

21st Century Skills of Computer System Servicing Students in One State Technical Vocational Institution in the Philippines

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Abstract - This study aims to assess the 21st Century Skills of Computer System Servicing Students. The study specifically described profile of the students; and the significant difference of the 21st century skills in terms of course, gender and age. The study employed the descriptive, evaluative, comparative and correlational methods of research. The descriptive method was used to describe the characteristics and the competency level of 21st century skills of 34 students enrolled in the first semester school year 2019-2020 at Camarines Sur Institute of Fisheries and Marine Sciences, Philippines. The percentage, ranking, and average weighted mean, and one-way ANOVA were used for data and statistical analysis in determining the interpretation based on the 4-point Likert's rating scale used. The study reveals that the overall level of competency of 21st century skills of Computer System Servicing Students with total rating mean of 3.064 which is interpreted as moderately competent which implies that the students can apply their skills in simple situations. Therefore, it is necessary to improve the 21st century skills of CSS Students to reach the level of very competent through strengthening the offering of program by developing diploma programs on TVET or the PQF level V qualifications, participate in extra-curricular activities, and strengthen industry partnership for industry immersions, on-the-job training or dual-training programs, upgrade training facilities, tools, and equipment.

Index Terms— 21st Century Skills, Computer System Servicing Students, Technical Vocational Program

INTRODUCTION

The Fourth Industrial Revolution also known as *Industry 4.0*, challenge the Philippine educational system to be at par to the global standard. TESDA as government agency mandated to manage and supervise the TVET programs in the Philippines aims to produce a globally competitive workforce [1]. To address this, TESDA promulgates and implements several projects, programs and policies to ensure the quality of the TVET in the country such as development of Training Regulations (TRs), alignment of the training program to the Philippine TVET Qualification Framework (PTQF), implementation of competency-based training, regulating the TVET programs thru the Unified TVET Program Registration and Accreditation System (UTPRAS), recognizing TVET programs that exceed to the minimum requirements and giving incentives to the institutions identified as Center of Technical Excellence (CENTExes), Distinctive Area of Competence (DAC) and System of TVET Accreditation and Recognition (STAR) program[2-7].

To adapt and excel in this revolution, 21st century skills are necessary. TESDA identified nine 21st century skills, these are the collaboration and teamwork, communication, learning and innovation, critical thinking and problem solving, environmental literacy, information technology, life-long learning, and career development, occupational health and safety, and entrepreneurship[8].

TESDA Technology Institutions (TTIs) as a state-run TVET provider must develop programs to cater to the development and enhancement of the 21st century skills possessed by the students while they are in the training period and school supervision. Camarines Sur Institute of Fisheries and Marine Sciences (CASIFMAS) as one of the TTIs in the Bicol region located at municipality of Pasacao, Camarines Sur continuously complying to the TESDA imperatives in order to provide quality TVET programs to the constitu-

ent and to the nearby municipalities and to help them to become productive and employable locally and internationally. CASIFMAS as a training institution, it is necessary to evaluate the level of competence of the students to develop a program intervention to help the students in developing and enhancing their 21st-century skills.

OBJECTIVE OF THE STUDY

This study aims to assess the 21st Century of Computer System Servicing (CSS) Students.

Specifically, the objectives of the study are:

1. Describe the profile of the Students;
2. Determine the level of competency of the 21st Century Skills possessed by Computer System Servicing Students;
3. Determine the significant difference in the 21st century skills of Computer System Servicing Students in terms of gender and age;

METHODS

The study employed the descriptive, evaluative, comparative and correlational methods of research. The descriptive method was used to describe the characteristics and the competency level of 21st century skills of the students. The similarities and differences of 21st century skills of the students in Computer System Servicing (CSS) NC II, a comparative method was used. The correlational method

was applied to determine the relationship between the 21st century skills of the students and the identified predictors.

The survey questionnaires were distributed to 34 EPAS NC II students enrolled at Camarines Sur Institute of Fisheries and Marine Sciences, Pasacao, Camarines Sur, Philippines in the first semester, the school year 2019-2020. The survey questionnaire used was based on the 21st century skills identified by TESDA.

Statistical Treatment Used

The percentage, ranking, and average weighted mean, one-way ANOVA, correlation, and multiple regression analysis were used for data and statistical analysis in determining the interpretation based on the 4-point Likert's rating scale used.

Table 1: Rating Scale and Verbal Interpretation

Scale	Range-Value	Verbal Interpretation
1	1.00 - 1.75	Incompetent
2	1.76 – 2.50	Less Incompetent
3	2.51 – 3.25	Moderately Competent
4	3.26 – 4.00	Very Competent

The researcher uses incompetent, less competent, moderately competent and very competent interpretation based on the rubrics for the level of competency of 21st Century skills possessed by the CSS Students.

RESULTS AND DISCUSSION

Profile of the Students

The distributions of respondents were 23.53% was male students while 76.47% was female students. It comprised of 8 male and 26 female of CSS Students. The majority of the respondents were female. The total respondents were 34 students. The data is shown in table 2.

25 Students were 16-20 years old, 6 of that is male and 19 of that were female. There were 1 male and 2 female respondent at the age of 21-25 years old. 1 male and 4 female were 26-30 years old and one female student age between 31 years old and above. This implies that the CSS Students were very young as they were newly graduates from senior high school.

Table 2 Computer System Servicing Students' Profile

Age	Frequency		Total
	Male	Female	
16-20 years old	6	19	25
21-25 years old	1	2	3
26-30 years old	1	4	5
31 and Above	0	1	1
Total	8	26	34

Table 3 shows the cross-tabulation of the 21st Century Skills in terms of Age and Gender of the students. The 21st century skills of CSS students have an over-all weighted rating mean of 3.098 which is interpreted as moderately competent. Female and male CSS students have moderately competent 21st century skills with the over-all weighted mean of 2.579 and 3.257 respectively. It also observed that female CSS students have a higher competency level of 21st century skills as compare to male CSS students. As shown in table 5.

Table 3. 21st Century Skills of Computer System Servicing Students in terms of Age and Gender

Age	Gender		Total WM	VI
	Male	Female		
16-20 years old	2.587	3.222	3.069	MC
21-25 years old	2.510	3.075	2.887	MC
26-30 years old	2.600	3.378	3.222	MC
31 and Above	-	3.820	3.820	MC
Over-All WM	2.579	3.257	3.098	MC

A: 16-20 years old; B: 21-25 years old;
C: 26-30 years old; D: 31 years and above
MC: Moderately Competent

21st Century Skills of Computer System Servicing Students

The level of competency of the 21st century skills of CSS students in CASIFMAS during the first semester, the school year 2019-2020 is shown in Table 4.

Table 4. Level of Competency of the 21st Century Skills of Male and Female TVET Students.

21 st Century Skills	Mean		Total MW	Rank	VI
	Male	Female			
OHS	2.575 ⁵	3.408 ¹	3.212	1	MC
LLCD	2.723 ²	3.339 ⁴	3.194	2	MC
IT	2.425 ⁹	3.385 ²	3.159	3	MC
CTPS	2.450 ⁸	3.362 ³	3.147	4	MC
Entrep	2.725 ¹	3.254 ⁶	3.129	5	MC
Com	2.500 ^{6.5}	3.292 ⁵	3.106	6	MC
CT	2.650 ^{3.5}	3.100 ⁷	2.994	7	MC
LI	2.650 ^{3.5}	3.096 ⁸	2.991	8	MC
EL	2.500 ^{6.5}	3.077 ⁹	2.941	9	MC
Over-All WM	2.579	3.257	3.098	-	MC

OHS: Occupational Health and Safety; LLCD: Life-long Learning and Career Development; Com-Communication; IT: Information Technology; Entrep-Entrepreneurship; CTPS: Critical Thinking and Problem Solving; CT: Collaboration and Teamwork; LI: Learning and Innovation; EL: Environment Literacy; N: Population WM: Weighted Mean; VI: Verbal Interpretation; MC: Moderately Competent; 1-9: Ranking

Among the skills identified by TESDA, CSS Student rated the Occupational Health and Safety Skills with the highest rating

mean of 3.212 which means that the CSS students are "moderately competent" in OHS Followed by Life-long Learning and Career Development (3.194), Occupational Health and Safety (3.088), Information Technology Skills (3.159), Critical Thinking and Problem Solving (3.147), Entrepreneurship (3.129), Communication skill (3.106), Collaboration and Teamwork (2.994), Learning and Innovation (2.991) and Environment Literacy got the lowest rating of 3.941. All the 21st century skills of CSS Students were all under a moderately competent level which means students can apply the skills in simple situations.

In general, the overall rating of 21st Century Skills of CSS students is 3.064 and interpreted as moderately competent with means that the students can apply the 21st century skills in simple situations.

Both male and female CSS students have a moderately competent 21st century skills.

Significant Difference in the 21st Century Skills Computer System Servicing Students in terms of Gender and Age

Table 5. Test of Significant Difference in the 21st Century Skills between Male and Female CSS Students

	t	df	Sig. (2 tailed)	Decision on Ho @ 0.05
Between Groups	-5.147	32	.000	Reject

Table 5 shows the summary of the independent sample "t" indicate that the competency level of 21st Century Skills between Male and Female Students, $t(32) = -5.174$. Since sig. value is lesser than 0.05, therefore reject H_0 and accept H_a . Therefore, the Competency Level of 21st Century Skills of the CSS Students has a significant difference between 21st Century Skills of Male and Female Students.

Table 6. Test of Significant Difference in the 21st Century Skills among Age Level of the CSS Student: 16-20 years old, 21-25 years old, 26-30 years old, and 31 years and above

	Mean Square	F	Sig. (2 tailed)	Decision on Ho @ 0.05
Between Groups	.251	1.377	.269	Accept

Table 6 shows the summary of the one-way ANOVA that indicates that the competency level of 21st century skills among the age level of the students the $F(3) = 1.377$. Since sig. value is higher than 0.05, therefore accept H_0 and reject H_a . Therefore, the competency level of 21st century skills of the students has no significant difference among age levels.

CONCLUSIONS AND RECOMMENDATIONS

The study aims to determine the level of competency of the 21st century skills of Computer System Servicing students. Based on the findings of the study, it is concluded that the 21st Century Skills of the CSS Students in CASIFMAS is moderate competent. It implies that the students can apply their skills in simple situations. Therefore, it is necessary to improve the 21st century skills of CSS Students to reach the level of very competent through strengthening the offering of program by developing diploma programs on TVET

or the PQF level V qualification, participate in extra-curricular activities, and strengthen industry partnership for industry immersions, on-the-job training or dual-training programs, upgrade training facilities, tools, and equipment.

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