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Fostering Students and Graduate Candidate Level of 21st Century Skills

(A survey study conducted at a University)

Hadiyanto Hadiyanto, Muhaimin Muhaimin, Noferdiman Noferdiman, Syamsurizal Syamsurizal, Yuliusman Yuliusman, Nazurti Nazurti, Syaiful Syaiful

Education a 26 Teachers' Training Faculty

Universitas Jambi

Jambi, Indonesia

hadiyanto@unj.ac.id

Abstract—This study is aimed to examine skills of 21st century students including three main skills; soft skill, hard skill and competitiveness. Soft skill was classified into six sub-skills; communication, IT, numeracy, learning how to learn, problem solving, and teamwork. Ten indicators indicated hard skills, while competitiveness includes entrepreneurship, life-long learning and employability. Students' self-report questionnaire was distributed to 600 hundred of the second to fifth year students at Science Technology, Humanities, Economic and Business, and Husbandry faculty. As many as 507 filled questionnaires were returned. The findings show that the overall 21st century skills of students were at average level. Soft skills, hard skills and competitiveness of students were at average level. All of sub components of soft skills and competitiveness were also at average level. These findings implied that the graduate candidate was not prepared enough with 21st century skills, which are very urgent to be possessed today. The institution must think about the new curriculum policy to embed 21st skills into teaching and learning process.

Keywords—21st century skills; soft skills; hard skills; teaching and learning; higher education

I. INTRODUCTION

The growing and continuing issue of HE and Universities in ASEAN have demanded University to provide students with the 21st skills that are suitable to the global enterprise needs, where the fresh graduates should bring the skills to the workplace. As stated also by Rajadit and Partnership for 21st century skills [1,2], all graduates need 21st century skills increasing their marketability, employability and readiness for citizenship.

In Indonesia, emphasizing students with 21st century skills has already stated in the higher education curriculum based on Indonesian Qualification Framework, KKNI 2013. Furthermore, Ristekdikti stated that teaching and learning process at University must bring the students to acquire more soft skills rather than hard skills during their learning at Universities [3]. Students are expected to possess individual competitiveness not only at job market but also in their career

development in the future. Hard skills should be acquired and developed through soft skills practices in the classroom [4,5].

The current study is one of research activities under LPDP Fund conducted a survey research to measure student 21st century skills based on self-evaluation questionnaire of 21st century skills. This study was conducted at the Faculty Science and Technology, Humanities, Economic and Business, Husbandry, Universitas Jambi. The findings were focused on level of students' soft skills in terms of communication, numeracy, IT, learning how to learn, problem solving, teamwork, and hard skills.

II. 21ST CENTURY SKILLS: SOFT SKILLS, HARD SKILLS

21st century skills include three major skills, soft skills, hard skills and competitiveness. Soft skills is defined as practical activities applied to generate and developed hard skills in the students' learning context and graduates' working context. This definition based on analysis and synthesis from related articles as stated in Hadiyanto [2,6]. Students' soft skills were developed through students' engagement in learning activities. Students must learn the content knowledge by their learning activities. Communication skill is defined as the ability of using English to express and exchange ideas by using feelings of thought a variety of verbal and non-verbal media, including speech and written text as also to synthesis information gained from relevant resources [7-9]. IT Skill, then defined as the competence of using technology of computers as well as its' device and programs, such as using Microsoft office, internet, website, email, messenger, downloading and uploading, applications, online conference, necessary tool and application to access, gain, create, manage and expose information [8].

Numeracy skill refers to the ability of using basic mathematic calculation, interpreting graphical information, timing, prioritizing tasks and sequencing of job or activities [7-9]. Learning skills is defined as the ability of using strategies as well as doing evaluation on self-learning strategy, seeking for the weakness and coming to better way and output of learning, it includes gaining general and detailed information, knowledge and skills in order to achieve the goal of learning

[6-8, 9]. **Problem solving skills**, which is the ability to tackle problem systematically and appropriately in appropriate situation in order come out with an appropriate solution [7,9].

The last aspect of soft skills is working with others. Working with others refer to a capacity to interact effectively with other people both on a one to one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a goal [10].

Hard skills refer to subject content knowledge, core concepts, ideas, values, and facts, related with students' selected discipline that can be practiced and applied in the real world integrated setting. Specifically, hard skills are defined the ability of person using and generating his/her major specific knowledge skills in the real context of learning and working, and it is blended with soft skills [6,11,12].

Competitiveness refers to the eagerness and the effort of a person to apply, maintain, and improve and promote his/her soft skills and hard skills in his/work, task and learning consistently. Competitiveness categorized into three capacities; lifelong learning, entrepreneurship and employability. The level of competitiveness level was assumed to be affected by the level of his/her soft skills and hard skills [6,11,12].

III. RESEARCH METHOD

The target population of this study was Students of Universitas Jambi. Four faculties were selected out of 11 eleven faculties for the location of data collection; Science and Technology, Husbandry, Humanities, Economic and Business faculty. The sample of the study was third year students that were selected by purposive sampling. The total sample used in the study was 506 students. The data for this study were generated using a quantitative method. A questionnaire was conducted to elicit student self-reports regarding their level of 21st century skills. The students were asked to respond each statement about their level of soft skills, hard skills and competitiveness using a 5-point Likert scale (never, rarely, sometimes, often, and very often). The mean score of the respondents' level of 21st century skills was calculated and interpreted in five levels. Table 1 shows that a mean score between 1.00 and 2.33 indicates a low level of soft skills and hard skills, a mean score between 2.34 and 3.66 an average level, and a mean score between 3.67 and 5.00 a high level of soft skills and hard skills.

TABLE I. MEAN INTERPRETATION OF 21ST CENTURY SKILLS

Mean Score	Level
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.40	Average
3.41 – 4.20	High
4.21 – 5.00	Very High

IV. FINDINGS

A. Overall Levels of Students' 21st Skills

According to the findings, the students showed mean score of 21st century skills in overall, softs skills and hard skills (2.97

of 5.00) is at average level. A closer examination of the mean are given by the students to each soft skill components shows that their communication, IT, numeracy, learning how to learn, problem solving, and team Work were at average level (see Table 2).

As displayed in Table 2, the mean scores of overall 21st century skills were at the average of 3.06. This score means that the students were at an average level of 21st century skills (Refer to Table 1). Soft skills with all components also yielded mean score at average level. Ironically, looking at the mean score of the aspect 'hard skills', the respondents, scored only at the average level (mean = 3.01). Nonetheless, referring to standard Competency, one of the competency that one must have is the capability to master own subject content [3]. Students also rated their competitiveness and its' sub-components; entrepreneurship, lifelong learning and employability at average level. This signifies that BEd (Hons) undergraduates have not acquired 21st century skills and terribly do not master the subject specific competency yet to be good teachers.

TABLE II. MEAN AND LEVEL OF STUDENTS 21ST CENTURY SKILLS

21 st Century Skills	Mean	S.td	Level
Soft Skills	2.87	.447	Average
Communication Skills	3.10	.525	Average
IT Skills	2.97	.470	Average
Numeracy	3.12	.443	Average
Learning How to Learn	3.02	.459	Average
Problem-solving Skills	3.37	.469	Average
Team Work	3.07	.363	Average
Hard Skills	3.01	.454	Average
Entrepreneurship	3.09	.476	Average
Lifelong Learning	3.29	.536	Average
Employability	3.12	.448	Average
Competitiveness	3.16	.424	Average
Overall 21st Century Skills	3.09	.353	Average

B. Students 21st Century Skills based on Year of Study

As displayed in Table 3, second year until fourth year students rate their softs skills, hard skills, competitiveness and 21st century skills at average level, mean in the range 2.61 – 3.40 (see Table 3). These findings mean that the students' 21st century skills were not increased from year to year. Ironically, 2nd year students show quite lower mean score compared with second year, third year and fourth year students. The reason of the findings were most of the fifth year students had completed all subjects, and its effect to their level of 21st century skills become decrease due to the lack of practices in the classroom.

TABLE III. MEAN AND LEVEL OF STUDENTS' 21ST CENTURY SKILLS BASED ON YEAR OF STUDY

Semester	2nd year	3rd year	4th year	5th year
Communication Skills	2.95	2.82	2.97	2.88
IT Skills	3.20	3.02	3.27	2.95
Numeracy	3.11	2.88	3.10	2.97
Learning How to Learn	3.25	3.05	3.19	3.04
Problem-solving Skills	3.08	2.96	3.15	3.03
Team Work	3.53	3.25	3.59	3.33
Soft Skills	3.19	2.99	3.20	3.03
Hard Skills	3.11	2.92	3.21	2.88

Table 3. Cont.

Entrepreneurship	3.28	2.98	3.27	2.87
Lifelong Learning	3.44	3.17	3.53	2.96
Employability	3.25	3.05	3.25	2.88
Competitiveness	3.32	3.06	3.34	2.90
21st CENTURY SKILLS	3.21	3.00	3.24	2.98

V. DISCUSSION

The limited students' 21st century skills revealed by this study are therefore of concern. Specifically, our study questions the assumption that 21st century are an inevitable outcome of time spent studying at university, and as discussed, this raises an issue that has received considerable attention both within and beyond HE institutions. Universities researcher must conduct R & D for the model of students' 21st century skills development that is integrated with curriculum form University into the classroom. University must take a policy in order the model developed can be implemented through the faculty. Lecturers should make a standard syllabus, the connections between the various parts of the teaching syllabus more explicit, in order to forge stronger links between hard skills and soft skills. At the same time, the promotion of soft skills should be highlighted as one of the strengths of graduate training at university.

Graduates should possess at least high capabilities, competencies, hard skills, and soft skills that we call as 21st century skills when they completed their study. Graduates need to be equipped with soft skills and hard skills that they can use to 'sell themselves' to employers. By practising these soft skills in and outside of the classroom will enable students to become more effective, independent learners during their studies, and will enhance their employment prospects following graduation. As a result, the university graduate should leave with three main attributes, namely employability, life-long learning, and good citizenship [6,9,13]. In short, this study contributes to the issues surrounding the development of soft skills and hard skills at university, and its results may be used as one of justifications to develop the model of students' 21st century skills. That is also to inform, support, and plan innovations within the university curriculum and teaching at both universities.

VI. CONCLUSION

This study was conducted at a selected university in Indonesia, which aims to identify the level of 21st century skills of the second year to the fifth year bachelor students. The overall findings conclude that students the 21st century skills. This signifies that these third year BEd (Hons) undergraduates at the institution were not strongly power by 21st century skills in term of softs skills, hard skills and competitiveness. The students were not engaged to practice the 21st century skills in the classroom practice. The authorities of the universities should consider the manner in which soft skills and hard skills could be embed with curriculum, syllabus and system assessment, and whether to make a certain level of 21st century

skills level a requirement of completing a degree programme within their institution. Finally, this study contributes to the issues surrounding the development of students' soft skills, hard skills and competitiveness at University and its results may be used as one of justification to develop the model of developing students' 21st century skills.

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