

## Formulating Employability Skills for Graduates of Public Health Study Program

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### ABSTRACT

Employability skills (ES) are important for effective and successful individual participation in the workplace. The main aims of the research were to identify important ES needed by graduates of Public Health Study Program Universitas Ahmad Dahlan (PHSP UAD) and to assess the achievement of the ES development that has been carried out by PHSP UAD. This study used a mixed method research with convergent design. Quantitative research was conducted with survey to graduates. Qualitative research was conducted with structured interviews to employers. Both data were analyzed separately and interpreted concurrently. Graduates and employers of PHSP UAD in broad outline were in line on the important ES needed in the workplace and the assessment of the achievement. Several ES consistently were considered important. The achievement of ES that were related to public health knowledge and its application were already high, meanwhile several important ES which are needed in the work place in the 21<sup>st</sup> century were still low. ES needed for graduates of PHSP UAD had been formulated. Curriculum revision is recommended to integrate ES into core academic activities to promote the development of ES needed in the work place in the 21<sup>st</sup> century.

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## 1. INTRODUCTION

Labour market and higher education in the 21<sup>st</sup> century are changing rapidly: globalization, rapid advances in information and communication technology, workplace diversifying, increasing role of private sector, decreasing role of the government to guarantee their citizens' employment; and increasing number of students at primary, secondary, and post secondary level of education. These conditions resulted in an increasing number of scholars and competition in the world of work [1]-[6].

The negative impacts of the conditions above for those who can not compete are increasing the number of unemployment. International Labour Organization (ILO) showed that in 2012, youth in Indonesia was 5,97 times more likely to be unemployed than those aged 25 years and above and in 2015 unemployment rate derived from a university education in the population aged 15 years and above was 5,34% [7],[8].

Unemployment can be anticipated by identifying the profiles of graduates who are needed in the workplace. Many studies suggest that employers need graduates who have two advantages, namely: cognitive advantages in subject specific and skills that are general in nature [9]-[14]. Generic skills which are specifically important to the success of an individual in the workplace are known as employability skills [15]. These skills are also known by different terms, namely: key skills, generic skills, workplace know-how, transferable skills, core work skills; and in Indonesia these skills are better known as soft skills [10],[16].

ILO defines employability skills as... “the skills, knowledge and competencies that enhance a worker’s ability to secure and retain a job, progress at work and cope with change, secure another job if he/she wants to quit or has been laid off and enter more easily into the labour market at different periods of the life cycle”. Core employability skills according to the ILO are grouped into 4 categories of skills, namely: learning to learn, communication, teamwork, and problem solving [10]. Association School of Public Health (ASPH) recommends that in the 21<sup>st</sup> century public health professionals need to be able to work together and communicate with professionals from different disciplines, between institutions across organizational boundaries; capable of using information technology; understand the diversity and culture; professional; leadership; program planning; and system thinking [4].

Employability development in higher education requires a special strategy. Employability development process requires 3 main parties and 3 important processes involved. Three main parties, namely: students, institutions of higher education and employers. Students are responsible for selecting and engaging with employability development opportunities provided by higher education institutions and get involved with extra-curricular activities. Pedagogic process, self reflection, and articulation of ability and experience are 3 important processes needed in employability development [2].

In 1996 UNESCO has initiated the concept of "liberal/general education" which is based on the four pillars of education (learning to know, learning to do, learning to live together and learning to be). This concept is a broad interdisciplinary curriculum that focus on creativity, critical thinking, cultural awareness, problem solving, and communication skills [1],[17]. Aligned with the strategy that has been initiated by UNESCO, ILO recommends a strategy that gives greater emphasis on learning by doing, working in groups, and thinking creatively. ILO also emphasizes that integration of employability skills into core academic activities is better than only providing a "skills curriculum" separately [10].

Public Health Study Program Universitas Ahmad Dahlan (PHSP UAD) was established since 2003. It is part of 172 public health higher education in Indonesia. To be a school of Public Health who excel in science and technology in the field of public health, professional, dedicated and able to provide services based on morals and ethics of Islam are the vision of PHSP UAD. Two programs are provided, namely: regular (high school graduates and equivalent as the requirement) and non regular (diploma degree as the requirement). Recent curriculum has been used since 2012 with several important activities, which are: face to face lectures (120 credits-83.3%), laboratory work and field activities (@10 credits-@ 6.9% respectively). Since 2013, PHSP UAD was accredited B from the National Accreditation Board of Higher Education [18]-[20].

This study was conducted to identify the employability skills needed by graduates of PHSP UAD and to assess the achievement of the employability skills development that has been carried out by PHSP UAD.

## 2. RESEARCH METHODS

A mixed method research with convergent design was conducted for the study. Quantitative and qualitative studies were conducted at the same time, December 2014 to February 2015. Both research methods have the same priority. Quantitative and qualitative data were analyzed separately and then interpreted concurrently to compare and to relate 2 perspectives [21].

### 2.1. Quantitative Method

Quantitative research was conducted with survey to PHSP UAD graduates, both from regular and non regular study program. The inclusion criteria were: graduates who have been working. The research sample was determined by convenience sampling with a minimum number of 100 respondents for the descriptive research [22].

Generic Skills Questionnaire from Tuning Educational Structure was used as the instrument. This questionnaire has been used extensively in Europe on Tuning research in 2006 and in the subsequent Tuning studies. The questionnaire contains 30 items of competencies/skills consisting of three constructs, namely: instrument competencies, interpersonal competencies, and systemic competencies. The questionnaire measured those variables on three aspects: importance, level of achievement and ranking. Assessment of the importance was done by selecting a score from 1 to 4 on the likert scale at 30 existing competencies/skills, namely: 1=not important; 2=less important; 3=moderately important; 4=important. Level of achievement was measured in the same way, namely: 1=none; 2=less; 3=moderate; 4=good. Blank space was provided for the respondent who wanted to add other skills that were considered important but not included in the 30 existing skills. Ranking was compiled based on five skills in order of importance. For each respondent, the first rank scored 5 points, second rank scored 4 points, and so on, and finally the fifth scored 1. Scored 0 was used for

unselected competencies. Competencies/skills further arranged in order of the highest number of points to the lowest.

The questionnaire had been translated into Indonesian by researchers and has been consulted with colleague in the field of Medical Education, Public Health, and English Department. Legibility test was performed repeatedly to 5 people from PHSP UAD with the intention that the respondent can understand the contents of the questionnaire.

Quantitative research was conducted in the following steps: 1) data of the respondent was obtained through existing data in the alumni book, followed by snowball method to get the newest data; 2) researchers contacted prospective respondents individually, asking their willingness to become respondents - if respondents expressed their willingness, the researchers will then send cover letter, brief research explanation, informed consent and a questionnaire via email/post/direct visit as agreed. Online questionnaire displayed with Google Drive media. Questionnaires sent by mail were accompanied by a stamped envelope and address to return the questionnaire. The questionnaire also displayed on the Group of PHSP UAD Graduate Association (IKA KESMADA) on Facebook. Graduates who could not be contacted personally, can access the questionnaire via this social media.

The results of quantitative research was analyzed descriptively and then followed by analysis of the importance and level of achievement of competencies/skills with Important Performance Analysis (IPA) as shown in Figure 1. IPA was done in the following stages: the mean of each item in 30 competencies/skills on the questionnaire visualized in the diagram AIR (Martilla& James) [13]. X axis in the diagram is the level of achievement, while the Y axis is the importance. Median of the level of achievement was used as a central point on the X axis and the median of the importance was used as a central point on the axis Y.

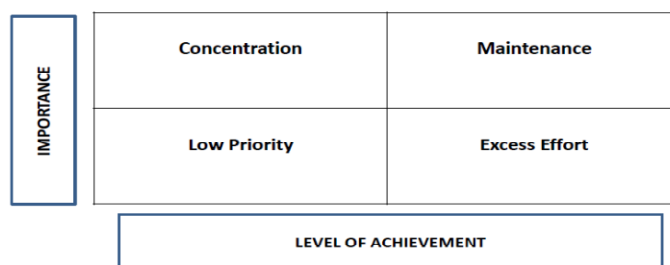


Figure 1. Diagram AIR-Martilla& James (Cited from Gonzales and Wagenaar, 2006<sup>13</sup>)

Interpretation of the diagram (Figure 1):

- a. Concentration: competencies that were considered very important but in which there was little achievement.
- b. Low priority: competencies which were not considered very important and in which achievement was low.
- c. Excess effort: competencies that were not considered very important but in which achievement was high.
- d. Maintenance: competencies that were considered important and in which achievement was high.

## 2.2. Qualitative Method

Qualitative research was conducted by structured interview to the employers. The inclusion criteria were employers who are working in an institution that is located in Yogyakarta (DIY) and Magelang and has had collaboration with PHSP UAD, and / or have staffs graduated from PHSP UAD.

The research instrument was a structured interview guidelines with four questions, namely: 1) are the PHSP UAD graduates must be equipped with employability skills along with subject specific skills; 2) what are the employability skills needed by graduates of PHSP UAD; 3) how is the achievement of employability skills development that have been carried out by PHSP UAD; 4) what can be done by PHSP UAD to develop graduates employability skills.

The time for the interview was determined based on the agreements between respondents and researchers and the interview started with brief explanation of the research and the signing of the consent form. Results of the interview were converted into a transcript immediately after the interview and prior to the next interview. Transcripts were analyzed with open coding by researchers and assisted by one research assistant as a lecture at PHSP UAD. Transcripts were analyzed using items from Tuning Generic questionnaire as the guidelines.

**3. RESULTS AND ANALYSIS**

**3.1. Quantitative research results**

**3.1.1. Characteristics of quantitative research respondents**

Total data received were 104 respondents, with details as follows: 86 respondents fill out an online questionnaire, two respondents sent a questionnaire by mail, and 16 respondents were visited directly. Three data could not be used for the following reasons: one incomplete questionnaire and two not working respondents. Total data analyzed was 101. The characteristics of quantitative research respondents are shown in Table 1.

Table 1. Characteristics of quantitative research respondents

Characteristic		N	%
Sex	Male	43	42.6
	Female	58	57.4
Age	<30 years old	68	67.3
	>30 years old	33	32.7
Educational program background	Regular	69	68.3
	Non regular	32	31.7
Entering year	2003-2007	52	51.5
	2008-2011	49	48.5
Years of Graduation	2005-2009	38	37.6
	2010-2014	63	62.4
Present employment	Working in a position related to public health*	70	69.3
	Working not in the field of public health*	18	17.8
	Unemployed, but have previously been employed, further study*	13	12.9
Education received at PHSP UAD	Very much	9	8.9
	Much	53	52.5
	Some	34	33.7
	Little	4	4
Employment potential by the degree from PHSP UAD	Very little	1	1
	Very poor	1	1
	Poor	2	2
	Fair	39	38.6
	Good	51	50.5
	Very good	8	7.9

\*Graduates were distributed in the area of Sumatera, Kalimantan, Java, Sulawesi, Nusa Tenggara Barat (NTB) and Nusa Tenggara Timur (NTT).

**3.1.2. Important Performance Analysis (IPA)**

Figure 2 shows the result of IPA. Three items of competency with the lowest level of importance are: knowledge of a second language (7), ability to work in an international context (23), and understanding of cultures and customs of other countries (24). Those three lowest competencies are “international” in nature. The overall list of competencies in Figure 2 can be seen in Table 2.

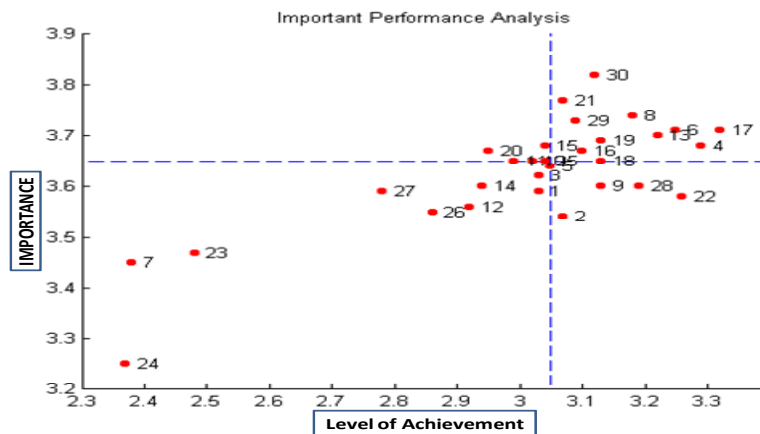


Figure 2. Diagram of Important Performance Analysis (IPA)

Table 2 . The list of competencies from Important Performance Analysis (IPA)

Concentration		Maintenance	
1.	Capacity to learn (10)	1.	Basic general knowledge in the field of public health (4)
2.	Information management skills (11)	2.	Oral and written communication in your native language (6)
3.	Problem solving (15)	3.	Elementary computing skills (8)
4.	Ability to work in an interdisciplinary team (20)	4.	Capacity to adapt to new situations (13)
5.	Ability to work autonomously (25)	5.	Decision making (16)
		6.	Teamwork (17)
		7.	Interpersonal skills (18)
		8.	Leadership (19)
		9.	Ability to communicate with non-experts (in the field) (21)
		10.	Concern for quality (29)
		11.	Will to succeed (30)
Low priority		Excess effort	
1.	Capacity for analysis and synthesis (1)	1.	Capacity for applying knowledge in practice (2)
2.	Planning and time management (3)	2.	Research skills (9)
3.	Grounding in basic knowledge of the profession in practice (5)	3.	Appreciation of diversity and multiculturalism (22)
4.	Knowledge of a second language (7)	4.	Ethical commitment (28)
5.	Critical and self-critical abilities (12)		
6.	Capacity for generating new ideas (creativity) (14)		
7.	Ability to work in an international context (23)		
8.	Understanding of cultures and customs of other countries (24)		
9.	Project design and management (26)		
10.	Initiative and entrepreneurial spirit (27)		

The five highest ranking among those 30 competencies are: 1) capacity for applying knowledge in practice, 2) basic general knowledge in the field of study, 3) capacity for analysis and synthesis, 4) problem solving, and 5) capacity for generating new ideas (creativity).

### 3.2. Qualitative research results

#### 3.2.1. Characteristics of the qualitative research respondents

Total respondents were 10 people aged 38-65 years. Eight respondents are male and two are female. Respondents came from various institutions fit to the inclusion criteria, namely: Primary Health Center, Health Office, Hospital, Health Training Centers, Health Laboratory Centers, Company Hygiene and Health Center, Seed Fodder Development and Animal Diagnostic Center.

#### 3.2.2. The importance of employability skills for PHSP graduates

All employers in this study agreed to the need to equip PHSP UAD graduates with employability skills. Respondents were more familiar with the term soft skills.

*“Graduates should have non-technical competencies to help them apply technical competencies appropriate to the profession in the world of work”* (Respondent 1)

*"The value stated in the certificate is not enough for the world of work. The contribution of value beyond the certificate is 40%"* (Respondent 5)

#### 3.2.3. Important and less important employability skills according to the employers

In general, employers' perception on important and less important employability skills are in line with graduates perception. Twenty seven of competencies/skills in the Tuning questionnaire were considered important and three skills that are "international" in nature were considered less important. Empathy appears as an additional competency from one employer. Sixteen competencies/skills were consistently mentioned by employers as important competencies/skills as shown in Table 3.

#### 3.2.4. Achievement of competencies/skills from employers perspective

Employers assessed the achievement of employability skills related to public health knowledge and its application were already high, meanwhile the achievement of several important employability skills which are needed in the work place in the 21<sup>st</sup> century such as: capacity for analysis and synthesis, initiative and entrepreneurial spirit, critical and self-critical abilities, capacity for generating new ideas (creativity), leadership, and planning and management were still low.

Table 3. Important competencies consistently mentioned by employers

1. Capacity for analysis and synthesis	9. Teamwork
2. Capacity for applying knowledge	10. Interpersonal skills
3. Basic general knowledge in the field of public health	11. Leadership
4. Oral and written communication in your native language	12. Ability to work in an interdisciplinary team
5. Capacity to learn	13. Ability to communicate with non-experts (in the field)
6. Critical and self-critical abilities	14. Appreciation of diversity and multiculturalism
7. Capacity for generating new ideas (creativity)	15. Project design and management
8. Problem solving	16. Initiative and entrepreneurial spirit

High achievement:

*"I think, in general, the knowledge is good enough"* (Respondent 7)

Low achievement:

*"Many of the results of the monitoring are stopped at the data. Not analyzed, not processed into good information ... passive, waiting for orders from the boss"* (Respondent 4)

*"Two ways of dialogue, not only presentation, but how to attract people... how to educate healthy people"* (Respondent 3)

### 3.2.5. Employers' suggestion to develop employability skills

Several actions can be done to develop employability skills of PHSP UAD graduates according to employers, namely: 1) increase the portion of practice, 2) introduce multiculturalism in Indonesia, 3) outbond, 4) strengthening the managerial concept, 5) detailed syllabus for each topic, 6) inviting guest lecture from practitioner with academic vision, 7) establish skills laboratory, and 8) expand the networking.

Analysis of quantitative and qualitative data showed that PHSP UAD graduates can work in various work setting: in the field of public health and also in other sectors. Graduates and employers of PHSP UAD broadly outline an agreement on the important and less important employability skills needed in the work place and its achievement.

In broad outline 27 skills in the Tuning questionnaire were considered important and three skills that are "international" in nature were considered less important. Similar result was also supported by Tuning research in 2006 [13]. The importance of three "international" competencies supposed to increase in the future in line with globalization in the health sector that inevitably has to be faced by PHSP graduates and to promote the achievement of PHSP UAD vision and mission.

Furthermore, by conducting in-depth analysis of the results from the two methods, it was shown that there was difference emphasis on competencies/skills that are considered important from graduates and employers perspective. Graduates gave more emphasis on competencies/skills such as public health knowledge and its application whereas employers gave more emphasis on cognitive, affective, and leadership competencies. The same phenomenon also similar on the research conducted by Saunders &Huzel in 2010 [14].This phenomenon can be explained by Dreyfus model (1986) in the skills development process [23]. Dreyfus divided skills acquisition into 7 stages, starting from: beginner level (entry level), capable, competent, proficient, expert, advanced expert, and luminary.Majority of PHSP graduates as respondents in this study aged less than 30 years. They were at the entry level stage. At this stage, they show several characteristics such as: work with rules, regulations, and need specific guidelines; the understandings about the whole organization are still lacking; the responsibility is limited; and the majority of its decisions are routine in nature. Meanwhile, employers as respondents in this study were on capable stage and above. People in these stages will show several characteristics such as: lifelong learner, more advanced in the area of cognitive and affective competencies, more intuitive, more sought as a mentor, and more recognized as a leader.

Formulation of employability skills for graduates of PHSP UAD was arranged based on: 16 competencies/skills that are consistently considered important by employers, IPA and five highest ranking of competencies/skills according to PHSP graduates. Several guidelines were also used, namely: Indonesian standards competencies of public health scholars (*standarkompetensisarjanakesehatanmasyarakat*); four core employability skills of ILO; four pillars of education of UNESCO; and employability skills of public health graduates according to the Association School of Public Health (ASPH) [4],[10],[17],[24].Thirteen items of

competencies/skills formulated as competencies/skills that are considered most important for graduates of PHSP UAD. Employability skills formulation can be seen in Figure 3. The figure illustrates the employability skills required by PHSP UAD graduates based on the importance: from the most important competencies/skills in the baseline to competencies/skills that are considered less important at the top.

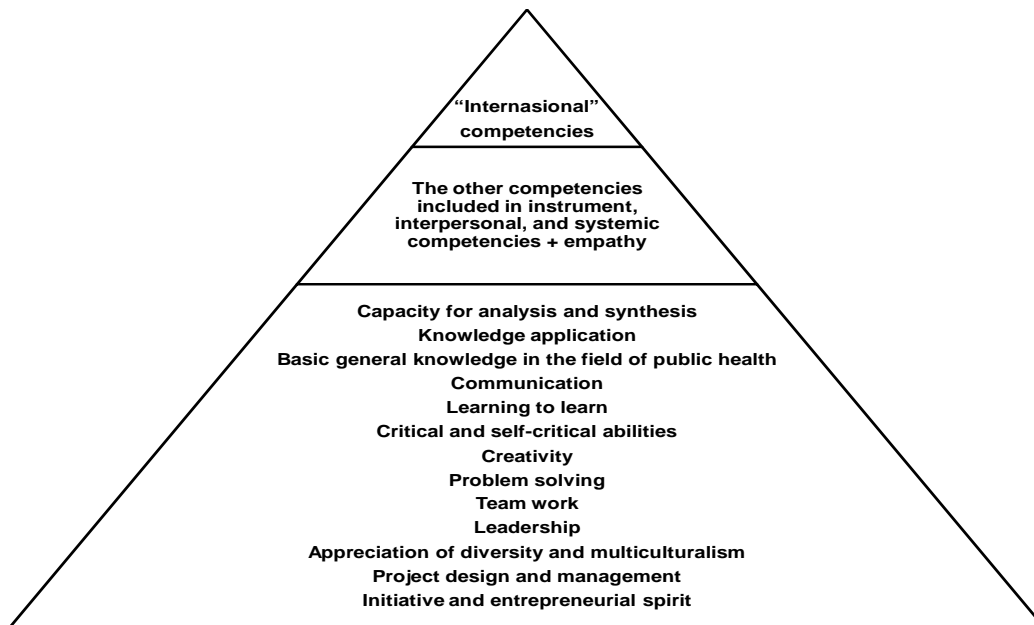


Figure 3. Employability skills needed for PHSP graduates based on the importance

Basic general knowledge in the field of public health, capacity for applying knowledge in practice, capacity of analysis and synthesis, communication, problem solving, capacity for generating new ideas (creativity), initiative and entrepreneurial spirit, learning to learn, critical and able to criticize themselves, project design and management all play an important role in the mastery process of knowledge and skills [16]. Competencies/skills in this group are related with learning to know and learning to do according to UNESCO. Both have a broad sense, it is not only gain detailed knowledge and being able to perform a technical competencies emphasized in the conventional curriculum, but learning to master the instrument to get knowledge and being able to apply these competencies in the real and complex community [16],[17].

Leadership, teamwork, appreciation of diversity and multiculturalism are related to learning to live together and learning to be according to UNESCO. Learning to live together in an intelligent and peaceful way; and learning to be as learning to be a human who has knowledge, skills, and values that is conducive to develop his personality in aspects of intellectual, moral, cultural, and physic [17].

Empathy appears as an additional competency from employers. The definition of empathy according to Great Dictionary of Indonesian Language is able to understand what is thought and felt by others. Graduates who have empathy are expected to work with a good manner [25].

Respondents of qualitative research were limited by the inclusion criteria. Based on that reason, employers' assessment on the achievement of the employability skills development of PHSP UAD graduates could not represent the overall assessment. Quantitative data from PHSP graduates can represent a better figure of the competencies/skills achievement. IPA showed that 15 items of competencies/skills are located in high achievement areas, and 15 other items are located in low achievement areas. These result also supported by employers' perception on the achievement of employability skills of PHSP graduates.

Assessment of achievement showed slight differences on leadership competencies/skills. Graduates assessed leadership with high achievement, while employers assessed it with low achievement. Different perception between graduates and employers on leadership skills could explain this difference. Graduates defined leadership in accordance with the definition of leadership contained in the questionnaire, while employers assessed leadership by graduates of PHSP UAD who occupy a leadership position.

Several factors contributed to the high achievement of several competencies/skills, namely: the large portion of knowledge aspect (83.3%) and research subject (9%) in the curriculum, computer practice, health communication practice, field practice learning 1 and 2, community service work; extracurricular activities;

soft skills development program in the level of university; a diverse origin of PHSP UAD students from all over the Indonesian archipelago, independent living in Yogyakarta; Islamic subject in the curriculum and Islamic environment at UAD.

In addition to the skills with high achievement, attention should be given to the other 15 skills with low achievements. Most of these skills are competencies/skills that are needed to become lifelong learners and able to work in an interdisciplinary team (required competencies for public health professionals in the 21<sup>st</sup> century). PHSP UAD graduates will be accepted and success in various fields of science and workplace if they have generic competencies/skills [3],[16],[26].

Review of PHSP UAD curriculum indicated that the curriculum used is based on the aim to master the content of science and its applications (content based) as emphasized in the conventional curriculum. Complex health problems require non technical competencies/skills such as problem solving, leadership, and ability to work in an interdisciplinary team. In 2008, General Directorate of Higher Education (DIKTI) stated that the conventional curriculum is no longer appropriate for the era of globalization and rapid development of science and technology. Another opinion stated that curriculum with too much theory loads will give negative impact to the development of graduates employability skills [4],[27].

The concept of "liberal/general education" initiated by UNESCO since 1996 can be used as a guidelines. This concept is an interdisciplinary curriculum that focuses on creativity, critical thinking, cultural awareness, problem solving, and communication skills. This curriculum offers more programs to train professional skills using real problems in the field, broader cooperation with relevant departments to train inter professional collaboration, and reduce the amount of basic science content in the curriculum. Integration of employability skills into core academic activities is better than only providing a "skills curriculum" separately. Results from qualitative methods supported these concepts. Employers proposed to increase professional practice for skills training to prepare the graduates to work [1],[3],[10],[16],[26].

Convenience sampling method used in this study has the potential to provide bias selection and can affect the study results [22]. Researchers have tried to minimize this possibility by using a minimal sample size as recommended. Random sample method for further research can be done so that all graduates have the same opportunity to become research respondents.

#### 4. CONCLUSION

Employability skills for graduates of PHSP UAD had been formulated. PHSP UAD curriculum is not yet support the development of several important employability skills needed in the workplace in the 21<sup>st</sup> century.

#### RECOMMENDATION

Curriculum revision is recommended to integrate employability skills into core academic activities to promote the development of employability skills needed in the work place in the 21<sup>st</sup> century.

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