world contexts through good communication and sound collaboration skills, adeptness in technology, innovative and creative thinking, and an ability to unravel problems" (p. 121.) Similarly, Silva (2009) stressed that the essence of 21st-century skills is on "what students can do with knowledge, rather than what units of knowledge they have" (p. 630).

The information, media, and technology skills are sets of competencies that learners can use to fact-check, verify and dissect information from different sources such as social media and the internet. This is an essential skill that they can use to fight against misinformation and fake news. Life and career skills are students' abilities that are useful as they enter the real world of work and navigate through life in the VUCAD^2 (volatile, uncertain, complex, ambiguous, diverse, and disruptive) world. With the VUCAD^2 world, students must be more equipped with the necessary life skills and career skills. Students must also obtain learning and innovation skills that are useful in this knowledge-based society and in this complex digital world. With the art of learning, students will successfully adapt to the fast-paced, changing environment. With innovative skills, they would be able to invent and discover things that would uplift the quality of life. Through the teaching of Social Studies, these skills can be further harnessed.

Globally, students' 21st-century skills have received extensive scholarly attention. Previous studies focused on the enhancement of these skills (Chu et al., 2021; Hewett et al., 2020; Kanbul, & Uzunboylu, 2017; Ridwan et al., 2017; Papanastasiou et al., 2019; Sanabria, & Arámburo-Lizárraga, 2017; Urbani et al., 2017), assessment of students' 21st-century skills (Pellegrino, 2017; Siddiq et al., 2017), the relationship of 21st-century skills and academic achievement (Ashraf, 2018), and important skills for the 21st-century workforce (Rios et al., 2020; Short, & Keller-Bell, 2021).

In the Philippines, previous scholarly works have presented the 21st-century skills of students. These studies ascertained the 21st-century skills of students under alternative learning systems (ALS) (Tindowen, 2017), university students (Aguila, 2015; Gonzales, 2020), prospective teachers (Molano, 2020; Molano et al., 2020; Mugot & Sumbalan, 2019). However, very minimal studies have been done in determining the 21st-century skills of junior high school students. Hence, this study was conducted to assess the level of acquisition of 21st-century skills of learners in junior high school along life and career skills (LCS); learning and innovation skills (LIS); and information, media, and technology skills (IMTS).

Method

Research Design

The study utilized a descriptive cross-sectional research to determine the level of acquisition of 21st-century skills of Grade 7 learners.

Study Respondents

The respondents of this study were randomly sampled 120 seventh grade students of a public secondary school in Zambales, Philippines. These students are currently enrolled in a Social Studies subject at the time of the survey. Table 1 shows the demographics of respondents.

Table 1. Respondents' demographics

Profile	F (N=120)	%
Age		
11-12 years old	46	38.33
13 years old and above	74	61.67
Sex		
Male	47	39.17
Female	73	60.83

Of the 120 respondents, 38.33% are within the age bracket of 11-12, while 61.67% are aged 13 and above. It implies that most of the respondents' age is within the age requirement of Grade 7. A majority (60.83%) of the students are females.

Research Instrument

The study used the 21st-Century Skills instrument developed by the researchers based on the Partnership for 21st Century Skills (2009) framework. The tool is composed of 63 items on a 5-point scale (scored from 1 to 5, strongly disagree to strongly agree). The instrument is divided into three dimensions, IMTS with 25 items (α=0.903), LCS with 13 items (α=0.904), and LIS with 25 items (α=0.937). The overall Cronbach alpha coefficient is 0.960, which implies that the instruments had an excellent internal consistency.

Data Gathering Procedure

Permission and approval from the school principal were sought prior to the administration of survey questionnaires. Parental consent was secured from the students before they responded to the survey as part of the ethical protocol. The researchers explained to the respondents the objective of the study and the parts of the tool. After which, the students answered the 63-item survey for 20 minutes. The retrieval of the survey questionnaires was done on the same day. Triangulation of the data was made through an interview with select students.

Data Analysis

After the data were encoded, tabulated, and organized, the researchers analyzed the data using SPSS v. 25 and MS Excel 2016. Frequency and percent were used to describe the demographics of the students in terms of age and sex. The weighted mean and standard deviation were used to determine the 21st-century skills of the respondents. The study also used the independent-sample t-test to check the significant difference of the respondents' 21st-century skills when grouped according to age and sex. The Pearson correlation was used to see the correlation among the dimensions of the 21st-century skills.

Results and Discussion

21st-Century Skills of Junior High School Students

Table 2 shows the summary of the students' 21st-century skills.

Table 2. Summary of the students' 21st-century skills

21st Century Skills	M	SD	VD
Learning and Innovation Skills (LIS)	3.32	0.66	M
Information, Media, and Technology Skills (IMTS)	3.53	0.82	H
Life and Career Skills (LCS)	3.53	0.74	H
Overall	3.46	0.66	M

Legend: Very High (VH) 4.50 – 5.00; High (H) 3.50 – 4.49; Moderate (M) 2.50 – 3.49; Low (L) 1.50 – 2. 49; Very Low (VL)) 1.00 – 1.49

Generally, the students have a moderate level of acquisition of the 21st-century skills

(M=3.46). Although only the dimension, LIS was moderately exhibited by the students. Students highly demonstrated IMTS and LIS. This implies that the students are good in ICT skills since they are digital natives. They are also good at life and career skills since they are exposed to social issues and situations embedded in their social studies subject.

Teachers may further enhance their learning and innovation skills which are needed in coming up with research-based solutions and science-based recommendatory policies about problems arising in the society.

Learning and Innovation Skills

As shown, the students had a moderate level of acquisition of the LIS based on the weighted mean of 3.32 (SD=0.66). This suggests that the students have an average acquisition of skills related to inventiveness and innovation, rational thinking and problem solving, and communication and teamwork. These skills need to be improved skills further for the students to be more successful in learning and create innovations in their own ways. Since they are still in the seventh grade, these skills can be further enhanced.

Two specific skills were rated as high by the respondents. These include being open and receptive to novel and varied perspectives, incorporating group feedback and comment into the work (M=3.57), and demonstrating the ability to work effectively and respectfully with diverse teams (M=3.56). This implies that the students have an open-minded disposition in group discussion and collaborative work and can work well with diverse backgrounds.

Students also moderately exhibit skills in demonstrating originality and inventiveness in work (M=3.48), skills in listening effectively to decipher meaning (M=3.48), and skills in assuming shared responsibility for collaborative work (3.46). This suggests that the students have moderately acquired the skills in work innovation, art of listening, and the beauty of shared vision and commitment. These skills are essential in navigating the VUCAD[2] world while maintaining synergy among peers and classmates.

Although in the acceptable range, the lowest means were noted in the following skills: assess and gauge major alternative perspective (M=3.07), infer how parts of a whole interrelate with each other to yield general results in multifaceted systems (M=3.06), and create new and worthwhile ideas (M=2.96). Students must cultivate these skills to be critical thinkers, to analyze complex problems better, evaluate different viewpoints and make conclusions based on sound judgment and rational explanation.

The findings confirm the conclusions from Mugot and Sumbalan (2019), in which they found out that teacher education students have performed learning and innovation skills on most occasions. Moreover, Aguila (2015) also conforms to the present study. However, Tindowen and company (2017) reported a deficient acquisition of ALS learners in creativity and innovation.

Information, Media, and Technology Skills

As reflected in the table, high school students have a high level of acquisition of IMTS, as revealed by the weighted mean of 3.53 (SD=0.82). This implies that the students exhibit excellent skills in utilizing digital technologies to learn and develop products and projects required of them. Since the respondents are part of Generation Z, who are considered digital natives, this finding is expected. However, teachers should also guide the Gen Z students when it comes to netiquette or internet etiquette. Netiquette reflects the polite, respectful, and good behavior that a student must show in using social media and using the internet in general.

Almost all indicators were rated high by the respondents. Some of these skills are on the use of digital technologies appropriately to manage information (M=3.67); comprehend and use the most suitable media construction tools (M=3.65); use technology as a means to conduct research (M=3.63) and comprehend and efficiently apply the most suitable expressions in varied situations (M=3.59). The results suggest that the students can use technology tools properly to manage information, research, and contextualize these digital tools in a multicultural environment. It is interesting to note that

the students are sensitive about their peers and others' culture and traditions in terms of technology use. Likewise, proper use of technology is very evident among Gen Z students.

Meanwhile, the results also revealed that the students moderately exhibited in four subskills. These skills include applying a central consideration of the ethical/legal issues surrounding the access and utilization of information (M=3.45), accessing information efficiently and effectively (M=3.43), applying a fundamental understanding of the ethical/legal issues surrounding the access and use of media (M=3.43), and evaluating the information critically and competently (M=3.34). This means that the students still need to improve their abilities in the ethical protocol of information and media use, effective utilization of data, and critical assessment of information. These may be done by giving the students authentic assessments such as journal critiquing, research reports, product development, and technical report writing.

Aguila (2015) reported the same results that the university students have very good skills in information, media, and technology skills. Several studies found out that students have a low acquisition of ICT skills, which disagrees with the present study (Mugot & Sumbalan, 2019; Tindowen et al., 2017).

Life and Career Skills

As gleaned from the table, students have a high level of acquisition of LCS, as shown by the weighted mean of 3.53 (SD=0.74). This implies that students are good at developing adequate skills that they will need in actual work and life encounters. These skills include cross-cultural skills, flexibility and adaptableness, and initiative and self-direction. Since social studies opens the windows of social issues and trends among students, they see the reality of life and put themselves in the context of the social environment that they are in.

The students obtained the highest means in the following skills: act sensibly with the welfares of the bigger society in mind (M=3.77); influence strengths of others to achieve a shared objective (M=3.69); utilize relational and problem-solving skills to influence and assist others toward a purpose (M=3.67); influence social and cultural dissimilarities to generate novel concepts and increase innovations (M=3.66); and conduct themselves in a respectable, professional manner (M=3.61). It can be deduced that the students always make sure that the greater good is prioritized when they act on something. They also make the most of the strengths of others and cultural diversity to achieve a shared vision. It is also interesting to know that the students have acquired the skills in proper demeanor and good manners.

Meanwhile, the students moderately exhibit the following skills: adjust to diverse roles, tasks, plans, and circumstances (M=3.38); work efficiently in a climate of ambiguity and varying priorities (3.38), and demonstrate initiative to increase skill levels towards a professional level (3.38). These skills are more likely to be acquired when they will be at a higher level in high school as they are not so immersed yet with work simulations or internship programs.

According to P21 Partnership for 21st Century Learning (2017), life and work settings today necessitate far more than rational skills and content knowledge. The ability to circumnavigate the complicated life and work surroundings in the highly competitive digital age requires learners to pay rigorous consideration to evolve satisfactory life and career skills.

Difference in the Students' 21st-Century Skills by Profile Variables

Table 3 shows the differences in the respondents' 21st-century skills when grouped according to age.

Table 3. T-test for independent samples of students' 21st-century skills by age

Dimension	Age	Mean	SD	df	t-value	*p* value
Learning and Innovation	11-12	3.33	0.68	118	0.020	0.889
	13-above	3.31	0.65			
Information, Media, and Technology	11-12	3.59	0.89	118	0.418	0.519
	13-above	3.49	0.78			
Life and Career	11-12	3.48	0.82	118	0.418	0.519
	13-above	3.56	0.69			
Overall	11-12	3.47	0.70	118	0.012	0.913
	13-above	3.45	0.64			

Significant p<0.05
*equal variances assumed

An independent samples t-test was made to explore the difference of the students' 21st-century skills by age bracket. The mean 21st-century skill score of students aged 11-12 was not significantly different with those aged 13 and above. There is no significant difference between the two groups along the three dimensions and the overall 21st-century skills. The results affirm Tindowen et al. (2017) findings that the 21st-century skills do not have any significant differences with the different age groups except with ICT skills and local connections.

Table 4 shows the differences in the respondents' 21st-century skills when grouped according to sex.

Table 4. T-test for independent samples of students' 21st-century skills by sex

Dimension	Sex	Mean	SD	df	t-value	*p* value
Learning and Innovation	Male	3.09	0.64	118	9.363	0.003*
	Female	3.46	0.63			
Information, Media, and Technology	Male	3.43	0.84	118	1.089	0.299
	Female	3.59	0.81			
Life and Career	Male	3.32	0.66	118	2.367	0.127
	Female	3.43	0.84			
Overall	Male	3.31	0.63	118	4.109	0.045*
	Female	3.55	0.66			

Significant p<0.05
*equal variances assumed

An independent samples t-test was made to explore the difference of the students' 21st-century skills by sex. The mean 21st-century skill score was significantly higher in females compared with their male counterparts. There is a significant difference between the two groups in learning and innovation skills (t=9.363, p=0.003), and the overall 21st-century skills (t=4.109, p=0.045). The finding negates the study of Tindowen and colleagues (2017) which they found out that male learners are more creative and innovative than female learners. In the present study, female students are more creative and innovative.

Relationship among the 21st-Century Sub-skills

A relationship among the sub-skills of the 21st Century Skills is presented in Table 5.

Table 5. Correlation coefficients among the 21st-century sub-skills

Skills	1	2	3
1. Learning & Innovation Skills	1	0.619**	0.560**
2. Information, Media & Technology Skills	0.619**	1	0.820**
3. Life & Career Skills	0.560**	0.820**	1

**. Correlation is significant at the 0.01 level (2-tailed)

As shown, a statistically significant relationship between LIS and IMTS (r=0.619; p<0.01). This means that the LIS and IMTS have a moderate positive correlation, which implies that as the LIS increases, the IMTS will likely increase.

It was also noted that LIS are statistically significantly correlated with LCS (r=0.560; p<0.01). This means that the LIS and LCS have a moderate positive correlation, which implies that as the LIS increases, the LCS will likely increase.

Moreover, the table also shows a statistically significant relationship between IMTS and LCS (r=0.820; p<0.01). This means that the IMTS and LCS have a strong positive correlation, which implies that as the IMTS increases, the LCS will likely increase.

The findings confirm Aguila's (2015) study, which found out high significant correlations among the dimensions of 21st-century skills.

Proposed Training Program

The proposed training program was crafted based on the findings of the survey among Grade 7 students.

Table 6. 21st-century on the go: a proposed training program

Objectives	Activities	Persons Involved	Duration	Expected Outputs
1. Disseminate information about the 21st-century skills training program	*Let Me Know!* Putting up of posters and tarpaulin in the school announcing the launching of different programs; Distribution of flyers to students	Researchers, Faculty, Administrative Staff and students	2 days	At least 95 % of the students will attend the training program
2. Enhance students' awareness of the program	*Tara Lets Gen Z!* Orientation Program; Forum on the scope of the programs	Local leaders, NGO's Researchers, Faculty, Administrative	2 days	Students are ready for the program and will give their 85%

Objectives	Activities	Persons Involved	Duration	Expected Outputs
		Staff and students		commitment to join and strictly follow the rules of the program and do the required activities.
3. Utilize an extensive choice of idea creation techniques and use various types of reasoning	*Project Think Tank* Conduct of roundtable discussion about innovative promotion of 21st Century Skills; Spearhead quarterly debate; Conduct of Lecture series on social trends and issues	Researchers, Faculty, and students	9 weeks	85 % of the participants will actively participate in the program.
4. Access information efficiently (time) and effectively (sources) and apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media.	*Click It Right!* Peer tutoring of students on proper accessing of information; Conduct of forum about the responsible use of social media.	Researchers, Faculty, and students	2 weeks	100 % of the participants will improve their least mastered skills regarding in Information, Media, Technology.
5. Demonstrate initiative to advance skill levels towards professional level and to adapt to varied roles, jobs, responsibilities	*Project EDUlikula* Conduct educational film viewing. *Project Pakikipamuhay* Spearhead community immersion. *Job for a Day* Conduct of job immersion or internship for a day in the local establishments/ companies	Researcher, Faculty, Administrative Staff and students	3 weeks	90% of the participants will demonstrate initiative to develop themselves professionall y

Objectives	Activities	Persons Involved	Duration	Expected Outputs
6. Monitor the programs and training of the 21st-century skills.	*Monitoring* Monthly monitoring of the participants' participation in each of the programs	Researchers, Faculty, and students	9 weeks	Monthly report of students attendance
7. Evaluate the effectiveness of the program	*Evaluation* Closing Program; refloating of 21st-century skills questionnaire; evaluation of the program	Researchers, faculty, administrative staff and students	2 days	Evaluation report

Conclusion and Recommendation

The present study ascertained the level of acquisition of the 21st-century skills of junior high school students. The results of this inquiry addressed the lack of literature on high school students' 21st-century skills in the Philippine context since previous studies have focused only on prospective teachers, university students, and students in an alternative learning system (ALS). The respondents have a moderate level of acquisition of 21st-century skills. They moderately exhibit learning and innovation skills while highly exhibiting information, media, technology skills; and life and career skills. Female students have higher overall 21st-century skills, and learning and innovation skills than their male counterparts. Furthermore, there is a positive relationship between learning and innovation skills; and information, media, and technology skills; between learning and innovation skills; and life and career skills; and between information, media and technology skills; and life and career skills. The proposed training program can be a helpful guide for the teachers and administrators in improving the students' 21st-century skills.

The study recommends that educational institutions must adapt to the emerging Education 4.0 brought about by the new industrial era and the 21st-century society so that learners can thrive to the current and evolving challenges. Further study may contextualize the developed research tool to other disciplines such as in Science and in English. Social Studies teachers may likewise incorporate in their instructional plans authentic assessment and learning tasks that may develop students' 21st-century skills. Male students may enhance further their 21st-century skills through the proposed intervention. The junior high school curriculum may be revisited to include teaching the most essential competencies that harness 21st-century skills. The proposed training program is recommended for implementation to enhance the students' 21st-century skills. This program can be contextualized to develop 21st-century skill-equipped and globally competent learners.

Although the results provide insights into the 21st-century skills of junior high school students, there are limitations in this study. Involving one grade level in the junior high school limits the generalizability of the results. The limitations of this study also include the self-professed skills of the respondents. This may be further triangulated through actual class observations, participant observation, analysis of students' outputs, and other documents. Since the survey was limited to one secondary school, further research may be conducted to include other schools in other Philippine regions for better generalizability. Future studies should also employ qualitative research tools to have an in-depth description of the students' 21st-century skills.

Acknowledgement

The authors would like to thank the President Ramon Magsaysay State University for the

support in this research endeavour and all the Grade 7 students who took part in this research endeavour.

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