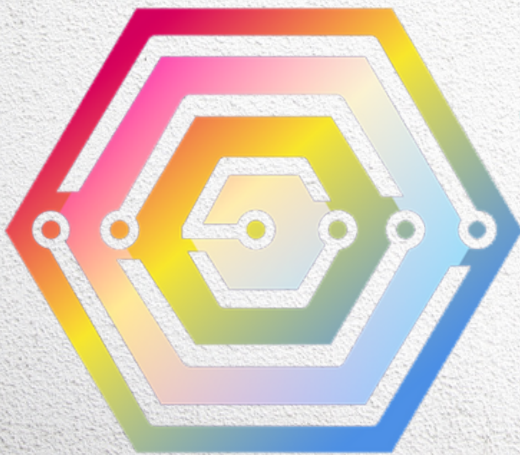




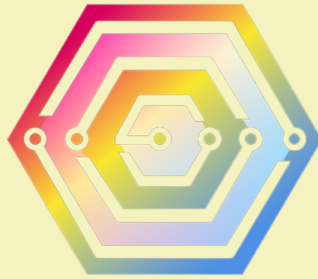
Proceeding:



4TH PIMC 2022

**4th Penang
International
Multidisciplinary
Conference 2022**

**PROCEEDING: 4TH PENANG INTERNATIONAL
MULTIDISCIPLINARY CONFERENCE 2022
(4TH PIMC 2022)**



4TH PIMC 2022

**4th Penang
International
Multidisciplinary
Conference 2022**

**PROCEEDING: 4th PENANG INTERNATIONAL
MULTIDISCIPLINARY CONFERENCE 2022
(4TH PIMC 2022)**

Date: 28 - 29 MAY 2022

Copyright 2022

Global Academic Excellence (M) Sdn Bhd

All rights reserved. No part of this publication may be reproduced in any form or by any means, whether electronically and/or mechanically including photocopying, recording or any means of storage of information and retrieval system, without the written consent of Global Academic Excellence (M) Sdn Bhd / Author.

eISBN: 978-967-2426-44-8

Published By:



GLOBAL ACADEMIC EXCELLENCE (M) SDN BHD -1257579-U

Lot 2 -11 Arked MARA Kota Bharu, Jalan Dato Pati, 15000 Kota Bharu ,Kelantan, MALAYSIA

Website: www.egax.org

Email: publication@egax.org



Contents

1. CAREER READINESS AMONG HIGHER EDUCATION STUDENTS: ISSUES AND CHALLENGES IN CAREER COUNSELLING 1
2. EDUCATION READINESS OF THE COUNSELORS OF HIGHER INSTITUTIONS IN PROVIDING COUNSELING SERVICES DURING COVID-19 PANDEMIC 6
3. FULFILLING THE ASPIRATIONS OF MALAYSIAN EDUCATIONAL BLUEPRINT 2013-2025: ISSUES AND CHALLENGES 14
4. CABARAN DAN KEBERKESANAN PENGGUNAAN SIMULATOR CISCO PACKET TRACER DALAM PEMBELAJARAN SAMBUNGAN VPN (*VIRTUAL PRIVATE NETWORK*) 20

CAREER READINESS AMONG HIGHER EDUCATION STUDENTS: ISSUES AND CHALLENGES IN CAREER COUNSELLING

Mohd Izwan Mahmud¹

Salleh Amat²

Abu Yazid Abu Bakar³

¹Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: izwan@ukm.edu.my)

²Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: sallehba@ukm.edu.my)

³Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: yazid3338@ukm.edu.my)

Abstract: *Career readiness focuses on the ability of career decision-making a part of being affected by external factors such as family, organisation, social and economy. Career decision-making ability among university students is important as an indicator of graduates' employability skills. This concept paper discusses the issues of career readiness as well as the factors that contribute to low career readiness among university students. The results of the analysis from the graduate marketability study report, previous studies and related references found that there are two main issues, namely the graduate marketability rate is still low for certain study programs and issues related to salaries earned by graduates are not commensurate with their qualifications. Career readiness is a psychological predictor factor that needs to be considered to help students have the skills needed in future careers. In the context of career counselling, the implications for career counselling and guidance; focus on the dysfunctional career thinking; the appropriateness of career interventions based on the needs of students; and evaluation and monitoring of structured career development programs. Suggestions for improvements to career development programs need to be made to provide effective career psychology support to students.*

Keywords: *Career counselling, career readiness, dysfunctional career thinking, university students*

Introduction

Graduate employability is measured by the extent to which university graduates get employment after graduation. The measure of graduates' employability is a benchmark for universities to ensure that graduates that are produced meet the needs of the market and graduates are employed upon graduation. The university's benchmark of producing competent and highly skilled graduates also influences national policies. The employment factor among employees with higher education qualifications to fulfil the job market in the 21st century is very important to ensure that the country is on track to achieve as a developed country. Various policies have been introduced from time to time in order to increase the graduates' employability to ensure the country's transformation agenda can be achieved. One of the

policies is to improve higher education capability to produce competent and high skilled graduates (Morshidi Sirat, 2005).

The university's challenge today is in line with the current needs to provide students with skills that suit their interests, abilities, and talents, improve their decision-making skills and information-seeking skills, and interpersonal relationships (Suradi Salim, 1996). These factors are elements that can measure students' career readiness in the process of making career planning. Career readiness is the ability of an individual to make appropriate career choices taking into account that factors that influence career development such as family, organisation, social and economy (Sampson et al., 2013). According Gysbers (2003), identified six career readiness skills: social competence, diversity of skills, positive work habits, personal qualities, personality and emotions, and entrepreneurship. However, Bullock-yowel et al. (2013) state that career readiness is a cognitive strategy such as the ability to make interpretations, problem-solving and decision-making ability.

Dysfunctional Career Thinking

In the context of career development, career decision-making is influenced by the past belief system either positively or negatively. Negative beliefs affect information processing in making career explorations, and job-seeking behaviour decreases (Reardon et al., 2006). The fundamental assumption of Cognitive Information Processing (CIP) theory assumes that career problem solving is a rational process in the socio-emotional context. Career problems are defined as the gap between the real self and ideal self. In contrast, negative career thinking is defined as the result of a person's thinking about assumptions, attitudes, behaviours, beliefs, feelings, plans or strategies related to problem-solving and career decision making (Sampson et al., 2013). This gap produces negative thinking that disrupts or prevents individuals from making decisions, especially related to career decisions. A rational process means that an individual can define a career through a learning process (Peterson et al., 1996).

The ability to make career decisions is related to career thinking that involves feelings, thoughts, attitudes, and beliefs of expectations (Bullock-yowell et al., 2013). Negative career thinking is an individual's dysfunctional thought that will affect career decision-making and problem-solving abilities. Individuals with low career decision-making efficacy tend to have negative career thinking. Thus, by identifying negative career thoughts help in planning appropriate intervention strategies (Sidiropoulou-Dimakakou et al., 2012; Thrift et al., 2012).

Issues and Challenges in Career Counselling

Past studies have found that undergraduate students in university experience low and moderate career readiness (Maznizam Mansor & Abdullah Mat Rashid, 2013; Zalizan Mohd Jelas et al., 2013; Yon, et al., 2012; Kaur, 2012; Hughes, 2011). Career readiness is a predicting factor to the ability and capability of higher education students in preparing themselves with systematic career planning and career exploration. Career readiness is influenced by an individual's ability to make appropriate career decisions taking into account factors that influence career development such as family, organisation, social and economy (Sampson et al., 2013; Reardon et al., 2012). The ability to make career decisions are related to career thinking that involves feelings, thoughts, attitudes, and beliefs of expectations (Bullock-yowell et al., 2013). However, negative career thinking is an individual's dysfunctional thinking that will affect the career decision-making process and problem-solving ability. Individuals with low career

decision-making efficacy tend to have negative career thinking. Therefore, by identifying negative career thinking can plan appropriate intervention strategies (Thrift et al., 2012).

Overall, it can be concluded that university students' career development can be explained to be a critical stage in the career decision-making process. Apart from the academic achievement factor, career planning is an essential factor that needs to be given attention by them. This situation is understandable that there are psychological factors in career development that can be linked to the ability to make career decisions. The ability to make career decisions can be enhanced through education either formally or informally (Kristin, 2009). Formal education is the application of coursework or program curriculum. In comparison, non-formal education is through career development programs such as career workshops/talks (resume writing, attending interviews, job hunting, etc.). Understanding students' need in career decision-making can help them plan and develop appropriate career interventions (Niles & Harris-Bowlsbey, 2013; Whiston & Blustein, 2013).

Past studies have found that many students lack confidence in their own ability to succeed academically and carry out tasks in the career they wish to pursue. In addition, respondents' career maturity level, self-career efficacy, and career decision-making ability were at moderate and low levels (Mohd Izwan et al., 2016). Some students experience a lack of confidence in making their own career choices and have poor self-efficacy, causing them to have difficulty visualising the forms of career tasks they would choose.

A thorough study of the Graduate Tracer Study System (SKPG) report between 2006 and 2018 showed an unchanged trend in unemployed graduates after six months of graduation (Ministry of Higher Education, 2019). In addition, there are also graduates who work in fields that are not aligned with the education they took in university (Norida et al., 2014). This issue has received the attention of the university and the ministry in finding a solution to address the issue of graduates who are unemployed upon six months of graduation. Among the factors why the output of higher education institutions is difficult to secure a job in the job market is because they do not have the ability to convince employers in terms of personality, appearance, self-confidence, lack of communication skills, lack of decision-making skills and incapable of working in groups (The National Higher Education Research Institute, 2003), low levels of readiness such as insecurity, negative attitudes, no job searching skills and communication skills problem (Norida et al., 2014). In the career development context, graduates who are unemployed upon graduation do not have a high level of career awareness and career maturity (The National Higher Education Research Institute, 2003), have negative career thinking (Reardon et al., 2013; Sampson et al., 2012; Kleiman, 2004; Sidiropoulou-Dimakakou et al., 2012) and low career self-efficacy (Zalizan Mohd Jelas et al., 2013).

Based on those discussions, the current university challenges fit with the current needs, which is to provide students with skills appropriate to their interests, abilities and talents, improving decision-making skills and information seeking skills, and interpersonal relationships. Besides, to determine the well-being and development of a country. This is because a higher level of education and skills are seen as the primary foundation needed to enable a country to compete in the era of globalisation and the knowledge-based sector. Thus, understanding the issues among graduates that affect employability and availability of work shows psychological factors such as the ability to make career decisions and career self-efficacy also affect a person's career

readiness. Therefore, appropriate career interventions are needed to improve students' career readiness to fulfil the job market's needs (Greene & Staff, 2012).

It follows that the implications of this study on the needs for the implementation of career development programs in universities require the following (i) conduct a study of current issues or phenomena; (ii) application of counselling and career counselling theory in the development of modules; (iii) test the validity and reliability of module/instrument; (iv) implement modules based on the suitability of population or target; (v) make a continuous evaluation of each activity in the module; and (vi) make continuous improvements to the module/instrument. These elements are implications to the needs for career intervention needs that can be implemented in career development programs towards university students.

Conclusion

Career readiness is an important element that needs to be considered, especially among university students where the education process between 3 to 5 years in university will be evaluated after graduation with the extent to which employability and job availability can be used as a benchmark to the quality of a university. Several government policies focusing on becoming a developed country by 2020, such as ETP, GTP, RMK10 and RMK11, PSPSTN and Malaysia Higher Education Blueprint 2015 – 2025, needs to increase competent workforce that contributes to the national economy. Psychological factors such as dysfunctional career thinking can be given attention to help students improve their self-confidence in the process of planning a systematic and structured career planning. This variable is a predictor to increase students' career readiness if appropriate interventions for students' needs are implemented.

References

- Bullock-yowell, E., Chason, A. K., Sampson, J. P., Lenz, J. G., & Reardon, R. C. (2013). Relationships among Career Thoughts, Career Interests, and Career Decision State. *The Canadian Journal of Career Development/Revue Canadienne de Développement de Carrière*, 12(1), 39 - 47.
- Greene, K. M., & Staff, J. (2012). Career programming. *New Directions For Youth Development*. 134.
- Gysbers, N. C. (2013). Career-ready students: a goal of comprehensive school counseling programs. *The Career Development Quarterly*, 61 (September), 283–289.
- Hughes, C. (2011). The influence of self-concept, parenting style and individualism–collectivism on career maturity in Australia and Thailand. *International Journal for Educational and Vocational Guidance*, 11(3), 197–210.
- The National Higher Education Research Institute (2003). Laporan Akhir Kajian Masalah Pengangguran di Kalangan Graduan. Pulau Pinang: Institut Penyelidikan Pendidikan Tinggi Negara (IPPTN).
- Kaur, P. (2012). Career maturity among adolescents in relation. *International Journal of Research in Education Methodology*, 1(1), 10–13.
- Ministry of Higher Education. (2019). *Laporan Kajian Pengesanan Graduan 2018*, Kuala Lumpur: Kementerian Pengajian Tinggi Malaysia.
- Kleiman, T., Gati, I., Peterson, G., Sampson, J., Reardon, R., & Lenz, J. (2004). Dysfunctional thinking and difficulties in career decision making. *Journal of Career Assessment*, 12(3), 312–331.

- Kristin, L. C. (2009). *Predicting career decision-making difficulties among undergraduate students: the role of career decision making self efficacy, career optimism, and coping*. Unpublished Dissertation. Southern Illinois University, Carbondale.
- Maznizam Mansor & Abdullah Mat Rashid. (2013). Career indecision : A cross-sectional survey among students of National Youth Skills Training Institutes. *Middle-East Journal of Scientific Research*, 17(8) : 1073-107.
- Mohd Izwan Mahmud, Amla Mohd Salleh, Zalizan Mohd Jelas, Norzaini Azman, & Abu Yazid Abu Bakar. (2016). Career interest and career information-seeking behaviour among students in Malaysian education system: A case study. *Jurnal Psikologi dan Kaunseling*, (7), 70 – 84.
- Morshidi Sirat. (2005). *Working paper transnational higher education in Malaysia: balancing benefits and concern through Regulations*. Universiti Sains Malaysia : Pulau Pinang.
- Niles, S. G. & Harris-Bowlsbey, J. (2013). *Career development interventions in the 21st century* (4th ed.). Upper Saddle River, NJ: Merrill.
- Norida, A., Tajudin, N. M., Kalthom, H., Jano, Z., Sharif, M., & Shahrulanuar, M. (2014). Model of self-esteem, job-search intensity and career decision-making self-efficacy for undergraduate students. *Proceedings of the International Conference on Science, Technology and Social Sciences (ICSTSS)*, 257–265.
- Reardon, R. C., Lenz, J. G., Sampson, J. P., & Peterson, G. W. (2006). *Career development and planning: A comprehensive approach (2nd edition)*. United States: Thompson Learning.
- Reardon, R. C., Lenz, J. G., Sampson, J. P., Jr., & Peterson, G. W. (2012). *Career development and planning: A comprehensive approach (4th ed.)*. Dubuque, IA: Kendall Hunt.
- Sampson, J. P., McClain, M., Musch, E., & Reardon, R. C. (2013). Variables affecting readiness to benefit from career interventions. *The Career Development Quarterly*, 61(June), 98–110.
- Sidiropoulou-Dimakakou, D., Mylonas, K., Argyropoulou, K., & Tampouri, S. (2012). Career decision-making difficulties, dysfunctional thinking and generalized self-efficacy of university students in Greece. *World Journal of Education*, 2 (1), 117–130.
- Suradi Salim. (1996). *Bimbingan dan kaunseling*. Kuala Lumpur: Utusan Publications & Distributors Sdn Bhd.
- Thrift, M. M., Ulloa-Heath, J., Reardon, R. C., & Peterson, G. W. (2012). Career interventions and the career thoughts of Pacific Island college students. *Journal of Counseling & Development*, 90 (April), 169–177.
- Whiston, S. C., & Blustein, D. L. (2013). *The impact of career interventions: Preparing our citizens for the 21st century jobs*. (Research Report). National Career Development Association (www.ncda.org) and the Society for Vocational Psychology.
- Yon, K. J., Joeng, J.-R., & Goh, M. (2012). A longitudinal study of career maturity of Korean adolescents: the effects of personal and contextual factors. *Asia Pacific Education Review*, 13(4), 727–739.
- Zalizan Mohd Jelas, Amla Mohd Salleh, Norzaini Azman, Ramlah Hamzah, Rohana Jani, Hanizah Hamzah, Mohd Izwan Mahmud & Zaleha Abd Hamid, (2013). *Laporan Penyelidikan: Analisis gender dalam pendidikan*. Kementerian Pendidikan Malaysia.

EDUCATION READINESS OF THE COUNSELORS OF HIGHER INSTITUTIONS IN PROVIDING COUNSELING SERVICES DURING COVID-19 PANDEMIC

Salleh Amat¹
Mohd Izwan Mahmud²
Abu Yazid Abu Bakar³
Ku Suhaila Ku Ali @ Ku Johari⁴
Dharatun Nissa Puad Mohd Kari⁵
Nur Ain Azmeeza Azmi⁶

¹Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: sallehba@ukm.edu.my)

²Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: izwan@ukm.edu.my)

³Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: yazid3338@ukm.edu.my)

⁴Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: suhaila@ukm.edu.my)

⁵Faculty of Education, Universiti Putra Malaysia, Malaysia, (E-mail: nissa@upm.edu.my)

⁶Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia, (E-mail: p107260@siswa.ukm.edu.my)

Abstract: *As is well known, the spread of the COVID-19 pandemic has impacted the world especially, in terms of mental health issues. The world continues to struggle with emotions of fear, worry, and depression. This has led to an increase in the need for counseling services. Students in higher learning institutions are among the most affected by the Movement Control Order imposed by the government to curb the spread of this virus. For counselors in institutions of higher learning, guidance and counseling services must be provided to students as a support system for students living life on campus. Students at higher learning institutions are affected by the spread of this pandemic because of the abrupt transition from face-to-face classes to online classes. However, some students were allowed to stay on campus because of internet problems at home. The university has provided counseling and social support services to students during the Movement Control Order period. The Board of Counselors has provided guidelines to aid counselors in providing counseling services during the pandemic. This paper discusses the readiness of counselors in implementing counseling programs along with psychological support services throughout the pandemic period. Counselors have also participated in various workshops and seminars conducted online to enhance their knowledge and competence in conducting counseling services.*

Keywords: *COVID-19 pandemic, higher learning institutions, movement control order, counselors competencies*

Introduction

2020 was when the world was hit by the COVID-19 pandemic which has affected the entire population including Malaysia. Causing a significant impact not only on the economic sector but also on the students and teachers in the education sector. Students in higher learning institutions (HLI) were also affected by the Movement Control Order (MCO) imposed by the government to curb the spread of the virus. The background of the COVID-19 pandemic has been widely presented in various seminars and conferences at national and international levels (Sipalan, 2020; World Health Organization, 2021).

The enforcement of the MCO has been stressful for teenagers as they are forced to stay at home. The restriction of their freedom and the unexpected change on their daily lives has caused strong emotional and mental conflict. (Muhammad Syawal, 2022). In addition, according to Muhammad Syawal (2022), Amin Al Jaadi and Abdul Rashid (2021), the closure of schools has affected the education of students.

As already known, the spread of the Covid-19 pandemic has had a negative impact on human life, especially in terms of mental health issues. In addition, emotions of fear, worry, and depression are felt by the community as a whole, leading to an increase in the need for counseling services. Hence, various parties, especially the Ministry of Women, Family, and Community Development, have established a special Covid-19 counseling service through "Talian Kasih" to provide psychological support to all communities affected by the pandemic. In addition, the Ministry of Health Malaysia has also provided Mental Health and Psychosocial Support (MHPSS) services to overcome the mental health problems of the community. Similarly, various other agencies and non-governmental organizations offer psychological support services to help the community cope with mental health issues due to the COVID-19 pandemic.

The pandemic has provided opportunities for registered counsellors to provide the best support services to the community. Professional counseling services are handled by registered counsellors based on the Counsellors Act 1998 (Lembaga Kaunselor Malaysia, 2011; Melati Sumari et al., 2017). For counsellors in higher learning institutions, guidance and counselling services are a mandatory program for students as a support system for students to facilitate them to live a conducive campus life (Thuryrajah et al., 2017).

Prior to the pandemic, counsellors at HLI were used to dealing with students who had problems involving emotions, careers, and self-development. The effect of the pandemic caused many higher learning institutions to close campuses, causing students to transition to online studies. (Pradeep Sahu 2020). This caused many students' mental health to be negatively impacted due to the abrupt shift from face-to-face classes to online classes, activities, and assignments. However, the pandemic has made it difficult for counsellors to provide services due to the MCO which made it difficult to provide face-to-face counselling services.

Studies conducted on students in Italy show that students experienced an increase in anxiety, stress, difficulty in paying attention, and depression due to the sudden transition to online learning (Giulia et al., 2020). Similarly, students at local universities also faced various problems. Future education prospects, unforeseen changes to assignments, financial, psychological, and health issues are among the many problems students had to consider. Employment is a potential issue for students that were closer to graduation. (Othman Jailani et

al. 2020). Additionally, students living alone showed a higher level of anxiety compared to students living with families (Sheela et al., 2020).

Universities have provided counselling and social support services to students during this period of lockdown. Counselors at higher learning institutions are following the guidelines issued by the Malaysian Board of Counsellors in providing counselling psychological support services during the pandemic season (Lembaga Kaunselor Malaysia, 2020). These guidelines are in line with standard operating procedures (SOP) implemented by the Malaysian government concerning MCO.

This paper discusses the willingness of counsellors in implementing counselling programmes as well as psychological support services during the pandemic season. Programs conducted by counselors in higher learning institutions are also discussed.

Counsellors' Readiness to Provide Counseling Services

In carrying out counselling services, counsellors need to be prepared especially during the pandemic. This is very important to help the client, especially the students. Counsellors need to have a high level of readiness and an understanding of various cultures such as race, religion, sexual orientation, and socioeconomic background of the client. This is because multiculturalism is a big challenge for counsellors in providing counselling services (Aida Nubaillah et al., 2018).

In general, students in higher learning institutions also need counselling services to address the mental health issues faced by them. The need for counselling services is important to help students improve their quality of life and help students achieve their desired academic goals (Thuryrajah et al., 2017). Through counseling, students can get help in expressing their concerns from qualified counsellors (Salina Nen & Khairul 2018). In addition, students in institutions of higher learning also need counselling services to overcome personal problems and matters related to their difficulties.

Counselors need to be competent in mastering the theories and counseling skills to deal with clients who have problems ranging from mental, physical, emotional, and psychosocial issues (Haikal Anuar et al., 2020). Moreover, counsellors need to conduct counselling ethically as counselling is a professional service (Lembaga Kaunselor Malaysia, 2011; Ogugua et al., 2019).

Online learning was initially considered burdensome to students and teachers. Therefore counseling services are crucial for the students (Wulan Yuniarti et al., 2021). This means that counsellors should be willing to provide services throughout the pandemic season. The willingness of the counsellor can be seen when the counsellors actively participate and engage in various seminars or webinars conducted online. Counsellors are also prepared with various psychological testing to understand the psychological issues of the students during the pandemic.

Psychological Assessment Tools

The use of psychological assessment tools is important in helping counselors to identify problems faced by the client, especially during the COVID-19 pandemic. The results of the psychological testing can be used as the basic guidance for counselors to better understand their clients.

To measure students' mental health levels, counselors used psychological testing such as Depression Anxiety Stress Scales (DASS), Patient Health Questionnaire (PHQ), and Generalized Anxiety Disorder (GAD) (Li Ping et al. 2021). Similarly, the Mooney Problem Checklist of Measurement test tool can be used as a basis to understand the problems experienced by students at Malaysian public universities (Othman Jailani et al., 2020).

Additionally, Sheela Sundrasen et al., (2020) conducted a study using the Zung Self-Rating Anxiety Scale (SAS) test tool on students of public and private universities in Malaysia to examine students' levels of anxiety. The Generalized Anxiety Disorder Scale (GAD-7) assessment is also used to measure the effects of COVID-19 on students' mental health (Wenjun Cao et al. 2020). GAD-7 is a brief measure for assessing generalized anxiety disorder.

During the COVID-19 pandemic, counselors at public universities also used other psychological assessment tools to assist counselors to identify problems faced by students. Among the test tools used were the Perceived Stress Scale and Coping Skills. Supplementarily to these test kits, counselors from local universities also use other test kits such as WHOOLEY (to measure depression), BDI (Beck Depression Inventory), BAI (Beck Anxiety Inventory), MBTI (Myers Briggs Test Instrument), and MSE (Mental State Examination).

Improving Counseling Knowledge

Throughout the pandemic, various methods were undertaken by counsellors to improve their knowledge to help the client effectively. They participate in various webinar programs organized by various government and private agencies. This webinar is conducted online to make it easier for counsellors to participate in the program.

Similarly, various online forums were conducted by various parties to increase the efficiency and effectiveness of knowledge among counsellors. For example, the Faculty of Education, Universiti Kebangsaan Malaysia conducted a forum related to ethical issues while providing counselling services during the COVID-19 season. Among the webinars organized to assist counsellors are Counsellors Knowledge Partnership Webinar, Clinical Mental Health Counseling Competency Enhancement Programme, Stress Management, Emotional Management, and Counseling Case Management. Similarly, other public universities also organized various webinars related to the understanding of the counseling services to the public.

Furthermore, Universiti Malaysia Pahang and Universiti Kebangsaan Malaysia conducted the Psychological First Aid (PFA) workshop. This workshop is a psychological support service that provides basic training to counsellors to assist students, especially in a crisis setting. Other programmes conducted by other public universities include the Mental Health Programme to Handle Stress During MCO, Effective Emotional Management, Stress Management, Sexual Issues in Counseling, and Counsellors' Knowledge Sharing Program.

The implementation of these online programme provides an opportunity for counsellors to attend more programs in comparison to face-to-face programs. These programs helped increase counselors' knowledge related to current mental health issues. At the same time, these program also improve the counseling skills of counsellors especially in the handling of mental

health cases online. This is especially important during the pandemic as students need help to adapt to the Movement Control Order that prevents them from being on campus.

Online Counseling Services / Psychological Support

Basically, the implementation of face-to-face counselling is more of a choice for most counsellors (Peng Kah Wong et al., 2018). Nevertheless, counsellors had to use online counselling services during the Covid-19 pandemic due to Movement Control Order. With the changing times and technology, many counsellors have a positive attitude towards online counselling services. The counsellors believe that online counseling is the best method to assist clients during the pandemic season (Lai Wei Foon et al., 2020). This online counselling service involves individual counselling, career counseling, and family counselling.

In addition to online counselling services, counsellors also conduct online psychological support services. Various names are given to these psychological support services such as Crisis Helpline, Chat With Counsellor, and Emergency Call Centre to make it easier for students to get help and support. In general, this psychological support service is to assist students, especially in dealing with mental health problems as well as seeking psychological support from counsellors.

These online counselling services or psychological support services allows students to contact counsellors even if they are not on campus or in their homes. This service can help students who need help and support. This can ensure that the mental health of students in higher education institutions is well-looked-after.

Program During Pandemic

Movement Control Orders (MCO) was carried out by the government to control the spread of the COVID-19 virus which restricted students from studying on campus. However, guidance and counselling services were still being continued online. Counsellors in higher learning institutions also conducted programs that can help students cope with the MCO while they were at home. The programme organised helped students adapt to the new norm and created awareness of the importance of taking care of their mental health.

Various programmes to help improve the mental health of students were carried out by the university counseling unit through online. This made it easier for students to participate in the programmes implemented. Programmes were implemented according to the suitability of the specific group of students such as the first-year students. Furthermore, some programs are open to all students.

Among the programmes that were carried out, Mental Health Programme, Building Self-Resiliency Programme, Self-Motivation, Assistance for Students Quarantined, Emotional Support Team, Physical Activation Program, Group Guidance, Assessment and Evaluation, Emotional management, Stress management, Mental Health Day, Counseling Seminar, Motivational Program for Students Facing COVID-19 Pandemic, Webinar Tele-Psychological Support and various other programs organized by the university counseling unit.

Career Counseling

Career counselling services are a necessary service for students to help students plan their career paths that are in line with their academic achievement and interests. Lack of information

and knowledge about the chosen career makes it difficult for students and career counselors in making job selection decisions (Amla, Zuria & Salleh, 2007; Mohd Sani et al. 2018). Therefore, career counseling continues despite the pandemic.

Graduates have difficulty getting their desired jobs due to limited employment opportunities caused by the COVID-19 pandemic (Nurulizza & Borhan, 2022). On top of that, they have to compete with employees who have been laid off due to the pandemic.

In response, counsellors at public universities have carried out stronger efforts into career counselling services to assist students in preparing for the work environment during the COVID-19 pandemic. Among the efforts taken by universities was a stronger emphasis on online workshops. Among the workshops held were How To Plan For The Future, Resume Writing, and Interview Preparation. The career center at Universiti Kebangsaan Malaysia, for example, conducted a mini career carnival organised by SOCSO and INVESTKL to assist graduates to find jobs. In addition, the counsellors also held Mock Interviews, Communication skills, Interview Ethics, Resume Writing as well as self-confidence building. Counsellors at public universities also provide finishing school programmes to help students enter the workforce.

Conclusion

In conclusion, the field of counselling is very important to help the community who are under stress, especially during the pandemic. Counsellors in institutions of higher learning are prepared in providing counselling services to students. Various psychological assessment tools have been used to identify students who need help. Correspondingly, various mentoring programmes were held to help students cope with the new normal. It is also to make it easier for counsellors to assist students who need help during the pandemic season.

It is imperative for a counsellor to always be prepared for various challenges during the pandemic season in order to provide the best service to clients. Counsellors also need to improve their competency as a counsellor by participating in various training workshops and courses from time to time to help clients more effectively. Counsellors also need to work with various parties, especially hospitals and other government departments to refer students who need to be referred.

Acknowledgment

The preparation of this article and the conference is supported by a grant from the Faculty of Education, Universiti Kebangsaan Malaysia (GG-2020-022).

References

- Amin Al Haadi Shafieab & Abdul Rashid Abdul Azizb. (2021). Pengurusan Keresahan Mahasiswa Ipta Di Musim Covid-19. *Journal of Islamic Social Sciences and Humanities*. 25(2): 128-144.
- Aida Nubailah Noor, Salleh Amat, Abu Yazid Abu Bakar. (2018). Efikasi Kendiri Kaunseling dan Kecekapan Kaunseling Pelbagai Budaya dalam kalangan Guru Bimbingan dan Kaunseling Sekolah Menengah di Malaysia. *Jurnal Psikoedukasi dan Konseling*. 2(2): 14-21.
- Giulia Savarese, Luigi Curcio, Daniela D'Elia, Oreste Fasano & Nadia Pecoraro. (2020). Online University Counselling Services and Psychological Problems among Italian Students in Lockdown Due to Covid-19. *Healthcare*. 8:440.

- Haikal Anuar Adnan, Khadijah Alavi, Amran Hassan & Daniella Maryam Mokhtar. (2020). Readiness and Challenges of Counsellor in Offering Gerontological Counselling in Malaysia. *Creative Education*. 11:2580-2593.
- Lai Wei Foon, Zaida Nor ainudin, Yusni Mohamad Yusop & Wan Norhayati Wan Othman. (2020). E-Vounselling: The Intentin, Motivation and Deterrent among School Counsellors. *Universal Journal of Educational Research*. 8(3C): 44-51.
- Li Ping Wong, Haridah Alias, Afiqah Alyaa Md Fuzi, Intan Sofia Omar, Azmawaty Mohamad Nor, Maw Pin Tan, Diana Lea Baranovich, Che Zarrina Saari, Sareena Hanim Hamzah, Ku Wing Cheong, Chiew Hwa Poon, Vimala Ramoo, Chong Chin Che, Kyaimon Myint, Suria Zainuddin & Ivy Chung. (2021). Escalating progression of mental health disorders during the COVID-19 pandemic: Evidence from a nationwide survey. *PLOS ONE*. 16(3): 1-14.
- Kementerian Kesihatan Malaysia. (2020). Soalan Lazim Penyakit Coronavirus (COVID-19). <http://www.myhealth.gov.my/wp-content/uploads/FAQ-COVID-19.pdf>. (3 January 2022).
- Lembaga Kaunselor Malaysia (2020) (Board of Counsellors, Malaysia). Guidelines for Counselling Services During Recovery Movement Control Orders (Garis Panduan Perkhidmatan Kaunseling Semasa Perintah Kawalan Pergerakan Pemulihan). No 1-2020, 2020
- Lembaga Kaunselor Malaysia. (2011). *Kod Etika Kaunselor*. Kuala Lumpur: Lembaga Kaunselor.
- Melati Sumari, Ida Hartina Ahmed Tharbe, Norfaezah Md Khalid & Azmawaty Mohamed Nor. (2017). *Teori Kuanseling dan Psikoterapi*. UM Press
- Mohd Sani Ismail, Abdul Hakim Abdullah, Aman Daima Md Zain, Mohd Hasrul Shuhari & Mohd Rahim Ariffin. (2018). Kematangan Kerjaya Pelajar: Implikasinya Terhadap Kaunseling Kerjaya. *Jurnal Islam dan Masyarakat Kontemporari*. 18(1): 45-55.
- Muhammad Syawal Amran. (2022). Psychosocial risk factors associated with mental health of adolescents amidst the COVID-19 pandemic outbreak. *International Journal of Social Psychiatry*. 68(1): 6-8.
- Nurlizza Binti Hanfie & Borhan S Abdullah. (2022). Faktor-Faktor Peningkatan Kadar Pengangguaran Di Malaysia Ketika Pandemik Covid-19. *OER*. 2:1-13.
- Ogugua G.U, Nwosu I.A & Nwankwo C.A. (2019). School Counsellors Awareness Of The Counselling Ethics And Their Readiness To Implement Them In Secondary Schools In Anambra State. *Sapientia Global Journal of Arts, Humanities and Development Studies (SGOJAHDS)*. 2(1): 111-119.
- Othman Jailani, Ansarul Haq Tahrir Adli, Muhammad Asyraf Che Amat, Syazana Masturah Othman, Neda Deylami & Nor Syazila Abdul Rahim. (2020). The Self-Perceived Problems among Malaysian Pre-university Students: Implications for College Counselling. *Asian Journal of University Education (AJUE)*. 16(3):122-123.
- Peng Kah Wong, Gregory Bonn, Cai Lian Tam & Chee P. Wong. (2018). Preference for Online and/or Face to Face Counseling among University Students in Malaysia. *PERSPECTIVE*. 9(64): 1-5.
- Pradeep Sahu. (2020). Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. *Cureus*. 7541
- Sheela Sundarasan, Karuthan Chinna, Kamilah Kamaludin, Mohammad Nurunnabi, Gul Mohammad Baloch, Heba Bakr Khoshaim, Syed Far Abid Hossain & Areej Sukayt. (2020). Psychological Impact of COVID-19 and Lockdown among University Students in Malaysia: Implications and Policy Recommendations. *International Journal of Environmental Research and Public Health*. 17: 2-13.

Sipalan J. (2020). Malaysia Confirms First Cases of Coronavirus Infection. Of Surgery during The COVID-19 Pandemic

https://ohd.moh.gov.my/images/pdf/Surgery_Guideline_V2.0.pdf

Thuryrajah V, Ahmed EM & Jeyakumar R. (2017). Factors Determining the University Counselling Services Effectiveness. *Business and Economics Journal*. 8(4): 2-6.

Wenjun Caoa, Ziwei Fanga, Guoqiang Houc, Mei Hana, Xinrong Xua, Jiaxin Donga & Jianzhong Zheng. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *ELSEVIER*. 112934: 1-5.

World Health Organization. WHO coronavirus disease (COVID-19) dashboard. (2021), January 10). 2021. Retrieved from

https://covid19.who.int/?gclid=EAIaIQobChMIjdyKu9nP6QIVUNbACh3G0ggsEAAYASAAEgI6hPD_BwE.

FULFILLING THE ASPIRATIONS OF MALAYSIAN EDUCATIONAL BLUEPRINT 2013-2025: ISSUES AND CHALLENGES

Abu Yazid Abu Bakar¹

¹Faculty of Education, Universiti Kebnagsaan Malaysia (UKM), Malaysia, (E-mail: yazid3338@ukm.edu.my)

Abstract: *The Malaysian mainstream education has been undergoing constant changes in order to create a world class quality education system. Currently, Malaysia has been using the Malaysian Education Blueprint (2013-2025) as a guideline in objectifying the future needs of Malaysian education system. The blueprint focuses on five aspirations' dimensions; (assess, quality, equity, unity and efficiency), five student aspiration (knowledge, thinking skills, leadership skills, bilingual proficiency, ethics and spirituality, and national identity) and 11 shifts that will help achieve all the aspirations mentioned above. This paper discusses on the issues and challenges lie ahead in fulfilling this aspiration listed in this guiding policy, and also streamlines should be taken to overcome such problems.*

Keywords: *Aspirations, Educational Blueprint, Issues and Challenges, Malaysia*

Introduction

As Malaysian education system matures the challenges faced to achieve the goals are also changing (Hussein, 2012). The Malaysian education system has been undergoing constant changes in order to create a world class quality education. Currently, Malaysian has been using the Malaysian Education Blueprint (MEB) 2013-2025 as a guideline in objectifying the needs of Malaysian education system. MEB focuses on five system aspirations (assess, quality, equity, unity and efficiency), five student aspirations (knowledge, thinking skills, leadership skills, bilingual proficiency, ethics and spirituality, and national identity) and 11 shifts that will help achieve all the aspirations mentioned above. Figure 1 displays the system and student aspirations of MEB 2013-2025.

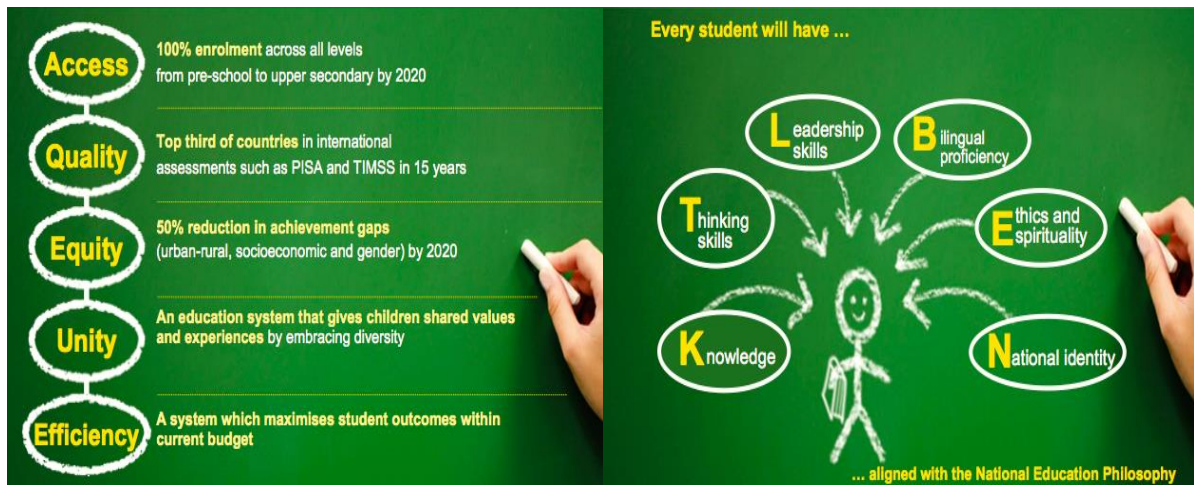


Figure 1: The MEB's 2013-2025 System and Student Aspirations

By 2025, Malaysia plans to be a worldwide education hub, yet we have been struggling to raise our international education standard for a while now. We can clearly see that it's not the lack of budget that caused the issue. According to Roman (2018) Malaysia spends roughly RM55 billion or 3.8% of its GDP on education alone, more than double the normal 1.8% in other ASEAN countries but it still remains at the bottom third of Global Rankings as indicated by the Program for International Student Assessment (PISA) two years consecutively. These are some statistics which shows that quality education is not just based on investment alone.

Malaysia is a well-known country for plurality and multicultural society. The main three races are Malay, Chinese and Indians. As a country of diverse races, cultures and religions, Malaysia is indeed unique in proving how its diversity could be united and contributed towards nation building. National unity indeed is a fundamental element for the nation's success. Education acts as a fundamental tool in national integration. It provides individuals with the opportunity to improve their lives, become successful member of the community and active contributors to national development. The education policies in Malaysia must consider the political and social aspects of this country. The Ministry of Education (MOE) has always been using education as a tool for unity. The development of common-content syllabi and the establishment in the 1970s of the national language, Malay, as the main medium of instruction in all schools were seen as crucial steps toward the goal of national integration (Jamil, 2010). However, the existence of previously established vernacular schools and the instructional language which is their own mother tongue have been a challenge in implementing national integration. This is not something new but it has been a concern since we gained independence.

Issues and Challenges of Fulfilling MEB 2013-2025's Aspirations

Expanded access to educational opportunities does not necessarily guarantee a quality education. A quality education, where resources are sometimes privileged for a few, may not be equitable in benefitting marginalized groups (Pereira, 2016). Tan (2012) argues that because of the states push towards democratization of education, a plethora of challenges have emerged such as:

- a. weak student progression
- b. school dropouts across minority ethnic groups
- c. urban and rural disparity

Weak Student Progression

In our MEB, there are very few plans that are clearly stated for underachievers. Most programs offered under Malaysian education system focuses on improving the better to be best rather than improving the underachievers to achieve the minimum. For example, High Performing Schools (HPS) is an initiative under the NKRA aimed at elevating the quality of schools to world-class standards. Selected HPS are given extra attention in maintaining the quality of education. This plan was stated in our MEB but no proper programs are developed for schools that are struggling to achieve. To eradicate this issue the Ministry of Education implemented the Literacy and Numeracy Screening (LINUS) program through THE Educational Mandate called National Key Result Area (NKRA) (Nazariah & Abdul Rahman, 2013). Even though the initiative in coming up with such a program is laudable but the program is carried out for a very limited time. LINUS is done only for pupils from year 1 to year 3 and a special screening for Year 4 pupils who are listed as non-achievers. After year 4 there are no clear interventions planned by the government in order to reduce the rate of underachievers.

In comparison to the Finland education system, the idea of upgrading uniformity centers on kids who require additional time and help than others to succeed. It perceives that not all understudies are the same. Some may have learning challenges, social issues and different issues that could hamper their learning. Malaysian Education blueprint should include more plans for underachievers rather than just focusing on high achievers. The weak student should progress hand in hand with the high achievers in order to prove the equity that our education system has to offer.

School Dropouts across Minority Ethnic Groups

In Malaysia, the issue of students who do not master literacy and numeracy has existed since the early formulation of the Malaysian education system and became more critical in the 1960's (Murad Dropout Report, 1972). Quoting statistics from the Education Ministry, there has been positive decrease of up to 75 per cent in the dropout rate from the year 2000 to 2013. In my opinion, this issue is more than just statistics. Decreasing dropout rates does not mean pupils are getting proper access to formal education. According to the MEB, approximately 36 percent of each cohort does not reach the “minimum achievement level desired of all students”. Ensuring that all Malaysian children have access to the educational opportunities provided in the country has been a key objective of the education system since independence. Due to population migration to cities, rural schools are encountering the danger of being closed down due to under enrolment. If this happens, students left behind in rural areas will be unable to go to school and get the education they need – unless there's an alternative way to access it.

Setting aside economic disadvantages, dropping out is a problem that excessively affects those who are from lower socio-economic condition and those who are difficult to reach such as the Orang Asli. For example, the dropout rates for Orang Asli remains high with 25 percent dropping out in the transition from primary to secondary school and the dropout rate for secondary school is 26 percent as stated in MEB annual report, 2014. In order to increase social mobility and improve the quality of life for this group of the population, this issue needs to be examined more closely. One of the steps taken is by establishing Comprehensive Special Model Schools (K9) near Orang Asli residential areas. It has said to successfully raise the attendance and transitions. The average attendance rate of Orang Asli students has increased tremendously by 7.1% to 86.3% surpassing the target set in 2016 of 82% as stated in Ministry of Education, Annual Report (2016).

Recently, our ministry has reintroduced combined classroom in schools with under-enrolled school to avoid schools from being closed down. Combined classroom is where pupils of

different age will be studying in the same classroom. For example, Year 2 and Year 3 pupils will study in the same classroom. The teachers are required to prepare lesson plans that can suit both levels of pupils. Even though the number of pupils is usually less but to conduct two different type of lesson in a limited time is very challenging. With problems like this, pupils might get left out as the teacher will have to focus on too many things at once.

Urban and Rural Disparity

Research in this context suggests four basic quality factors that are pertinent to improving Malaysian primary education: educational resources, school climate, leadership and parental involvement.

Statistical evidence showed that Malaysian parents, in general, encourage their children to go to school (Kementerian Pelajaran Malaysia, 2006). Between 1996 and 2008, the enrolment rate in primary education (age 6+ - 11+) in government and government-assisted schools across the nation was between 93.98% and 95.15% (Bahagian Perancangan dan Penyelidikan Dasar Pendidikan, 2000, 2008). However, parental involvement in terms of monitoring their children's homework and involvement in school activities known as school-home partnership could motivate pupils to develop more positively once in attendance (OECD, 2005; Scheerens & Bosker, 1997).

In a research conducted in Sabah the findings prove that, the education inequalities for urban, rural areas and overall inequality have decreased over the past five years. This is a good sign, as it shows that a series of policies and efforts implemented by the government has borne fruit (Sui Chin et al, 2016). Another research finding showed that generally no differences between urban and rural schools in educational quality as perceived by teachers were found, which contradicts previous studies. Nevertheless, results did show that rural teachers perceived lower levels of school climate (Mariam & Daniel, 2012).

To summarise the findings, this research shows that there is not much gap between urban and rural schools as far as instructive assets, school initiative, and parental association are concerned. This interesting finding can be confirmed by UNESCO (2008) study that proves, Malaysia, assets and resources in schools are distributed almost similarly in the both urban and rural areas. Furthermore, UNESCO (2008) reports that Malaysia has the most recorded assets in schools when compared with other upper middle income nations such as Chile, India, Peru and Tunisia. Thus, this proves that our Malaysian education blueprint has taken some best measures too in order to curb some issues to achieve the aspirations.

Strategy to Overcome Issues and Challenges of Fulfilling MEB 2013-2025's Aspirations

In order for Malaysia to improve its education system, our government had done some changing in the curriculum, policy or even medium of instruction. Each political figure will try to left or create a legacy so that they can compete who can produce a better education system. However, those changing had given impacts towards the results of PISA and TIMMS. Unfortunately, too much changing in education will also make our education system become destructible.

Teachers and students in Malaysia are suffering from the unending state of changing due to curriculum, teaching and learning methodology and also technology. They become genuine pigs as they need to apply and implement those policies. For example, some of the students learnt Science and Mathematics using English and after a few years, our government change the policy again and they need to learn those subjects in Bahasa Melayu again. Therefore, those rapid changes had cause Malaysia to have a bad grade in TIMMS and PISA for 2011 compared to 2009. According to Malaysian Education Blueprint (2013), in 2009 Malaysia managed to

get number 27 for science contrast to 2011 where Malaysia only managed to place ourselves for number 32. Not only that, the declined of the results also cause by incomplete coverage of the topics in TIMMS by our national curriculum. Thus, from this, we could see that before the responsible parties changing the curriculum, they did not make any further research or needs analysis as to make sure that the new curriculum will cover the needs of the students.

Therefore, our government need to make sure that they do need analysis when they want to change the national curriculum. According to British Council Website (n.d), a good understanding of learner needs can contribute to successful course planning. This is because needs analysis will help the responsible parties to know and find out what the learners needs and also the problem faced by the school in order to fulfil the new curriculum. Besides, although there are changes in our government, the policymakers should consider about the youngsters and do not mix politics with education. They should not always compete with each other to make sure that they will have the best policy. This will cause our education to suffer as it keeps on changing in rapid without having a timeline to make sure that the new curriculum is really successful or not.

Conclusion

In a nutshell, the most important way to make our education system at its best is to take other country as references or role model in creating curriculum. Countries like Finland, Japan and Singapore should be in the most priority list in creating curriculum and syllabus as well. This is because Finland was voted for top 10 best education and they won it. Finland is known as the best education in the world as for now. Our ministry of education can look at Finland's education system and adapt it to our Malaysian context. For example, Finland takes quality and qualified teachers in their system. They strengthened and made it highly selective for teachers' intake. All the teachers are required to get masters. They have to pass minimum qualification in Finish matriculation examination or have to complete 3 years vocational education programmes (Education Policy Outlook: Finland 2013). Besides, teachers in Finland are trained to adapt different learning needs and styles of students (Education Policy Outlook: Finland 2013). Malaysian education ministry can adapt this into our system and start electing good and qualified teachers for all types of schools. Our teachers should undergo the same process of training of adapting different learning needs and styles of student so that they can cater and provide good teaching for our students.

Acknowledgement

The author would like to thank the Faculty of Education, Universiti Kebangsaan Malaysia for funding the publication of this article via internal research grant (Code: GG-2020-023).

References

- Abdolreza, L. (2014). Investigating the content of Mathematics textbook used in 8th Grade in Malaysia based on content domain of TIMSS. *International Journal of Education and Research* 2(9).
- Chap, S.L., & Norma, P. (2011). Teaching Mathematics in two languages: A teaching dilemma of Malaysian Chinese primary schools. *International Journal of Science and Mathematics Education*.
- Jamil, H. (2010). The aspiration for educational rights in educational policies for national integration in Malaysian pluralistic society. *Procedia Social and Behavioral Sciences* 9, 158–173.

- Jamil, H. (2007). Ethnic arithmetic and the challenges of nation building: a study of Malaysian education policy for national integration, 1970 to present. Unpublished PhD Thesis University of Sheffield.
- Haniza, M. (2014). Civics and Citizenship Education in Malaysia: The Voice of Micro Policy Enactors. Unpublished Thesis Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy, Cardiff University.
- Haslina, K. (2017). Sinar Online. *Tiada IPG Yang Ditutup, Tapi Tukar Fungsi*. <http://www.sinarharian.com.my/nasional/tiada-ipg-yang-ditutup-tapi-tukar-fungsi-1.712546>
- Kementerian Pelajaran Malaysia. (2006). Pelan induk pembangunan pendidikan 2006-2010 (Edisi Pelancaran PIPP 2006 ed.). Putrajaya: Kementerian Pelajaran Malaysia.
- Kuhan, R., Mohd, F., & Wang, L. H. (2017). Pendidikan Moral Tahun 2 Sekolah Kebangsaan. Kula Lumpur: Dewan Bahasa dan Pustaka.
- Lee, C. H. (2018). The Star Online. *Education Ministry: 1000 teacher trainees needed, good benefits offered*. <https://www.thestar.com.my/news/nation/2018/03/21/education->
- Lim, E. S., Lee, P. L., & Khor, H. M. (2013). English Year 4 Sekolah Kebangsaan. Kuala Lumpur: Dewan Bahasa dan Pustaka
- Ministry of Education. (2013). Malaysia Education Blueprint Annual Reports. Putrajaya.
- Mariam, O., & Daniel, M. (2012) Educational quality differences in a middle-income country: the urban-rural gap in Malaysian primary schools, *School Effectiveness and School Improvement*, 24:1, 1-18.
- Ministry of Education (2007). Pendidikan di Malaysia edisi 2007(translation: Education in Malaysia edition 2007). Putrajaya: MOE.
- Pereira, J. D. (2016). Equity, access and educational quality in three South-East Asian countries.
- Roman, A. (2018). *Why is Malaysia's Education System Still Lagging Behind Its Neighbors?*. Azeus Convene. <https://www.azeusconvene.com/problems-in-malaysia-education-system/>
- Sui, C. T., Chong, M. H., & Vincent, P. (2016) "Why has education inequality widened in Sabah, Malaysia?", *Economics Bulletin*, 36(1), 569-575.
- Scheerens, J., & Bosker, R. (1997). *The foundations of educational effectiveness*. Oxford: Elsevier.
- Tan, Y. S. (2012). Democratization of secondary education in Malaysia: Emerging problems and challenges of educational reform. *International Journal of Educational Development*, 32(1), 53–64. <http://doi.org/10.1016/j.ijedudev.2010.11.004>
- Zaini, M. (2014). Education policy and ethnic relations in Malaysia: The socio-economic perspectives. *Journal of Educational and Social Research*, 4(2), 138-142.

CABARAN DAN KEBERKESANAN PENGGUNAAN SIMULATOR CISCO PACKET TRACER DALAM PEMBELAJARAN SAMBUNGAN VPN (*VIRTUAL PRIVATE NETWORK*)

Abdul Halim bin Ahmad

Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuala Terengganu, Malaysia, (E-mail: alim_mt@hotmail.com)

Abstrak: Kaedah simulasi merupakan penggunaan program berasaskan komputer yang mengandungi proses atau model seperti peralatan dalam bentuk sebenar yang digunakan untuk tujuan pembelajaran dalam bentuk eksperimen dan penemuan. Keberkesanan pembelajaran berbantuan simulasi bukan sahaja bergantung kepada bentuk simulasi semata-mata, tetapi juga berdasarkan pelaksanaan simulasi itu sendiri. Kajian yang dijalankan adalah berbentuk deskriptif untuk mengenalpasti cabaran dan keberkesanan penggunaan simulator Cisco Packet Tracer dalam pembelajaran sambungan VPN (*Virtual Private Network*). Sampel bagi kajian ini terdiri dari 30 orang pelajar dalam bidang teknologi maklumat. Instrumen bagi kajian ini terdiri dari satu set soalan borang soal selidik untuk mengenalpasti cabaran penggunaan simulator Cisco Packet Tracer dan satu set soalan set ujian praktikal untuk menilai keberkesanan penggunaan simulator Cisco Packet Tracer. Kumpulan eksperimen yang melalui pembelajaran menggunakan Cisco Packet Tracer dan kumpulan kawalan yang melalui pembelajaran secara konvensional telah dibentuk bagi menilai keberkesanan kaedah penggunaan simulator Cisco Packet Tracer. Analisis data dibuat dengan menggunakan perisian *Statistical Package for Social Sciences (SPSS)* versi 27.0. Dapatan kajian menunjukkan terdapat tiga cabaran utama yang dihadapi oleh pelajar dalam penggunaan Cisco Packet Tracer. Pertama, pelajar memerlukan konsentrasi yang tinggi kerana arahan bertulis perlu diingati dan difahami. Kedua, penggunaan Cisco Packet Tracer memerlukan kemahiran yang tinggi dalam mensimulasi rangkaian yang kompleks dan ketiga, jika terdapat kesalahan dalam mereka bentuk rangkaian menyebabkan berlakunya ralat yang sukar dicari dan memberi kesan ke atas pembelajaran pelajar. Hasil kajian juga mendapati terdapat peningkatan dalam pencapaian akademik pelajar selepas mereka mengikuti kaedah pembelajaran menggunakan simulator Cisco Packet Tracer. Penambahbaikan secara berterusan perlu dilaksanakan agar dapat membantu pelajar mengharungi cabaran yang dihadapi sewaktu menggunakan Cisco Packet Tracer dan penggunaannya dalam pembelajaran diharapkan dapat membentuk pelajar yang kompeten dalam bidang rangkaian.

Kata kunci: cabaran, keberkesanan, Cisco Packet Tracer, pembelajaran

Pendahuluan

Penggunaan media atau alat bantu mengajar dapat merangsang minda dan fokus pembelajaran pelajar. Ianya dapat membantu pengajar dalam menyampaikan isi pelajaran dengan lebih berkesan, mencipta suasana pembelajaran yang menarik dan dapat memotivasikan pelajar untuk mengambil bahagian dalam aktiviti pembelajaran (Purbaningsih, 2017). Penggunaan teknologi maklumat dan komunikasi (ICT) sebagai salah satu alat bantu mengajar dalam

bidang pendidikan telah membawa banyak faedah terutamanya dalam mata pelajaran berdasarkan pelbagai konsep abstrak. Ianya mampu menunjukkan konsep abstrak secara visual dan membantu pelajar memahami konsep abstrak seperti model, simulasi, permainan, video dan melayari multimedia. Olakanmi, Gambari, Gbodi dan Abalaka, (2016) dalam kajian yang dilaksanakan mendapati kesan bantuan komputer dapat meningkatkan motivasi intrinsik dan ekstrinsik yang lebih tinggi dalam kalangan pelajar berbanding kaedah pengajaran konvensional. Salah satu kaedah yang sering digunakan dalam pengajaran berbantuan komputer adalah menggunakan teknik simulasi. Pembelajaran berasaskan simulasi dapat memberikan maklum balas yang positif dalam pelbagai bidang diantaranya ialah bidang kejuruteraan komputer (Kappers dan Cutler, 2016), kejururawatan (Eyikara dan Baykara, 2017) dan perubatan (Hing et.al, 2019). Salah satu aplikasi simulasi yang sering digunakan dalam kursus rangkaian komputer adalah *Cisco Packet Tracer Simulator*. Ianya perisian pendidikan yang berkesan yang menyokong pelajar untuk mencuba dan mengamalkan konsep kajian komputer dalam persekitaran simulasi. Akademi Rangkaian Cisco Program (CNAP) telah memperkenalkan simulator *Cisco Packet Tracer* sebagai media pengajaran dan pembelajaran komputer bagi kursus rangkaian dengan menyediakan simulasi, visualisasi, pengarang, keupayaan kerjasama dan penilaian (Noor Mohamad, Yayao dan Sumazly, 2018). Ia juga memudahkan pengajaran, dimana pelajar boleh mencipta makmal berasaskan senario mereka sendiri dan menyediakan simulasi sebenar dalam persekitaran visualisasi (Abdul Rashid, Zaharbin, & Othman, 2019).

Kajian yang dijalankan adalah untuk menilai cabaran dan keberkesanan yang dihadapi oleh pelajar dengan penggunaan *Cisco Packet Tracer* dalam pembelajaran sambungan VPN. VPN merupakan singkatan kepada *Virtual Private Network*, iaitu beberapa rangkaian komputer dan rangkaian persendirian (*private network*) dihubungkan melalui rangkaian awam (*public network*) atau internet. Tajuk sambungan VPN adalah merupakan salah satu tajuk yang diajar dalam kursus Keselamatan Rangkaian (DFN40143) di Politeknik. Ianya dipilih kerana pelaksanaan penyambungan VPN sukar difahami tanpa adanya teknik simulasi rangkaian. Penggunaan *Cisco Packet Tracer* dapat menerangkan dengan lebih jelas bagaimana sambungan VPN dilaksanakan. Ianya turut dibandingkan keberkesannya jika menggunakan kaedah pembelajaran konvensional iaitu dimana Pensyarah lebih aktif memberi kuliah dan pelajar dilihat cenderung pasif serta berkongsi peralatan rangkaian fizikal sedia ada dalam proses pembelajaran. *Cisco Packet Tracer* telah memberi impak positif dalam membantu proses pembelajaran dan pengajaran dan walaupun ianya telah berkembang namun keberkesananannya masih diragui (Molenda dan Sullivan, 2003). Selain dari itu kajian ini juga dijalankan bagi mengenalpasti cabaran-cabaran yang dihadapi oleh pelajar dalam penggunaan *Cisco Packet Tracer*.

Pernyataan Masalah

Semasa proses pengajaran dan pembelajaran dijalankan, didapati terdapat beberapa kekangan yang dihadapi oleh pelajar dalam menjayakan pembentukan topologi rangkaian. Diantaranya proses pembelajaran mengambil masa yang lama dalam membentuk rangkaian fizikal dan kesukaran untuk mencari penyelesaian dengan cepat apabila terdapat masalah teknikal atau kesilapan. Ini menyebabkan pelajar tidak dapat menyiapkan tugas praktikal yang diberikan dalam tempoh yang ditetapkan. Teknologi rangkaian yang berubah dengan cepat seiring kemajuan teknologi menyukarkan pelajar memperoleh ilmu baru dalam menjayakan tugas yang diberikan hanya bersandarkan peralatan rangkaian sedia ada.

Satu satu kaedah bagi mengurangkan kadar kegagalan pembentukan topologi rangkaian adalah dengan menggunakan simulator. Rangkaian simulator dapat membantu pelajar mereka bentuk dan mensimulasi rangkaian yang digunakan seperti pada rangkaian sebenar. Simulator rangkaian yang telah digunakan secara meluas dalam proses pembelajaran adalah *Cisco Packet Tracer*. Javid (2014) mendapati bahawa *Cisco Packet Tracer* dapat membantu pelajar belajar konsep asas rangkaian komputer dan mereka juga boleh mensimulasikan rangkaian komputer yang telah dibangunkan. Simulator *Cisco Packet Tracer* boleh digunakan untuk memahami perbezaan antara peranti rangkaian yang berbeza seperti hab, suis, penghala dan lain-lain serta penggunaannya sesuai menyambungkan pelbagai komputer untuk pembangunan rangkaian (Kainz, Cymbalak, Lamer, Michalko dan Jakab, 2016). Aplikasi simulator *Cisco Packet Tracer* boleh dikemaskini sesuai dengan kemajuan teknologi rangkaian, maka pelajar sentiasa didedahkan dengan ciri teknologi rangkaian terkini.

Objektif Kajian

- i. Menenalpasti cabaran yang dihadapi oleh pelajar dalam penggunaan *Cisco Packet Tracer*.
- ii. Menenalpasti sama ada terdapat perbezaan antara pencapaian min ujian praktikal antara pelajar yang mengikuti pembelajaran menggunakan Simulator *Cisco Packet Tracer* dengan pelajar yang mengikuti kaedah konvensional?

Persoalan Kajian

- i. Apakah cabaran yang dihadapi oleh pelajar dalam penggunaan *Cisco Packet Tracer*.
- ii. Adakah terdapat terdapat perbezaan yang signifikan dalam pencapaian min ujian praktikal antara pelajar yang mengikuti pembelajaran menggunakan Simulator *Cisco Packet Tracer* dengan pelajar yang mengikuti kaedah konvensional.

Kepentingan Kajian

Hasil kajian ini dapat membantu pihak Politeknik Kuala Terengganu menilai keberkesanan penggunaan *Cisco Packet Tracer* bagi membantu proses pembelajaran khususnya bagi kursus yang berteraskan rangkaian komputer. Penambahbaikan dari masa ke semasa dapat dijalankan bagi memantapkan pembelajaran pelajar.

Skop Kajian

Kajian ini hanya dijalankan ke atas pelajar semester 4, Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuala Terengganu (PKT) yang mengambil kursus Keselamatan Rangkaian (DFN40143).

Kajian Literatur

Ika Sari, et.al, 2018 dan Hashimi, Gunes, 2017, telah menjalankan kajian perbandingan diantara *Cisco Packet Tracer* dan GNS3 telah mendapati *Cisco Packet Tracer* mendapat komen positif sebagai perisian simulasi rangkaian komputer yang menyokong pembelajaran. Kajian yang dijalankan oleh Herbert dan Wigley, 2015 penggunaan *Cisco Packet Tracer* dapat membantu pelajar memerhati perkembangan paket-paket yang dihantar melalui rangkaian dan ini dapat mendorong mempertingkatkan pembelajaran mereka. Menurut tinjauan yang dilakukan oleh Mohd Syahrizad Elias dan Ahmad Zamzuri Mohamad Ali, 2014 dalam sesi temu bual yang dijalankan, penggunaan alat simulasi rangkaian dapat melibatkan pelajar dalam

pembelajaran aktif dan meningkatkan pemahaman mereka tentang konsep komunikasi data yang kompleks.

Javid (2014) telah meniasat peranan *Cisco Packet Tracer* berdasarkan pengalaman guru dan pelajar. Penemuan daripada kajian ini merumuskan terdapat banyak faedah dan kelebihan menggunakan *Cisco Packet Tracer* dalam pembelajaran asas dan penting konsep rangkaian komputer yang boleh mencabar faham secara teori. Tu, (2012) menganalisis perbandingan antara *Cisco Packet Tracer* sebagai teknologi percubaan maya dan eksperimen sebenar menggunakan peralatan fizikal. Dia membuat kesimpulan *Cisco Packet Tracer* mempunyai banyak faedah seperti ekonomi, kemudahan, fleksibiliti, keselamatan dan mudah dikembangkan.

Metodologi

Metodologi kajian merujuk kepada kaedah yang paling efektif untuk menjalankan penyelidikan dan menentukan tatacara yang berkesan bagi menjawab permasalahan kajian.

Sampel

Kajian ini merupakan reka bentuk Kumpulan Kawalan Tidak Serupa. Reka bentuk ini melibatkan sampel sebanyak 30 orang pelajar dari dua kumpulan yang berbeza iaitu terdiri dari kumpulan A, 15 orang pelajar dan kumpulan B, mewakili 15 orang pelajar. Kumpulan B merupakan kumpulan eksperimen yang menggunakan *Cisco Packet Tracer* sebagai medium pembelajaran dan kumpulan A merupakan kumpulan kawalan yang menggunakan kaedah pembelajaran konvensional dan ianya telah ditetapkan oleh Pensyarah kursus yang mengajar. Peningkatan pencapaian dinilai berdasarkan perbezaan pencapaian mereka dalam ujian praktikal yang diambil. Ujian pra dilaksanakan untuk melihat kesetaraan antara kumpulan, kerana kedua-dua kumpulan pelajar tidak dipilih secara rawak. Ianya juga bertujuan untuk digunakan sebagai pengawalan secara statistik. Ujian pasca akan dijalankan setelah kedua-dua kumpulan selesai mengikuti kaedah pembelajaran masing-masing.

Instrumen Kajian

Instrumen untuk kajian yang dijalankan terbahagi kepada dua unit soalan. Unit pertama terdiri borang soal selidik bagi mengenalpasti cabaran yang dihadapi oleh pelajar dalam penggunaan *Cisco Packet Tracer*. Setiap item dalam borang soal selidik dinilai berdasarkan skala Likert lima mata dengan skor 1, 2, 3, 4, dan 5. Unit kedua merupakan satu set soalan ujian, untuk sampel kumpulan A dan B yang mana setiapnya mengandungi 2 soalan struktur berasaskan latihan praktikal. Instrumen ini digunakan untuk mengenalpasti sama ada terdapat perbezaan antara pencapaian min ujian praktikal antara pelajar yang mengikuti pengajaran kaedah menggunakan Simulator *Cisco Packet Tracer* dengan pelajar yang mengikuti kaedah konvensional.

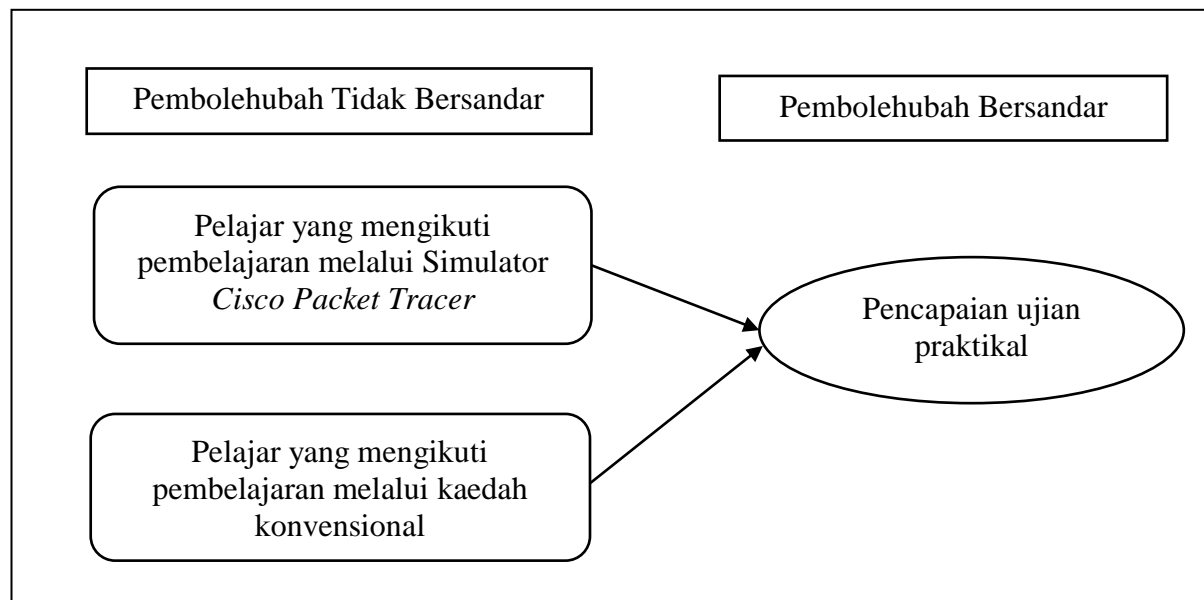
Kaedah Analisis Data

Hasil kajian dianalisis menggunakan perisian *Statistical Package for Social Science* (SPSS) versi 27.0. Statistik deskriptif dan inferensi telah digunakan dalam menganalisis data bagi kajian yang dijalankan. Statistik deskriptif digunakan untuk melihat min, dan sisihan piawai bagi menganalisa dan membuat keputusan terhadap item yang dikaji. Statistik inferensi seperti ujian-t digunakan untuk membandingkan min skor pencapaian ujian antara kumpulan kawalan dan kumpulan eksperimen. Paras signifikan dalam membuat keputusan ditetapkan pada aras

0.05. Hipotesis akan ditolak sekiranya nilai p yang diperolehi adalah kurang daripada 0.05 atau sebaliknya.

Pembolehubah Kajian

Pembolehubah adalah suatu nilai yang boleh berubah-ubah dan mengambil nilai yang berbagai (Nurfarhana, 2012). Di dalam kajian ini, pencapaian ujian praktikal merupakan pembolehubah bersandar dan pelajar yang mengikuti pengajaran kaedah menggunakan Simulator *Cisco Packet Tracer* merupakan pembolehubah tidak bersandar. Kajian dijalankan bagi menilai keberkesanan penggunaan Simulator *Cisco Packet Tracer* dalam pembelajaran berbanding pelajar yang mengikuti kaedah pembelajaran konvensional.



Rajah 1: Pembolehubah Kajian

Hipotesis Kajian

Berdasarkan persoalan kajian, hipotesis berikut dirangka bertujuan untuk mengetahui adakah terdapat hubungan di antara faktor kesukaran memperolehi pekerjaan dalam mempengaruhi kerjaya yang diceburi. Hipotesis yang direka adalah seperti berikut:

- H¹ Terdapat perbezaan antara pencapaian min ujian praktikal antara pelajar yang mengikuti pembelajaran menggunakan Simulator *Cisco Packet Tracer* dengan pelajar yang mengikuti kaedah konvensional

Dapatan Kajian

Cabaran yang Dihadapi oleh Pelajar dalam Penggunaan Cisco Packet Tracer

Jadual 1: Cabaran Yang Dihadapi Oleh Pelajar Dalam Penggunaan Cisco Packet Tracer

Bil.	Item	Min	Intepretasi
1.	Saya mempunyai masalah capaian internet untuk login ke dalam persekitaran <i>Cisco Packet Tracer</i> .	1.50	Rendah
2.	Proses mengkonfigurasi rangkaian menggunakan <i>Cisco Packet Tracer</i> adalah sukar.	1.73	Rendah
3.	Maklumat yang diberikan di dalam sistem <i>Cisco Packet Tracer</i> tidak disampaikan dengan jelas.	1.14	Rendah
4.	Paparan grafik pada <i>Cisco Packet Tracer</i> tidak menarik dan menyukarkan saya menggunakannya.	1.11	Rendah
5.	Saya memerlukan masa yang lama untuk belajar <i>Cisco Packet Tracer</i> terlebih dahulu.	2.39	Sederhana
6.	Proses mendapatkan dan memuat turun <i>Cisco Packet Tracer</i> versi yang terkini sukar didapati.	1.07	Rendah
7.	Saya mempunyai masalah menggunakan <i>Cisco Packet Tracer</i> yang telah dikemasakini dengan versi yang terkini.	1.13	Rendah
8.	Saya memerlukan konsentrasi yang tinggi kerana arahan melalui <i>Command Line Interface</i> (CLI) perlu diingati dan difahami.	3.75	Tinggi
9.	Saya perlu kemahiran yang tinggi dalam mensimulasi rangkaian yang kompleks sebelum ianya digunakan rangkaian dalam sebenar.	3.92	Tinggi
10.	Kesalahan dalam mereka bentuk rangkaian menggunakan <i>Cisco Packet Tracer</i> menyebabkan berlakunya ralat yang sukar dicari dan akan mengecewakan dan memberi kesan kepada pembelajaran saya.	3.76	Tinggi

Berdasarkan analisa min (Jadual 1) didapati terdapat tiga cabaran utama yang dihadapi oleh pelajar dalam penggunaan *Cisco Packet Tracer*. Pelajar amat bersetuju (min = 3.75) bahawa mereka memerlukan konsentrasi yang tinggi kerana arahan melalui *Command Line Interface* (CLI) perlu diingati dan difahami. Pelbagai arahan digunakan dalam mengkonfigurasi sesuatu bentuk rangkaian. Ini memerlukan fokus yang tinggi dan setiap arahan perlu diingati sebaik mungkin. Pelajar juga amat bersetuju (min = 3.92) bahawa mereka memerlukan kemahiran yang tinggi dalam mensimulasi rangkaian yang kompleks sebelum ianya digunakan rangkaian dalam sebenar. Kompetensi dalam mensimulasi rangkaian yang kompleks memerlukan kemahiran teknikal yang tinggi. Pelajar perlu mempersiapkan diri dengan pelbagai kemahiran sebelum menjalankan konfigurasi rangkaian yang kompleks. Kesalahan dalam mereka bentuk rangkaian menggunakan *Cisco Packet Tracer* menyebabkan berlakunya ralat yang sukar dicari dan akan mengecewakan dan memberi kesan kepada pembelajaran pelajar. Senario ini kadangkang berlaku namun jika ianya berlaku pelajar amat bersetuju (min = 3.76) ia membawa kesan terhadap pembelajaran mereka.

Perbandingan Pencapaian Min Ujian Antara Pelajar yang Mengikuti Pembelajaran Menggunakan Simulator Cisco Packet Tracer Dengan Pelajar yang Mengikuti Kaedah Konvensional

Jadual 2: Ujian-t Tak Bersandar Bagi Skor Ujian Praktikal (Ujian Pasca) Antara Kumpulan Kawalan Dan Kumpulan Eksperimen

Kumpulan	Bilangan Pelajar	Min	Sisihan Piawai	Nilai t	Signifikan
Eksperimen (Kumpulan B)	15	68.30	10.75	5.00	0.10
Kawalan (Kumpulan A)	15	59.50	9.45		

Analisis ke atas skor ujian menunjukkan terdapat perbezaan signifikan skor ujian praktikal yang dijalankan antara kumpulan kawalan ($M = 59.50$, $SP = 9.45$) dengan kumpulan eksperimen ($M = 68.30$, $SP = 10.75$; $t = 5.00$, $p = .010 > .05$). Kesimpulannya, hipotesis yang dibangunkan diterima. Ini menunjukkan terdapat perbezaan yang signifikan dalam pencapaian min ujian pelajar yang mengikuti kaedah pembelajaran menggunakan simulator *Cisco Packet Tracer* berbanding dengan mengikuti kaedah konvensional. Didapati min markah kumpulan eksperimen (68.30%) lebih tinggi berbanding kumpulan kawalan (59.50%). Ini menunjukkan bahawa penggunaan simulator *Cisco Packet Tracer* dapat membantu dalam meningkatkan pencapaian akademik pelajar.

Kesimpulan

Pembelajaran melalui simulasi terbukti berkesan dan memberikan hasil positif serta boleh membantu mempertingkatkan hasil pembelajaran. Penggunaan *Cisco Packet Tracer* dalam pembelajaran kursus rangkaian jelas memberi impak signifikan terhadap pencapaian pelajar. Kemahiran dalam mereka bentuk dan menyelesaikan masalah telah bertambah baik apabila pelajar menggunakan simulator *Cisco Packet Tracer*. Aktiviti dalam *Cisco Packet Tracer* boleh dianggap sebagai satu bentuk pengalaman pembelajaran kerana ia membolehkan pelajar sama ada mengukuhkan atau menemui pengetahuan dan kemahiran melalui interaksi sendiri (Noor Mohamad, Yayao dan Sumazly, 2018). Pembelajaran melalui kaedah konvensional membolehkan pelajar memperoleh kemahiran proses dan kemahiran manipulatif. Walau bagaimanapun, kaedah ini adalah mahal dari segi penggunaan bahan dan peralatan serta memakan masa yang lama jika berlaku kesilapan (Julius, 2018). Dapatan kajian menunjukkan terdapat perbezaan yang signifikan dalam pencapaian min ujian praktikal pelajar yang mengikuti kaedah pembelajaran menggunakan simulator *Cisco Packet Tracer* berbanding dengan mengikuti kaedah konvensional. Ini jelas menggambarkan penggunaan *Cisco Packet Tracer* telah membantu dalam proses pembelajaran pelajar disamping meningkatkan pencapaian akademik pelajar. Pelbagai cabaran yang harus diharungi oleh pelajar sewaktu menggunakan *Cisco Packet Tracer*. Hasil kajian menunjukkan terdapat tiga cabaran utama yang dihadapi oleh pelajar sewaktu menggunakan *Cisco Packet Tracer*. Pertama, pelajar memerlukan konsentrasi yang tinggi kerana arahan melalui *Command Line Interface* (CLI) perlu diingati dan difahami. Kedua, pelajar berpendapat mereka memerlukan kemahiran yang tinggi dalam mensimulasi rangkaian yang kompleks sebelum ianya digunakan rangkaian dalam sebenar. Ketiga, sebarang kesalahan dalam mereka bentuk rangkaian menggunakan *Cisco*

Packet Tracer menyebabkan berlakunya ralat yang sukar dicari dan akan mengecewakan dan memberi kesan kepada pembelajaran pelajar. Justeru itu dengan cabaran yang dihadapi pelajar, pelbagai langkah penambahbaikan boleh dilaksanakan bagi mengurangkan bebanan cabaran yang dihadapi oleh pelajar disamping meneruskan penggunaan *Cisco Packet Tracer* bagi mempertingkatkan keupayaan akademik pelajar.

Rujukan

- Abdul Rashid, N., Zaharbin, M., & Othman, R. (2019). Cisco Packet Tracer Simulation as Effective Pedagogy in Computer Networking Course. *International Journal of Interactive Mobile Technologies (IJIM)*. Retrieved from <https://doi.org/10.3991/ijim.v13i10.11283>
- Akubue, B. N., & Chukwu, L. N. (2016). Uses of Information and Communication Technology in Teaching and Learning of Clothing and Textiles in Ebonyi State University. *British Journal of Education*, 4, 44-51. Retrieved from www.eajournals.org
- Eyikara, E., & Baykara, Z. G. (2017). The importance of simulation in nursing education. *World Journal on Educational Technology: Current Issues*, 9(1), 02.
- Eyitao U. Olakanmi, Isiaka A. Gambari, Bimpe E. Gbodi, Enejo N. Abalaka (2016). Promoting Intrinsic and Extrinsic Motivation among Chemistry Students using Computer-Assisted Instruction. *Journal of Contemporary Educational Technology*, 2016, 7(1), 25-46
- Hariyanto, D. & Nugraha, A. D. H. (2012). Pelatihan Penggunaan Software Simulasi Jaringan “Packet Tracer” untuk Meningkatkan Kompetensi Jaringan di Kabupaten Kulonprogo
- Hashimi, S. M., & Güneş, A. (2017). Performance Evaluation of a Network Using Simulation Tools or Cisco Packet Tracer. *IOSR Journal of Computer Engineering*, 19(01), 0105.
- Herbert, B. M., & Wigley, G. B. (2015). The Role of Cisco Virtual Internet Routing Lab in network training environments. Julio.
- H. Tu. (2012). “Study on the application of virtual experiment technology in computer network courses,” *Psychol. Res.*, vol. 8, no. 1838-658X, pp. 90–93, 2012
- Ika Sari, L. M., Wihidayat, E. S., Hatta, P., & Xiao, F. (2018). A Comparison between the use of Cisco Cisco Packet Tracer and graphical network simulator 3 as learning media on students’ achievement. *Jurnal Pendidikan Teknologi dan Kejuruan*, 4(21), 132-136.
- Javid, S. R. (2014). Role of Packet Tracer in learning Computer Networks. *International Journal of Advanced Research in Computer and Communication Engineering*. 3.5, 6508 – 6511
- Julius, K. J. (2018). Influence of Computer Aided Instruction On Students’ Achievement, Self-Efficacy and Collaborative Skills in Chemistry in Secondary Schools of Tharaka Nithi County, Kenya. Kenyatta University, Philosophy in the School of Education, Kenya. Retrieved March Sunday, 2019
- Kainz, Cymbalak, Lamer, Michalko, & Jakab. (2016). Innovative methodology and implementation of simulation exercises to the Computer networks courses. *ICETA 2015 - 13th IEEE International Conference on Emerging eLearning Technologies Applications, and Proceedings*, (pp. 1-7). Retrieved from <https://doi.org/10.1109/iceta.2015.7558481>
- Kappers, W. M., & Cutler, S. L. (2016). Simulation to Application. The Use of Computer Simulations to Improve Real-World Application of Learning. *Computers in Education Journal*, 7 (1).
- Mohd Syahrizad, E., & Ahmad Zamzuri, M. A. (2014). Survey on the Challenges Faced by the Lecturers in Using Packet Tracer Simulation in Computer Networking Course. *Procedia-Social and Behavioral Sciences*, 131, 11–15. <https://doi.org/10.1016/j.sbspro.2014.04.070>

- Molenda, M., & Sullivan, M. (2003). *Issues and trends in instructional technology: Treading water*. In M. A. Fitzgerald, M. Orey, & R. Branch (Eds.), *Educational Media and Technology Yearbook 2003*. (pp. 3–20). Englewood, CO: Libraries Unlimited.
- Norfarhana binti Romeli (2012). Tahap Kemahiran Berfikir Kreatif Dan Kritis Dalam Kalangan Pelajar Diploma Pendidikan Lepas Ijazah Universiti Tun Hussein Onn Malaysia. *Tesis UTHM*.
- Noor Mohamad, M., Yayao, N., & Sumazly, S. (2018). Effectiveness of Using Cisco Packet Tracer as a Learning Tool: A Case Study of Routing Protocol. *International Journal of Information and Education Technology*, 8(1). Retrieved from <http://www.ijiet.com>
- Purbaningsih, T. (2017). Penggunaan Alat Peraga Untuk Meningkatkan Motivasi dan Hasil Belajar Matematika Siswa Kelas IV SD Negeri 03 Gondangrejo Tahun Pelajaran 2017. *Doctoral dissertation*, IAIN Metro.
- Rahayu, S. (2018). Penggunaan Alat Peraga Dengan Pembelajaran Langsung Dalam Meningkatkan Motivasi Mengajar Guru Di Sd Negeri 010 Pagaran Tapah. *Jurnal Pajar (Pendidikan dan Pengajaran)*, 1016.

4th Penang International Multidisciplinary Conference 2022 (4th PIMC 2022)

ORGANIZING COMMITTEE

Chairman:

Dr. Ezanee Mohamed Elias
Universiti Utara Malaysia

Treasurer:

Zafira Zainudin
(Global Academic Excellence (M) Sdn Bhd, Malaysia)

Technical Committee:

Norhaslinda Mohd Kamil
(Global Academic Excellence (M) Sdn Bhd, Malaysia)

Technical Reviewer:

Assoc. Prof. Dr. Awanis Ku Ishak
Dr. Bidayatul Akmal Mustafa Kamal
Dr. Nazlina Zakaria

Liaison Officer:

Nuratikah Amid Dudin
(Global Academic Excellence (M) Sdn Bhd, Malaysia)

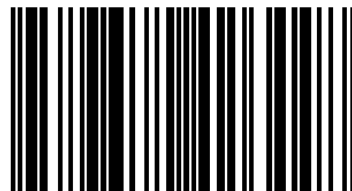




4TH PIMC 2022

4th Penang International Multidisciplinary
Conference 2022

e ISBN 978-967-2426-44-8



9 7 8 9 6 7 2 4 2 6 4 4 8



Published by:
Global Academic Excellence (M) Sdn. Bhd.
(1257579-U)
KELANTAN, MALAYSIA