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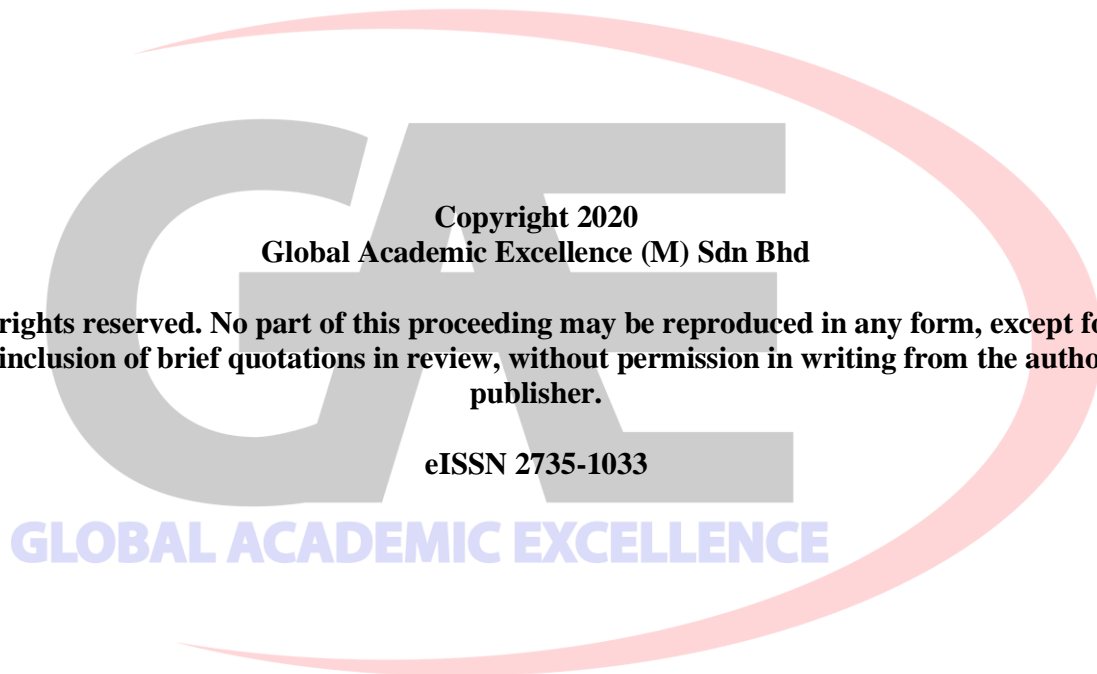


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THE INFLUENCE OF CULTURE ON INSTAGRAM USAGE AMONG HIGHER INSTITUTION STUDENTS

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Abstract: *Instagram, the photo and video-sharing social medium, is rapidly gaining popularity. Malaysia presents an excellent case for exploring the influence of culture on Instagram use. Like other developing countries, the traditional culture of Malaysia greatly affects the attitudes and behaviors of its people. It is interesting to examine the influence of gender on Instagram use activities. In Malaysia, the culture, besides security reasons, inhibits females from disclosing contact information. The central theme of this research paper is to understand gender differences on Instagram use by students in higher education students. This study confirms that males are more likely than females to post their personal pictures on Instagram, more likely to disclose their personal information and more likely to have public accounts unlike females who are more likely to have private accounts than males.*

Keyword: *social media, gender differences, cultural differences, media and culture, usability, Instagram*

Introduction

Instagram, the photo and video-sharing social medium, is rapidly gaining popularity and preference with more than 200 million users and 13% of the total users of social media placing it fourth in rank after Facebook, Twitter and Pinterest . It is a social media application that allows people to share with others their daily life activities, lifestyles, habits and interests in pictures and videos. Instagram is easy to operate, and it only requires downloading, choosing a username and password, and finally posting pictures that others see. People can either upload posts taken instantly or stored ones from their mobile phone gallery.

Like other social networks, Instagram is fabricated on having followers like family, friends or strangers who follow the updates of Instagrammers' life via posted pictures and videos. Created profiles include personal information and a picture to identify the account. People either create public, directly accessed, accounts or private ones that require seeking permission from the Instagrammer before viewing the posts. Once following Instagrammers, followers can view the pictures and videos' timelines. People viewing the posts can interact with what they see by pressing the "Like" button or provide comments to express their opinions on the posts.

Malaysia presents an excellent case for exploring the influence of culture on Instagram use. Like other developing countries, the traditional culture of Malaysia greatly affects the attitudes and behaviors of its people. It is interesting to examine the influence of gender on Instagram use activities. In Malaysia, females have been subjugated by a cultural conservatism.

Literature Review

Wherever Females compose the majority users of many Social Networking Sites (SNS), Facebook, MySpace, Twitter, Bebo, Flickr and Pinterest. Conversely, males make up the majority of Google's users (71%), Digg, YouTube and LinkedIn. These surveys confirm that

the nature, functions and design of social media determines their users and effects. Females prefer Facebook, Twitter, and Pinterest because they are interpersonal and discussion-oriented while males favor Google, Digg, YouTube and LinkedIn because they are information and content-oriented. We also argue that females prefer social media more than males because these media are primarily social in their nature and this nature is similar to the social makeup of females.

Instagram use by males and females will not eschew from those uses of other social media. Females use it to socialize and provide opinion while males use it to collect information and pass time. Both will use it to present their daily life to others, however, the culture and traditions of Malaysia may mediate such use. Females will be more reserved about presenting themselves to others in personal pictures because the “social attitudes have remained relatively constant” in the conservative culture.

In addition, among the higher institutions students’, family honor, which has roots in the sexual conducts of females, is an important value that has to remain unsoiled. If not bounded by marriage, such conducts bring shame to family and “blacken its face”. It is difficult to erase or restore a dishonor.. Thus, many families will think that posting personal pictures of females show them as having playful and unrestrained character that seeks relations with males. This is to avoid giving “rise to false impressions or unfounded gossip”. Therefore, even if females post personal photos, they have to appear sober and modest in them and not reveal much of their bodies. Also, females who have public accounts will avoid posting their personal pictures in favor of pictures of materials they own or places they go.

Privacy Settings

More females believe that there is risk online. They report more about privacy concerns and are more likely to read privacy statements. This interest in the online privacy issues by females is perhaps because they are more likely to be victims of online abuse. According to the Working to Hold Online Abuse Organization, 73% of the 2500 online harassment and stalking cases from 2000 to 2008 are for females. Hence, in order to maintain their privacy, they create private accounts, support privacy policies and provide false information.

Females’ students will probably be more likely to create private accounts on Instagram due to safety and more importantly cultural reasons. Many fathers, brothers and husbands will reject that females have stranger male followers because it communicates a negative impression or create bad reputation about the females. Conversely, having a private account may communicate that a female is moral and well-mannered. More likely, males will have public accounts and followers from the opposite sex because “The misbehavior by women is believed to do more damage to family honor than the misbehavior of men” On the other hand, males can go out with anyone and come back at any time while females are restricted. Thus, they will limit their Instagram’s relationships only to family and friends. Even in the United States, 52% of females say that their social media profiles are set private so that only friends view them.

Information Disclosure

Females are extroverted and reveal more information about themselves on Facebook. This personal information includes their relationships, preferences, jobs, and religious affiliations. However, more often than females, males provide their contact information such as telephone numbers, emails and home addresses on their social network profile accounts. Moreover, female students feel more worried about providing such information compared to male. About

20% of them say they will share their location details in comparison to 65% of males. Also, 55% of males will share their email contact while only 42% of females will do so.

In most of the higher institutions in Malaysia, the culture, besides security reasons, inhabits females from disclosing contact information. This culture assumes that “the inherent personalities between men and women are vastly different”. Females who display contacts will be perceived as flirty and frivolous. Displaying contact information will reveal males flirty and wanting to contact females too, but the culture is less critical to males. It gives them more freedom in behaving and movement than females. It also forbids interaction between males and females who are strange to each other. Generally, it is indecent if a male and female stay behind closed doors or go out on a date. That is why there is a separation between males and females in social gatherings, and higher institutions.

Hypothesis

The central theme of this research paper is to understand the influence of culture on Instagram use by Malaysian higher education students. The following research questions are posited: Accordingly, this study tries to answer and confirm three hypotheses:

Hypothesis 1: Males are more likely to post their personal pictures on Instagram than females.

Hypothesis 2: Females are more likely to have private Instagram accounts than males.

Hypothesis 3: Males are more likely to reveal their personal information on their profile accounts than females.

Methods

The sample of this study includes university students in Malaysia. This segment is chosen because it uses Instagram more often than other age groups. About 200 university students participated in a questionnaire that took about 10 minutes to fill out. It was distributed to students who were enrolled in general education courses to guarantee a sample representing diverse body of students from different fields. The questionnaire was in English and it took about 15 minutes to fill out. Subjects were told that their information will be confidential.

Results

This study seeks to confirm its three hypotheses. In order to confirm them, independent t-test procedures were used to find out the differences between males and females. The first hypothesis stated, males are more likely to post their personal pictures on Instagram than females. The t-test revealed that males ($M = 1.82$; $SD = .38$), more than females ($M = 1.49$; $SD = .50$), posted personal pictures on Instagram ($t(522) = 8.00$, $p = .001$). This finding confirms the first hypothesis.

The second hypothesis stated that Females are more likely to have private Instagram accounts than males. The t-test statistical procedure confirmed this hypothesis. Males ($M = 1.21$; $SD = .41$) are more likely than females ($M = 1.10$; $SD = .30$) to have public accounts ($t(520) = 3.54$, $p = .001$).

The last hypothesis which stated that Males are more likely to reveal their personal information on their profile accounts than females. The t-test revealed that More frequently than females ($M = 2.92$; $SD = 1.77$), males ($M = 3.68$; $SD = 2.01$) disclose their personal information ($t(527) = 4.49$, $p = .001$). The third hypothesis is confirmed. Table I below shows types of information, each gender disclosed with percentage.

Information Disclosed	Males			Females		
	Freq.	Rank	%	Freq.	Rank	%
Real name	152	1	78	206	1	59
Personal pictures	140	2	72	126	3	37
Preferred saying	77	3	40	175	2	51
Age/ Birthday	57	5	29	101	4	29
Major/school of study	57	5	29	92	5	27
Contacts	47	6	24	42	9	12
Interests and hobbies	46	7	24	67	7	19
Gender	36	8	19	68	6	20
Nationality	34	9	18	52	8	15
Job title	24	10	12	17	11	5
Place of living	18	11	9	16	12	5
Marital status	18	12	9	22	12	6

Table 1: Types of information, each gender with %

Discussion and Conclusion

This paper sought to find out the influence of culture on Instagram use between males and females. This study confirms that males are more likely than females to post their personal pictures on Instagram, more likely to disclose their personal information and more likely to have public accounts unlike females who are more likely to have private accounts than males. Such findings confirm what has been discussed in the literature review. Such culture has always preferred males over females and this is why males are more likely than females to post their personal pictures or disclose their personal information on Instagram. The image of a female is part of the image of the entire family or clan. Father, brothers and husbands probably will allow females to have Instagram accounts, but would probably not prefer that their sisters, wives and daughters to post their personal pictures especially if they have public accounts or disclose personal information. Such conduct might “blacken its face” of the family. “Guarding a woman’s image is neither a personal nor a family choice; it is imposed by the culture”.

This is also similar to having public accounts by females. Families are more likely to reject that their daughters to allow other stranger males to follow them. Having males followers may shows a female who is a playful. Such image is because “The misbehavior by women is believed to do more damage to family honor than the misbehavior of men”.

Future studies might compare between Malaysia and Western females on the use of Instagram. Using a cultural perspective might further highlight the influence on culture on the use of various social media. Future studies might also examine age as a factor influence usage of Instagram in issues related to privacy settings, disclosure, types of pictures posted, and level of involvements, etc

References

- A. Smith. (2014). The numbers: 85 interesting Instagram statistics. Digital Marketing Rambling. [Online]. Available: http://expandedramblings.com/index.php/important-instagramstats/#.U_jjTtgcSt8
- B. Ward, Even in virtual environments women shop and men build: A social, 2011.
- D. Williams, M. Consalvo, S. Caplan, and N. Yee, “Looking for gender (LFG): Gender roles and behaviors among online gamers, ” *Journal of Communication* , vol. 59, pp. 700 – 725, 2009.
- E. A. Kolek and D. Saunders, “Online disclosure: An empirical examination of undergraduate Facebook profiles,” *NASPA Journal*, vol. 45, no. 1, pp. 1–25, 2008.
- E. Shubin. (2012). *Gender differences in social media usage*. [Online]. Available: <http://www.comcreative.com/blog/2012/09/gender-differences-social-media-usage>
- Examiner (2012). Gender differences arise in social media use. [Online]. Available: <http://www.examiner.com/article/genderdifferences-arise-social-media-use>
- J. Fogel and E. Nehmad, “Internet social network communities: Risk taking, trust and privacy concerns, ” *Computers in Human Behavior*, vol. 25, pp. 153-160, 2009.
- J. Goudreau. (2010). What men and women are doing on Facebook. [Online]. Available <http://www.forbes.com/2010/04/26/popular-social-networking->
- K. B. Sheehan and C. Doherty, “Re-weaving the web: Integrating print and online communication, ” *Journal of Interactive Marketing*, vol. 15, no. 2, pp. 47-59, 2001.
- M. Duggan and J. Bernner. (2013). The demographics of social media users—2012. *The Pew Research Internet Project*. [Online]. Available: <http://www.pewinternet.org/2013/02/14/thedemographics-of-social-media-users-2012/>
- M. Hoy and G. Milne, “Gender differences in privacy-related measures for young adult Facebook users, ” *Journal of Interactive Advertising*, vol. 10, no. 2, pp. 28-45, 2010.
- M. Nydell. *Understanding Arabs: A Guide for Modern Times*, Boston: Intercultural Press, 2006.
- P. Norris, *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide*New York: Cambridge University Press, 2001.
- R. E. Guadagno and R. B. Cialdini, “Persuade him by email, but see her in person: Online persuasion revisited, ” *Computers in Human Behavior*, vol. 33, pp. 999 –1015, 2007.
- R. E. Guadagno, N. L. Muscanell, B. M. Okdie, N. M. Burk, and T.
- R. Milne, George, and J. M. Culnan, “Strategies for reducing online privacy risks: Why consumers read (or don't read) online privacy notices, ” *Journal of Interactive Marketing*, vol. 18, no. 3, 15-29, 2004.
- R. Patai, *The Arab Mind*, Red Brick Press, 2007. sites-forbes-woman-time-facebook-twitter.html
- The Demographics of Social Media Users. (2012). [Online]. Available: www.pewresearch.org
- Working to Hold Online Abuse organization (WHOA). (2008). Comparison statistics 2000-2009. [Online]. Available: <http://haltabuse.org/resources/stats/Cumulative2000-2007.pdf>
- Z. Tufekci, “Grooming, gossip, Facebook, and MySpace,” *Information, Communication & Society*, vol. 11, no. 4, pp. 544– 564, 2008.

THE INFLUENCE OF SOCIAL NORMS AND PERCEIVED BEHAVIORAL CONTROL ON CONSUMER BEHAVIOR IN PURCHASING HOUSING: A LITERATURE REVIEW

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Abstract: *In the last few decades there has been a mounting demand for housing due to the increasing growth of the population. The real estate sector plays an important role in meeting this demand. However, there are various factors - demographic, psychological and social that influence the consumers' decision-making in purchasing an apartment from the real estate sector. But to determine the actual purchasing behavior of the consumer, behavioral factors such as social norms and perceived behavioral control need to be considered along with other factors. So, the study attempts to give a systematic review on how social norms and perceived behavioral control influence consumers' purchasing behavior. From a review of national and international journals it was found that family members, relatives and friends have a great influence on consumers' purchasing decisions. Apart from these, the timely delivery, goodwill and advice of real estate sales staff also have a positive influence on consumers' decisions to purchase an apartment. Additionally, it was found that perceived behavioral control influences consumers' purchasing behavior to buy an apartment. In this case, given that they had sufficient funds for purchasing an apartment, consumers were found to emphasize that knowledge and availability of information about the housing market ranks as their utmost priority in buying an apartment from the real estate sector.*

Introduction

A “house” is an indispensable asset in terms of its nature and role since it fulfills all the expectations of an individual/family and provides socio-economic identity. To a family, the contribution of housing is not only the provision of shelter, it is an important wealth component that enables a family to contribute socially and economically to the community, a representation of achievements and social acceptance, and a component of the income distribution. That is why it is considered as the basic need of the people (Jahan, 2002; Zavei & Jusan, 2012; Andrews, Sánchez & Johansson, 2011; Kamal & Safayat, 2016).

Over time, the family patterns have changed and the traditional family is no longer the norm. In the place of traditional family patterns, the family pattern is now single, then married, married with children, empty nest, retirement, and widowhood. So, the demand for housing types has also changed, which creates demand for wider housing options (Gibler & Nelson, 2003). As a result, the decision in buying a suitable housing unit has become a very crucial one for a family since many purchasers have to spend their whole life's savings for the purchase (Kamal & Pramanik, 2015).

However, many factors influence the consumers' house-buying decisions such as demographic factors (age, gender, income, etc), psychological factors (internal motivation), and social factors (Singh, Gupta & Dash, 2018). According to some literature, the physical factor is probably the most important, although the actual decision of the consumer may be

influenced by other considerations (Levy & Lee, 2004; Witayapunpracha, 2003; Manorungruengrat, 2009). To determine the actual decision-making process of consumers, behavioral research can help to understand the driving factors, and to do so, the rational factors need to be considered along with the psychological and behavioral factors (Bargh, 2002; Graaskamp & Jarchow, 1991).

Some studies have been conducted that focus on consumer behavior and the facts that drive the purchase of a house. But conclusive clarifications from the behavioral point of view are missing in most cases (Gibler & Nelson, 2003; DeLisle, 2012; Koklic & Vida, 2009). Studies from a real estate perspective mostly focus on neoclassical theory which assumes that to buy/rent a real estate property people make their economic decisions rationally so that the utility can be maximized. But the human influence on the consumers of the real estate market has not been examined by most of the researchers. They continue to approach the consumers' behavior from the production side rather than the consumption side, so the property is valued by its physical attributes. The consumers' perception of space, surroundings and linkages has not been addressed, although the integration is very important in understanding the consumers' decisions in a better way (Gibler & Nelson, 2003). So, based on the literature, this study attempts to explain how social norms and perceived behavior affect consumers in their purchase of housing from the real estate sector.

Conceptual Framework

Theory of Planned Behavior (TPB)

The theory of planned behavior was proposed as an extension of the theory of reasoned action (Ajzen 1988; Ajzen, 1991). According to the TPB, consumer behavior can be predicted by the consumers' attitudes toward the behavior, subjective norms regarding the behavior, and perceived control over performing the behavior. (Ajzen, 1991; Sheeran, Trafimow & Armitage, 2003). It is the subject of considerable attention in relation to beliefs. Considering the important role of beliefs in human behavior, Ajzen (1991) emphasized three kinds of beliefs related to the three predictors of intention: behavioral beliefs which are assumed to influence attitudes toward the behavior, normative beliefs which constitute the underlying determinants of subjective norms, and control beliefs which provide the basis for perceptions of behavioral control.

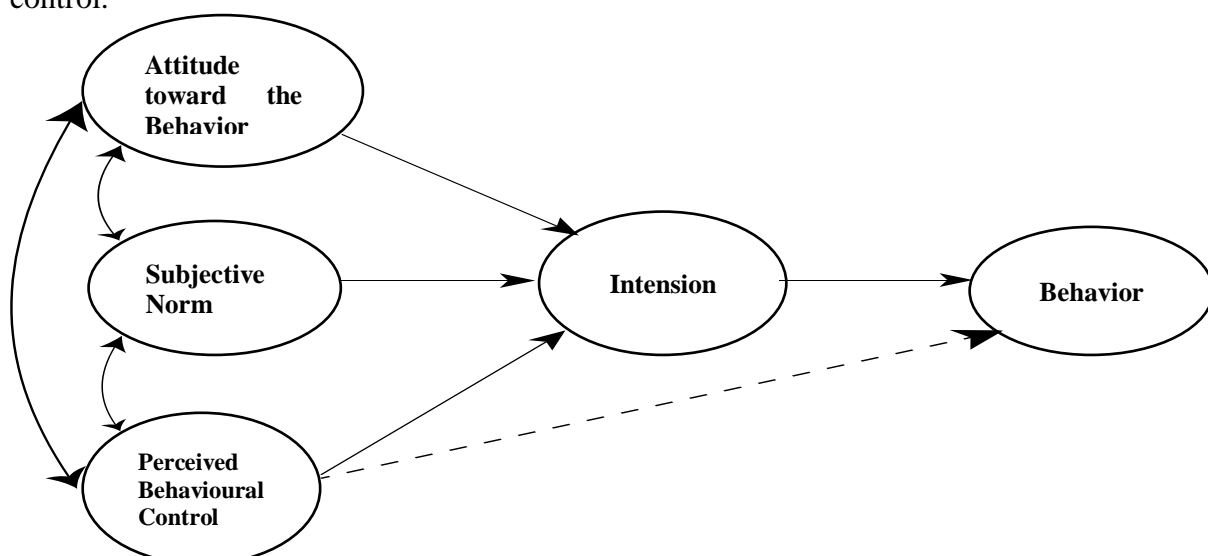


Figure 1: Theory of Planned Behavior; Source: Ajzen, (1991) p 182

Consumer Behavior

For the last few decades, understanding the buying behavior of the consumer has become a very important issue (Singh, Gupta & Dash, 2018). Consumer behavior is the behavior consumers show to search, purchase, utilize and assess a product, service, and idea (Schiffman & Kanuk, 2010). According to Dudovskiy (2015), consumer buying behavior is the result of the individual's necessities and wishes, and purchases are made to fulfill these desires. Consumer buying behavior not only examines the customers' actions but also how these affect their behavior (Gibler & Nelson, 2003). It helps to know more about the consumers' moods and behaviors so that a strong relationship can be developed with them. (Goel, Hofman, Lahaie, Pennock & Watts, 2010). At the macro level, marketers are concerned about society's values, beliefs and practices that impact on the market place. The micro-level focuses on human behavior and the reasons behind this (Gibler & Nelson, 2003). Consumer behavior plays a significant role in forming customer loyalty. The more the focus has been put on customer satisfaction, the more long-term profit can be achieved in the business (Goel et al., 2010).

Subjective Norm

Subjective norm is the outcome of the pressure imposed on a person either to perform the behavior or not (Han & Kim, 2010; Kim & Han, 2010; Tonglet, Phillips & Read, 2004; Ajzen, 1991). It is the individual's normative beliefs that are affected by family members (Rivis & Sheeran, 2003). It is presumed that friends, parents, political parties, and/or agents have an involvement in the decision-making process (Kalafatis, Tsogas & Blankson, 2000). If people close to the customers have a preference for a product, the customer's intention to purchase will increase; if not, the customers may have to adjust their intentions (Rivis & Sheeran, 2003).

A significant relationship has been found between subjective norms and intentions in different studies; while no relation has been found in many other studies (Baker, Al-Gahtani & Hubona, 2007; Teo & Lee, 2010; Mathieson, 1991; Chan & Lu, 2002). In the case of real estate purchasers, Phungwong (2010) and Numraktrakul, Ngarmyarn & Panichpathom (2012) found that subjective norms influenced the intention of the customers of Jeddah to purchase a house from the real estate sector. The same result is found among the consumers in Malaysia in the case of purchasing a house from the real estate market (Razak, Ibrahim, Abdullah, Osman & Alias, 2013).

Perceived Behavioral Control

The term "Perceived behavior control" refers to the extent to which a person has control over both the internal and external factors that are responsible for either facilitating or preventing the behavioral performance (Han & Kim, 2010). In other terms, control beliefs are an individual's belief towards these internal and external factors, which expedite or restrict them to act (Kim & Han, 2010; Tonglet, Phillips & Read, 2004). Researchers have identified perceived behavior control as a predictor of intention (Nabi, Liñán, Iakovleva, Kolvereid & Stephan, 2011; Wu, Lin & Lin, 2011; Alam & Sayuti, 2011). In the studies covering different areas, a positive relationship has been found between perceived behavioral control and intention (Baker, Al-Gahtani & Hubona, 2007; Teo & Lee, 2010; Fang, 2006; Gopi & Ramayah, 2007; Blanchard, Fisher, Sparling, Nehl, Rhodes, Courneya & Baker, 2008; Ramayah, May and Omar, 2007). Conversely, the opposite scenario has been found in the study of Al-Nahdi, Habib & Albdour (2015) where perceived behavior control does not influence the intention of home purchasers.

Examples of variables

Many researches have been conducted to see how social norms and perceived behavioral control impact on consumers' purchasing decisions. Here, factors under the social norms and perceived behavior have been distinguished from various literature works as shown in the following table:

Dependent variable	Underlying factor	Citation
	Spouse's Influence	Ford & Warnes, 1993; Songkakoon, Ngarmayarn & Panichpathom, 2014; Al-Nahdi, Habib, Bakar, Bahklah, Ghazzawi & Al-Attas, 2015.
	Child's Influence	Songkakoon, Ngarmayarn & Panichpathom, 2014; Al-Nahdi et al., 2015; Law & Warnes, 1982; Allen, Hogg & Peace, 1992; Chaudhary, 2013; Kotler & Keller, 2012.
Subjective Norm	Parent's Influence	Levy & Lee, 2004; Al-Nahdi et al., 2015; Al-Jeraisy, 2008.
	Friend's Influence	Al-Nahdi et al., 2015; Gillani, 2012; Susilawati & Anunu, 2001; Kichen & Roche, 1990.
Perceived Behavioral Control	Reference Group Influence (Relatives, siblings, sales staff, estate agents)	Koklič & Vida, 2009; Rivis & Sheeran, 2003; Al-Nahdi et al., 2015; Law & Warnes, 1982; Numraktrakul, Ngarmayarn & Panichpathom, 2012.
	Opportunity (easy access to the market) in making a decision to buy house	Yoke, Mun, Peng & Yean, 2018, Wibawal, Hartoyo & Hartoyo, 2017; Lei, 2017.
	Time to make a decision to buy house	Al-Nahdi et al., 2015; Yoke et al., 2018; Wibawal, Hartoyo & Hartoyo, 2017; Lei, 2017.
	Solvency to buy house	Al-Nahdi et al., 2015; Yoke et al., 2018; Wibawal, Hartoyo & Hartoyo, 2017; Lei, 2017.
	Skills and knowledge about housing to make decision when someone would like to buy house	Al-Nahdi et al., 2015; Yoke et al., 2018; Wibawal, Hartoyo & Hartoyo, 2017; Lei, 2017.
	Control over buying house	Al-Nahdi et al., 2015; Wibawal, Hartoyo & Hartoyo, 2017; Lei, 2017.

Influence of Social Norm and Perceived Behavioral Control on Consumers' Purchasing Decisions

Social Norms

Spouse's Influence

From the social viewpoint, a family is a functional unit where both husband and wife put their opinions into the purchasing decision (Al-Jeraisy, 2008). Dependent on the product type, decision-making process and situation, the role of husband and wife has undergone change. With the changing family structure, the tendency to make joint decisions has increased, including for both housing and housing financing (Gibler & Nelson, 2003). Traditionally, the husband is the main person to make the final purchasing decision. But now, the influence of spouses in the decision-making process has increased, particularly when the purchase involves high risk and long-term financial commitment. Generally, the older married couple with no children make their homeownership buying decision mutually; they also spend more money on

their hobbies and luxury items since they have to spend less on family and often have a good amount of savings [Al-Jeraisy, 2008; Balda, Duhan, Chadha, Gandhi & Prakash, 2018]. Even in Saudi society, the increasing trend of education and employment among females makes them confident to take part in decisions like housing purchase (Al-Nahdi et al., 2015).

Child's Influence

In today's world, the youngest family members are showing their power of influencing important family day by day buying decisions (White, 2013). Their influence on purchasing decisions is found at every stage, even in the decision of buying a house (Sangkakoon, Ngarmyarn & Panichpathom, 2014). Although parents take the final decision, they try to discuss this with the other members of the family (Levy & Lee, 2004). In a high income families, where resource transfer is larger, a close association is found between the parents' home purchasing decision and the children's preference. The adult children are found to be more knowledgeable and familiar with their parents' home choice (Lux, Samec, Bartos, Sunega, Palguta, Boumová & Kázmér, 2018). In the case of older parents, who want to move home after retirement, the children try to influence their decision through their advice and good wishes. They might expect to help their parents choose their house after retirement, particularly if one of them is widowed (Livette, 2007). Even in a traditional society like Saudi Arabia, children are getting more involved in the decision of purchasing a house. It is because Saudi society is shifting from a traditional society to a modern society where children are provided with a good education so they are now more able to express their needs (Al-Jeraisy, 2008).

Parent's Influence

The influence of parents on children lasts until children make their own family. In some cases, it persists until they get married and have children (Levy & Lee, 2004). In the study of Al-Jeraisy (2008), Saudi parents were found to have a strong influence on the consumption behavior of society. The study concluded that the father has the most significant influence on the sons in making the purchasing decision.

Friend's Influence

Friends influence the consumers' purchasing behavior both intentionally and unintentionally. They continuously put pressure on consumers and as a result the consumers adjust their behavior accordingly, even if they might prefer a different choice (Sangkakoon, Ngarmyarn & Panichpathom, 2014; Rao, Childers & Dutta, 1991). According to Susilawatiet & Anunu (2001), friends, colleagues and wives have 45% influence on the decision of buying a house. Al-Nahdi, Ghazzaw & Bakar (2015) found that the positive influence of friends resulted in a greater intention of real estate purchasing in Saudi Arabia.

Reference Group Influence:

Reference group refers to those formal or informal groups that influence the consumer's behavior. The consumers do not necessarily have to be a member or to have a direct or indirect relationship with the reference group (Gibler & Nelson, 2003; Al-Jeraisy, 2008). But this group has a strong influence on the purchasing decisions of the consumers (Panthura, 2011).

The study of Labib, Bhuiya & Rahaman (2013) found that apartment buyers in Dhaka city are influenced by their relatives to buy apartments close to them. Especially in Dhanmondi and Mohammadpur, apartment buyers were significantly influenced by their relatives in their purchasing decisions. Furthermore, in another Bangladesh study, colleagues were identified as being more influential than family and friends (Jamil, Hossain & Siddique, 2018).

Other influences are sales staff and estate agents, whose behavior, punctuality and goodwill is a contributing factor in decisions to buy apartments, particularly in the case of the real estate sector (Nasar & Manoj, 2013; Livette, 2007). Personal word-of-mouth communication is a good source of information for real estate buyers and influences the consumers' purchasing decisions more significantly than advertising and other market-oriented sources (Herr, Kardes & Kim, 1991). Gibler and Nelson (2003) claim that if the most influential reference groups can be identified by the real estate developers, their products can be designed and marketed in such a way that the reference groups would accept them more readily.

Perceived behavior control

Wibawa¹, Hartoyo & Hartoyo (2017) found that in the case of buying an apartment from the real estate sector, easy access to information about the products contributes most to attracting buyer interest. The availability of market information stimulates consumers' attitudes towards buying an apartment. Apart from this, enough money and enough time have been identified as two other key factors necessary to generate interest in making a purchase. But they ranked financial ability after having enough knowledge and insight into the market. Lei (2017) conducted a study to identify how perceived behavioral control affects the purchasing decisions of Chinese customers in Bangkok by considering the same five indicators - opportunity to make a decision, enough time, solvency, skill and knowledge, and control over the market. The study found that perceived behavioral control has a positive influence on consumer purchasing behavior and concluded that understanding the influential factors would help the real estate developer to incorporate them into their marketing. Another study by Zheng, Cheng & Yingjie (2019) found that perceived behavioral control has a positive impact on the purchasing intentions of young consumers. Furthermore, government incentives were identified to have a direct effect on perceived behavioral control. The study puts the reason for this as government incentives, through which the young consumers get additional financial support which, in turn, increases their willingness to purchase a house. Different studies have confirmed the positive association between perceived behavioral control and consumer purchase intentions in relation to the real estate (Khoo, Goh & Ting, 2020; Phungwong, 2010; Numraktrakul, Ngarmyarn & Panichpathom, 2012). But the opposite scenario is found in the study of Al-Nahdi et al (2015) where it is concluded that in the case of the real estate apartment buyers of Saudi Arabia, the more positive perceived behavioral control would not result in greater purchasing intention.

Conclusion

The study attempted to explore consumer purchasing behavior from behavioral points of view. Based on the literature, the study attempted to explore how social norms and perceived behavioral control affect consumers' purchasing intentions from the real estate sector. The study threw light on the important factors in making housing purchase decisions. Modern society is now taking this issue so seriously that, as well as every family member (parents, children), friends and reference groups are now getting involved in the decision-making process. The perceived behavioral control is also found to have a positive influence on the consumers' purchasing behavior in most cases. There are many studies on the social norm and perceived behavioral control of consumers covering different areas like food consumption, housing choice, etc., but very few incorporate both the social norm and perceived behavioral control of consumers' purchasing behavior from the real estate sector. So, more research is needed focusing on real estate consumers to identify the contributing factors that may affect their purchasing behavior from the behavioral point of view.

References

- Ajzen, I 1988, 'Attitudes, personality, and behavior', Chicago, IL: Dorsey.
- Ajzen, I., 1991. The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), pp.179-211.
- Alam, S.S. and Sayuti, N.M., 2011. Applying the Theory of Planned Behavior (TPB) in halal food purchasing. *International journal of Commerce and Management*.
- Al-Jeraisy, K.A., 2008. Consumer Behavior; An Analytical Study of The Saudi Family's Purchase Decision (Purchasing Computers). *King Fahd National Library: Saudi Arabia*.
- Allen, I., Hogg, D. and Peace, S., 1992. *Elderly people: choice, participation and satisfaction*. Policy Studies Institute.
- Al-Nahdi, T.S., Ghazzawi, O.H. and Bakar, A.H.A., 2015. Could Behavioral Factors Affect Purchaser's Behavior of Real Estate in Jeddah. *International Journal of Business and Management*, 10(10), p.87.
- Al-Nahdi, T.S., Habib, S.A. and Albdour, A.A., 2015. Factors influencing the intention to purchase real estate in Saudi Arabia: moderating effect of demographic citizenship. *International Journal of Business and Management*, 10(4), p.35.
- Al-Nahdi, T.S., Habib, S.A., Bakar, A.H.A., Bahkalah, M.S., Ghazzawi, O.H. and Al-Attas, H.A., 2015. The effect of attitude, dimensions of subjective norm, and perceived behavior control, on the intention to purchase real estate in Saudi Arabia. *International Journal of Marketing Studies*, 7(5), p.120.
- Andrews, D., Sánchez, A.C. and Johansson, Å., 2011. Housing markets and structural policies in OECD countries.
- Baker, E.W., Al-Gahtani, S.S. and Hubona, G.S., 2007. The effects of gender and age on new technology implementation in a developing country. *Information Technology & People*.
- Balda, S., Duhan, K., Chadha, N., Gandhi, P. and Prakash, I.J., 2018. Block-4 Family Life Cycle Stages-II.
- Bargh, J.A., 2002. Losing consciousness: Automatic influences on consumer judgment, behavior, and motivation. *Journal of consumer research*, 29(2), pp.280-285.
- Blanchard, C., Fisher, J., Sparling, P., Nehl, E., Rhodes, R., Courneya, K. and Baker, F., 2008. Understanding physical activity behavior in African American and Caucasian college students: an application of the theory of planned behavior. *Journal of American College Health*, 56(4), pp.341-346.
- Chan, S.C. and Lu, M.T., 2002. Understanding Internet Banking Adoption and Continue-Use Behavior: A Hong Kong Perspective.
- Chaudhary, M., 2013. Role of children in the family buying process. *Doctor of Philosophy, Jaypee Institute of Information Technology*.
- DeLisle, J.R., 2012. Lessons (To Be) Learned. *The Appraisal Journal*.
- Dudovskiy, J., 2015. A Brief Literature Review on Consumer Buying Behaviour. Retrieved March, 30, p.2018.
- Fang, M.L., 2006. Examining ethical intentions of individual employees of Taiwan from theory of planned behavior. *The Business Review, Cambridge*, 6(1), pp.257-264.
- Ford, R. and Warnes, A.M., 1993. *Residential strategies in later life: focus group and interview study results*. Department of Geography and Age Concern Institute of Gerontology, King's College.
- Gibler, K. and Nelson, S., 2003. Consumer behavior applications to real estate education. *Journal of Real Estate Practice and Education*, 6(1), pp.63-83.

- Gillani, F., 2012. Impact of peer pressure and store atmosphere on purchase intention: An empirical study on the youngsters in Pakistan. *International Journal of academic research in Business and Social Sciences*, 2(7), p.323.
- Goel, S., Hofman, J.M., Lahaie, S., Pennock, D.M. and Watts, D.J., 2010. Predicting consumer behavior with Web search. *Proceedings of the National academy of sciences*, 107(41), pp.17486-17490.
- Gopi, M. and Ramayah, T., 2007. Applicability of theory of planned behavior in predicting intention to trade online. *International Journal of Emerging Markets*.
- Graaskamp, J.A. and Jarchow, S.P., 1991. *Graaskamp on real estate*. ULI-the Urban Land Institute.
- Han, H. and Kim, Y., 2010. An investigation of green hotel customers' decision formation: Developing an extended model of the theory of planned behavior. *International journal of hospitality management*, 29(4), pp.659-668.
- Herr, P.M., Kardes, F.R. and Kim, J., 1991. Effects of word-of-mouth and product-attribute information on persuasion: An accessibility-diagnostics perspective. *Journal of consumer research*, 17(4), pp.454-462.
- Jahan, A., 2002. Housing provision in Dhaka: an analytical study of the role of state and private formal developers.
- Jamil, M.A.A., Hossain, A. and Siddique, M.Z.R., 2018. Factors Influencing Consumers' Choice Criteria to Purchase Residential Apartments in Bangladesh. *International Journal of Science and Business*, 2(3), pp.294-305.
- Kalafatis, S.P., Tsogas, M.H. and Blankson, C., 2000. Positioning strategies in business markets. *Journal of Business & Industrial Marketing*.
- Kamal, M. and Pramanik, S.A., 2015. Customers' Intention towards Purchasing Apartment in Dhaka City, Bangladesh: Offering an Alternative Buying Intention Model. *European Journal of Business and Management*, 7(35).
- Kamal, M. and Safayat, A., 2016. HOUSING FINANCE: A STUDY ON PUBLIC AND PRIVATE HOUSING FINANCE INSTITUTIONS IN BANGLADESH. *International Journal of Economics, Commerce and Management*, IV (3), pp. 438 – 461.
- Khoo, D., Goh, Y.N. and Ting, M.S., 2020, May. Investigation on Buyers' Purchase Intention of High-Rise Properties in Malaysia in the Era of 4.0. In *First ASEAN Business, Environment, and Technology Symposium (ABEATS 2019)* (pp. 1-5). Atlantis Press.
- Kichen, J.M. and Roche, J.L., 1990. Life-care resident preferences. *Life care: A long-term solution*, pp.49-60.
- Kim, Y. and Han, H., 2010. Intention to pay conventional-hotel prices at a green hotel—a modification of the theory of planned behavior. *Journal of Sustainable Tourism*, 18(8), pp.997-1014.
- Koklic, M.K. and Vida, I., 2009. A strategic household purchase: consumer house buying behavior. *Managing Global Transitions*, 7(1), pp.75-96.
- Kotler, P. and Keller, K., 2006. *Marketing Management*, Pearson Prentice Hall.
- Labib, S, M, Bhuiya, M, M, R, & Rahaman, M, Z 2013, 'Location and size preference for apartments in Dhaka and prospect of real estate market', *Bangladesh Research Publications Journal*, 9(2), 87-96.
- Law, C.M. and Warnes, A.M., 1982. The destination decision in retirement migration. *Geographical perspectives on the elderly*, pp.53-81.
- Lei, L., 2017. The Study of Factors Influencing Chinese Customers' Purchase Decision of Residential Condo in Bangkok.

- Levy, D.S. and Lee, C.K.C., 2004. The influence of family members on housing purchase decisions. *Journal of Property Investment & Finance*.
- Livette, M., 2007. Influencer and other “buying” roles in the decision-making process of retirement housing purchasers. *Property Management*.
- Lux, M., Samec, T., Bartos, V., Sunega, P., Palguta, J., Boumová, I. and Kázmér, L., 2018. Who actually decides? Parental influence on the housing tenure choice of their children. *Urban Studies*, 55(2), pp.406-426.
- Manorungruengrat, A., 2009. Preferences for Detached House: DINKs Perspective.
- Mathieson, K., 1991. Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information systems research*, 2(3), pp.173-191.
- Nabi, G., Liñán, F., Iakovleva, T., Kolvereid, L. and Stephan, U., 2011. Entrepreneurial intentions in developing and developed countries. *Education+ Training*.
- Nasar, K.K. and Manoj, P.K., 2013. Customer satisfaction on service quality of real estate agencies: An empirical analysis with reference to Kochi Corporation Area of Kerala State in India. *International Journal of Management, IT and Engineering*, 3(6), pp.213-227.
- Numraktrakul, P., Ngarmyarn, A. and Panichpathom, S., 2012, June. Factors affecting green housing purchase. In *17th International Business Research Conference. Toronto, Canada*.
- Panthura, G., 2011. Structural Equation Medeling on Repurchase Intention of Consumers towards Otop Food. In *International Conference on Advancement of Development Administration* (pp. 33-36).
- Phungwong, O., 2010. Factors influencing home purchase intention of Thai single people. *Published dissertation., International graduate school of business, University of South Australia, Adelaide, Australia*.
- Ramayah, T., May, O.S. and Omar, A., 2007. Behavioral determinants of online banking adoption: Some evidence from a multicultural society. *i-Manager's Journal on Management*, 2(3), p.29.
- Rao, A.R., Childers, T.L. and Dutta, S., 1991. *Theoretical perspectives on intergenerational influences in consumer behavior*. Working paper, Department of Marketing, Univesrity of Minnesota, USA.
- Razak, M.I., Ibrahim, R., Abdullah, N., Osman, I. and Alias, Z., 2013. Purchasing intention towards real estate development in Setia Alam, Shah Alam: Evidence from Malaysia. *International Journal of Business, Humanities and Technology*, 3(6), pp.66-75.
- Rivis, A. and Sheeran, P., 2003. Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology*, 22(3), pp.218-233.
- Sangkakoon, P., Ngarmyarn, A. and Panichpathom, S., 2014. The influence of group references in home purchase intention in Thailand. *IDEAS Working Paper Series from RePEs, St. Louis*.
- Schiffman, L.G. and Kanuk, L.L., 2010. *Consumer Behaviour* (ed.).
- Singh, N., Gupta, M. and Dash, S.K., 2018. A study on impact of key factors affecting buying behaviour of residential apartments: a case study of Noida and Greater Noida. *International Journal of Indian Culture and Business Management*, 17(4), pp.403-416.
- Sheeran, P, Trafimow, D, & Armitage, C, J 2003, ‘Predicting behaviour from perceived behavioural control: Tests of the accuracy assumption of the theory of planned behavior’, *British Journal of Social Psychology*, 42, 393-410.
- Susilawati, C. and Anunu, F.B., 2001. Motivation and perception factors influence buying home behaviour in Dilly, East Timor. In *Proceedings of The 7th Pacific Rim Real Estate Society Annual Conference*. Pacific Rim Real Estate Society.

- Teo, T. and Lee, C.B., 2010. Explaining the intention to use technology among student teachers. *Campus-Wide Information Systems*.
- Tonglet, M., Phillips, P.S. and Read, A.D., 2004. Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK. *Resources, conservation and recycling*, 41(3), pp.191-214.
- White, M.C., 2013. American families increasingly let kids make buying decisions Time.
- Wibawa, R.T., Hartoyo. & Hartoyo, S., 2017. Purchase Intention of an Apartment: An Application of Theory of Planned Behavior (TPB). *International Journal of Science and Research (IJSR)*. 6(10).
- Witayapunpracha, S., 2003. Analysis of factors affecting the decision to purchase housing.
- Wu, S., Lin, C.S. and Lin, J., 2011. An empirical investigation of online users' keyword ads search behaviours. *Online Information Review*.
- Yoke, C.C., Mun, Y.W., Peng, L.M. and Yean, U.L., 2018. Purchase intention of residential property in greater kuala lumpur, malaysia. *International Journal of Asian Social Science*, 8(8), pp.580-590.
- Zavei, S.J.A.P. and Jusan, M.M., 2012. Exploring housing attributes selection based on Maslow's hierarchy of needs. *Procedia-Social and Behavioral Sciences*, 42, pp.311-319.
- Zheng, S., Cheng, Y. and Ju, Y., 2019. Understanding the Intention and Behavior of Renting Houses among the Young Generation: Evidence from Jinan, China. *Sustainability*, 11(6), p.1507.

THE EFFECTS OF MODELLING ON CHILDREN'S ENGAGEMENT IN SPORTS AND PHYSICAL ACTIVITIES IN ILIGAN CITY SCHOOLS DIVISION: BASIS FOR INTERVENTION PROGRAM

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Abstract: *This study aimed to determine parents, teacher, coach, and peer modelling as factors affecting children's engagement in sports and physical activities (CESPA). It investigated the respondents' profile such as age, gender, height, weight, health status, socio-economic status, personality type, belief system, community sports facilities availability, community sports program availability, frequency of sports media exposure. It also determined if the moderating variables interplay in the relationship between CESPA and modelling. Descriptive-correlational analysis were utilized to determine the respondents' profile and the CESPA. Correlational analyses were used to examine relationships between key variables, modelling, and CESPA among 200 randomly selected Grades 1 to 6 pupils in randomly selected private and public schools in the Division of Iligan City. Likert Scale and Inferential Statistics were used to measure the level of self-reported responses. Results showed that all the models influenced the CESPA, coach ranked first with 88.5% most influential, peers ranked second 83.5%, parents ranked third 77%, lowest influence were teachers 59%, implying that coach had the highest influence, while teachers were the least influential models. Among all the models, Coach Modelling had the closest relationship with the CESPA. Surprisingly, parents who were supposed to be the first models at home were not that influential on CESPA because they were too busy doing other things inside or outside their homes, definitely not sports nor physical activities. With coach and frequency of sports media exposure strongly influencing CESPA, it was recommended that pupils must be given access to SPA along with parents through the Intervention Program proposed in this study, making them aware on physical fitness at all times, and know the benefits thereof.*

Keywords: *Children, Engagement, Modelling, Sport*

Introduction

In today's modernization and automation, life longevity is dwindling. This phenomenon is attributed to unhealthy lifestyle of the modern people. Life span is shortened due to sedentary habits like lazily sitting in front of television sets instead of doing physical activities, riding in cars when going to near places instead of walking, thus people in present generation die as early as 50 years of age or even shorter. One major cause of health problems is physical inactivity modelled by the next generation, the children, from their parents, teachers, coaches, and peers.

Parents become too busy working, unable to model sports and physical activities [SPA] to their children. In schools, due to limited space, equipment and facilities for SPA, children's participation is curtailed. This condition is likely to worsen in the next decade to confront medical practitioners, physical educators, parents, and sport coach across races/ethnicities and

nations, as reported by the World Health Organization (Marmot 2012); National Nutrition Surveillance Center (2009); and Heart Disease and Stroke Statistics (Benjamin, 2018), to include core health behaviours in smoking, lack of physical activity [PA], poor diet and inappropriate weight; health problems with cholesterol, hypertension, glucose control along with alarming risks not only among the elderly but in young children as well.

A growing body of researches delving on protective factors affecting children's and adolescents' lives, reveals that sports and physical activities [SPA] can be modelled by the more knowledgeable other [MKO]: parent, teacher, coach (Usher, 2016), even friends or peers. Such modelling produces self-regulatory factors serving as central role-transformers of mental activities into academic skills (Coleman et al., 2016). Thus, children grow not only in physical and mental age, but also socially with their surroundings (Acero, et al., 2016), and most importantly with parents as key roles in moulding the young from birth to childhood, until adulthood. These MKOs and peers also influence children's engagement in SPA (Rickwood, 2012), yet, parents may have the most influence among them all. Parents' influence, being in the nucleus of the system in raising kids, is confronted with key issues and questions regarding nature and nurture of lifespan development, directly or indirectly affected by the environment (Feldman, 1981), these are challenges that affect children's holistic development.

Since children's growth and development start mainly at home where parents provide their needs and serve as role models, the moment children go out from their homes, play with neighbours, and interact with the other MKOs, they are exposed to new things, learn mainly by observing others' behaviour, attitudes, and outcomes of those behaviours as Bandura (1971) proposes that "most human behaviour is learned observationally through modelling: from observing others. The individual forms an idea of how new behaviours are performed, such coded information guide the child's further actions that can affect both their current and future health (Allen, et al., 2012). But it is sad to note that in later years, children are further exposed to risks of tobacco, alcohol, gang activities and sex at an early age, instead of engaging in wholesome and healthful SPA. Physical inactivity or sedentary attitudes including the use of gadgets in browsing the net, plus overeating while staying stationary, are only few of observable practices which, deemed inferior (Sison, 2018).

While western countries were experiencing obesity as threat to life, physical inactivity caused 6% of deaths globally as the 4th leading risk factor (Moore et al., 2017). In the Philippines, physically inactive Filipino adults reached 92.6% at risk in transport-related activities and heart problems with complications (Alberico, et. Al., 2017) pointing out the value of MKOs' direct or indirect influence on children's diet, and engagement in SPA. Despite several promotions of SPA, Efrat (2017) cites insufficient activity during elementary school years as primary cause of health problems. Kids need to accrue PA with parents at particular age level or developmental stage, but as to what extent the MKOs can influence engagement, are pressing concerns (Ashford et. al., 2010), augmented by the social climate of Information Age where children are hooked with gadgets at home or in school, instead of doing PAs (Brewer, 2009).

Sad to say, some parents seem to have 'no-care' attitude, not even feeling guilty of neglecting their children, unmindful of the provisions of law to protect their children below eighteen (18) years of age or those over eighteen years but unable to fully protect themselves from abuse, neglect, cruelty, exploitation, or discrimination because of physical, mental disability, or unfavourable conditions (Pangalangan, 2011), referring to Villar's (2018) signed bill on children's protection provided for in Republic Act 7610's, on psychological/psychiatric services, recreation, sports and livelihood, for child's self-efficacy (Brewer, 2009). Usher

(2016) also stressed prioritization of schoolchildren's health to build up self-efficacy, the strong beliefs within the young that they could do worthwhile things in life.

Health problems like obesity, prevalence of diabetes mellitus, hypertension, and cardiovascular problems caused by insufficient PA needs to be reduced, otherwise, perennial problems will continue to occur. Thus, local, national and international studies were conducted on the matter, yet there remains a dearth of the study in Iligan City, Philippines. It was on this premise that this paper was conceptualized and developed to investigate the randomly selected 200 pupil-respondents' (Grades 1 to 6) engagement in sports and physical activities [SPA] and the effects of parents, teacher, coach, and peer modelling on such engagement. Respondents were officially enrolled in public and private schools during the school year 2018-2019. As part of recommendations, an intervention program would be designed.

Statement of the Problem

This study which delved into parents', teacher, coach and peer modelling on the pupil-respondents' engagement in sports and physical activities, sought to answer the following questions:

1. What is the profile of the pupil-respondents in terms of:
 - 1.1 age
 - 1.2 gender
 - 1.3 height
 - 1.4 weight
 - 1.5 health status
 - 1.6 socio-economic status
 - 1.7 personality type
 - 1.8 belief system
 - 1.9 community sports facilities availability
 - 1.10 community sports program availability
 - 1.11 frequency of sports media exposure
 - 1.12 sports and physical activities engagement
 - 1.12.1 type of sports and physical activities
 - 1.12.2 frequency of engagement per week
 - 1.12.3 intensity of exercise
 - 1.12.4 time spent on the chosen sports and physical activities?
2. How do parents influence the Grades 1 to 6 pupil-respondents' engagement in sports and physical activities?
3. How does teacher influence the Grades 1 to 6 pupil-respondents' engagement in sports and physical activities?
4. How does coach influence the Grade 1 to 6 pupil-respondents' engagement in sports and physical activities?
5. How do peer influence the Grades 1 to 6 pupil-respondents' engagement in sports and physical activities?
6. Is there a significant relationship between parents', teacher, coach, peer modelling and children's engagement in sports and physical activities in terms of the type of sports and physical activities, frequency of engagement per week, intensity of exercise and time spent on the chosen sports and physical activities?
7. How do the moderating variables such as age, gender, height and weight, health status, socio-economic status, personality type, belief system, community sports facilities availability, community sports program availability, frequency of sports media exposure, engagement in sports and physical activities (type of sports and physical activities, frequency of engagement per week, intensity of the exercises, time spent on the chosen sports and physical activities) interplay in the relationship between children's engagement in sports and physical activities and modelling?
8. What intervention program can be proposed based on the results of the study to increase children's engagement in sports and physical activities?

Hypotheses

- Ho: 1. There is no significant relationship between parents, teacher, coach, and peer modelling and children's engagement in sports and physical activities.
- Ho: 2. The moderating variables such as age, gender, height and weight, health status, socio-economic status, personality type, belief system, community sports facilities availability, community sports program availability, frequency of sports media exposure, engagement in sports and physical activities (type of sports and physical activities, frequency of engagement per week, intensity of exercise, time spent on the chosen sports and physical activities) do not interplay in the relationship between children's engagement in sports and physical activities and modelling.

Conceptual Framework

This study, anchored on Bandura's Social Learning Theory [SLT] and Self-Efficacy Theory [SET], Bronfenbrenner's Eco-Biological Theory [EBT], Piaget's Cognitive Development Theory [CDT], Kohlberg's Moral Development Theory, Stage 2, and Vygotsky's Scaffolding Theory [ST], investigated on the effects of the more knowledgeable other's [MKO] modelling on children's engagement in sports and physical activities [SPA] at home, in school, and within a complex environment.

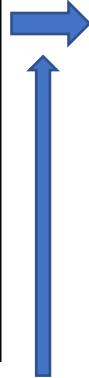
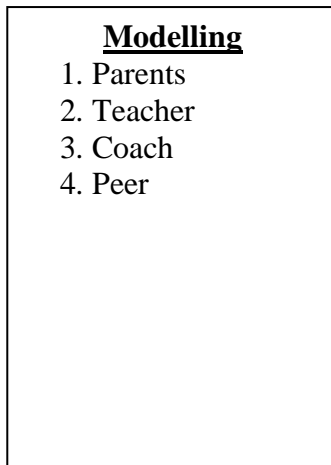
The application of the foregoing theories laid down the foundation of this research work, presented in a diagram, with the intention to design an intervention program to these effects, shown in the schematic diagram where children's engagement in sports and physical activities is believed to be influenced by parents, teacher, coach and peer modelling.

Age, gender, height and weight, health status, socio-economic status, personality type, belief system, community sports facilities availability, community sports program availability and frequency of sports media exposure as the moderating variables are thought to interplay in the relationship between children's engagement in sports and physical activities and modelling of parents, teacher, coach and peer.

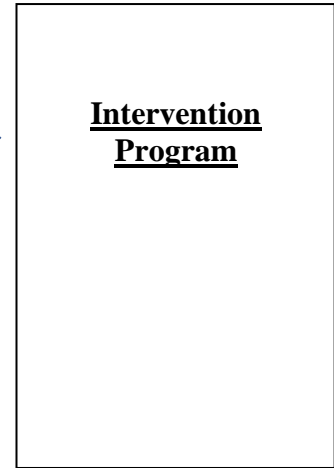
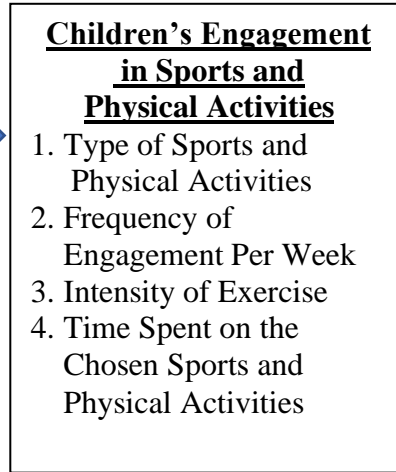
Furthermore, an intervention program was designed to promote sports and physical activities engagement among the children and the models. Target clients of this intervention program would be the pupil-respondents together with their parents and as they would benefit from worthwhile sports and physical activities in the long run.

Conceptual Framework

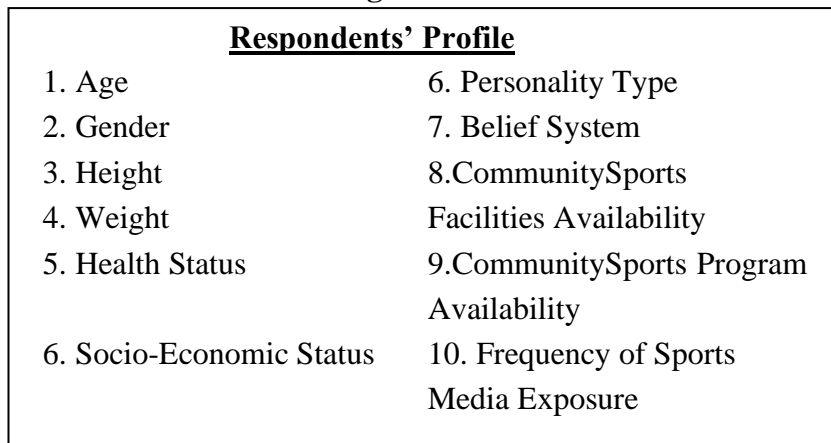
Independent Variables



Dependent Variables



Moderating Variables



Scope and Delimitation

The results of this study would add to the scarce literature about the effects of modelling on children’s engagement in sports and physical activities, with parents, teacher, coach, and peer as models.

This study was limited to gather data from the randomly selected two-hundred (200) pupil-respondents, the Grades 1 to 6 pupils officially enrolled in the randomly selected public and private schools in Iligan City Division of Iligan City, Philippines, during the school year 2018-2019. Models were limited to parents, teacher, coach, and peer, of pupil-respondents. Although siblings and other possible models could have been included, but time constraints did not warrant such inclusion.

Moderating variables were limited to age, gender, height, weight, health status, socio-economic status, personality type, belief systems, community sports facilities availability, community sports program availability, and frequency of sports media exposure.

Regarding children’s engagement in sports and physical activities, basis were limited to type of sports and physical activities, frequency of engagement per week, intensity of exercise, and time spent on the chosen sports and physical activities. Specific sports and physical activities

listed in the questionnaire were limited to the most common sports in the Philippine setting, based on the K-12 Curriculum.

Literature Review

Albert Bandura

The study was anchored on Bandura's Social Learning Theory which posits that people learn from one another, by observation, imitation, and modelling. The theory has often been called a bridge between behaviourist and cognitive learning theories because it encompasses attention, memory, and motivation, suggesting that human behaviour is learned observationally through modelling: from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action (Bandura, 1971).

Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences, with two basic models of learning: 1) People can learn by direct experience and through the power of social modeling; and 2) The advanced capacity of observational learning from modelled activities and their effects enables people to short cut the tedious trial and error process, as Dugdale (2013) asserts that evolutionary advances in communications technology enable people to transcend the confines of their lived environment, where attitudes, values, and new ways of thinking and behaving are now being modeled and rapidly diffused worldwide.

In addition to cultivating new competencies, modeling influences can alter motivation, emotional dispositions, and value systems, as the study of Singh et al. (2009) cited the effects of self-efficacy on the performance of athletes, human performance and emotions spanning the "thrill of victory to the agony of defeat" as well as group dynamics, organizational behavior and individual personality characteristics also discussed by Pajares (2005) regarding the effects on the mental preparation strategies and worthwhile performance of physically active individuals, as ideal setting for the development of psychological characteristics, specifically during childhood and adolescence.

Factors like self-efficacy where the axis of human traits and to a large extent affects the outcome of the specific behavior, are mentioned by Feldman (1981) defined as people's beliefs in their capabilities to perform in ways that give them control over events that affect their lives, referring to Bandura's (1971) notation of situationally specific variable which influences performance and determines how much efforts individual will expand and how long they will persist in the face of obstacles and difficult experiences. Therefore, the higher the self-efficacy, the more will be the intensive efforts while the lower the self-efficacy, the lesser will be the effort and difficult tasks being viewed as threats. Challenges among children, then, largely depend on their respective levels of self-efficacy.

Bronfenbrenner

Moreover, people's images of social reality and the structure and ideological orientations of societies are heavily influenced by the symbolic modelling in the mass media, as the Bronfenbrenner's Ecological Systems Theory (Feldman, 1988), mentions the child's development within the context of the system of relationships that form his or her environment. It defines complex "layers" of environment, each having an effect on the child's development, later renamed "Bio-Ecological Systems Theory" [BEST], it further emphasizes that a child's own biology is a primary environment fuelling his or her development, along with the immediate family, community, societal landscape and global environment that steer up development.

Other literature displayed the impact of parents transmitting to their children, as a systematic review of parental influences on PA, Edwardson and Gorely (2010) citing the influence on children's PA through direct involvement, eventually role modeling, but Frost et al., (2013) mentioned the fathers being more involved in children's soccer participation, exerting lesser pressure in performing more positive psychosocial responses.

Meanwhile, Vazou et al. (2012), asserts that observational learning is most powerful when the person being observed is powerful, respected, or considered to be like the observer. Consequently, it has been hypothesized that parents' PA behaviour may directly influence their children's PA behaviour—a concept often referred to in the literature as parents' modelling.

Piaget

Piaget believes that peers might promote cognitive development in ways that adults (parents and teachers) cannot. The child's brain development and cognitive processes from one stage to the next is Yao's (2015) citation of Piaget's parallel concepts on parental correlates in child and adolescent's PA, finding out that socio-cultural setting interplays with cognitive processes in children's engagement in SPA, and that children do not develop new cognitive structures in play, but merely try to fit new experiences into what they already know (Piaget, 1951), throughout the stages of play development, teachers and parents have many opportunities to observe children as they grow physically, emotionally, socially, and intellectually.

Vygotsky

This Russian development scientist Lev Vygotsky challenged Piaget's developmental stages. Though he shared the former's belief that children are motivated learners who actively seek to understand their world, he disagreed with Piaget's other basic assumptions: that the child, as a solitary scientist, focuses on what he or she can do working alone without assistance, instead Vygotsky (1978) saw the child embedded in a social context, focusing on what he or she could do with the assistance of an adult, resulting to collaboration in a particular socio-cultural setting, becoming an apprentice of the MKO: the parent, teacher, coach, friends or peers who are likely to serve as models. This modelling involves scaffolding where the older model provide learning opportunities, materials, hints, and clues when the child gets stuck, but the moment the skill is mastered, the assistance is withdrawn.

The Zone of Proximal Development Theory [ZPDT] of Vygotsky is the area between what a child can do alone and what he or she can do with assistance. This ZPD consist of skills, ideas, and understanding that are just beyond the child's reach, that the child is beginning to perform and can do with support or assistance from adults or more skilled peers. Rogoff (2003) expanded on 'guided participation' with children's varied ways of learning about society's values and practices through participation in family and community activities, even involving in sports and physical activities [SPA].

Results and Findings

The Modelling Influence on Children’s Engagement in Sports and Physical Activities [CESPA]

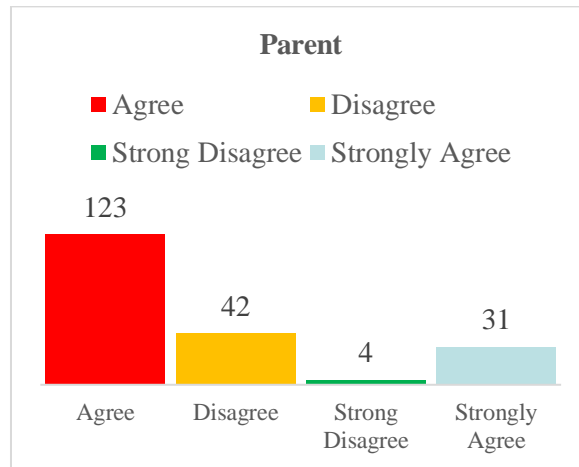


Figure 1: Frequency and Percentage Distribution of Parents’ Modelling Influence on CESPA

Figure 1 shows that out of the total population of 200 pupil-respondents, most of them, adding up ‘strongly agree’ and ‘agree’ 154 (77%) said that their parents had influenced their engagement in sport and physical activities [SPA], while 46 (23%) said: their parents did not influence them, which could mean that exercise should be made fun as parents do, referring to exercise model of Feldman (1971).

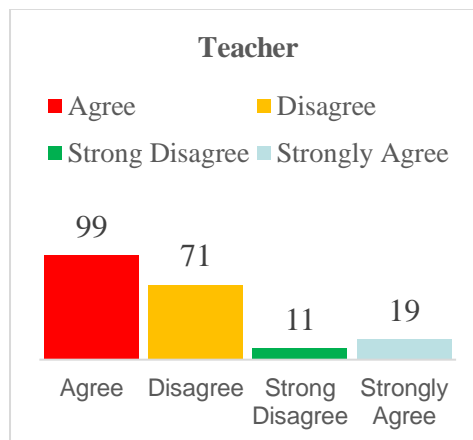


Figure 2: Frequency and Percentage Distribution of Teacher’s Modelling Influence on CESPA

Figure 2 shows that out of the 200 pupil-respondents, 118 (59%) ‘strongly agreed’ and ‘agreed that their teachers influenced their engagement in SPA, while 82 (41%) stated that their teachers did not influence their engagement in SPAs, implying that children’s engagement in sports and physical activities is not largely influenced by teachers, as Morris (2016) cited on utilization of Physical Education grades as participation scores not affecting much the CESPA, while Parten (1932) observes that the child is not actually playing but merely watching anything that happens to catch his/her interest. The child may play with his or her own body, move around, remain in one location, or follow a teacher, referring to the theory of Unoccupied Play.

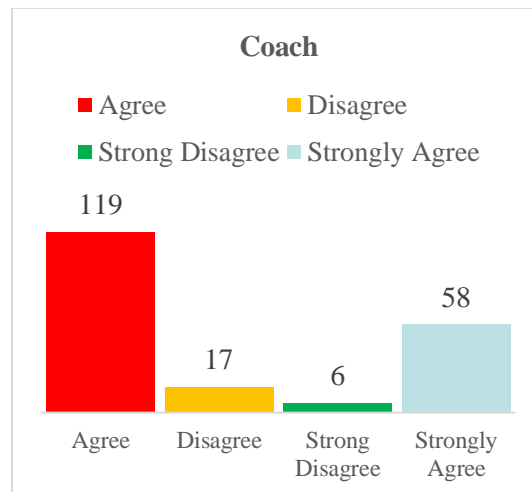


Figure 3: Frequency and Percentage Distribution of Coach Modelling Influence on CESPAs

Figure 3 shows that out of 200 pupil-respondents, most of them, 177 stated that their coach coaches influenced them to engage in SPA, while 23 (11.5%) said that their coach had not influence, which could mean that once coaches manifest sports enthusiasm, children are likely to emulate engagement (Adviento, 2016).

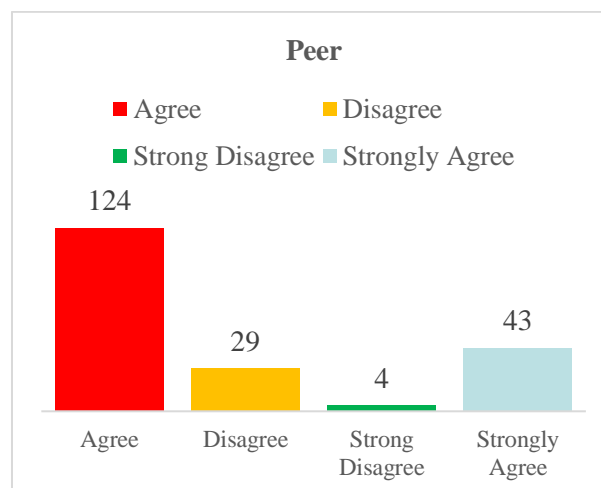


Figure 4: Frequency and Percentage Distribution of Peer Modelling Influence on CESPAs

Figure 4 shows that out of the 200 pupil-respondents, most of them, 167 (83.5%) stated that their peers influenced their engagement in SPA, while 33 (16.5%) said that their peers did not influence their engagement in SPA, which could mean that not only family, but also friends and peers can guide behaviours (Maturo, 2004), also referring to Kohlberg’s Moral Development Theory, stage 2, where children are self-interest driven, that if they belong to a group, they have the ‘what-is-it-for-me’ position, where right behavior is defined by whatever the individual believes to be in the best interest.

Relationship Between the Coach Modelling and CESPA

Coach	TypeofPhysicalActivities						Total
	1	2	3	4	5	6 or more	
Strong Disagree	0	0	0	0	0	6	6
Disagree	0	1	3	3	0	10	17
Agree	22	9	10	7	3	68	119
Strongly Agree	14	8	9	9	3	15	58
Total	36	18	22	19	6	99	200

Pearson chi2(15) = 29.6371 Pr = 0.013

Table 1: Relationship Between Coach Modelling and Type of Sports and Physical Activities

Table 1 shows that out of the 200 pupil-respondents, 177 strongly agreed and agreed, and with Pr=0.013, an evidence that there was a significant relationship between coach modelling and type of SPA the respondents’ coach engaged to, that coach modelling was related to the type of physical activities. It could mean that due to the coach’ nature of work of being players’ trainer, coach had modelled the type of physical activity, that coach was actively engaged, plus the coach physique capable of performing SPA, referring to Adviento’s (2016) findings that coach manifest sports enthusiasm, then children were likely to emulate engagement.

Coach	Frequency							Total
	1	2	3	4	5	6	7	
Strong Disagree	3	0	0	2	0	0	1	6
Disagree	8	4	2	1	1	0	1	17
Agree	32	9	21	12	11	27	7	119
Strongly Agree	8	1	4	10	8	24	3	58
Total	51	14	27	25	20	51	12	200

Pearson chi2(18) = 40.6159 Pr = 0.002

Table 2: Relationship Between Coach Modelling and Frequency of Engagement Per Week

Table 2 shows that out of the 200 pupil-respondents, 177 strongly agreed and agreed, and with Pr=0.002, it was evident that there was a significant relationship between coach modelling and frequency of engagement per week, implying that the coach could not perform his/her job if he/she was not physically capable of doing so, referring to Dugdale’s (2013)

findings that attitudes, values, new ways thinking were modelled by children on coach influence.

Coach	Intensity				Total
	Low	Moderate	High	Vigorous	
Strong Disagree	3	2	1	0	6
Disagree	7	7	2	1	17
Agree	31	19	23	46	119
Strongly Agree	7	9	6	36	58
Total	48	37	32	83	200

Pearson chi2(9) = 29.5660 Pr = 0.001

Table 3: Relationship Between Coach Modelling and Intensity of Exercise

Table 3 shows that out of the 200 pupil-respondents, 177 strongly agreed and agreed, and with Pr=0.001, evident that there was a significant relationship between the coach modelling and the intensity of exercise, implying that coach had modelled CESPAs, and that the nature of his/her work involved physical activities, which the Recreation Theory of Mitchell & Mason (1948) on physical activity suggests restoration of energy and recuperation from fatigue and hard work are made possible by play for diversion, and for fun.

Coach	Time						Total
	14	15	20	30	60	120	
Strong Disagree	0	1	0	2	0	3	6
Disagree	1	6	1	2	4	3	17
Agree	0	15	1	25	12	66	119
Strongly Agree	1	4	0	5	2	46	58
Total	2	26	2	34	18	118	200

Pearson chi2(15) = 39.2895 Pr = 0.001

Table 4: Relationship Between Coach Modelling and Time Spent on the Chosen Sports and Physical Activities

Table 18.4 shows that out of the 200 pupil-respondents, 177 strongly agreed and agreed, and with Pr=0.001, evident that there was a significant relationship between the coach modelling and the time spent on the chosen SPA, implying that due to the school's preparation for the upcoming Annual Division Meet, CESPAs incurred long period of training, where children enjoyed the games, as Vazou's et al., (2012) cites regarding observational learning as most powerful when the person being observed is influential, like the coach being looked up to by the trainees, the children.

Thus, Table 18.1, 2, 3 and 4 show that there was a significant relationship between coach modelling and children's engagement in sports and physical activities.

Conclusion

Given the foregoing summary of findings, it could be concluded that most pupil-respondents were on the sporting age from 10 to 12 years of age, on the higher percentage of males engaged in sports and physical activities [SPA] over females, considering their physique, but not much difference compared to females' engagement also in SPA (101 males, 99 females). Most of the respondents were generally healthy as they were actively engaged in sports and physical activities, also belonging to 'above average and average socio-economic status', able to take vitamins and energy boosters because their parents could afford to buy for them. These were beneficial to the CESPAs, more so their parents were able to provide sports and physical activities supplies, materials, and equipment to support active engagement in SPA.

Furthermore, although personality type and belief system should have had no significant relationship to CESPAs, still these moderating variables were vital to augment the performance level of children during competitions, considering that the competition does not necessarily mean competing with others, but competing for the self, for self-gratification and self-actualization, thus explaining the fulfillment of self-efficacy. It could be concluded further that both community sports facilities and programs availability were not that significant but played important roles on influencing CESPAs and beneficial to the community as a whole.

It could be concluded further that parents, teacher, coach, and peer modelling were all influential to CESPAs, proving that Bronfenbrenner's Bio-Ecological System was operational on the process, from the nuclear family, to the school, community, and farther to the outer systems, CESPAs were greatly influenced by such factors, thus their effects on modelling were evident in the study.

However, among all the models, Coach Modelling had the closest relationship with the CESPAs (type of sports and physical activities, frequency of engagement per week, intensity of exercise, and time spent on the chosen sports and physical activities). Surprisingly, parents who were supposed to be the first models at home, were not that influential on CESPAs because they were too busy doing other things at home or outside their homes, definitely not sports and physical activities.

Finally, the frequency of sports media exposure, among all the moderating variables, had the closest relationship to all the models considering these recent days' trend of using gadgets at home, with children's exposure to the internet. Teachers, therefore, are challenged to fully integrate technology in the classroom with sports movies and other physical activities to encourage CESPAs, beneficial to children's health. Parents must be cautious to limit the time allocated for children's use of gadgets, and execute proper guidance in filtering exposure to the Internet. Much more vital activities must be focused on sports and physical activities among the models, to assure healthy lifestyle and productive life.

References

Books

- Acero, Victorina D., Evelyn S. Javier, and Herminia O. Castro. *Child and Adolescent Development*. Rex Book Store. www.rexpublishing.com.ph. 2008
- Adolph, K.E., & Berger, S.E. *Physical and Motor Development*. In M.H. Bornstein & M.E. Lamb (Eds.) *Development Science: An Advanced Textbook* (5th ed., pp.223-281). 2008.
- Feldman, Robert S. *American Journal of Public Health*. 1981.
- Feldman, Robert S. *Development Across the Lifespan*. 3rd Edition. Pearson Education, Inc. Upper Saddle River, New Jersey 07458. 2003
- Feldman, S., & Gehring, T.. *Changing Perceptions of Family Cohesion and Power Across Adolescence*. *Child Development*, 59, 1034-1045. 1988.

- Flavell, J. The Development of the Appearance-Reality Distinction. *Cognitive Psychology of Jean Piaget*. Princeton, NJ: Van Nostrand Reinhold. 1963.
- Livingstone, M. & Hubel, D., Segregation of Form, Color, Movement, and Depth. *Anatomy, Physiology, and Perception*. pp.740-749. 1988
- Piaget, Jean. *To Understand is to Invent: The Future of Education*. New York: Grossman Publishers. 1972 (Originally produced in 1948).
- Vygotsky, L.S. *Thought and Language*. Cambridge, M.A. MIT Press. 1986.

Journals

- Lytton, H. & Romney D.M. Parents' Differential Socialization of Boys and Girls. A Meta-analysis. *Psychological Bulletin*. pp 267-296. 1991.
- Wachs, T.D., & Gandour, M.T.J. Temperament, Environment, and Six-Month Cognitive Intellectual Development: A Test of the Organismic Specificity Hypothesis, *International Journal of Behavioral Development*. Pp. 135-152. 1983.
- Wallis, C., & Steptoe, S. How to Bring Our Schools Out of the 20th Century. *Time Magazine*. 2006, December 16.

e-Journals

- Center for Child and Family Policy. 2014 www.childandfamilypolicy.dulce.edu. Retrieved August 30, 2018.
- National Nutrition Surveillance Center, 2009. Retrieved September 4, 2018.
- Alberico, Claudia. Use of Global Positioning System for Physical Activity Research in Youth ESPACOS Adolescents, Brazil. 2017. https://www.researchgate.net/.../311878311_useof_global_positioning_system_for_ph Retrieved October 2, 2018.
- Allen, Justine B. Social Motivation in Youth Sport. University of Waikato, Hamilton, New Zealand. 2003. groups.jyu.fi/sporticus/lahteet/LAHDE_5.pdf. Retrieved September 29, 2018.
- Ashford, Basil, Stuart, Biddle & Marios Goudas. Participation INCommunity Sports Centres: Motives and Predictors of Enjoyment. 2007. https://haveyoursay.ashford.gov.uk/.../PDF/Draft_Ashford_borough_Indoor_Sports. Retrieved September 27, 2018.
- Benjamin, Sara E (Neelon), Brian Neelon, John Pearce, Elyse R. Grossman, Sarah Gonzales-Nahm, Meghan Slining, Kiyah Duffey, Natasha Frost. State Regulations Promoting Infant Physical Activity in Early Care and Education. *Childhood Obesity*. August/September 2018 Volume 14. Number 6. Mary Ann Libent, Inc. Retrieved August 31, 2018.
- Blazevic, Ines. Family, Peer and School Influence on Children's and Social Development. Education and Teacher Training Agency, Croatia, Education and Teacher Training Agency, Croatia *Correspondence: Education and Teacher Training Agency, Tolstojeva 32, 21000 Split, Croatia. Tel: 385-91-1570-236. E-mail: iblazevic@ffst.hr. Retrieved October 1, 2018
- Cagas, Jonathan. Pampapayat, Para Lumakas, To be Healthy: Exploring Filipino Motives for Exercise. 2015. <http://www.research.Pampapayat Para Lumakas>. Retrieved September 23, 2018
- Coleman, Lester, Louise Cox and Debi Roker. The Importance of Increasing Young Women's Level of Physical Activity. 2018. https://www.researchgate.net/.../594667_Girls_and_young_women's_participation_in. Retrieved October 5, 2018.

- Dugdale. Enfield Children and Young Person's Services Guide.pdf. 2013. <https://www.enfield.gov.uk/.../children.../local-offer-information-ecyps-guide-to-activity..> Retrieved August 29, 2018.
- Efrat, Merav W. Exploring Strategies that Influence Children's Physical Activity. <https://files.eric.ed.gov.2017>. Retrieved October 2, 2018.
- Figueiredo, Sequeira and Filomena Valadao Dias. Families: Influences in Children's Development and Behavior. 2012. <https://files.eric.ed.gov/fulltext/ED539404.pdf>. Retrieved August 30, 2018.
- Edwardson and Gorely replace with Akpina, Abdullah and Murat Cankurt. Parental Influence on Children's Physical Activity in Urban Green Spaces. 2015. [https://www.researchgate.net/.../283902592_Parental_influence_on_children's_physical_activity_\(PA\)](https://www.researchgate.net/.../283902592_Parental_influence_on_children's_physical_activity_(PA)). Retrieved September 24, 2018.
- Haddad, Caroline. UNESCO Asia and Pacific Regional Bureau for Education 920 Sukkhumvit Rd., Prakanong Bangkok 10110. 2008. [unesco.org./images/0015/001585.pdf](https://unesco.org/images/0015/001585.pdf). Retrieved October 1, 2018.
- Hong, Euna. An Analysis of the Sport Policy Process in the Republic of Korea: The Cases of Elite Sport Development and Sport for All. Loughborough University Institutional Repository. https://dspace.lboro.ac.uk/dspace_jspui/bit_Stream/2134/5886/./Thesis-20-10/Hong.pdf. 2010. Retrieved September 30, 2018.
- Hurrelman, Klaus. Parents, peers, Teachers and Other Significant Partners in Physical Activity. 2012. <http://www.tandfonline.com/doi/abs/10.1080/02673843.1990.9747679>. Retrieved October 1, 2018.
- Ignacio, Rona C. - Montecalbo, Academic Achievement as Influenced by Sports Participation in Selected Universities in the Philippines. August 2017. <https://www.researchgate> Retrieved August 31, 2018.
- Klassen, Robert M. and Ellen L. Usher. Self-Efficacy in Educational Settings: Recent Research and Emerging Directions. Emerald Insight. 2010. Google Scholar. Retrieved August 28, 2018.
- Lubans, David R., Phillip J. Morgan, Dylan P. Cliff, Lisa M Barnett, and Anthony D. Okely. Fundamental Movement Skills in Children and Adolescents. Review of Associated Health Benefits. December 2010, Volume 40, Issue 12, pp 1019- 1035. Sports Medicine, 2010, Springer. Google Scholar. Retrieved October 8, 2018.
- Marmot, Sir Michael, Jessica Allen, Ruth Bell, Ellen Bloomer, Peter Goldblatt. WHO European Review of Social Determinants of Health and the Health Divide. 2012. [https://doi.org/10.1016/S0140-6736\(12\)61228-8](https://doi.org/10.1016/S0140-6736(12)61228-8). Retrieved August 31, 2018.
- Mills, David S. and Missy Morton. Ethnography and Education. https://www.researchgatenet/publicatiuon/281741993_Ethnography_and_education. 2007. Retrieved September 20, 2018.
- Minnemeier, Gerhard. Kohlberg: An Introduction. Journal of Moral Education, Researchgate. December 2011. <https://www.researchgate.net>. Retrieved November 22, 2018.
- Moore, Patrick V., Kathleen Bennett, Charles Normand. Centre for Health Policy and Management. Trinity College Dublin, Ireland. Social Science and Medicine Journal. 2017. www.elsevier.com. Retrieved August 30, 2018.
- Pajares, Frank. Self Efficacy During Childhood and Adolescence. Emory University, Atlanta, Georgia, U.S.A.. 2005. <https://pdfs.semantic.scholar.org.pdf>. Retrieved September 23, 2018.
- Pangalangan, Raul C. Looking After Filipino Children. Consuelo Foundation. 2011. <http://www.cwx.gov.ph/downloadablesNPAC%FINAL.pdf>. Retrieved October 6, 2018.

- Rickwood, Greg. The Status of Daily Physical Activity in Northern Ontario's Elementary Public Schools. Nipissing University, 50 Wellington Street, Brantford, Ontario, N3T3L6, Canada. *Journal of Education and Training Studies* Vol.3, No.2; March 2015. <http://dx.doi.org/10.11114/jets.v3i2.605>. Retrieved October 2, 2018.
- Sague, N.A. The Family System – Child Target: Illustrated (On-line) <http://www.psy.pdx.edu/PsiCafe/Overheads/FamilysSys-ChildTarget>. Retrieved August 29, 2018.
- Sapungan, Gina Madrigal. Parental Improvement in Child's Education: Importance, Barriers, and Benefits. <https://www.researchgate.net>. 2014. Retrieved August 31, 2018.
- Shin & Ryan replace with Trudeau, Francois and Roy Shephard. 2015. Physical Education, School Physical Activity, School Sports and Physical Activity. 2015. https://www.researchgate.net/.../280157353_Physical_education_school_physical_activity. Retrieved September 26, 2018.
- Singh, T.D., Bhardwaj, G., and Bhardwaj, V. Effects of Self-Efficacy on the Performance of Athletes. 2009. medin.nic.in/jau/+09/i2/jaut09i2p110.pdf. Retrieved October 1, 2018.
- Trost, Stewart, Susana Vale, Jonathan Ruiz, and Carla Rego. Physical Activity Guidelines and Pre-schoolers Obesity Status. *International Journal of Obesity*. 2013. Retrieved September 2, 2018.
- Usher, Ellen L. Self Efficacy Among Primary Schoolchildren. *Educational Psychology, Journal of Experimental Psychology*. <https://sites.education.uky.edu/motivation/researchpublications>. 2016. Retrieved October 4, 2018.
- Vazou, Spiridoula. Physical Activity and Health. 2012 http://www.academia.edu/.../_integrating_activity_in_the_elementary_schools.pdf. Retrieved October 6, 2018.
- Villar, Manny. Statute Governing the Special Protection of Children Against Abuse, Exploitation, and Discrimination Act. 15th Congress of the Republic of the Philippines. Republic Act 7610. <https://www.senate.gov.ph/lisdata/86167171.pdf>. Retrieved September 2, 2018.
- Wright, Kevin N. A Parent-Developed Training Program. Binghamton University Cherie Wooden. Our Lady of Lourdes Memorial Hospital, Inc. Retrieved August 28, 2018.
- Yao, Christopher A. and Ryan E. Rhodes. Parental Correlates in Child and Adolescent Physical Activity. *International Journal of Behavioral Nutrition and Physical Activity* 2015. <https://ijbna.biomedcentral.com/articles/10.1186/s12966-015-0163-y>. Retrieved August 30, 2018. <https://www.louthcoco.ie/en/Publications/Development-Plans/Dundalk-Development-Plan-and-LAP-s-/8-Community-Facilities-Sport-and-Recreation.pdf>. Retrieved October 1, 2018.

STRESS LEVEL AND PERCEIVED HEALTH STATUS AMONG WOMEN EMPLOYEES OF MSU-IIT: BASIS FOR AN ADVOCACY

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Abstract: *This study was undertaken to determine the veracity that stress can be a factor that affects the health status among the women employees of MSU-IIT. It also aims to find out whether the moderating variables can affect the relationship between stress level and health status. This study utilizes descriptive-correlational method of research. Researcher-made questionnaires were validated by the 30 women faculty and staff of MSU- Naawan before being distributed to the randomly selected 203 women faculty and staff of MSU-IIT, Iligan City. The questionnaire aimed to generate information on the profile, physical activity involvement, food choice, social support system, stress management, health status and stress level of the respondents. The data were analyzed using the Excel and R software. Descriptive Statistics, Frequency of Count and Percentage, Spearman Rank Correlation Coefficient, Cramer's Contingency Coefficient and Mann Whitney U Test were employed to arrive a sound interpretation. The respondents involved were the 132 faculty and 71 staff aged 21- 61 above, either single or married. After the Logistic Statistical Analyses, the results showed that there is a significant relationship between the stress level and health status of the working women of MSU-IIT with correlation value of -0.131. Of the moderating variables, only the Body Mass Index (BMI) shows a predictive correlation value of -0.147 which indicates that as the BMI increases, the level of health status of the working women of MSU-IIT decreases. An intervention program was proposed to lessen the stress level and improve the health status of the working women of MSU-IIT.*

Keywords: *health, stress, women employees*

Introduction

In this modern era, women play a vital role in finding ways to help improve the financial status of their families and communities. Republic Act No. 7192 also known as “Women in Development and Nation Building Act” clearly says, that the “state recognizes the role of women in nation building and shall ensure the fundamental equality before the law of women and men and shall provide women rights and opportunities equal to that of men”. Women today are equally competent and talented. They are active in social life and participate in various cultural and social purposes. With this, their involvement requires high demand in unleashing their full potential and transforming their lives.

In Mindanao State University - Iligan Institute of Technology (MSU-IIT), the women faculty and staff are continuously aiming for academic excellence. As the institute is considered the leading educational institution in Iligan City and even ranked as the top eleven university nationwide (4icu.org, 2017), there is a greater responsibility for the faculty and staff to manifest the core values of the institute that includes integrity, commitment, excellence,

teamwork and accountability. Because the institute is working well to compete globally, women faculty and staff are saddled with various responsibilities to do quality instruction, research - extension and production. With the increasing demands at work each employee faces so much pressure which could lead to stress. However, one must consider and ensure the health status of every constituent so as to sustain the job performance and be able to function effectively and enjoy life as well.

Being healthy is an advantage to do certain tasks for the family, work and community. Good health is also necessary for a person to be productive, to feel good and to look good. Health is like a great wealth that must be protected carefully. On the contrary, a person who cannot maintain good health undergoes a strange feeling and is susceptible to any form of diseases, physical and mental disabilities and stress. Along with this concept, health therefore, is believed to be affected by stress.

Conny (2011) defines stress as the mental and physical response of the body. Its effects can be both beneficial and detrimental. It is hard to live with it, but it is almost impossible to live without it. Stress threatens the person's physiological homeostasis, produces negative or non-constructive feelings, influences the person's conceptual and problem-solving abilities, alters a person's relationship to others, and challenges one's beliefs and values.

Each year, millions of people died of stress-related illnesses. When faced with chronic stress and an over activated autonomic nervous system, people begin to see physical symptoms. With more exposure to chronic stress more serious health problems may develop such as depression, diabetes, hair loss, heart disease, obesity, sexual dysfunction, strokes, and even some forms of cancer (Simon, 2013).

As stated by Griffiths (2012), one of women's greatest stressor is work. Work-related stress is the response women may have when presented with work demands and pressures that are not matched with their knowledge and abilities and which challenge their ability to cope.

There is also another stressor outside of the work environment that may affect a worker's health. Family demands, particularly on dual career or single-parent households can be significant disturbance. Also, marital conflicts, problems caring for elderly parents, the health status of a family member can all affect the work.

Today, women are surprisingly doing many roles. They often do multi-tasking which include ensuring the family's safety, doing the daily household chores, providing emotional support to her husband, taking action plan for developing their professional role, socializing to be the caretakers of others, with active civic involvement and community work, and having a career outside the home or even after office hours. With all these activities their stress levels are indeed on the rise.

This study addresses this gap by examining how these several stress-related factors can affect health status specifically among working women. This study also adds to the literature of studies whose respondents are the employees of MSU-IIT.

This study therefore which is entitled "Stress Level and Perceived Health Status Among Women Employees of MSU-IIT: Basis for an Advocacy" is undertaken to know the veracity that stress can be the factor that affects the health status among the women employees of MSU-IIT. Moreover, this study hopes to know how the moderating variables interplay in the relationship between stress levels and health status among the women employees of MSU-IIT.

Statement of the Problem

This study attempts to find out the stress level and health status among working women of MSU-IIT. Specifically, this study hopes to answer the following relevant questions:

1. What is the profile of the respondents in terms of:
 - a. age
 - b. gross monthly income
 - c. body mass index
 - d. marital status
 - e. number of children
 - f. educational attainment
 - g. tenure
 - h. religion
 - i. physical activity involvement
 - j. food preference
 - k. social support system
 - l. stress management
 - m. work classification
2. What is the stress level of the working women of MSU-IIT on the following aspects: work-related relationships, family-related relationships, community-related relationship, and business-related relationship?
3. What is the health status of the working women of MSU-IIT?
4. Is there a significant relationship between the stress level as the independent variable and health status as dependent variable among the respondents the study?
5. How do the moderating variables interplay in the relationship between stress level and health status among the employees of MSU-IIT?
6. Is there a significant difference in the stress level and health status between faculty and staff?
7. What advocacy can be proposed among the women employees of MSU-IIT to cope and manage stress?

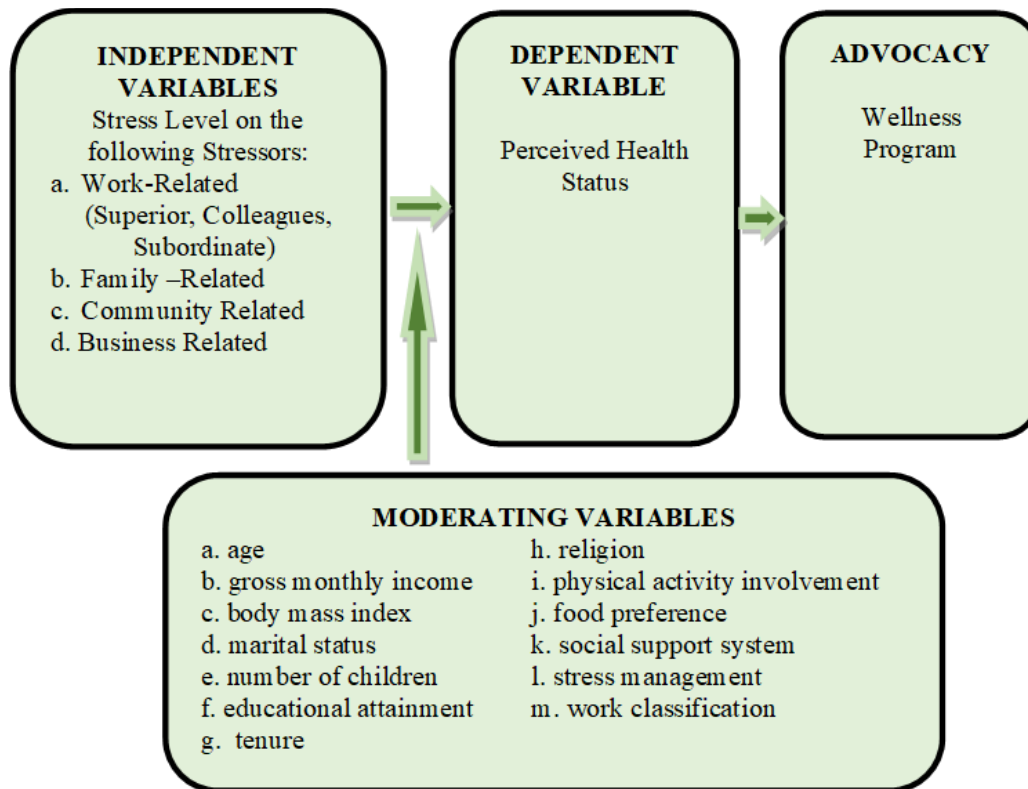
Hypotheses of the Study

In this study, the following hypotheses were formulated and tested at 0.05 and 0.10 level of significance:

- HO1: There is no significant relationship between the stress level as the independent variables and health status as dependent variable among the respondents.
- HO2: The moderating variables do not interplay in the relationship between stress level and health status among the respondents.
- HO3: There is no significant difference in the stress level and health status between faculty and staff.

Conceptual Framework

The conceptual paradigm of the study illustrates the relationship between stress levels as the independent variable and health status of the women employees of MSU-IIT as the dependent variable of this study. Additionally, this study also shall try to know the effects on how the moderating variables will interplay in the relationship between health status and stress levels among the women employees of MSU-IIT. It will also be the basis to develop a regular physical fitness program and stress coping strategies that will be given to the employees of MSU-IIT which serves as an intervention program.



Significance of the Study

This study provides a wide array of understanding and awareness about the importance of health and in handling stress. The result of this study would benefit the women employees of MSU-IIT, the head of respective offices, the human resource management and administration, the physician or the psychiatrist, the family and community. This can also be used as a reference for further study about health and stress.

Scope and Limitations of the Study

This study is limited to knowing the stress levels and perceived health status among women employees of MSU-IIT. The stress levels are based on the following stressors: work-related, family-related, community-related, and business-related.

The study also includes the moderating variables such as age, gross monthly income, body mass index, marital status, number of children, educational attainment, tenure, religion, physical activity involvement, food preference, social support system, stress management and work classification.

The respondents of the study are the 203 women employees who are randomly selected. This study was conducted within the premise of MSU-Iligan Institute of Technology on the second semester of the calendar year 2015 -2016.

Literature Review

This section reviews the body of literature of stress level and perceived health status and other selected variables that strengthen the design of the program formulated, as well as the theories and findings that support the study. Due to limited existence of studies on stress in the Philippines, some studies based on foreign countries settings are presented.

Stress generally refers to two things: the psychological perception of pressure and the body's response to it which involves multiple systems, from metabolism to muscles to memory.

Through hormonal signaling, the perception of danger sets off an automatic response system, known as the fight-or-flight response, that prepares a person to meet a challenge or flee from it. A stressful event whether an external phenomenon like the sudden appearance of a snake on one's path or an internal event like fear of losing a job when the boss yells, triggers a cascade of hormones, including adrenaline and cortisol, that surge through the body, speeding heartbeat and the circulation of blood, mobilizing fat and sugar for fast energy, focusing attention and preparing muscles for action are some factors that can cause stress (Psychology Today, 2017).

The human body is designed to experience stress and react to it (WebMD, 2017). Stress can be positive such as a getting a job promotion or being given greater responsibilities and keeping him/her alert and ready to avoid danger. However, stress becomes negative when a person faces continuous challenges without relief or relaxation between challenges. As a result, the person becomes overworked and stress-related tension builds.

Effects of Stress

Medical studies have determined that stress causes the bodies to produce more Cortisol. This “stress hormone” is normally only released into the bloodstreams in emergency situations. When people become scared or excited, Cortisol is flooded into the bodies to help them deal efficiently with the situation. Too much of this hormone in the blood streams can and does cause adverse health conditions. These conditions can include, but are not limited to, cardiac problems, strokes, obesity, a lower immunity system, and insomnia.

Scientists have discovered how stress in the form of emotional, mental or physical tension physically reshape the brain and causes long-lasting harm to humans. According to McEwen (2008), stress causes neurons to shrink or grow. The wear and tear on the body from lots of stress changes the nervous system.

Causes of stress vary from person to person. Some common causes of stress can be a death of a family member, illness, taking care of the family, relationship changes, work, job change, moving and money. Lowered stress has a beneficial effect on health. Thus high, constant stress is detrimental to health. A continual high level of stress has a number of harmful effects on overall health. People who experience high stress get more colds, suffer more digestive tract problems and have more frequent bouts of fatigue.

Also, according to Valentino (2005), women, biologically speaking are more vulnerable to stress than men. The brains of females are more sensitive to hormones produced at times of angst and thought to be involved in stress management. Studies also show that men and women handle stress differently – a difference that some scientists attribute, in part, to estrogen. This hormonal difference may also account for the fact that women are three times more likely to develop depression in response to the stress in their lives than are men.

Factors that can Cause Stress

According to Landsbergis (2003) work-related stress is a pattern of reactions that occurs when workers are presented with work demands that are not matched to their knowledge, skills or abilities, and which challenge their ability to cope. These demands may be related to time pressure or the amount of work (quantitative demands), or may refer to the difficulty of the work (cognitive demands) or the empathy required (emotional demands), or even to the inability to show one's emotions at work. Demands may also be physical, i.e. high demands in the area of dynamic and static loads. A little pressure is good and helps to keep one motivated. But too much can lead to stress, which can affect one's health and performance. Stress occurs in a wide range of work circumstances but is often made worse when employees feel they have

little support from supervisors and colleagues and where they have little control over work on how they can cope with the demand and pressure

Stress is something that people have to deal with on a daily basis. Identifying what causes the stress can help individuals to deal with it more proactively and positively. There are many factors in the workplace that cause stress, but the home lives can bring just as much, if not more, anxiety. According to Conny (2008), living in a stressful household is not easy and takes a toll on one's health. Stress related symptoms include high blood pressure, anxiety, weight fluctuations, back pain, headaches and depression. Stress in the home can be caused by everything from arguments between family members to money problems and illness.

According to the Family Stress Model (Conger et.al 2000), poverty is one of the more important factors that can put severe strains on spousal relationships, bring about feelings of depression and increasing family dysfunction. Moreover, family distress causes problems in the relationship between adults that are, in turn, linked to less effective parenting (Ahmed, 2005).

Tanner (2001) further added that most people think of a crisis as unexpected danger: serious illness, an accident, a fire that snuffs out human life. But the same physical and psychological consequences that are associated with such stress can also follow happy, long-anticipated events - promotions, purchase of a new home, birth of a child - and these occurrences, too, must be accounted as crises. The common element among these diverse crises is change, and it is fact of drastic change, whether it is expected or unexpected, favorable or unfavorable, that makes a stress a crisis.

In a study published by Shultz (2010) entitled Age Differences in the Demand–Control Model of Work Stress- An Examination of Data From 15 European Countries revealed that only the interaction between problem solving and time to complete tasks was significant for younger workers. For older workers, however, the interactions between time deadlines and having sufficient time to complete tasks, autonomy, and the interaction between problem solving and schedule flexibility are significant predictors of self-reported stress. Due to age changes in cognitive processing, the psychological demands of jobs may interact differently with controls for younger versus older workers. The study uses data from the Euro barometer to examine how the demand–control model of work stress may function differently for older versus younger workers. The results indicate that different controls may in fact buffer different types of job demands for younger versus older workers.

In the statement of Epel (2010) non-overweight who are vulnerable to the effects of stress are more likely to have excess abdominal fat, and have higher levels of stress hormone cortisol. Lean women with abdominal fat have exaggerated response to cortisol. Abdominal fat is related to worse health, including greater risk of heart disease and diabetes. Women with greater abdominal fat had more negative moods and higher levels of life stress. Greater exposure to life stress or psychological vulnerability to stress may explain their enhanced cortisol reactivity. In turn, their cortisol exposure may have led them to accumulate greater abdominal fat. Cortisol exposure can increase visceral fat. Another study has explored on the association between work stress and body mass index. The proportion of overweight and obese people has grown rapidly, and at the same time, stress has increased in working life. The two problems could be connected if work stress promotes unhealthy eating habits and sedentary behavior and thereby contributes to weight gain (psychosomaticmedicine, 2005).

Stress alters nutrient needs and poor nutrition or under nutrition is of itself a stress on the body. So, when additional stress is imposed on the system, it will no longer have the same reserve capacity to adapt to the stress. People who are the most easily stressed and in greatest need of a good diet, especially during times of extra stress, often make the worst food choices.

According to Rosch (2010), a faulty diet can certainly be a source of stress. Conversely, stress can lead to poor dietary habits. Many people either stop eating almost entirely, or eat more frequently, shifting from well-planned, nourishing meals to junk food, fast food, alcohol, or stimulants such as caffeine or nicotine

Research Design

The nature of the study utilized quantitative research design using the descriptive-correlational method of research to determine the relationship between stress levels and health status together with the other variables which are believed to interplay in the relationship between stress levels and health status among women employees of MSU-IIT. The design is appropriate in testing the hypotheses of the study.

Respondents of the Study

The respondents of this study were the randomly selected 203 women faculty and staff of MSU-IIT, Iligan City, whose ages were ranging from 20-60.

Research Instruments Used

The present study used researcher-made and validated questionnaires to gather the data needed to answer the problems that were formulated for this study. The researcher-made questionnaire was composed of seven parts for the personal profile and other moderating variables among working women of MSU-IIT. Part I was designed to generate information on the Respondents' Profile; Part 2 regarding the physical activity involvement of the respondents; Part 3 concerning their food choice; Part 4 about their social support system; and Part 5 on managing their stress. To determine the health status of working women of MSU-IIT, a researcher-made questionnaire was utilized. This study also used a researcher-made questionnaire to gather the information concerning the stress levels from the different stressors of working women of MSU-IIT.

Data Collection Method

To ensure the accuracy and speedy retrieval of the data, the researcher personally conducted the distribution of the questionnaires to the different cost centers. A letter had been sent to the Chancellor of MSU-IIT asking permission for the researcher to conduct the study within the school premise and to the Human Resource Department to get the list of women employees of MSU-IIT. The respondents were then requested to supply the needed information and assured them the confidentiality of their answers.

Prior to that, the questionnaires were pilot tested to 30 women Faculty and Staff of MSU- Naawan for validity and reliability of the instrument. The cronbach's alpha was at 0.859 which indicated a high level of consistency.

Statistical Treatment of Data

In the treatment of the data, the following statistical tools were used in summarizing and analyzing the data in order to arrive at a sound interpretation.

Descriptive Statistics, Frequency of Count and Percentage were used to describe the profile of the respondents in general. Frequency and percentages were used in the presentation of the demographic profile. Tabular and summary calculations were utilized to present the data or information.

Weighted mean is used to compute social support system, level of health status and stress level. To test the relationship between the stress levels and health status among women employees of MSU-IIT, the Spearman Rank Correlation Coefficient was used.

Spearman Rank Correlation was also used to determine the relationship between the demographic profile such as age, income, educational attainment, number of children, BMI and length of service towards health status. Since some of the variables were not normally distributed, which was one of the assumptions of Pearson correlation coefficient, it was used to determine the relationship between the independent and dependent variable.

To test the relationship between demographic profile and health status, the Cramer’s Contingency Coefficient was used.

Contingency coefficient was used to determine the association between demographic profile such as status (faculty or staff), employment and religion towards health status. To Test the significant difference in the stress level and health status between faculty and staff Mann-Whitney U Test was used. All the data were analyzed using the Excel and R software.

Results and Discussions

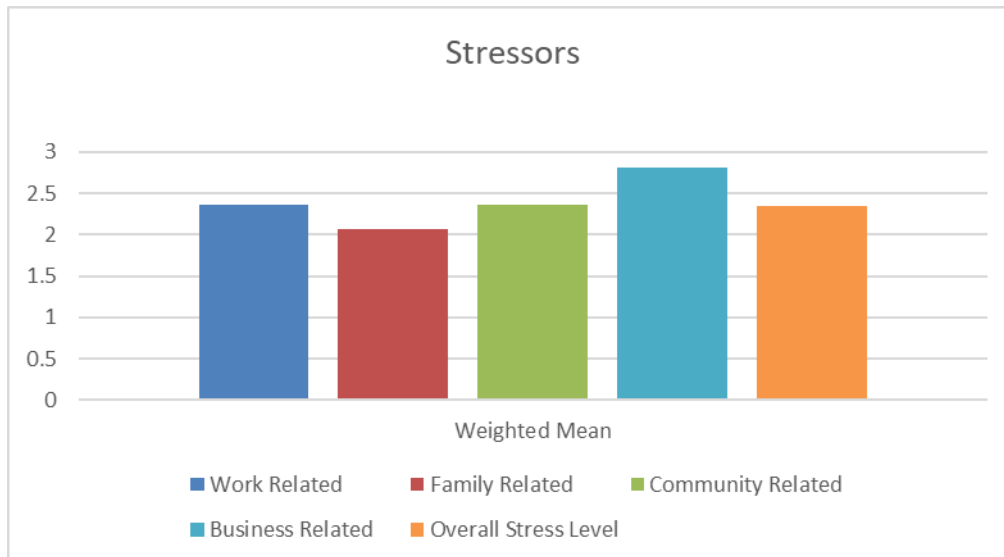


Table 1: Distribution of the Respondents According to Overall Stress Level by the Different Stressors

Table 1 displays the overall stress level of the respondents by the different stressors. As shown on the table, the respondents’ stress level has a weighted mean of 2.35 which implies that they are not so stressed when it comes to their work, family, community and business-related activities.

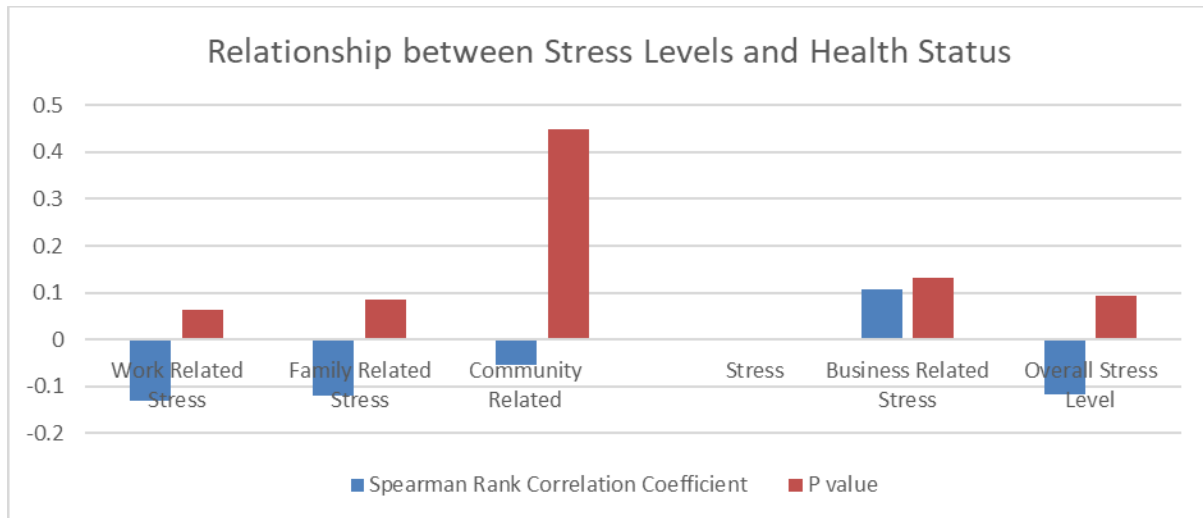


Table 2: Spearman Rank Correlation Coefficient at 0.10 Level of Significance Showing the Relationship between Stress Levels as the Independent Variable and Health Status as the Dependent Variable among the Employees of MSU-IIT

(Note: If p value is less than 0.10 level of significance, then the relationship is significant, otherwise not significant.)

As depicted on the table, at 0.10 level of significance there is a significant relationship between Work related stress and health status with correlation value of -0.131. This implies that there is a significant negative relationship between work related stress and health status.

Therefore, there is sufficient evidence to conclude that as the level of work-related stress increases their health status decreases. The same can be said with family related stress with correlation value of -0.121.

Constant stress is detrimental to health. A continual high level of stress has number harmful effects on overall health. In the statement made by Landsbergis (2003), work related stress is a pattern of reactions that occurs when workers are presented with work demands that are not matched to their knowledge, skills or abilities and which challenge their ability to cope with. Further, a little pressure in work is good to keep a worker motivated to work, but too much of it can lead to stress which affect one’s health and performance.

To answer the first null hypothesis that “there is no significant relationship between the stress level as the independent variables and health status as dependent variable among the respondents, the overall stress level with correlation value of -0.118 and with corresponding significance of 0.094 is less than $\alpha=0.10$, thus the hypothesis that “there is no significant relationship between the stress level as the independent variables and health status as dependent variable among the respondents” is rejected. Therefore, there is a significant relationship between the stress level as the independent variable and health status as the dependent variable.

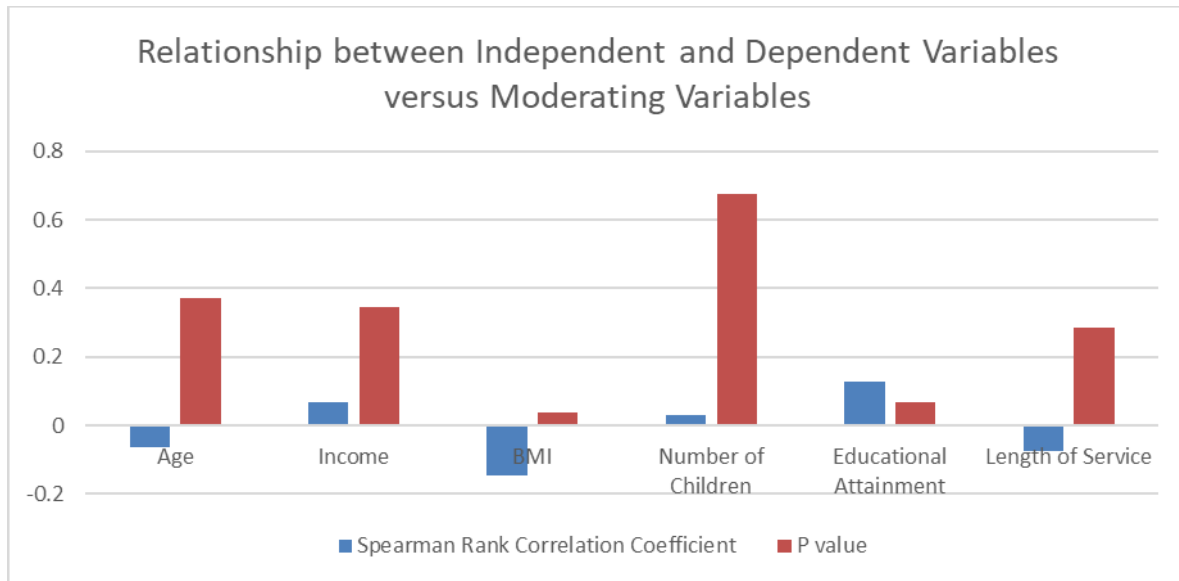


Table 3: Spearman Rank Correlation Coefficient between Independent and Dependent Variables versus Moderating Variables

Based on the results, age, income, number of children, educational attainment and length of service do not interplay as moderating variables in the relationship between stress level as the independent variable and health status as the dependent variable.

However, as depicted in the table, at 0.05 level of significance there is a significant negative relationship between BMI and health status of the employees of MSU-IIT with a correlation value of -0.147 and p value of 0.037. This implies that there is a significant negative relationship between BMI and health status, that as the health status level of the employees increases their corresponding BMI index decreases (tend to be normal) or as BMI increases the level of health status decreases.

A study that has explored on the association between work stress and body mass index. The two problems could be connected if work stress promotes unhealthy eating habits and sedentary behavior and thereby contributes to weight gain (psychosomaticmedicine, 2005).

Moreover, according to National Institute of Health, the higher the BMI, the higher the risk for certain diseases such as heart disease, high blood pressure, type 2 diabetes, gallstones, breathing problems, and certain cancers.

On the other hand, there is no significant relationship between age and health status with correlation value of -0.063 and p value of 0.370. Therefore, there is no sufficient evidence to conclude that there is a significant relationship between age and health status. The same can be said with income, height, number of children, educational attainment and length of service.

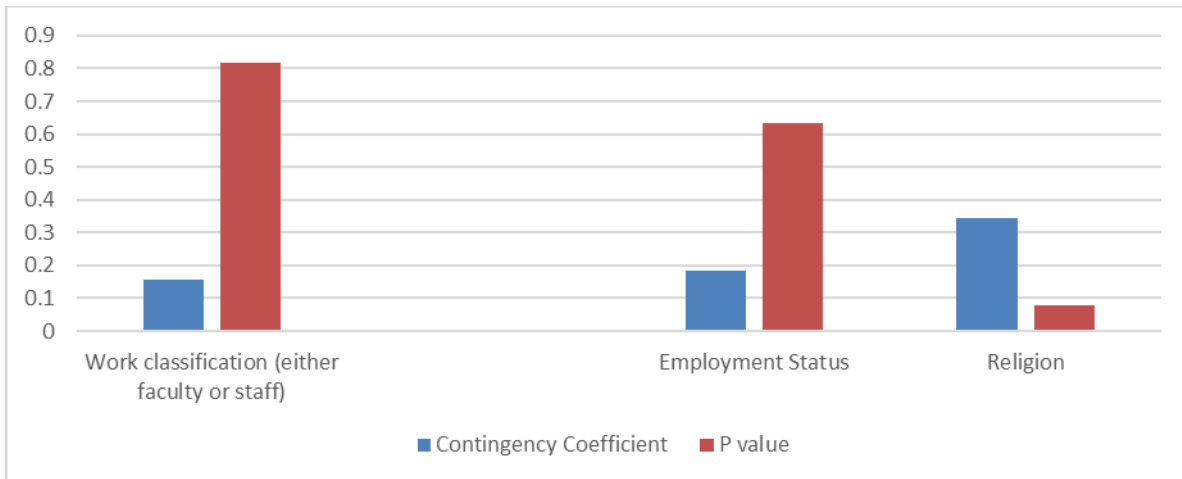


Table 4: Contingency Coefficient between Independent and Dependent Variables versus Moderating Variables

As depicted on Table 4, at 0.05 level of significance there is no significant association between work classification (either faculty or staff) and health status with contingency coefficient value of 0.158 and p value of 0.819. Therefore, there is no sufficient evidence to conclude that there is a significant association between status (faculty or staff) and health status. The same can be said with employment status and religion with contingency coefficient of 0.183 and 0.343 respectively.

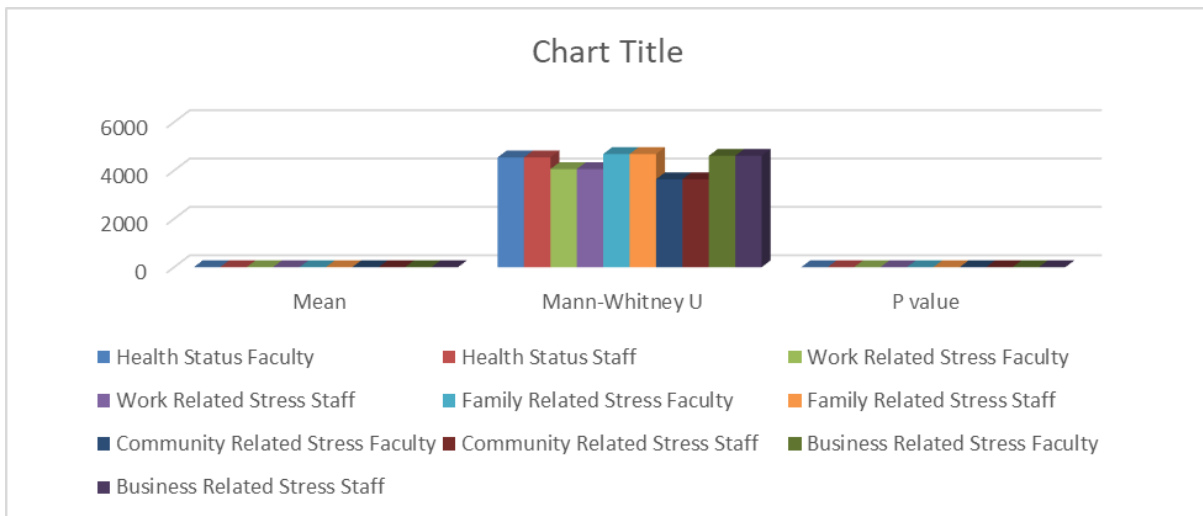


Table 5: Mann Whitney U Test of Difference in the Stress Level and Health Status between Faculty and Staff

Note: If p value is less than 0.10 level of significance, then the relationship is significant, otherwise not significant.

As depicted on table, at 0.10 level of significance there is no significant difference between faculty and staff in health status, level of work-related stress, level of family-related stress, and level of business-related stress since their corresponding P value is greater than $\alpha = 0.10$. Thus, the null hypothesis is not rejected. This implies that the health status, level of work-related stress, level of family related stress, and level of business-related stress between faculty and staff are just statistically the same.

On the other hand, there is a significant difference in level of community related stress between faculty and staff with P value of 0.008 which is less $\alpha = 0.10$. Thus, the hypothesis is rejected. This implies that the level of community related stress between faculty and staff are not the same, and that faculty (mean=2.4417) has higher level of community related stress than staff (mean=2.1944).

As can be gleaned on the table, the faculty of MSU-IIT has a higher level of community related stress than the staff. This is because faculty responds to the aspirations of the community as stated in National Competency Based Standard, Domain number 6 which is the Community Linkages and as also mandated in the Code of Ethics of Teachers, Section 2, that every teacher shall provide leadership and initiative to actively participate in community movements for moral, social, educational, economic and civic betterment. More so, the faculty of MSU-IIT are doing research and extension services as part of their job performance.

Conclusions

Based on the results of this study, the following conclusions surfaced:

In terms of the respondent's profile, majority of the respondents are young adult who are low-income earners since they are newly-hired employees with regular status. In terms of BMI, most of them are considered normal since their weight is relative to their height. Most of them are married with no children and Catholic believers.

Moreover, majority of the respondents are considered active since they get involved in physical activities. However, they are not health conscious because most of them prefer non-vegetarian diet. Most of them have strong support system and can manage stress adequately.

Majority of the respondents participate or get involved in physical activities. Most of them prefer non-vegetarian diet. Most of them have acquired a high social support system during challenging moments. Majority have adequate stress management skills.

The result of the study shows a significant negative relationship between work-related stress and health status. This implies that as the level of work-related stress decreases their health status increases. The same can be said with family related stress.

As shown in the table on the Distribution of the Respondents According to Health Status, the respondents health status is 3.63 with a descriptive meaning of "Seldom" which implies a good health status of the respondents. On the over-all health status, the respondents rated seldom which is interpreted that they have good health status.

There is a significant negative relationship between work related stress and family related stress towards health status. As the level of work and family related stress decreases their health status increase. On the other hand, there is no significant relationship between community and business-related stress towards health status.

Among the moderating variables only Body Mass Index (BMI) significantly interplay the relationship between stress level and the health status of the respondents.

There is no significant difference between faculty and staff in health status, level of work-related stress, level of family related stress, and level of business-related stress. However, there is a significant difference in level of community related stress between faculty and staff. The faculty have higher level of community related stress than the staff.

Recommendations

Since the findings revealed that working related stress, family related stress and body mass index (BM) show a significant negative relationship towards health status, the following recommendations are drawn:

Women must maintain a good health status to be able to function effectively and enjoy life as well. For this, women should engage in any physical activities and have a wise choice of foods to manage their weight.

The heads of respective offices should encourage their subordinates to actively join in regular physical activities for them to be physically fit and so as not to be easily prone to illnesses.

The school administrators should come up with programs that would provide the need of women employees to battle with work related stress and must highlight the implementation of these programs. Moreover, the school administrator may adopt and to continue the “Fitness Hour” program which was implemented before by Chancellor Sukarno D. Tanggol.

The medical professional should conduct awareness seminars and symposia on balanced diet in order to promote good health and proper lifestyle.

A strong family and community support system is highly recommended. Family members must always support each other especially in times of trials.

To the researchers, they are encouraged to conduct a wider and more comprehensive study coherent to this problem. The researcher further suggests that an Advocacy Program be formulated for the Women Faculty and Staff of MSU-IIT.

References and Appendices

Books

- Ajzen, I. (1996). *The Ultimate Resource for Fitness Professionals*. American Council on Exercise, 3rd Edition.
- Biddle, S.J (2006). *Anatomy for Strength and Fitness Training: An Illustrated Guide to Your Muscles in Action*. New York, McGraw Hill.
- Cotton, R.T., Ekeroth, C.J., & Yancy, H. (1998). *The American Council on Exercise*. Human Kinetics Publishers.
- Mokdad, Marks, Stroup, & Gerberding, (2000) *Yoga: The Definitive Step-by-Step Guide to Dynamic Yoga*. New York, Three Rivers Press, 2000.
- Nelson, D.K. (2000). *The Surprise Key to Stress Management*. Health and Homes. Volume 41.
- Payne, R. (2005). *Relaxation Techniques: A practical Handbook for the Health Care Professional (3rd ed.)*. Nek: Churchill Livingstone.
- Psychosomatic Medicine, (2007). *Challenge Yourself - Leanness, Fitness & Health - At Any Age*. Ripped Enterprises.
- Quenk, N.L. (2001). *Was that really me? How Every Stress Brings out our Hidden Personality?* Palo Alto, CA: Davie-Black Publishing.
- Robles, T.F. & Kiecolt-Glaser, J.K. (2003). *The Physiology of Marriage: Pathways to Health*. Physiology and Behavior.
- Whitaker, R. (2007). *You Don't Eat Meat*. Health & Home. Volume 47

Journals

- Anspaugh, Junter, Mosley. (1995). *The Economic Impact of Corporate Wellness Programs: Past and Future Consideration*. Journal of American association of Occupational Health.
- Chrousos, G. (2004). *Stress: Basic Mechanism and Clinical Implication*. New York Academy of Sciences
- Harding, J. L. (2014). Psychosocial Stress is Positively Associated with Body Mass Index Gain over 5 Years: Evidence from the Longitudinal AusDiab Study.

- Keller, A. (2012). Does the Perception that Stress Affects Health Matter? The Association with Health and Mortality. Retrieved on December 2011. From <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3374921/>
- Journal of Clinical Psychiatry. (2011). Building Strength and Stamina. Human Kinetics, 2nd edition.
- Journal of Neuroscience. (2011). Exercise for Older Adults: ACE's Guide for Fitness Professionals.
- Lim, V. & Teo, T. (1999). Occupational Stress and IT Personnel in Singapore: Factorial Dimensions and Difference Effects.
- McEwen, B. (2008). Stress can Reshape the Brain. McClatchy Newspaper.
- Robles, T.F. & Glaser, J.K. (2003). The Physiology of Marriage: Pathways to Health. Physiology and Behavior.
- Scott, E. (2009). Socioeconomic Status and Stress-How Your Socioeconomic status Can Cause Stress.
- Steinhard, Y. (2001). The Importance of Physical Fitness versus Physical activity for Coronary Artery Disease risk factor: A cross-sectional Analysis.
- Wu, X. & De Maris, A. (1996) Gender and Marital Status Differences in Depression: The Effects of Chronic Strains Sex Roles: A Journal of Research.

MOVEMENT CONTROL ORDER FROM STUDENTS' PERSPECTIVES: A STUDY ON STUDENTS OF UITM PAHANG BRANCH

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Abstract: *The Movement Control Order (MCO) was announced by the Prime Minister (PM) of Malaysia, Tan Sri Muhyiddin Yassin on 16 March 2020 and was implemented on 18 March 2020. This implementation came about as a response to the severe increase in COVID-19 cases in Malaysia by 17 March 2020 to 673 cases. Following the implementation, all schools, universities, and educational institutions were ordered to close, and students were asked to return to their homes. On 18 March 2020, the PM had then announced that students should remain on campus instead and not travel home. This had caused some students to become distressed with the situation while others were obliged to comply for the sake of themselves and their families. Various reactions from students were observed. A total of 359 students (154 males, 205 females) were confined on the campus grounds of UiTM Pahang Branch, Jengka Campus. The current study involves 210 students who remained in the hostels of Kolej Mat Kilau and Kolej Tok Gajah. Data was collected through interviews and questionnaires distributed to random samples. The results from the current study reveal that 68.10% of the students were stressed because they had to remain on campus while 31.20% complied with the implementation of MCO for their safety and their families.*

Keywords: *COVID-19, MCO, Stress, Safe*

Introduction

The wave of the COVID-19 pandemic had spread throughout the entire globe by the end of 2019 and eventually reached the shores of Malaysia in early 2020. This crisis led to a historical moment in Malaysia on 16 March 2020 as the nation witnessed Tan Sri Muhyiddin Yassin, the 8th Prime Minister (PM) of Malaysia announced the implementation of a nationwide Movement Control Order (MCO). This order was implemented by the PM following a sudden spike of COVID-19 cases (*Perutusan Khas Perdana Menteri*, 2020). This action by the PM is regarded

as a timely and proper response as the number of cases had reached over 100 cases by 15 March 2020. The number of reported cases continued to rise by 17 March 2020 reaching up to 673 cumulative cases (*Situasi Semasa Pandemik COVID-19 Di Malaysia, 2020*). Acting on the advice of the Ministry of Health (MOH) and the National Security Council (NSC), the Prime Minister announced the first nationwide MCO for 14 days beginning from 18 March 2020 until 31 March 2020. In line with the MCO, all schools, universities, colleges, and other institutions were instructed to close and students were told to return to their own homes and hometown. In response, students began flooding bus stations and terminals to acquire bus tickets which resulted in an unanticipated mass gathering of students in many areas. This situation was very alarming since the mass gathering was one of the major catalysts for the spread of the virus throughout Southeast Asian countries like Brunei, Indonesia, and Thailand. Similarly, the mass gathering of students trying to make their way home may lead catastrophic effects to the number of COVID-19 cases in Malaysia. To avoid creating a new cluster of infected people, on 18 March 2020, the PM once again announced to the nation that all students who had not left the campuses or school grounds were to remain on their campuses until a particular date. The retraction of the directive caused many students to feel stressed since their movements were now restricted, and they were no longer allowed to leave their campuses. Additionally, all student activities were not allowed. Among the students who were not able to return home, there was also the student who felt obliged to comply with the directive and accepted their fate as they felt that they were keeping their families safe from the virus. Even though implementing the MCO and restricting university students from leaving campuses was the correct response to the situation by the PM on that moment, many students suffered as this has caused them to feel great stress. Students began to feel trapped in confinement and had to discontinue their regular activities from before the MCO. Furthermore, students also felt envious of their friends who were successful in returning home to their families. Students felt that the restriction tore them further away from their families causing them to be demoralized. However, not all students were negatively impacted by the MCO. Some students also felt safer being trapped inside the campus as they were not exposed to the virus. Besides, this group felt that they were helping in keeping their families safe from the virus as well. Thus, the current study aims to examine students of UiTM Pahang, Jengka Campus' perceptions on the implementation of the MCO in Malaysia.

Literature Review

Coronavirus disease 2019 (COVID-19) is a novel pneumonia disease originating in Wuhan, was confirmed by the World Health Organization on January 12, 2020, before becoming an outbreak in all countries. Due to this, the Government of Malaysia enforced a Movement Control Order starting on March 18, 2020, to break the chain of COVID-19. The media actively spread the hashtag *#stayhome*. Non-governmental organizations, as well as prison inmates, started to produce personal protective equipment for the frontline (Ain Umaira Md Shah, Syafiqah Nur Azrie Safri, Rathedevi Thevadas, Nor Kamariah Noordin, Azmawani Abd Rahman, Zamberi Sekawi, Aini Ideris, 2020). On 23 January 2020, the government of the Republic of Singapore announces that one imported case of COVID-19 detected that involves the person from Wuhan, China. Due to this, the Singapore Ministry of Health informed the Malaysian Government that eight of the closed contact for the case currently stay in Johor Bahru Malaysia (Norhisham Abdullah, 2020). Due to the increasing number of the case, the Prime Minister decides to implement movement control order (MCO) in Malaysia. As a result of the announcement, the students who stay on campus are not allowed to leave the campus (Nuradzimmah Daim, 2020). As mention by Senior Minister Datuk Seri Ismail Sabri Yaakob,

the students who are stranded at higher learning institutions are not allowed to return to their hometown during the third phase of the movement control order which will end on April 28. He also said the decision has been taken because a new cluster of Covid-19 infections may occur should a mass exodus of students be allowed and the sheer number of students on the move would also affect the monitoring of roadblocks by the police nationwide (Bunyan, 2020). According to the study by Young Minds, around 25% of their sample reported experiencing anxiety symptoms, which were positively correlated with increased concerns about academic delays, economic effects of the pandemic, and impacts on daily life. Besides, 83% of young respondents agreed that the pandemic worsened pre-existing mental health conditions, mainly due to school closures, loss of routine, and restricted social connections (Young Minds, 2020). Due to this situation, universities are encouraged to provide counseling and psychological services for students (Sandhya Menon, 2020). However, on 24 April 2020, the Senior Minister (Security Cluster) Datuk Seri Ismail Sabri Yaakob said, students who are stuck on campus will be sent home in stages from next Monday. This arrangement will be handled by the government and will only apply to students who are returning to green zones (Soo Wern Jun 2020). To prevent existing cases among the students who were sent home, the traveling time will be fixed between 9 pm to 9 am to avoid traffic congestion. The students also need to undergo COVID-19 screening before they are allowed to board the bus. Furthermore, social distancing must be practiced and students will be provided with food and face masks and only 20 passengers will be allowed on the bus at one time (Wong, 2020).

Methodology

For this study, the data was collected via face-to-face interviews and a questionnaire. The samples involved are students who stayed on the Campus of UiTM Pahang Branch in Jengka. The total number of students on campus is 359 students in which 154 are male students while 205 are female students. The questionnaire was distributed to all students who stay on campus using the google form and the number of students responded was 210. Based on the Krejcie and Morgan Table (Krejcie & Morgan, 1970), the required sample size is 196. The questionnaire consists of five parts; Part A is relating to personal details, Part B is on students' perceptions towards MCO, Part C is about challenges face by students who remained on campus during online distance learning, Part D is about students' reactions after the announcement about being allowed to return home and Part E is about students' overall view on the implementation of the MCO. Data collected were analyzed using SPSS 24.0. Interviews sessions were done in three (3) parts which are during the first announcement of the MCO, second is during the commencement of classes online, and third after the PM's announcement about students on campus to be sent home. Descriptive and frequency analysis is used to examine the students' perceptions on the implementation of the MCO in Malaysia.

Findings and Discussion

Table 1: Respondent's information

GENDER	Male	91	43.33%
	Female	119	56.67%
AGE	under 18	3	1.43%
	18-20	168	80.00%
	20-22	29	13.81%
	22-24	10	4.76%
FACULTY	AS	48	22.86%
	BA	52	24.76%
	AC	36	17.14%
	EC	28	13.33%
	SR	20	9.52%
	AT	26	12.38%

Table 1 shows that there are 91 male respondents (43.33%) and 119 female respondents (56.67%). The majority of the respondents are between the ages of 18-20 years old with 168 respondents (80%). This is because most respondents are from the diploma program. By faculty, 48 students (22.86%) are from Applied Science (AS), 52 students (24.76%) are from Business and Management (BA), 36 students (17.14%) are from Accounting (AC), 28 students (13.33%) are from Civil Engineering (EC), 20 students (9.52%) are from Sports and Recreational Sciences (SR), and 26 students (12.38%) are from Agriculture and Agrotechnology (AT).

Table 2: Students Perception of the MCO

Students' Perception	Frequency	Percentage (%)
Feeling eager to go home and be with family	181	86.19
Uncomfortable being isolated in rooms	121	57.61
Stressed about the MCO	201	95.71
Wanting to live freely like before the MCO	208	99.05
Need to be with own family life through the MCO	189	90
Feeling envious of students who made it home	151	71.90
The MCO puts a burden on students	201	95.71
The MCO has changed the student's way of life	201	95.71
Feeling secure on campus grounds	195	92.85
Not wanting to create a new COVID-19 cluster	190	90.48
Willing to remain on campus to ensure the family's safety.	162	77.14

Table 2 shows the perception of students after the announcement by the PM that university students must remain on campus and not allowed to return home. Based on the table, the highest percentage of students of 99.05% represents the group who feel that they would like to continue to have the freedom as they had before MCO. Furthermore, the data also indicates that students felt stressed about the implementation of the MCO and that the MCO puts a burden on students and has changed their way of life, as indicated by 95.71% students. As students begin to endure the MCO on campus, 90% feel that they need the support of family members by their side and 86.18% feel eager to go home and be with their families. On the contrary, 92.85% students felt secure staying on campus and 90.48% do not want to be the

cause for a new cluster of infected people if they proceed to return home. Moreover, 77.14% students felt willing to remain on campus to ensure the safety of their families from the virus. However, 57.61% felt uncomfortable being confined inside the campus. This situation came about as a circular from the campus Rector on 19 March 2020 stated that students were to stay within campus grounds. Students were not allowed to carry out any activities outside the hostel area or campus.

Table 3: Challenges During Online Distance Learning (ODL)

Challenges	Number of Students	Percentage (%)
Internet connection problems	118	56.19
Unconductive condition of their rooms	95	45.24
Limited access to IT rooms	99	47.14
Schedules to take meals overlapping with classes	109	51.90
Longer time required to get used to online distance learning	200	95.24
Slow internet connection at Kolej Mat Kilau (male hostel)	96	45.71
Spending a big amount of money for internet data	100	47.62
Disturbance from roommates	87	41.43
Classes outside of class hours	132	62.86
The lack of motivation to attend online lectures	198	94.29
Learning objectives not achieved	203	96.67

According to the circular titled "Pekeliling Rector Bilangan 2 Tahun 2020" dated 16 March 2020, all lectures are to be held via online platforms. This directive (Pekeliling Naib Canselor UiTM) was circulated in congruence with the circular from the Vice-Chancellor of UiTM regarding the implementation of lectures online. This announcement had a major impact on the students. Table 3 shows the challenges faced by the students who remained on campus during online distance learning (ODL). The table shows that 96.67% students feel that learning objectives not achieved via online lectures because it is more difficult to understand the lessons. 95.24% of them feel that they require more time to accommodate themselves to the online learning platforms and 94.29% of them feel less motivated to attend online lectures. 62.86% students reported that their lecturers conducted lessons outside lecture hours to ensure the completion of the syllabus. Students are provided with meals by the campus' management 3 times a day, however, since students began to attend online lectures, some students were not able to pick-up their food as their lectures were overlapping with the meal distribution schedules, as reported by 51.90% of the students. In response to this issue, the hostel management prepared two (2) IT rooms at Kolej Mat Kilau 1 and 2, however, 47.14% of the students reported that the rooms were limited as social distancing had to be executed and only a few students can be in the room at one time. In addition, 45.24% of the students reported that the rooms were not conducive. Apart from that, among the challenges that students reported to have faced is disturbances from their roommates, with 41.43% experiencing this problem. In terms of internet-related issues, it is also reported that students experience a slow internet connection as well as having to spend a considerable amount of money on internet data, with 45.71% and 47.62% respectively. The Internet connectivity continues to be a big challenge despite it is being provided by UiTM.

Table 4: Students’ Reactions After the Announcement of Return Home Permission

Students’ Reactions	Frequency	Percentage (%)
Online lectures will be more difficult to attend	146	69.52
Happy about being reunited with family	201	95.71
Sad about separating from friends	102	48.57
Worried about the family's safety	189	90.00
Wanting to stay on campus	98	46.67

On 21 April 2020, the Senior Minister of Defence, Datuk Seri Ismail Sabri Yaakob stated that 85% or roughly around 53000 students will be sent home from and to green zone areas. For the students of UiTM Pahang in Jengka, this news was highly anticipated. Table 4 shows students' reactions after hearing the announcement. The table shows 95.71% were happy because they could finally be reunited with their families, while 90% felt worried that they might spread the virus at home. Other than that, 69.52% were also worried that they would not be able to attend their online lectures as they did while they were on campus due to the poor internet connection and other home-related problems. 98 students or 46.67% preferred to stay on campus and were not interested to return to their homes, however, the university had decided that all students must leave the campus and be sent home.

Table 5: Students’ overall view on the implementation of the MCO

Students’ Reactions	Frequency	Percentage (%)
Stressed from being confined on campus	143	68.10
Willingly comply with government orders	67	31.90

Table 5 reveals students' overall perception of the announcement about the implementation of the MCO by the PM and about them not being allowed to leave the campus. From the entire sample, 68.10% of the students felt stressed about the implementation of MCO because of the many problems they face. On the other hand, 31.90% of them felt obliged to comply with MCO to ensure the safety of their families at home.

Conclusion

The implementation of the Movement Control Order (MCO) had a drastic impact on Malaysians. For many, the MCO caused a lot of stress and inconvenience. Similarly, university students also experienced a significant impact on their lives as the MCO had forced students to continue their studies using a variety of online platforms. Several students felt that the MCO brought more harm than good. This is evident as some students were forced to go to great lengths and find various methods to ensure a stable internet connection to sustain a smooth learning process. This includes spending large amounts of money buying more internet data.

Also, the MCO had caused great stress for students who were not able to return home but instead were instructed to remain on their campuses. Despite great efforts from the university’s management teams in providing the students with various services such as counseling, online as well as face-to-face sessions, health and welfare, and other relevant programs in such situations. Nevertheless, despite the efforts, several students still felt that they did not get enough support in coping with their conditions as they strongly yearned to be with their families during these critical times. From the researchers’ point of view, although the students' stress level is at 68%, they were still emotionally stable and healthy. Students showed no obvious signs of negative implications from the situation. Programs conducted are focussing on various aspects such as spiritual, emotional, mental, and physical health to stabilize the

students' day-to-day lives. Besides this, UiTM's management teams with the help of the hostel resident staff (SRK) had contributed the most needed moral support to students as they faced challenges throughout the MCO. Further research needs to be conducted in depth of the psychological effect on students after the MCO in order to prepare for the upcoming events of pandemic.

References

- Ain Umaira Md Shah, Syafiqah Nur Azrie Safri, RathedeviThevadas, Nor Kamariah Noordin, Azmawani Abd Rahman, ZamberiSekawi, Aini Ideris, M. T. H. S. (2020). COVID-19 outbreak in Malaysia: Actions taken by the Malaysian government. *International Journal of Infectious Diseases*, 97, 108–118. <https://doi.org/https://doi.org/10.1016/j.ijid.2020.05.093>
- Bunyan, J. (2020, April). Students must stay put on campus during the third phase of MCO, says the minister. *Malay Mail*. <https://www.malaymail.com/news/malaysia/2020/04/13/students-must-stay-put-on-campus-during-third-phase-of-mco-says-minister/1856226>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*. <https://doi.org/10.1177/001316447003000308>
- Nuradzimmah Daim. (2020, April). University students must stay on campus until MCO ends. *New Straits Times Press*. <https://www.nst.com.my/news/nation/2020/04/583930/university-students-must-stay-campus-until-mco-ends>
- Perutusan Khas Perdana Menteri*. (2020). <https://www.mkn.gov.my/web/ms/covid-19/>
- Sandhya Menon. (2020, April). Students staying at campuses not allowed to leave. *The Star*. [hestar.com.my/news/nation/2020/04/03/students-staying-at-campuses-not-allowed-to-leave](https://www.hestar.com.my/news/nation/2020/04/03/students-staying-at-campuses-not-allowed-to-leave)
- Situasi Semasa Pandemik COVID-19 Di Malaysia*. (2020). Ministry of Health Malaysia. <http://covid-19.moh.gov.my/>
- Soo Wern Jun. (2020, April). Students stuck on campus due to MCO allowed home to green zones starting April 27, says Ismail Sabri. *The Malay Mail*. <https://www.malaymail.com/news/malaysia/2020/04/24/students-stuck-on-campus-due-to-mco-to-be-sent-home-starting-april-27-says/1859861>
- Wong, A. (2020). *MCO: University students allowed to return home if it's located in a green zone*. <https://www.soyacincau.com/2020/04/24/mco-university-students-campus-return-home-green-zone-27-april/>
- Young Minds. (2020). *Coronavirus: Impact on young people with mental health needs*. https://youngminds.org.uk/media/3708/coronavirus-report_march2020.pdf
- Norhisham Abdullah (2020). Tindakan KKM bagi pengesanan kontak (contact tracing) kepada kes pertama positif novel Coronavirus di negara Singapura [Press release] (2020). Retrieved from http://www.moh.gov.my/index.php/database_stores/store_view_page/21/1300 [Accessed 30 March 2020]
- Pekeliling Naib Cancellor UiTM
Pekeliling Rektor UiTM Cawangan Pahang

THE EFFECTS OF SOCIAL MEDIA ON THE READING HABITS ACROSS GENERATIONS IN ILIGAN CITY

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Abstract: *This study examined the effects of the social media on the reading habits across generations in Iligan City from March to May, 2020, utilizing the purposive sampling and snow-balling approach, and questionnaires were retrieved face-to-face (FtF), through cellphone texts, and by computer-mediated communication (CMC) through Facebook. During COVID 19, on-line responses were utilized. Findings revealed that P1, P2, P3, and P4 were the Silent Generation, 82, 79, 77, and 76 years old, birth year bracket: 1925-1945. Then, P 5 and 6, Baby Boomers Generation, born 1946-1964, got information from the social media for global perspective. Generation X or the Baby Bust, born in 1965-1979. Xennials, born in 1980-1985. The Millennials or the Generation Y, born in 1984-1994, said that reading in social media news and articles became an integrative part of their reading habits. The i Gen/Gen Z, born in 1995- 2012, did not read much from printed materials because the social media had much attraction to them. Then, P19 and P20, both 7 years of age, the Gen Alpha born in 2013-2025. These Grade 1 pupils said that the social media helped them in language improvement, especially English and Tagalog cartoons from YouTube, developed language and imitating skills by prolonged exposure to technology. It could be concluded that all generations' reading habits were affected by social media, from printed materials to Internet, even more during COVID-19 where almost all activities were done on-line.*

Keywords: *Social Media, Reading Habits, Generations*

Reading is the avenue to all learning, such that every individual who reads may learn almost everything, forming a reading habit beneficial for leisure and academic purposes. Early years' printing presses were publishing books, magazines, journals, and newspapers where people get information, or entertain themselves, thus developing a reading lifestyle. However, the onset of Global Information Age, decreased publication of printed materials, instead technological activities like reading electronic books, journals, and the social media: Twitter, Facebook, Instagram, and electronic mails were popularized. Schools become even more scientific in using technology as tool in gathering information and learning outcomes are done mostly by technology, whenever traditional methods are no longer utilized, or a combination of face-to-face and virtual discussion are employed. Not only the young, but also the elderly are getting information from the internet for personal and professional practices, and become part of Cultural Anthropology.

Cultural Anthropology, branching out to Linguistic Anthropology, then to Interpretative Anthropology (Bonvillain,2006) delves on culture as meanings, rather than as forms and functions, where mental and cognitive processes are important developmental symbolic meanings of people's actions, thus the human language is a cultural resource that speaks about cultural practices, as cognitive faculty, and social achievement, part of intellectual tools for thinking and acting in the world (Chettri et al, 2013), the formation of reading habits boiling down to a reading culture, the gateway to success in all fields, the heartbeat not only

of all academic courses, but all undertakings in society, across generations (Catsouphe et al., 2014), in global perspectives.

In the Philippines, Barrot (2018) classifies reading as one of the six macro skills in language use: receptive skills – which includes reading, listening and viewing); and productive skills-speaking, writing, and representing. As one essential skill, the development of a reading culture in a particular community necessitates habit formation as Ahearn (2017) posits the concept of community of practice being challenged by detractors, the proliferation of information technology as major cause of changes in the reading habits, thus culture is dynamic. Early Filipinos' reading habits were formed from the time of the hieroglyphics, to the time when books, magazines, comics, journals, and newspapers were printed, then the onset of internet-reading.

The Program for International Student Assessment (PISA), participated by the Philippines' Department of Education (DepEd) in 2018, recorded an overall reading literacy of 340 points, significantly lower than the international standard of 487. Out of five Filipino students, only one achieved at least the minimum proficiency level, calling for intervention by the administrators and all sectors of society, if Filipinos were to build a strong nation, thus the National Book Development Board (NBDB), with the Intellectual Property Office of the Philippines (IPOP HL) and Vibal Foundation, investigated the reading habits of Filipino adults, citing 88% of the total 49.2 million Filipino adults exhibiting decline in number of readers despite the existence of all sorts of reading materials both printed and electronic platforms, confirmed by the Social Weather Stations (Book Readership Survey, 2012).

Noting such decline, a body of researches were conducted on social media and its effects on students' academic performance and in other aspects of people's lives, but there was no single study that delved on reading habits and the formation of a reading culture across generations in Iligan City. Philippines, hence it would be imperative to look into the different age groups' reading habits and the extent by which these habits can be affected by the proliferation of the social media. It was on this premise that this study was conceptualized and developed, to answer the following questions: What is the participant's perception on the influence of social media on his/her reading habits, in terms of a) engagement in social media activities; b) hours spent per day (using social media); c) days spent in one week (using social media); d) the effects of using social media on the reading habits?; How does the proliferation and constant use of social media affect one's reading habits, in terms of a) increase or reduction in time devoted to read printed materials; b) development of addictive manner in the use of social media; c) whetting the appetite for engaging in this form of communication?; In the participant's point of view, who has the interest in reading printed materials, is it the one who belongs to The Silent Generation, Baby Boomer, Generation X (Baby Bust), Xennials, Millennials Generation Y, i Gen/Gen Z, or Gen Alpha, in terms of: a) motivation to read printed materials; b) benefits of reading printed materials; c) appreciation of printed materials?

Primarily anchored on the Theory of Cultural Determinism, positioned on the ideas, meanings, beliefs, and values people learn as members of society, determines human nature, this study investigated on generation groups' reading habits in relation to the use of Social Media (SM), relating to cultural determinism, placing no limits in the abilities of human beings to do or to be whatever they want (Diah, 2014) on anthropological perspective of facts to come and those ascertained in the milieu. Some anthropologists suggest that there is no universal 'right way' of being human (Bonvillain, 2006), whether to form a reading habit, or do it less, is a choice, and how one individual perceives it to be, opposed by the pessimistic version asserting that people are what they are conditioned to be, human behavior in a realm that is totally beyond human control (Brenner et al, 2011) where urban life is influenced by external

factors, and contending that the utilization of Facebook (one form of Social Media), has been found to increase the user's sense of personal belongingness among college students, a matter of determinant to the reading habits. The child recognizes symbols, and begin to read, or the adults are capacitated to find meanings in these interpretations (Diah & Hossain, 2014) by definition of anthropology as the study of humankind in all times and places. In Linguistic Anthropology, cultural resource, act of reading and speaking is collectively a human language faculty that produces cognitive and social achievements providing intellectual tools for thinking and acting, if not possible with face-to-face interaction, be done through the social media, pertaining to the Social Presence Theory (SPT). Aside from the face-to-face (FtF), Computer-Mediated Communication (CMC) is trending at the onset of the Information Age, though lacking non-verbal cues, but extends social interaction and engage people without being FfF (Drago, 2015) on the effects of technology on the FtF communication, while reading online messages, also Lowenthal (2010) citing a continuum focusing on interpersonal emotional connection between communicators on one end and a focus on 'if someone is perceived as being 'present there', or 'real' at the other end, referring to Media Naturalness Theory of Kock, 2004; Kock, et al. (2008) originally developed to defend the CMC as inferior argument, cited by Perry (2010), closely related to lack of cues in CMC stating that humans are accustomed to and most comfortable in FtF. While Darwinian evolution contends that humans have developed interpersonal communication skills intended for face-to-face context (Kock, 2004; Kock, et al., 2008), anything outside the unnatural involves struggle with interpretation of messages, as reading habit is formed.

This study was limited to the effects of social media on reading habits across generations in Iligan City, at the time when news about COVID 2019 reached the Philippine television, two weeks before the Enhanced Community Quarantine (ECQ), and during the time when ECQ was then fully implemented in March and April 2020. Following the mandate of social distancing and conforming to the stay home policy, wheelchair anthropological study was utilized by sending the questionnaires through the personal messaging at Facebook (FB). Although four respondents were able to answer the questions FtF two weeks before the ECQ. The researcher-made questionnaire was face-validated by the expert in the College of Arts and Social Sciences, English Department. This qualitative study focused on the participants' narrative responses, with in-depth analysis of twenty (20) individuals residing in Iligan City chosen as respondents by snowball technique. FB friends were asked if they had neighbors whose ages were from 7 years to 78 or more. Purposive Sampling was utilized in scouting for willing representatives of each generation or age group. Formal permission was sought, with screenshots and text messages in mobile phones used as data. To hide their identities, names were scratched, and participants were assigned the code: P1, P2, so on. Those who refused to join in the study were free enough to leave the group. Children and teenagers below eighteen (18) years old were assisted by their parents and guardians in answering the questions. And, for better understanding of the questions, English words were translated to *Sebuano* Language, where Discourse Analysis explored the meanings produced by language use and communication, and where contexts and processes of meanings and practices were perceived and categorized into various meaning-making processes, networks and practices (van Dijk, 2001), bearing various starting points and discipline-specific applications of historical and social situations or processes, and social constructionism in linguistics.

Findings revealed that the Silent Generation, born in 1925 to 1945, had the age of 82 years, 79, 77, and 76, no longer read printed materials as they used to do before, but use social media (SM), except P2 who had no internet at home, hence not using SM as Baruah (2012) cited the problem on connectivity to the internet. These were elderly people who used SM

reading religious items, and read printed materials like magazines, religious materials, and Bible, except P3 who lost interest in reading printed newspapers because almost every information was found in the internet. P4, spending almost 2 hours per day using SM, said that it reduced the time for reading printed materials, even lessened clarity of vision. This generation that used to read printed materials in the past years of their early lives on earth, indeed had the habit of reading, and reading culture was existing during their younger years, as Ahearn (2017) refers to Literary Practices as being challenged while readers' taken-for-granted ways of reading and writing saturate individuals' or groups lives. In this current study, reading printed materials were mixed up with the use of SM. Instead of devoting time to printed materials, parallel to Wolf et al., (2018), this generation was included in the two classifications of social media: the personal and the professional social media- the public and private networks- despite the lack of a universally agreed definition, still the boundlessness of individual applications, sites, and platforms made the tool effective for both informational and recreational purposes.

Baby Boomers, born in 1946 to 1964, used the social media to be updated on what was going on globally. P5 read Rick Warren's 'The Purpose Driven Life', a book based on the Bible, but the other books read were Mathematics and Sciences, because she was a former public school teacher. P5 used social media (SM) one hour a day while P6 used SM from thirty minutes to one hour a day, or a total of three to four hours in one week.

Generation X (Baby Bust), born in 1965 to 1979 had P7 saying that awareness on the effect of social media on the reading habits was a bit helpful although there was no total dependency on that material. Top preference on printed books, magazines, and newspapers was inevitable, but used SM one hour daily. P8 said that the use of SM made one to become more encouraged to read much, thus enhanced reading habits, improved vocabulary and logic skills, more inspired because of updates from the internet. P9 was not influenced by the SM in choosing what to read, as use of SM lasted only one hour per day, three times a week. P10 said that the use SM developed one's reading skills, easier to search for references online than reading printed books, especially when searching for Bible verses. This participant observed that from the Silent Generation to the Millennials, they still read printed books for retention, and can be read again, to build up a Library.

Xennials, born in 1980 to 1985, had P11 saying that the use of SM helped in updating individuals on the latest news, but sometimes fake news were easily spread, yet enhanced the reading habits, as the participant spent three hours almost every day in reading in the internet. It really affected the reading habits, as a leisure time to read, yet continue to read the printed Bible. P12 also used SM to get information, spending three hours, seven days a week, using the cellphone, therefore lost time to read printed materials like newspapers, magazines, and academic books, Sell (2000) asserting that the mediation between writers and readers belonging to different historical periods or social groupings, in this case, P11 who was forty years old, and P12 who was 26 years old, partly belonging to the era of technology, were capable of empathizing with socio-historical formations.

The Millennials or Generation Y, born in 1984 to 1994 said that the social media was useful in recent days when information would be easily accessed, a tool for gathering data and also for expressing personal opinions, allowing people to widen knowledge and connect to others by: radio, television, newspapers, or telephone (Otiike, 2011), P13 using SM four hours, three times a week, yet constant use of SM widen ideas and give growth to the mind. P14 said that the use of SM helped a lot in building reading habits, in watching news- about global information, especially for research purposes, building up Library Resources (Loan, 2009) with the Digital Natives, and that new words were added to the vocabulary, and reading habits were

developed. P15 preferred to read from Facebook over and above printed books, spending at least six hours a day, not really a reader, but when SM was introduced, interest in reading articles from the internet, opening FB only to browse other friends' photos, profiles and status became also a habit, believing that it was the parents' upbringing that influenced one's reading habits. Although, some friends were still reading printed materials but not on PDF files in the internet. Digital information had become even more useful than printed materials, referring to Smith (2002) who cited problems of boys in schools, especially in reading and writing. Though researchers barely pointed out how literacy educators could combat those challenges, this current study found out that indeed the digital generation is on. Although contested by the proliferation of the social media, referring to Otiike (2011), that the promotion of a reading culture to publicize reading among members of the general public is an activity that was meant to popularize reading, making it a lifelong hobby, not just for passing the examinations in school, but reading for pleasure, that is, concerning the printed materials as part of the Library resources. This was confirmed by Thomas, et.al. (2012) referring to this generation as the digital natives, supposedly the reading culture natives, but as they embraced technology, which was so rapid in its growth in this generation's days, they embraced the new media more comprehensively than the older generations.

The i Gen/Gen Z, born in 1995 to 2012, said that they did not read printed books except those required in schools. P6 said that the social media influenced many people because some of them used phones. This participant used the social media seven to eight hours weekly. Reading habits were not affected because reading was not the participant's hobby. P7 said that the social media somehow changed the reading habits since most of the time, photos and videos usually appeared on screen, and with many platforms, it was so easy to read. Funny and interesting posts were enjoyable, not really for the sake of information. The social media could not destroy the reading habits but improve one's reading habits, as journals and articles were easily accessed by computer-mediated-communication CMC (Riva, 2002). This participant used the social media nine hours a day, seven days a week. Thus, it reduced the time to read printed materials. It is very addictive to use the social media. Although this participant still read printed materials, in case of school age, even those who pursued Ph.D. degrees, they read printed books as required, and some people also read newspapers usually those who were in the age group of the Xennials and the Silent Generation, this participant observed. P8, on the other hand, used the social media every minute to check e-mails, which indeed disturbed reading habits, because six hours were spent for social media, every day, with Barrot (2018) citing how it is to be in the 21st century teaching-learning setting. This participant said that the social media was very useful for school work, yet newspapers were still read, as well as the academic books. or Gen Z people, referring to what Chettri (2013) cited by Fatilon (2017) asserting that the habit of reading printed materials are vital in the teaching-learning environment, and that the love of reading augmented the level of academic performance, were useful. It could mean further that the love of reading per se was not in its prime necessity, rather, for school requirement only, Loan's (2009) findings about the impact of new technology on the reading habits along with the all-around development of a person from birth to death- the eyes and new wisdom to mind in this multi-media society, Kuliktod and Pasagui (2017) observing that reading habits had to be formed despite the presence of the so-called "Time Eating Machine", naming reading as 'almost a closed book'. The i Gen or Gen Z, having formed their reading habits more with the social media, according to Sotiluye and Bodunde (2018), formation of reading habits from printed materials, whether waxing or waning, would be a question raised concerning literacy, the reading culture, and the recreational reading.

The youngest generation, Gen Alpha, born in 2013 to 2025, having another world of readers- P19, a Grade 1 pupil said that the social media helped in language improvement, especially YouTube English and Tagalog cartoons, although usage was only some time. Prolonged exposure to social media could help this participant learn even more, referring to Fatiloro et al, (2017) natural to Digital Natives. The last participant, P2-used social media four hours daily, parallel to what Kuliktod and Pasagui (2017) finding out that SM was the major source of communication between the individuals in the world, hence the label ‘cyber-world’, including Facebook, Twitter, MySpace, Instagram, Flickr, Friendster, Blogs, Podcast, YouTube, Tublr and Skype, among others. This Gen Alpha is using SM along with their academic pursuits, and the reading habits would be formed not only from the printed reading materials, but from SM as reading avenue, an integral part of the recent culture, referring to Paine’s (2007) sustenance of the Reading First Initiative in teaching students to read well, the reading culture may be in place as a vital aspect of the scientifically-based school-wide reading models, parallel to Palani’s (2007) assertion that reading habit is an essential aspect for creating the literate society in this world, as it shapes the individual’s personality, and to develop proper thinking and methods of creating new ideas. However, due to the proliferation of SM, people could not show much interest in reading the printed books, magazines, and journals as they are born in the time of fast-pacing technology (Thomas et al, 2012).

All generations under study utilized SM for information, in their respective jobs, for school work, religious purposes, and for leisure, that across generations in Iligan City, the proliferation of the social media affected their reading habits in ways whereby their time supposedly spent for reading printed materials were remarkably reduced because their attention were diverted to the utilization of SM which was readily accessible, more interesting, and gave them fun, referring to Loan’s (2009) study findings that the impact of new technology on the reading habits of the participants, in view of the world of literature, that supposedly, reading these printed reading materials were essential to the formation of a reading culture that could help in the all-around development of a person from birth to death, adding new insight to the eyes and new wisdom to the mind (Hrastinski & Aghhaee. 2012).

Furthermore, the social media affected the reading habits of generations in Iligan City, even at the start of the COVID-19 related activities, where almost all activities were done on-line, the more the social media affected their reading habits in a positive way- of learning what is going around the world, even attending meetings on-line, and the school work soon to be done with the help of technology and other means, by printed materials together with the social media.

It was recommended for future researchers to increase the scope of this study, with increased number of participants, and focus on how the reading habits and the social media utilization across generations affect each other, especially during and after the COVID-19 pandemic times. The English Department of the College of Arts and Social Sciences, through the Ph.D. students enrolled in Educational Technology, to delve into researches on designing instructional materials considering the current set-up of syllabi-making, responsive to the need for Open Distance Learning, with emphasis in creating a reading culture both in printed and digital materials for all levels of education: graduate studies, college, secondary, and elementary levels. Furthermore, The MSU-IIT Administration to consider training of teachers in the drive towards being a research university, to consider the development of a reading culture, and the enhancement of reading habits among constituents: faculty, staff, students, and stakeholders, by putting up a reading center inside the campus, for all to access any time of the day, for information, and for recreation.

References

- Ahearn, Laura M. *Living Language: An Introduction to Linguistic Anthropology*. Oxford: Blackwell Wiley, 2017.
- Barrot, Jessie S. *English Curriculum Reform in the Philippines: Issues and Challenges from a 21st Century Learning Perspective*. 2018. Retrieved from Google Scholar.
- Baruah, T. D. (2012). Effectiveness of Social Media as a tool of communication and its potential for technology enabled connections: A micro-level study. Retrieved from www.ijsrp.org.
- Bonvillain, Nancy. *Cultural Anthropology*. New Jersey: Prentice Hall, 2006.
- Book Readership Survey. National Book Development Board. 2017. Retrieved from booksphilippines.gov.ph.
- Brenner, Neil, David J. Madden, and David Wachsmuth. *Assemblage Urbanism and the Challenges of Critical Urban Theory*. 2011. Retrieved from www.tandonline.com.
- Catsouphe, Marcie Pitt, Christina Matz-Costa, and Elyssa Besen. *Age and Generations: Understanding Experiences at the Workplace*. 2014. Sloan Center on Aging. Retrieved from www.bc.edu.
- Chettri, Kushmeeta, S.K.Rout. *Reading Habits- An Overview*. IOSR Journal. 2013. Retrieved from www.iosjournals.org.
- Diah, Nurazzura Mohamad and Dewan Mahboob Hossain. 2014 *An Overview of Anthropological Theories*. Academia.edu. Retrieved from Google Scholar.
- Drago, E. (2015). *The Effect of Technology on Face-to-Face Communication*. In *The Elon Journal of Undergraduate Research in Communications* (1st ed., Vol. 6, pp. 13-19). Retrieved from www.elon.edu.
- Fatiloru, Oluwayemisi Florence, Oyekola Adebimpe Adesola, Bilkis Alaba, and Oseni Munat Adewumi. *A Survey on the Reading Habits Among Colleges of Education Students in the Information Age*. *Journal of Education and Practice*. 2017. Retrieved from eric.ed.gov.
- Hrastinski, Stefan and Naghmeh M. Aghaee. *How Are Students Using Social Media to Support Their Studies? An Explorative Interview Study*. *Education and Information Technologies*. Vol.8. 2012. Retrieved from link.springer.com.
- Kock, Ned. *E-Collaboration and E-Commerce: The Potential in Virtual Worlds of Second Life and World of Warcraft*. *International Journal of e-collaboration*. 2008. Retrieved from cits/tamui.edu.
- Kuliktod, Remedios C. and Nahida S. Pasagui. *Effects of Social Networking Media to the Academic Performance of the Students*. Philippines: Atlantis Press, 2017. Retrieved from www.atlantis-press.com.
- Loan, Fayaz Ahmad. *Impact of New Technology on Reading Habits: A Glimpse on the World Literature*. New Delhi: *International Journal of Digital Library Services*, 2009. Retrieved from core.ac.uk.
- Lowenthal, PR *The Evolution and Influence of Social Presence Theory on Online Learning*. 2010. Retrieved from Igi-global.com.
- Otike, Fredrick Wawire. *Reading Culture, Cultivation and Its Promotion Among Pupils: A Kenyan Perspective*. Kenya: 2011. Retrieved from www.dkut.ac.ke.
- Paine, Stan. *Building A Strong Reading Culture: What You Can Do*. Arlington, Virginia: RMC Research Corporation, 2007. Retrieved from www2.ed.gov.
- Palani, K.K. *Promoting Reading Habits and Creating Literate Society*. *Researchers World*, 2012. Retrieved from www.questia.com.



- Riva, Giuseppe. The socio-cognitive psychology of computer-mediated communication: the present and future of technology-based interactions. 2002. Retrieved from www.liebertpub.com.
- Route, S.K. College of Education Gangkok Reading Occupies a Pivotal Role in the Life of a Man. 2013. Retrieved from www.iosjournals.org.
- Sell, Rogel D. Literature as Communication: The Foundations of Mediating Criticism. Amsterdam/Philadelphia: John Benjamins Publishing Company, 2000. Retrieved from Google.com.ph.
- Smith, Michael W. and Jeffrey D. Wilhelm. Reading Don't Fix No Chevys: Literacy in the Lives of Young Men. 1st Edition 2002. Retrieved from Amazon.com.
- Sotiloye, Bosede and Helen Bodunde. Assessment of Students' Reading Culture in a Nigerian University: Waxing or Waning? *Legon Journal of the Humanities*, 2018. Retrieved from <https://dx.doi.org>.
- Thomas, Kilian, Nadine Hennigs, and Sascha Langner. Do Millenials read books or blogs? Introducing a media usage typology of the internet generation. *Journal of Consumer Marketing*, 2012. Retrieved from www.researchgate.net.
- Van Dijk. Discipline-Specific Applications of Historical and Social Situations: Social Constructionism in Linguistics. 2001. Retrieved from www.discourses.org.
- Wolf, Maxim, Julian Sims and Huadong Yang. *Social Media? What Social Media?* London. 2018. Retrieved from www.ukais.org.

DETERMINANTS OF SALES TAX COMPLIANCE AMONG SMALL AND MEDIUM ENTERPRISES IN MALAYSIA

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Abstract: *Tax compliance behaviour has been addressed as a continuous serious concern globally. However, empirical research on sales tax compliance in Malaysia is still scarce. The present study can be considered a first attempt that was conducted in the context of sales tax version 2.0 for sales tax compliance in Malaysia. The main objective of this study was to investigate the determinant of sales tax compliance behaviour among Small and Medium Enterprise (SMEs) in Malaysia. Fischer model as a basis model with the consideration on the relationships of socio psychological factors (tax complexity, peer influence, tax fairness, tax knowledge, service quality and compliance cost), economic factors (tax complexity) with sales tax compliance. As a new contribution to tax compliance knowledge, the relationship between tax compliance behaviour and its determinants was also examined. The population consists of employees who are working in SME manufacturing. Data was collected using the survey method, whereby a total of 300 questionnaires yielded a 50% response rate. All the items in the study's variables were assessed using the 5-point Likert scale. Multiple regression analysis was employed to test the hypotheses. The findings show that tax complexity, tax fairness, peer influence and tax knowledge have significant influences on compliance behavior. Meanwhile tax law and enforcement, service quality and compliance cost variable on tax compliance were non-significant. This study concluded with the theoretical and practical implications for the tax authority and the government of Malaysia.*

Keywords: *Tax complexity, Tax fairness, Peer influence, Tax knowledge, SST 2.0.*

Introduction

Many countries rely heavily on taxation as a source of government revenue. Malaysia's main sources of income are direct and indirect taxation. Collecting tax revenue is essential for the government to finance its operating and development expenditures (Hartner et al., 2008). About 50 % of the total revenue collected is generated from corporate income tax and various types of indirect taxes such as custom and import duties, goods and services tax (GST), sales and service tax (SST) and et cetera. In 2018, direct taxes and indirect taxes added 133.474 billion (76.4 percent) and RM41.23 billion (23.6 percent) to government revenue (Malaysian Federal Government Treasury Annual Economic Report, 2017-2018), representing 73.88% of Malaysian government revenue.

This study focuses on indirect taxation, namely the sales and service tax (“SST”) as a source of government revenue. SST is imposed when a service or product is delivered to its final consumer. In September 2018, the Ministry of Finance announced that the Goods and Services Tax (GST) was abolished and would again be replaced by the Sales and Services Tax (SST 2.0). A total of 94,783 companies came under list of the Sales and Service Tax as of 14 September 2018, including 56,918 service providers and 37,865 manufacturers. The revenue

from SST, which was initially estimated at RM22 billion in the 2019 budget, was revised upwards to RM26.8 billion in 2019 in anticipation of increased sales tax revenue at RM15.5 billion and service tax at RM11.3 billion (Ministry of Finance, Fiscal Outlook and Federal Government Revenue Estimates 2020).

Despite the various fiscal measures undertaken by the Malaysian government to increase domestic revenue collection, the annual reports demonstrated a sharp rise in tax non-compliance, specifically with the Goods and Service Tax (RMCD Annual Report, 2016). Tax non-compliance, as mentioned earlier, could have long-term negative repercussions on financing the growth and development of the country. Judging from past experience with GST implementation, it is anticipated that tax non-compliance with the newly reinvigorated SST is likely to occur as businesses will try as much as to avoid paying tax. Hence, it is important for RMCD to tackle this issue upfront to minimize the incidences of tax evasion. However, since the sales tax was just newly reintroduced and businesses are required to file first sales and service tax returns by or before November 2018, data on sales tax compliance from SMEs are not yet available. To elucidate on the risk of non-compliance, this research study aims to examine sales tax compliance behaviour.

Nura, Abdul-Jabbar & Ibrahim(2017) asserted that sales tax compliance is referred to as conformity to all policies and regulations including declaring real and accurate revenue received, actual selling liabilities, as well as prompt and proper collection of all required tax returns. Therefore this study is set to investigate the factors influencing tax compliance behavior among SME in Malaysia by incorporating tax complexity, tax fairness, peer influence, tax law enforcement, tax knowledge, service quality and compliance cost in the sales tax compliance model, particularly in determining the extent to which group of manufacturers fully meet their legal tax obligations. Further this study will identify the perception of fairness regarding the sales tax system, the degree of support from business associates also determine the behavioural of taxpayers. Also, there is lack of empirical studies specifically in investigating the determinants of sales tax 2.0 compliance among SMEs in Malaysia. The identification of factors influencing the behavioural compliance of taxpayers is crucial because taxpayers could be influenced and nurtured to engage in sales tax compliance activities over time. Thus, this study attempts to investigate the determinants of tax compliance behaviour in the era of sales tax 2.0.

Literature Review

This present study employs the Fischer's model as underpinning theory to understand tax compliance behaviour of SMEs taxpayers. Fischer, Wartick, and Mark (1992) incorporated various factors into a single model where economic and socio psychological factors were integrated. Seven factors impacting compliance with sales tax are classified into two categories in this research, namely economic factors and non-economic factors. Economic factors are those variables that have an underlying impact on one's benefit, such as tax law enforcement being an economic cause that the taxpayer would be penalized if the non-compliant behaviours were found. The level of tax complexity, tax fairness, peer influence, tax knowledge, service quality and compliance cost are those behavioural considerations that come under category of non-economic variables. The following section will discuss studies on tax compliance that involves the seven elements, namely (1) tax complexity (2) tax fairness (3) peer influence (4) tax law enforcement (5) tax knowledge (6) service quality (7) compliance cost, with the objective to assess their importance to this investigation and to determine the elements that should be included.

Sales Tax Compliance

Sales tax compliance is defined as compliance with all procedures and regulations, including accurate reporting of actual sales tax paid and received, true sales tax liability, timely payment of all sales taxes and reporting of sales (Nura et al., 2017). Compliance with the sales tax can moreover be defined as a correct record of details in the sales invoice, instead of being fraudulent in the invoice to pay less sales tax. Business entities should have ability to submit accurate and complete sales tax returns in full satisfaction and conformity with all the regulations and sales tax laws of a tax authority (Ocheni, 2015).

Tax Complexity

Tax complexity is characterized as the complexity of the tax system, the complexity of enforcement, the complexity of the rules and the complexity of the procedures (Saad, 2014). In this study, sales tax complexity is referred to as behavior relevant to the difficulties faced by companies with sales tax laws, including regular adjustments, onerous specifics, multiple estimates and descriptions of various business records. The more sophisticated the tax system, the lower the propensity of taxpayers to comply well with the filing of the correct tax returns as well as the collections and payments of taxes within the stipulated time frame. Hardika's (2006) and Salman's and Farid's (2010) work identified the nature of the tax code and HS code (Hard) as factors that affected compliance amongst taxpayers. Cuccia and Carnes (2001) found a negative relationship between tax complexity and ability to adhere to tax payments while Abdul-Jabbar and Pope (2008) demonstrated increased tax complexities and frequent changes in tax laws had a negative effect on the performance of SMEs. Abdul-Jabbar and Pope (2008) claimed that tax complexity was always related to tax enforcement costs, rendering failure in compliance a simpler alternative option for most companies. Some recent research studies showed that sales tax compliance was negatively impacted by market complexity (Woodward & Tan, 2015). The more complex a tax code law, the lower the taxpayer's incentive to compliance exposed the link between the understanding of the tax laws and compliance behaviour. This addition to the model will potentially contribute to the tax compliance literature because it investigates specific habits implicit in SME taxpayers.

Tax Fairness

Tax fairness refer to payment of sales tax (including its related fines) to tax authorities in a fair manner, whereby the incidental amount of which equals the recorded amount of sales tax. If people believe the tax system is equal, they will have a stronger tendency for compliance in the tax system, which will enable a person to show adherence to tax obligations. This study refers to tax fairness, such as sales tax distribution rates and sales tax penalty rates. Recent work has had identified a positive correlation between tax fairness and tax compliance (Fochmann & Kroll, 2015; McKerchar, Bloomquist & Pope, 2013; Kirchler & Wahl, 2010; Feld & Frey, 2007). The literature also showed a positive relationship between tax fairness and sales tax compliance (Lin and Chin-Fatt, 2000; Adams & Webley, 2001; Woodward & Tan, 2015; Yahaya, 2015). Several studies also found no connection between tax fairness and tax compliance (Abdul Jabbar, Hijattulah, 2009). Some studies even suggested conflicting findings on the relationship between tax compliance and tax fairness (Sinnasamy, Perabavathi, Zainol Bidin, Syed Soffian Syed Ismail, 2015). In terms of sales tax, the three previous results revealed a positive correlation between tax fairness and compliance with sales tax (Adams, Caroline and Paul Webley, 2001; Woodward, Lynley and Lin Mei Tan, 2015; Webley, Paul, Caroline Adams and Henk Elffers, 2004).

Peer Influence

Peer influence is part of Fischer 's model beliefs and expectations. The term peers is generally defined as associates of taxpayers and they include relatives, friends, co-workers and colleagues (Jackson and Milliron, 1986). Peer groups have a potent effect on preferences, behaviour and personal values of taxpayers (Puspitasari and Meiranto, 2014). Hence, Lefebvre et al. (2015) reported the significance of not ignoring the presence of peer impact when examining the tax compliance behaviour. Chau and Leung (2009) stated that peers' influences are reflected in taxpayer's anticipations in relation to ~~the~~ disapproval or approval of tax non-compliance, whereas Alm and McKee (1998) declared that ~~the~~ social norms are a major determinant of tax compliance. The present study defines peer influence as the effect of people who are significant influences on SMEs' owner-managers in their sales tax compliance decisions, thus contributing in shaping their attitude towards sales tax compliance. In SMEs, peers have influences on tax obligation behaviour of their counterparts, and SMEs will evade tax payment if they felt that their peers have been evading even with punishment (Maseko, 2014; Omweri et al., 2010). Hence, a taxpayer is affected by the perception of his peer's behaviour. In contrast, if the taxpayers think of others as being honest, tax moral would rise (Frey and Torgler, 2007). However, the relationship between tax compliance and social norms is complex (Kirchler et al., 2008).

Tax Law Enforcement

According to Kamil (2006), laws and its enforcement exist mainly to control and ensure societies fulfil their responsibilities by obeying the laws. In an effort to prevent tax evasion, traditionally, the government depends on criminal and civil penalties. Tax evasion still happens even though tax authorities increase the volume in auditing. Trivedi et al. (2005) found that as tax authorities increased their audit operations, tax declaration activities by taxpayers also increased correspondingly. In this study, enforcement of tax laws refers to inspection, tracking, auditing and penalties imposed by RMCD on manufacturers who fail to register and comply as law abiding sales tax taxpayers. Taxpayers who are found guilty are subject to fines by the authority. In regard to compliance behavior of sales tax implementation, the perception on tax laws and enforcements by RMCD is important.

According to Sales Tax Act 2018, those who fail to register in the system or ~~avoid~~ evade tax payments are subject to penalties. Penalties may be imposed if the offences are committed for any deficiency on the net tax payable such as no sales tax return is made or a sales tax return is submitted without payment or lesser payment. Taxpayers' perception on tax laws and enforcements is the main focus by examining their perceptions of benefits reaped by tax evasion and the incidental risks involved. Allingham and Sandmo (1972) noticed a positive association between legal attitudes and high enforcement and compliance behaviour. They used the economic criminal method to explain tax activities assuming that if tax evaders were quickly detected and large fines were levied, tax enforcement would improve. Murphy (2007) argues that the only method to minimise tax evasion is to enforce financial fines on tax evaders.

Tax Knowledge

Tax knowledge relates to a method of reminding taxpayers about tax laws and other tax-related facts (Hasseldine et al., 2009). Financial awareness includes knowledge of tax regulations. Poor tax knowledge can lead to mistrust and negative compliance (Mukhlis et al., 2015). Tax knowledge would allow SMEs to comply with the tax laws and change their perceptions and attitudes. This will encourage SMEs to deal with their tax compliance problems and improve

their view of tax compliance by developing a supportive atmosphere (Gitaru,2017). Tax knowledge affects taxpayers' grasp of knowledge in tax legislations and regulations to prevent tax non-compliance (Kasipillai, Aripin & Amran, 2003). Improving tax knowledge of taxpayers would allow them to understand tax structures and tax laws in growing regions.

Loo, Mckerchar, and Hansford (2009) considered tax awareness as a significant element in evaluating taxpayer compliance behavior. Mohamad, Nor, Bakar and Nanta (2013) and Pui Yee, Moorthy and Choo Keng Soon (2017) believed tax knowledge is required to strengthen tax compliance discipline among taxpayers, which implies that tax knowledge has a positive relationship with tax compliance. Saad (2014) stressed the value of tax knowledge in preventing tax non-compliance. Studies indicated that taxpayers who have inadequate knowledge of the technical issues would believe that the tax structure is complex and this would promote non-compliance. Mukasa (2011) confirmed that tax knowledge has a good, advantageous association with tax compliance and would contribute to lower levels of enforcement. According to Mukhlis, Utomo and Soesetio (2015), Indonesia has a clear and significant partnership the handicraft SME sector in fostering understanding of tax laws and regulations. Taxpayers with adequate tax knowledge can easily adopt their on-time tax obligations and submit tax return documents. Taxpayers are expected to file their absolute; and accurate tax returns provided they have sufficient tax comprehension.

Service Quality

Service is a form of helping (or preparing to support a person to fulfill all regulatory requirements). Meanwhile, tax controllers are government employees. Service tax authorities can be interpreted as tax officials responsible for assisting, overseeing, handling or preparing all related tax documentation for an individual who is a taxpayer in this case (Jatmio, 2006). Service quality concerns the perception whether people are satisfied or not with the services provided. Quality of services is a metric of service quality and reflects whether the services fulfill the customer's needs (Sapriadi, 2013). Customer service is a significant area of research and affects consumer sentiment. Service quality is defined as the difference between consumer perceptions of service prior to actual service delivery and their experience of service delivered (Parasuraman et al.,1988). Chen (2010) defined the service level as an attempt to satisfy customer expectations and desires to ensure continuity in meeting consumer preferences. Tax service efficiency can be described as standard assessment of taxpayer's tax administration. Many researchers have studied the concept of service quality as a framework for tax purposes (Connolly & Bannister, 2008; Ali et al., 2017; Nurhayatiet et al., 2015; Jaya et al., 2017). Mustapha and Obid (2015) described service quality as a factor leading to taxpayers' compliance and it comprises assessing sensitivity, informativity, and reliability of service to taxpayers. Stinglingh (2014) sought to assess service efficiency from a tax practitioner 's viewpoint.

Compliance Cost

Compliance costs are identified as the mandatory costs that taxpayers incur in fulfilling their tax obligations (Eragbhe & Modugu, 2014). Compliance costs of taxes are expenses incurred to enable taxpayers to satisfy their tax obligations beyond the tax owed, in addition to their tax liabilities, in fulfilling the criteria in tax laws (Rahmawati, 2012). For a business, it includes the expenses of collecting, submitting and paying taxes, as well as the costs of obtaining information which include details on its legal responsibilities and penalties, and the associated costs of proper housekeeping of relevant documents as required by tax authorities.

Eichfelder & Vaillancourt (2014); Tran-Nam et al., (2000) describe three main components of compliance in which consist of taxpayers' income, time and psychological costs. Time costs are expended for handling tax information records, reviewing the tax forms or writing tax reports by tax practitioners, as well as time spent in dealing with tax officials. Psychological effects contribute impactfully on taxpayers facing tax problems, such as anxiety of grappling with complicated tax issues. The present study records all organizational time expended and financial expenses incurred, but does not measure taxpayers' psychological costs. Xin, Khai, Fong and Chen (2015) study on the relationship between compliance costs , tax knowledge, tax agent and taxpayer's compliance behaviour found that compliance costs substantially and negatively associated with to compliance behaviour. Faridy et al., (2014) analysis on the connection between the sophistication of value added (VAT) legislations and compliance behaviour found that compliance expenses will not improve voluntary compliance habits of taxpayers. Furthermore, Nzioki and Peter (2014) analyzed the correlation between compliance costs and tax compliance, and their findings showed there was a significant negative correlation between compliance costs and tax compliance behaviour. There is sufficient proof to show that higher compliance costs will lead to taxpayers' failure to pay taxes (Xin et al., 2015; Faridy et al., 2014; Nzioki & Peter, 2014)

Method

Population

The population of the study comprises 3,100 registered SMEs with Federation of Malaysian Manufacturers (FMM Directory, 2018). This study will use a sample of sales tax registered companies located at Selangor state. Estimate 1,302 from total Malaysian SMEs registered business entities which represent majority portions of SMEs registration.

Unit of analysis

The unit of analysis for this study is at individual level, whereby the individual taxpayers selected to participate in the present study will be from corporate organizations. They are SMEs manufacturer registered with the RMCD. To represent the demographic of manufacturers, annual sales turnover must exceed RM 500,000 and the head of management such as the chief executive officer, directors or senior finance manager were target respondents who will be approached to answer questions on sales tax compliance behaviour as they have reasonable knowledge about their businesses and has an appropriate capacity in their respective businesses.

Sampling Size

All employers in the manufacturing sector, 75% employers are from small and medium enterprises (SME) with employees less than 200 whilst 25% employers are from large employers with employees more than 200. The total selected population will be 977 (75 % from 1,302 registered SMEs companies from Selangor State). Krecjie and Morgan (1970) describe, for a population of 977 as in the present study, a sample size of 276 samples is adequate.

Sampling Method

In this present study, the simple random sampling technique is applied to assure equal chance participation from FMMs population. Simple random sampling is the basic sampling technique where we select a group of subjects (a sample) for study from a larger group (a population). Each individual is chosen entirely by chance and each member of the population has an equal

chance of being included in the sample. This study aims at least 276 questionnaires to be answered and replied to researcher.

Questionnaires Design

Questionnaires were answered on a 5 point Likert scale ranging from 1=strongly disagree to 5 =strongly agree. The unit of analysis of this study is at the company level. This survey will be conducted among SMEs in various industries around Selangor state where there is the highest number of SMEs registered with Federation of Malaysian Manufacturers (FMM). A self-administrative question will be employed to serve as a data collection instrument, the design of questionnaire will be divided into three sections to suit the nature of the current study. The total number of items used will be estimated to forty- two (42) items.

Data Collection Procedure

Data will be collected through structured questionnaires that will distribute to participants with the assistance of the Human Resource Department. Participants will be selected via simple random sampling using a list obtained from the FMM directory 2018 in the Selangor state. Participation will be voluntary to answer the questionnaire. This study will use primary data, a self-administered technique through cross-sectional study design for selection

Data Analysis Technique

Techniques of data analysis applied in the present study are combinations of descriptive and inferential statistics. Thus descriptive statistics will be computed through statistical package social Science (SPSS) version 23. There will be 42 items will be constructed to measure the dimension of the research model, the responses and information collected from the survey will be tested such as descriptive statistics, reliability analysis, Pearson's Correlation Coefficient Analysis and Multiple Linear Regression Analysis.

Theoretical Framework

This study is associated with the Fischer's model (1992) where economic and socio-psychological factors are considered in determining tax compliance among SMEs. This study has identified seven independent variables namely tax complexity, tax fairness, peer influence, tax law enforcement, tax knowledge, service quality and compliance cost might have an association with SME's sales tax compliance behaviour under sales tax system as dependent variable.

Based on the discussion, the following hypothesis are as follows:

H1: There is a negative relationship between tax complexity and sales tax compliance behaviour

H2: There is a positive relationship between tax fairness and sales tax compliance behaviour

H3: There is a positive relationship between peer influence and sales tax compliance behaviour

H4: There is positive relationship between tax law enforcement and sales tax compliance behaviour

H5: There is a positive relationship between tax knowledge and sales tax compliance behaviour

H6: There is a positive relationship between service quality and sales tax compliance behaviour

H7: There is a negative relationship between compliance cost and sales tax compliance behavior

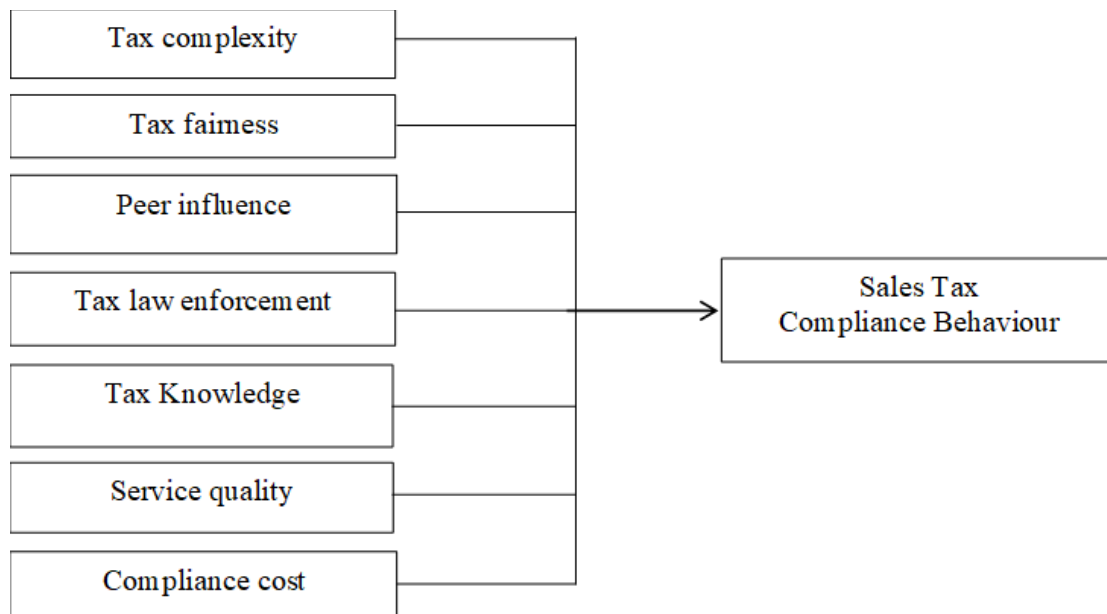


Figure 1: Conceptual framework

Results

Results of reliability test

The reliability of the measurements used in this study was determined by evaluating the internal accuracy of the measuring items using Cronbach's alpha. Bland and Altman (1997) suggested that α from 0.7 to 0.8 be considered suitable for basic research, while a much higher α of 0.9 is needed for clinical use. Different research use acceptable alpha values from 0.70 to 0.95 to ensure a scale 's internal accuracy (Tavakol & Dennick, 2011). Table 2 indicates that all alpha values of Cronbach 's structures vary from 0.784 to 0.911 under which they are considered as acceptable and recommended. Specially, the Cronbach's alpha coefficient of peer influence are service quality are rated excellent (> 0.9); tax knowledge and compliance cost are rated good (>0.8) while the coefficients of other latent variable (tax complexity, tax fairness, tax law and enforcement and sales tax compliance) are within the acceptable level (> 0.70). Specifically, the Cronbach alpha coefficient of peer influence and service quality are rated excellent ($>.90$); tax complexity, tax fairness, tax knowledge and compliance cost are rated good ($>.80$) while the coefficients of other latent variables include sales tax compliance and tax law and enforcement are within the acceptable level ($>.70$).

Table 1: Reliability of Latent Variables

	Items	Cronbach's Alpha
Sales tax-compliance	6	0.797
Tax complexity	5	0.828
Tax fairness	4	0.823
Peer influence	5	0.903
Tax law and enforcement	4	0.784
Tax knowledge	6	0.834
Service quality	5	0.911
Compliance cost	5	0.883

Results of Factor Analysis

In this research, factor analysis was performed using Principle Component (PCA) with varimax rotation on all objects. Measurement in this study is Kaiser-Meyer Olkin (KMO) and Barlett Sphericity Measure (BTOS). KMO is used to investigate suitability samples and BTOS to determine suitability of factor analysis (Hair et al., 1998). In general, the results of the EFA were assessed by the rule of thumb provided by Hair et al. (2010) and Coakes and Ong (2011). They argued that KMO should be >0.60 , Bartlett's Test of Sphericity should be significant at $P < 0.05$, communality > 0.50 , and factor loading > 0.40 , eigenvalue > 1 or total variance explained of at least 60% and anti-image correlation coefficient > 0.50 . Furthermore, Williams, Brown and Onsmann (2012) pointed out that KMO with 0.50 is considered acceptable for factor analysis.

In this study, a factor analysis was run to verify the postulated dimension of the independent variables (the seven factors contributing to sales tax compliance) and dependent variables. Factor analysis was conducted to confirm the variables of tax complexity, tax fairness, peer influence, tax law enforcement, tax knowledge, service quality, compliance cost and sales tax compliance were a different construct. The Kaiser-Meyer-Olkin (KMO) values after the exploratory factor analysis (EFA) for tax complexity, tax fairness, peer influence, tax law enforcement, tax knowledge, service quality, compliance cost and sales tax compliance behavior were 0.792, 0.789, 0.778, 0.777, 0.803, 0.851, 0.857 and 0.830 respectively.

Table 2: Factor Analysis

Construct	Number of items	Number of factor	KMO	Total variance explained
Tax complexity	5	1	0.792	67.36
Tax fairness	4	1	0.789	66.09
Peer influence	5	1	0.778	72.56
Tax law enforcement	4	1	0.777	61.55
Tax knowledge	6	1	0.803	55.58
Service quality	5	1	0.851	73.93
Compliance cost	5	1	0.857	68.32
Sales tax compliance	6	1	0.830	52.39

The Multiple Regression Analysis

The multiple regression analysis (entered method) is applied to measure the variables that explained the variance in the overall sales tax compliance. Table 4 below shows the results of multiple regression analysis of the research. The statistical analyses revealed that model was statistically significant as indicated by the F value of 11.294 ($P = .000$) respectively. This suggests that this model have a significant ability to predict sales tax payers' behaviour in Malaysia. This represents approximately a 59.8% increase over the account of tax compliance behaviour offered by this model. With regards to the independent variable, tax complexity ($\beta = .258$; $P = 0.018$), peer influence ($\beta = .343$; $P = 0.00$) and tax knowledge ($\beta = .170$; $P = 0.043$) were found significantly relate to sales tax compliance behaviour positively. Meanwhile, tax fairness ($\beta = -.169$; $P = 0.041$) was negatively relate to sales tax compliance behaviour.

Table 3: Multiple Regression Analysis

	Unstandardized Coefficients		Standardized Coefficient	T	Sig
	B	Std Error	Beta		
(Constant)	14.827	1.778		8.337	.000
Tax complexity	.258	.108	.211	2.393	.018**
Tax fairness	-.169	.082	-.171	-2.061	.041**
Peer influence	.343	.076	.400	4.544	.000*
Tax law and enforcement	.011	.117	.009	0.091	.928
Tax knowledge	.170	.083	.190	2.040	.043**
Service quality	-.087	.072	-.099	-1.217	.226
Cost Compliance	.042	.065	.046	.647	.518

R=0.598, R square = 0.358, Adjusted R Square =0.326, F statistics = 11.294, sig at 0.0000

* $P < 0.01$; ** $P < 0.05$

Discussion

This study aims to investigate sales tax compliance and its determinants. In this study, taxpayers are the respondents who claimed initially that the challenge of sales tax for they have submitted a valid sales tax return due to longer time period taken to file sales tax returns, which include tax planning and time taken to obtain advices from tax authorities (Gambo, Mas'ud, Nasidi & Oyewole, 2014). Gradually, some respondents have claimed that they have confidence level to complete sales tax appropriately and accurately. Therefore, it conclude that tax complexity is influential for tax compliance of sales tax, small and medium-sized businesses considered that tax complexity may have an impact on their level of compliance as they were aware of the final outcome of not dealing with the sales tax laws and regulations will subject to penalties.

Tax fairness affects sales tax compliance as SMEs consider that compliance with sales tax is the sales tax system's fairness. To improve sales tax compliance, this work indicates that the tax authority should set the fair registration threshold and minimize the cost of business compliance with sales tax. The study also provided evidence that there was a relationship between perceived tax fairness and sales tax compliance behaviour. This result indicated that perceptions of SMEs on tax fairness might have a positive impact on their sales tax compliance behaviour. The findings of this study may provide policymakers and tax authorities with information when developing policies not only for tax compliance.

Peer influence plays an significant role in influencing one 's actions to comply with sales tax. Referential classes, such as business partners have been found to have a positive effect on tax payers when dealing with sales tax. This study found that there is a significant positive relationship between peer influence and compliance with sales tax among small and medium-sized taxpayers. This research has demonstrated that business partners control taxpayers' decisions in tax declarations. Business partners as delegates of taxpayers and RMCD, define the actions of taxpayers in terms of tax compliance. For this analysis, tax payers are the impact of business partners on the declaration and reporting of sales tax income specifically by compliance with the sales tax laws. In general, the finding is consistent with previous research that showed a substantial impact of the subjective standard on behavioral intention (Chu & Wu, 2004; Taylor & Todd, 1995; Zainol et al., 2009).

This study revealed statistically significant compliance between tax knowledge and sales tax compliance among SMEs in Malaysia. This result suggested that a higher level of tax knowledge could improve sales tax compliance. It is consistent with earlier studies that sufficient knowledge is used to minimize sales tax non-compliance (McKerchar, 1995; Palil & Mustapha, 2011). Tax knowledge involves sales tax rules and regulation. Furthermore, tax knowledge is one of the key considerations of voluntary tax compliance. It plays a major role in shaping sales tax behavior (MR Palil, MR Akir, W Ahmad, 2013). Most previous literature found that higher tax knowledge would lead to higher tax compliance, as Nzioki and Peter (2014), Loo, Mckerchar, and Hansford (2009) strongly support this finding. Mukhlis, Soesetio (2015) and Mukasa (2008). Taxpayers use tax knowledge especially on tax law, to find solutions to tax compliance in the tax system. Since SME taxpayers have the necessary and specific knowledge in the area of sales tax, they continue to comply with the applicable sales tax regulations and laws. Hence, adequate sales tax knowledge induced to tax compliance among taxpayers. It is suggested that manufacturing owners should attend the courses and seminars conducted by RMCD by improving sales tax knowledge. Tax payers who have ample tax knowledge are in a position to accurately view their tax liabilities and to file their tax return forms on time. They are expected to submit a complete, correct tax return precisely if they have sufficient knowledge to understand the tax system. Overall, it can conclude that increasing tax compliance is to enhance tax payer's tax knowledge.

The results and identified limitations of this study provide insight into potential lucrative areas of tax compliance that may need future researchers' attention, especially in Malaysia. Furthermore, future research may want to consider extending tax compliance studies to non-Selangor areas, where there is a large disparity in development between Selangor and non-Selangor areas.

The current study model was capable to explain 32.6 percent of the total variance in sales tax compliance, which means that there are other variables that could also significantly explain the variance in sales tax compliance. In other words, the remaining 67.4 percent of the variance in sales tax compliance could be explained by other variables. This study is considered the beginning of research in sales tax version 2.0 in Malaysia, the findings of this study suggest that the further extension of the tax compliance model, particularly Fischer's model to consider other possible contracts that could impact the sales tax compliance such government quality, tax audit, tax penalty, tax rate, tax moral, probability of detection, ethnic diversity as well as the moderating effect would further strengthen the predictive capacity of the model for better understanding taxpayers' compliance behaviour. In addition, research efforts could also concentrate on recognizing certain economic, social, psychological and cultural variables that can affect compliance behaviors of taxpayers, especially in developing countries. This opinion is focus on observations in the literature that tax enforcement activity is still mostly underdeveloped work (Andreoni, et al 1998; Chau & Leung, 2009). Similarly, given findings in this analysis and other similar studies (Murphy, 2007; Wenzel, 2004 & 2005), which endorse Kirchler et al. (2007)'s hypothesis that the interaction between tax compliance and its determinants could be moderated by certain variables, researchers may recognize the potential moderating impact of some financial, psychological or cultural factors on the relationship between tax compliance and its determinants. Such investigations would provide further information on taxpayers' behavior to better understand their compliance decisions.

Future research should exploit opportunities to conduct more sales tax compliance research using mixed methods of both qualitative and quantitative research. Mixed methodology strategy helps researchers to reduce respondents' psychological prejudice (Creswell, 2009). Researchers are also urged to follow open-ended questions in order to from

the views of the respondents . Open-ended questions will help rich qualitative evidence and can offer ways for participants to learn about respondents. Future researcher should adopt longitudinal-sectional study. Researchers may assess variables over time in quantitative studies. Furthermore, more knowledge may be generated because it offers qualitative and quantitative details

Conclusions

To sum up, the present study has found that Fischer model can be applied in an indirect tax environment. This study can be considered a first that was conducted in the context of sales tax version 2.0 in Malaysia, the current study was designed to fill the gap in sales tax compliance literature. The study explores the factors contributing sales tax compliance and this study calls for future studies in the area of sales tax compliance of SMEs in order to better understand its determinants. The finding has verified that tax complexity, tax fairness, peer influence tax knowledge are significantly correlated with sales tax compliance. However, tax law and enforcement, service quality and compliance cost were not being remarkable to have an impact on sales tax compliance. This complex relationship is as advanced in the extended Fischer's tax compliance model.

This study has significant inputs to the government, tax agencies and public economic policy makers by providing insights into factors affecting sales tax compliance behaviour. It is provided empirical in the evidence on sales tax compliance behaviour of SMEs taxpayers and also provided valuable information to SMEs owner-managers to improve sales tax compliance in the future. It provides crucial information concerning the impact of factors affecting the Malaysian sales tax compliance that could be used to formulate social, economic and political policies as well as enable the government to be more realistic in designing strategies and policies on tax compliance behaviour in Malaysia. In summary, the current study provides several contributions, particularly to theory, methodology and practice as well as offering explanations on the way on how tax compliance can be enhanced.

References

- Abdul-Jabbar, H., & Pope, J. (2008). The effects of the self-assessment system on the tax compliance costs of small and medium enterprises in Malaysia. *Journals in Business & Management*, 23, 289-307.
- Abdul-Jabbar, Hijattulah. *Income tax non-compliance of small and medium enterprises in Malaysia: Determinants and tax compliance costs*. Unpublished Doctorial thesis, Curtin University, 2009
- Akinboade, O.A., 2015. Correlates of tax compliance of small and medium size businesses in Cameroon. *Managing Global Transitions*, 13(4): 389-413.
- Alabede, J. O., & Zainal Affrin, Z. (2011). Tax service quality and compliance behaviour in Nigeria: Do taxpayers financial condition and risk preference play any moderating role?. *European Journal of Economics, Finance and Administrative Sciences*, 35, 90-108
- Ali, M. M., Cecil, H. W., & Knoblett, J. A. (2001). The effects of tax rates and enforcement policies on taxpayer compliance: A study of self-employed taxpayers. *Atlantic economic journal*, 29(2), 186-202.
- Ali, M., Asmi, F., Rahman, M. M., Malik, N., & Ahmad, M. S. (2017, September). Evaluation of E-Service Quality through Customer Satisfaction(A Case Study of FBR E Taxation). *Open Journal of Social Sciences*, 5, pp 175-195.
- Allingham, M., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics*, 1(3-4), 323-338.

- Alm, J. (2012). Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. *International Tax and Public Finance*, 19(1), 54-77.
- Alm, J., & Mckee, M. (2006). Audit certainty, audit productivity, and taxpayer compliance. *Andrew Young School of Policy Studies Research*, 59(4), 06-43.
- Alm, J., Clark, J., & Leibel, K. (2016). Enforcement, socioeconomic diversity, and tax filing compliance in the United States. *Southern Economic Journal*, 82(3), 725-747.
- Alshirah, A. F., Abdul-Jabbar, H., & Samsudin, R. S. (2016). Determinants of sales tax compliance in small and medium enterprises in Jordan: A call for empirical research. *World Journal of Management and Behavioral Studies*, 4(1), 41-46.
- Alshira“h, A. F., Abdul-Jabbar, H., & Samsudin, R. S. (2018). Sales tax compliance model for the Jordanian Small and medium enterprises research. *Journal of Advanced Research in Social and Behavioural Sciences*, 10(2), 115-130.
- Al-Smirat, B. Y. (2013). The use of accounting information by small and medium enterprises in South District of Jordan (An empirical study). *Research Journal of Finance and Accounting*, 4(6), 169-175.
- Al-Ttaffi, L. H. A., & Abdul-Jabbar, H. (2015). A conceptual framework for tax noncompliance studies in a Muslim country: A proposed framework for the case of Yemen. *International Postgraduate Business Journal*, 7(2), 1-16
- Al-Ttaffi, L., & Abdul-Jabbar, H. (2016). Service quality and income tax non-compliance among small and medium enterprises in Yemen. *Journal of Advanced Research in Business and Management Studies*, 4(1), 12-21.
- Al-Zoubi, A., Khatatba, H., Salama, R. B., & Khatataba, M. (2013). Methods of tax avoidance and evasion: The incapability of the Jordanian income tax law to face tax avoidance and evasion. *Journal Almanara*, 19(4),9-36.
- Adams, C., & Webley, P. (2001). Small business owners attitudes on VAT compliance in the UK. *Journal of Economic Psychology*, 22(1), 195-21
- Andreas, & Savitri, E. (2015). The effect of tax socialization, tax knowledge, expediency of tax id number and service quality on taxpayers compliance with taxpayers awareness as mediating variables. *Procedia - Socialand Behavioral Sciences*, 211(9), 163-169.
- Ariel, B. (2012). Deterrence and moral persuasion effects on corporate tax compliance: Findings from a randomized controlled trial. *Criminology*, 50(1), 27-69.
- Atawodi, O.W. and S.A. Ojeka, 2012. Factors that affect tax compliance among small and medium enterprises (SMEs) in North Central Nigeria. *International Journal of Business and Management*, Working, pp: 84-2.7(12): 87-97
- Azmi, A., Sapiei, N. S., Mustapha, M. Z., & Abdullah, M. (2016). SMEs' tax compliance costs and IT adoption: The case of a value-added tax. *International Journal of Accounting Information Systems*, 23, 1-13
- Belay, S. A., & Viswanasham, P. (2016). An assessment of business income taxpayers' tax knowledge, tax complexity, and tax compliance: A case of Amhara regional state of Ethiopia. *International Journal of Science and Research*, 5(5), 628-634.
- Boonyarat, N., Sofian, S., & Wadecharoen, W. (2015). The antecedents of taxpayers“ compliance behavior andthe effectiveness of Thai local government levied tax. *International Business Management*, 9(2), 182-190.
- Chan, C. W., Troutman, C. S., & Bryan, D. (2000). An expanded model of taxpayer compliance: Empirical evidence from the United States and Hong Kong. *Journal of International Accounting, Auditing and Taxation*, 9(2), 83-103.
- Chau, G., & Leung, P. (2009). A critical review of Fischer tax compliance model:research synthesis. *Journal of Accounting and Taxation*, 1(2), 34-40.

- Chen, C. W. (2010, July 1). Impact of Quality Antecedents on Taxpayer Satisfaction with Online Tax- filing Systems- An Empirical Study". *Information and management*, 47, pp.308-315.
- Connolly, R., & Bannister, F. (2008). E- Tax Filing & Service Quality : The Case of the Revenue Online Service. *International Journal of Economics and Management Engineering*, 2(2), pp.56-60.
- Eichfelder, S., & Vaillancourt, F. (2014). Tax compliance costs: A review of cost burdens and cost structures. *Review of Public Economics*, 210(3), 111–148.
- Eragbhe, E., & Modugu, K. P. (2014). Tax compliance costs of small and medium scale enterprises in Nigeria. *International Journal of Accounting and Taxation*, 2(1), 63-87
- Faridy, N., Copp, R., Freudenberg, B., & Sarker, T. (2014). Complexity, compliance costs and non compliance with VAT by small and medium enterprises in Bangladesh: Is there a relationship. *Australian Tax Forum*, 29, 281-329.
- Faridy, N., Freudenberg, B., Sarker, T., & Copp, R. (2016). The hidden compliance cost of VAT: An exploration of psychological and corruption costs of VAT in a developing country. *eJournal of Tax Research*, 14(1), 166-205.
- Fadzilah, E. N., Mustafa, R. M., & Putri, N. K. (2017). The effect of tax understanding, tax payness consciousness, quality of tax service, and tax sanctions on compulsory tax of SMEs in Banyumas Regency. *Acta Univeresitatis Danubius*. 13(4), 28-38.
- Feld, L. P., & Larsen, C. (2012). Self-perceptions, government policies and tax compliance in Germany. *International Tax and Public Finance*, 19(1), 78-103.
- Fischer, C.M., Wartick, M., & Mark, M. (1992). Detection probability and taxpayer compliance: A review of the literature. *Journal of Accounting Literature*, 11(2), 1-25.
- Frey, B. (2003). Deterrence and tax morale in the European Union. *European Review*, 11(3), 385-406.
- Frey, B., & Torgler, B. (2007). Taxation and conditional cooperation. *Journal of Comparative Economics*, 35, 136–159.
- Gambo, E. J., Mas’ud, A., Nasidi, M., & Oyewole, O. S. (2014). Tax complexity and tax compliance in African self-assessment environment. *International Journal of Management Research & Review*, 4(5), 575-582.
- Giesecke, J., & Tran, N. H. (2012). A general framework for measuring VAT compliance rates. *Applied Economics*, 44(15), 1867-1889.
- Gitaru, K. (2017). The Effect of Taxpayer Education on Tax Compliance in Kenya. University of Nairobi, School of Economics. Kenya: Munich Personal RePEc Archive.
- Hanefah, H. (1996). *An evaluation of the malaysian tax administrative system and tax payers' perceptions towards assessment systems, tax law fairness, and tax law complexity* (Unpublished doctoral thesis, Universiti Utara Malaysia)
- Jackson, B. R., & Milliron, C. V. (1986). Tax compliance research: Findings, problems and prospects. *Journal of Accounting Literature*, 5, 125-165.
- Jaya, A. (2017, August). "Analysis of Effect of Knowledge and Service Quality, Accessibility of Information, Awareness and Behavior of Taxpayers and Impact on Satisfaction and Compliance With Taxpayers of Land and Buildings in The City Batam Island Riau Province". *International Journal of Business and Management Invention*, 6(8), pp.73-83
- Kamleitner, B., C. Korunka and E. Kirchler, 2012. Tax compliance of small business owners. *International Journal of Entrepreneurial Behaviour and Research*, 18(3): 330-351.
- Kasipillai, J., Aripin, N., & Amran, N. A. (2003). The influence of education on tax avoidance and tax evasion. *eJournal of Tax Research*, 1(2), 134-146.

- Kasipillai, J. & Jabbar, A.H. (2013). Tax compliance attitude and behaviour: Gender & ethnicity differences of Malaysian taxpayers. *The Malaysian Accountant*, 7, 1-7.
- Kirchler, E., Hoelzl, E., & Wahl, I. (2008). Enforced versus voluntary tax compliance: The “slippery slope” framework. *Journal of Economic Psychology*, 29(2), 210–225.
- Kirchler, E., Kogler, C., & Muehlbacher, S. (2014). Cooperative tax compliance: From deterrence to deference. *Current Directions in Psychological Science*, 23(2), 87-92.
- Lefebvre, M., Pestieau, P., Riedl, A., & Claire, M. (2015). Tax evasion and social information : An experiment in Belgium, France, and the Netherlands. *International Tax and Public Finance*, 22(3), 401–425. <https://doi.org/10.1007/s10797-014-9318-z>
- Loo, E.C., McKerchar, M., & Hansford, A. (2008). *Tax compliance behavior: Findings derived from a mixed method design*. Paper presented at the 8th International Tax Administration Conference, Sydney.
- Loo, E., Mckerchar, M., & Hansford, A. (2009). Understanding the compliance behaviour of Malaysian individual taxpayers using a mixed method approach. *Journal of the Australasian Tax Teachers Association*, 4(1), 181-202.
- Lutfi, A. A., Idris, K., & Mohamad, R. (2017). AIS usage factors and impact among Jordanian SMEs: The moderating effect of environmental uncertainty. *Journal of Advanced Research in Business and Management Studies*, 6(1), 24-38.
- Madanchian, M., Hussein, N., Noordin, F., & Taherdoost, H. (2015). The role of SMEs in economic development: Case study of Malaysia. *International Journal of Academic Research in Management*, 4(3), 77-84
- Maseko, N. (2014). The impact of personal tax knowledge and compliance costs on tax compliance behaviour of SMEs in Zimbabwe. *Elite Research Journal of Accounting and Business Management*, 2(3), 26–37.
- McKerchar, M., Bloomquist, K., & Pope, J. (2013). Indicators of tax morale: An exploratory study. *eJournal of Tax Research*, 11(1), 5-22.
- Mohdali, R., Isa, K., & Yusoff, S. H. (2014). The impact of threat of punishment on tax compliance and non-compliance attitudes in Malaysia. *Procedia - Social and Behavioral Sciences*, 164, 291-297.
- Muche, B. (2014). Determinants of tax payer’s voluntary compliance with taxation in east Gojjam-Ethiopia. *Research Journal of Economics & Business Studies*, 3(9), 41-50.
- Mukhlis, I., Utomo, S. H., & Soesetio, Y. (2015, September 15). The Role of Taxation Education on Taxation Knowledge and Its Effect on Tax Fairness as well as Tax Compliance on Handicraft SME Sector in Indonesia". *International Journal of Financial Research*, 6(4), pp.161-169.
- Murphy, K. (2007). Procedural justice and the regulation of tax compliance behaviour: The moderating role of personal norm. *Andrew Young School of Policy Studies international conference*. Atlanta: Georgia State University.
- Mustapha, B., & Obid, S. N. B. S. (2015). Tax service quality: The mediating effect of perceived ease of use of the online tax system. *Procedia-Social and Behavioral Sciences*, 172, 2-9.
- Nzioki, P. M., & Peter, O. R. (2014). Analysis of factors affecting tax compliance in real estate sector: A case of real estate owners in Nakuru town, Kenya. *Research Journal of Finance and Accounting*, 5(11).
- Nura, M., Abdul-Jabbar, H. & Ibrahim, I. (2017). VAT compliance and the influence of political and business environment: A proposed framework for Nigerian SMEs. *Asian Journal of Business Management Studies*, 8(2), 13-20.

- Nurhayati, N., Halimatusadiah, E., & Diamonalisa. (2015). "Influence of Tax Officer Service Quality and Knowledge of tax on Individual Taxpayer Compliance in Tax Office Bojonagara Bandung". *International Journal of Applied Research*, 1(8), pp. 805-809.
- Ocheni, S. (2015). A causality analysis between tax compliance behaviour and Nigerian economic growth. *Mediterranean Journal of Social Sciences*, 6(1 S1), 577.
- Omweri, L., Miqwi, W., & Obara, M. (2010). Taxpayers' attitudes and tax compliance behaviour in Kenya: how the taxpayers' attitudes influence compliance behaviour among SMEs business income earners in Kerugoya. *African Journal of Business & Management*, 1(8), 112–122.
- Palil, M. R. (2010). Tax Knowledge and Tax Compliance Determinants in Self Assessment System in Malaysia. Malaysia: *University of Birmingham. Management*, 5(33), pp.12864-12872
- Palil, M. R., Zain, N. H. M., & Faizal, S. M. (2012). Political affiliation and tax compliance in Malaysia. *Humanities and Social Sciences Review*, 1(4), 395-402.
- Parasuraman, A., Zeithml, V. A., & Berry, L. L. (1988). SERVQUAL: A Multiple Item Scale For Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*, 64(1), pp.12 -40.
- Pope, J., & Abdul-Jabbar, H. (2008). Small and medium-sized enterprises and tax compliance burden in Malaysia: Issues and challenges for tax administration. *Small Enterprise Research*, 16(1), 47-60.
- Puspitasari, E., & Meiranto, W. (2014). Motivational postures in tax compliance decisions: an experimental studies. *International Journal of Business, Economics and Law*, 5(1), 100–110.
- Saad, N. (2012). Tax non-compliance behaviour: Taxpayers view. *Procedia-Social and Behavioral Sciences*, 65, 344-351.
- Saad, N. (2014). Tax knowledge, tax complexity and tax compliance: Taxpayers' view. *Procedia-Social and Behavioral Sciences*, 109, 1069-1075.
- Sapiei, N., Kasipillai, J. and Eze, U. (2014). Determinants of tax compliance behaviour of corporate taxpayers in Malaysia. *eJournal of Tax Research*, 12(2), pp.383-409.
- Sapriadi, Doni (2013). Effect quality tax service, tax and awareness sactions against taxpayers compliance in the UN pay (in the District Selupu Rejang), Padang State University
- Sinnasamy, P., Bidin, Z., & Syed-Ismail, S. S. (2015). A proposed model of non-compliance behaviour on excise duty: A moderating effects of tax agents. *Procedia - Social and Behavioral Sciences*, 2011, 299-305.
- Slemrod, J., 2004. Small Business and the Tax of small and medium size businesses in H.J. Aaron and J. Slemrod (eds), *The Crisis in Tax Administration*, Brookings Institution Press, Washington, D.C, pp: 69-123
- Slemrod, J., Blumenthal, M., & Christian, C. (2001). Taxpayer response to an increased probability of audit: Results from a controlled experiment in Minnesota. *Journal of Public Economics*, 79, 455-483.
- Stinglingh, M. (2014). Service Quality Framework for the South African Revenue Service from the Perspective of the Tax Practitioner. *Public Relations Review*, 40, pp.240-250.
- Tran-Nam, B., Evans, C., & Walpole, M. (2000). Tax Compliance Costs: Research Methodology and Empirical Evidence from Australia. *National Tax Journal*, 53(2), 229–252.
- Trivedi, V. U., Shehata, M., & Mestelman, S. (2005). Attitudes, Incentives, and Tax Compliance. *Canadian Tax Journal*.

- Wade, S. (2014). Compliance and non compliance behavior of business profit taxpayers“ towards the tax system: A case study of Mekelle city. *Scholars Journal of Economics, Business and Management*, 1(10), 525-531.
- Webley, Paul, Caroline Adams, and Henk Elffers. Value added tax compliance. Paper Presented at the Conference ‘Behavioral Public Finance: Towards a new agenda’, University of Michigan Business School, April, 23- 24, 2004.
- William, M. (2015). The influence of social norms and tax system on tax compliance. a case study of small and medium taxpayers in Tanga City- Tanzania (Unpublished doctoral thesis, University of Tanzania)
- Woodward, L., & Tan, L. M. (2015). Small business owners attitudes toward GST compliance : A preliminary study. *Australian Tax Forum*, 30(2), 517-550.
- Xin, M. K. H., Khai, K. G., Fong, L. S., & Chen, N. H. (2015). Factors affecting individual taxpayers' compliance in Malaysian tax filing system. *The International Journal of Business & Management*, 3(9), 339-347.

PERCEIVED SERVICE QUALITY, CUSTOMER SATISFACTION AND BEHAVIOURAL INTENTIONS TOWARDS HOSPITAL IN SABAH

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Abstract: *Health system in Malaysia is a two-tier framework where both public and private sectors coexist and complement each other in delivering healthcare that meet the different needs and demands of the vast population. This research project aimed at examining the relationship among perceived service quality, customer satisfaction and behavioural intentions in the context of hospital in Sabah, Malaysia. Information from 208 respondents were used through questionnaires for the purposed statistical data analysis using SmartPLS. The result showed only tangibles and empathy supports behavioural intentions in relations to hospital within Malaysia. Relationships of tangibles, assurance and empathy with customer satisfactions respectively were shown to be significantly positive as well. Positive relationship between customer satisfaction and behavioural intentions was also observed in this study. As for the mediation analysis, the outcome indicated that tangibles, assurance and empathy respectively have indirect relationship with behavioural intentions mediated by customer satisfaction. Additional findings also showed that, while the direct effects of empathy on behavioural intentions was significant, the indirect impact was noted to be greater for behavioural intentions in connection with customer satisfaction as mediation. The result also showed that relative to other perceived service quality, empathy has the most impact on customer satisfaction as well as behavioural intentions respectively.*

Keywords: *perceive service quality, customer satisfaction, intention, public and private, healthcare*

Introduction

The Malaysian Healthcare system is advanced due to extensive support from the Malaysian government through investment in hospital's medical infrastructure (PEMANDU, 2020). The improvements in the last ten years are significant enough to be on par with well-developed countries, comprising of both well-trained medical staff and excellent hospital facilities. Public healthcare is the cheaper option; however private hospitals have their advantages over public ones. For instance, many public hospitals are overcrowded from higher number of patients. Private healthcare, on the other hand, has more doctors, due to higher working salaries within the private sphere. Another advantage is that private hospitals offer faster services for their patients since the ratio of doctors to patients is higher (The Borneo Post, 2010).

Health system in Malaysia is a two-tier framework where both public and private sectors coexist and complement each other in delivering healthcare that meet the different

needs and demands of the vast population (Hassali, 2014). Various literatures were published in distinct context on the link between the quality of service, satisfaction and behavioural intentions. The findings were positive when improved quality of service resulted in increased satisfaction among customers (Ali, Faizan, Amin and Nasharuddin, 2013; Allameh et al, 2015; Biscaia et al, 2013; Riadh Ladhari, 2009). However, contradicting findings were also found indicating that satisfaction and perceived value have no critical effect on patient loyalty which would be reflected in behavioural intentions (Sumaedi et al, 2014). For example, the healthcare industry has not supported Cronin and Taylor (1994) customer satisfaction, being a moderation between service quality and behavioural intentions, despite having an impact in other industries like communication, transportation and recreation industry.

Despite various research into perceived service quality, satisfaction and behavioural intentions (Parasuraman et al., 1988; Boulding et al., 1993; Cronin and Taylor, 1992); limited studies have so far been explored in the area of healthcare in Malaysia. Subsequently, previous research may not provide necessary strategic recommendations to the operation of general or private hospital as a service provider to achieve the desired service quality goal and improve behavioural intentions among customers.

This has become the principal motivation for this study, which is to bridge the research disparity and subsequently, centre around the perceived service quality on hospitals in Sabah and how it would impact behavioural intentions. On top of that, as customer satisfaction was also shown to be an important factor in behavioural intentions (Zeithaml et al., 1996; Aagja and Garg, 2010; Oliver, 1980; Anthanassopoulos et al., 2001; Riadh Ladhari, 2009; Gaur et al., 2011). Therefore, this study aims to examine the role of perceived service quality towards behavioural intentions as mediated by the effect of customer satisfaction among hospitals in Sabah.

Literature Review

Tri-component Attitude Model

This study tested the links between perceived service quality, customer satisfaction and behavioural intentions were explained using this model. The model is commonly used in consumer marketing research to examine the attitudes of consumers towards certain subject or objects. There are 3 components in the construct attitude of tri-component model, namely cognitive component (Thinking/Knowledge), an affective component (feeling) and a conative component (behaviour) (Assael, 2004; Schiffman & Kanuk, 2004; Solomon, 2002).

Attitude is a learned process whereby it could be shaped by consumers perception and understanding on the subject matter, and this perception can be formed based on one's exposure, life experiences or personal situations when in contact with the related subject matter (Antonides and Van Raaij, 1998), thus, leading to differences in perception and view of the reality and in the context of this study, differences in perception and view on personal roles and services (Antonides and Van Raaij, 1998). In summary, customer choice and behavioural intentions would be influenced by both cognitive (for instance, from personal experiences) and affective components (for example, from promotion) (Argawal and Malhotra, 2005; Lazarus, 1982).

As mentioned, negative behavioural intentions toward a firm or body could lead to negative outcomes like brand switching, negative word of mouth, or even complaints on their negative experiences to others (Caruana, 2002; Lewis, 1991; Newman, 2001). In Lazarus (1991), the cognition-leads-to-emotions approach explained the necessary cognition role to emotions, in which consumers were conscious of their cognition before their affects, thus resulting in behavioural intentions or actual behaviour (conation and actions). In this study,

service quality is a representative of a cognitive judgement, whereas satisfaction is represented as an affective construct (Gooding, 1995; Oliver, 1993), and thus place service quality prior to satisfaction (Goldstein and Schweikhart, 2002; Oliver, 1993; Rust and Oliver, 1994).

Behavioural intentions

According to Ladhari (2009), a division into either a favourable or unfavourable signal in which customers would either remain with or leave the service provider relationship can be used to explain behavioural intentions. The favourable dimension of behavioural intentions can be referred to as the likelihood of positive endorsement of word-of-mouth, willingness to pay a high price and spend more; and loyalty (Ladhari, 2009; Zeithaml et al., 1996); while the unfavourable dimensions of behavioural intentions can be related to the spread of negative words and experiences to others (Caruana, 2002; Lewis, 1991; Newman, 2001); spending less (Zeithaml et al., 1996); as well as having the intention of changing to competitors (Anthanasopoulos et al., 2001).

In this model, endorsement of word-of-mouth regardless of its positive or negative bias, is an informal communication that takes place between two or more consumers about a product or a service. For example, a pleased customer is more likely to introduce or recommend its products or services to their friends and family (Anderson, 1998; Ryu and Han, 2009; Finkelstein et al., 1999). This can also be further understood with the definition of recommendation based on Arndt (1968). Recommendations can be described as personal-to-person interaction, when there is willingness of a non-commercial communicator to engage with a current customer concerning a service provider who is deemed not to achieve financial profit from the interaction received in regards to a brand, product or service (Host and Knie-Andersen, 2004; Arndt, 1968).

In addition, as for loyalty behaviour, it involves the relationship that has been built and maintained with the consumers by the service provider, where consumers would want to come back to the service establishment for its products and services (Zeithaml et al., 1996; Kessler and Mylod, 2011). In these studies, they believed consistent engagement by the consumers due to return for the desired product or services of their liking in the future (Oliver, 1997; Bei and Chiao, 2001). Therefore, in the context of healthcare services in this study, the subject consumers' behavioural intentions are in reference to endorsement of word-of-mouth, willingness to pay more and loyalty towards preferred hospitals for its health services and products.

Perceived Service quality

Previous studies defined service quality as a consumers' judgement, impression and evaluation process, in which the consumer compares service expectations with service perceptions with regards to the overall excellence of the service providers (Grönroos, 1984; Cronin and Taylor, 1992; Boulding et al., 1993; Parasuraman, Zeithaml and Berry, 1985, 1988). In healthcare services, its quality perception is in reference to the opinion of a patient/customer, which is reflected by the service provided that are most appropriate in yielding the best result reasonably expected by the patient/customer.

In healthcare, technical quality can be explained based on the technical accuracy relative to the conformity to professional specifications, whereas functional quality is in reference to the way in which the healthcare service is conveyed to the patients or customers. However, as majority public are unable to value the technical quality because of poor comprehension on the expertise, most in general will depend on functional attributes (for

example: facilities, cleanliness, staff's attitudes, and others) as opposed to technical attributes while assessing service quality (Babakus and Boller, 1991; Gronroos, 2001)

Customer Satisfaction

Customer satisfaction is an enjoyable fulfilment response towards a good, service, benefit or reward that is in reference to the judgement that a good, service, benefit or reward, provide an enjoyable level of consumption-related fulfilment, inclusive of levels of under- or over-fulfilment (Oliver, 1997). Likewise, consumer satisfaction can be explained as a summary of either at a transaction-specific level or an overall level of cognitive and affective reactions regarding a service encounter (Rust and Oliver, 1994). Therefore, this study used overall satisfaction as a function to better understand consumers in the context of healthcare services as it has been affirmed to be more applicable for the apprehension of consumer responses.

Perceived Service Quality, Customer Satisfaction, and Behavioural intentions

Inconsistent opinions toward relation linking service quality with customer satisfaction were observed where there were differences in perspective from different studies. In one perspective, customer satisfaction is seen as an antecedent with a given service experience, influence a perceived service quality where satisfaction would affect the outcome of the perceived quality service over time (Bitner and Hubbert 1994; Mohr and Bitner 1995; Oliver, 1981; Parasuraman et al., 1988).

There were also other opposite views indicating that customer satisfaction as an emotive satisfaction construct, as a resultant of service quality as cognitive evaluation, in which desired perceived service quality would directly influence the improvement of satisfaction (Dabholkar et al., 1996; Brady and Robertson 2001; Cronin and Taylor 1992; Cronin et al., 2000; Gotlieb, Grewal, and Brown, 1994). Nevertheless, study by Dabholkar and Overby (2005) claimed that the assessment of quality of services comes before customer satisfaction for normal or non-extreme services in which the services provided are of acceptable range that enable customers to rationally and cognitively evaluate the services. However, for extreme service assessments where expectations are greatly unfulfilled, an opposite relationship was observed where customer satisfaction precede service quality.

According to Ali and Amin (2014), a significant relationship between perceived quality, customer satisfaction and behavioural intentions was observed to be evident. A number of conclusions have also been made about service quality and the satisfaction of customers with behavioural intentions, be it direct or indirect. Therefore, given that healthcare is an important concern for everyone, this study would like to examine whether the service quality would have a direct consequence towards behavioural intentions or indirect outcome with regards to customer satisfaction (Dagger et al, 2007; Parasuraman et al., 1991; Boulding et al.,1993; Cronin and Taylor, 1992).

Methodology

This study employed questionnaire in examining the relationships between perceived service quality (independent variable), overall customer satisfaction (mediator) and behavioural intentions (dependent variable). The self-administered survey is circulated to participants using the non-probability convenient sampling method. This study focuses on respondents who are at the age of 18 years and above and had visited a hospital of at least once previously for health-related matters which were asked by the questions in filtering question in the demographic profile. This is to make sure that the respondents enrolled in this investigation have adequate experience to assess the hospital services in general. In estimating the sample size for a

research, the research nature and statistical technique to be utilized in this study are to be taken into consideration. for this research, the estimation of sample size is supported by the G-power measurement.

The minimum sample size required for this study is estimated to be 107 according to the G-Power measurement. Nevertheless, a total of 213 sets of questionnaires from total 450 distributed questionnaire have been gathered for this study and 208 sets were used for data analysis after screening based on inclusion criteria of the study.

The questionnaire questions and statements are divided into few sections; Section A collects information on respondent's demography background; Section B measures respondents' patterns for visiting hospitals; Section C gathers information on the perceived service quality; Section D on customer satisfaction towards the service provided and lastly, section E measures the behavioural intentions. This study using a seven-point Likert scale, with the left end corresponds to (1) strongly disagree, and the right end corresponds to (7) strongly agree. A bilingual language consisting of English and Malay survey questionnaire was used to facilitate the sampling of populations. The information gathered from the questionnaire dissected using partial least squares structural equation modelling (PLS-SEM), with the assistance of SmartPLS 3 and SPSS version 25. PLS-SEM is used in this study as it helps in the prediction of dependent variables, perceived service quality (Roldán and Sánchez-Franco, 2012), and customer satisfaction as mediator between perceived service quality and behavioural intentions (Hair et al., 2014; Nitzl et al., 2016; Richter et al., 2016).

Table 1 The Measurement Items

Variables	No. of Items	Sources
Perceived Service Quality		
Tangibles	4	Parasuraman et al. (1985)
Reliability	5	
Responsiveness	4	
Assurance	4	
Empathy	5	
Customer satisfaction	4	Wu et al. (2008)
Behavioural intentions	3	Riadh Ladhari (2009)

The study hypothesis:

H1: There is a positive relationship between perceived service quality (PSQ) and behavioural intentions (BI)

H2: There is a positive relationship between perceived service quality (PSQ) and Customer Satisfaction (CS)

H3: There is a positive relationship between Customer Satisfaction (CS) and Behavioural intentions (BI).

H4: Customer satisfaction (CS) mediates the relationship between perceived service quality (PSQ) and behavioural intentions (BI)

Data Analysis and Findings

Table 2 shows the respondent's profile in this study. This study involved 208 number of respondents.

Table 2 Respondent's Profile

Profile	Description	Frequency	Percentage
Gender	Male	88	42.3
	Female	120	57.7
Age	18–35	125	60.1
	36–50	46	22.1
	> 50	37	17.8
Marital Status	Single	96	46.2
	Married	112	53.8
Highest Education Level	Primary School	1	0.5
	Secondary School	25	12.0
	Tertiary	182	87.5
	Have Not Attended School	0	0
Occupation	Professional	143	68.8
	Non-Professional (Non-Manual Worker)	28	13.5
	Manual Worker	5	2.4
	Housewife	7	3.3
	Student	9	4.3
	Unemployed	1	0.5
	Retiree	15	7.1
	Excellent	30	14.4
Monthly Household Income (RM)	1,000–1,999	14	6.7
	2,000-2,999	20	9.6
	3000-3,999	31	14.9
	4,000-4,999	29	13.9
	≥5,000	102	49.0
	No Income	12	5.7
	Excellent	30	14.4
Health Status	Very Good	58	27.9
	Good	93	44.7
	Fair	26	12.5
	Poor	1	0.5
	No Answer	0	0

Table 3 Shows the frequency and reason for visiting hospitals.

Table 3 Frequency and Reason of Visiting Hospital

	Frequency	Percentage
Frequency of Visiting		
Once or more a week	6	2.9
Two to three times a month	63	30.3
At least once every few months	118	56.7
Once a year	21	10.1
Very seldom	5	2.4
Reason for Visiting		
Doctor review	36	17.3
To prescription para-pharmaceuticals and non-prescription medications.	77	37.0
To purchase para-pharmaceutical products	85	40.9
To ask for doctor advice	4	1.9
To purchase monitoring devices, e.g., blood pressure devices and blood glucose meters.	4	1.9
To get general health information.	1	0.5
To get first-aid information	1	0.5

Descriptive Analysis

The mean and standard deviation values for all the constructs were shown in table 4. These were obtained using SPSS version 23.

Table 4 Descriptive Analysis

Constructs	Mean	Std. Deviation
Tangibles	5.2392	1.09327
Reliability	5.5904	1.04521
Responsiveness	5.5288	1.04014
Assurance	5.7139	1.01642
Satisfaction	5.5397	0.9826
Behavioural Intention	4.9824	1.12656

Measurement Model

Partial least squares structural equation modelling (PLS-SEM) is used in examining the hypotheses. Due to its robustness, it is commonly used for data analysis (Penga and Lai, 2012). PLS-SEM was used in this study because it helps in the prediction of dependent variables (Roldán and Sánchez-Franco, 2012), as well as the incremental character in this study that is having Customer Satisfaction mediating between training satisfaction and turnover intention (Hair et al., 2014; Nitzl et al., 2016; Richter et al., 2016). In the first segment, measurement model testing was performed (Figure 1) (i.e. internal consistency reliability, convergent and discriminant validity), and in the second segment, the structural model was examined (Figure 2) (e.g. the hypotheses test) using SmartPLS, version 3.2.8. Table 5 listed out the Measurement Structure and Items as for convergent validity results.

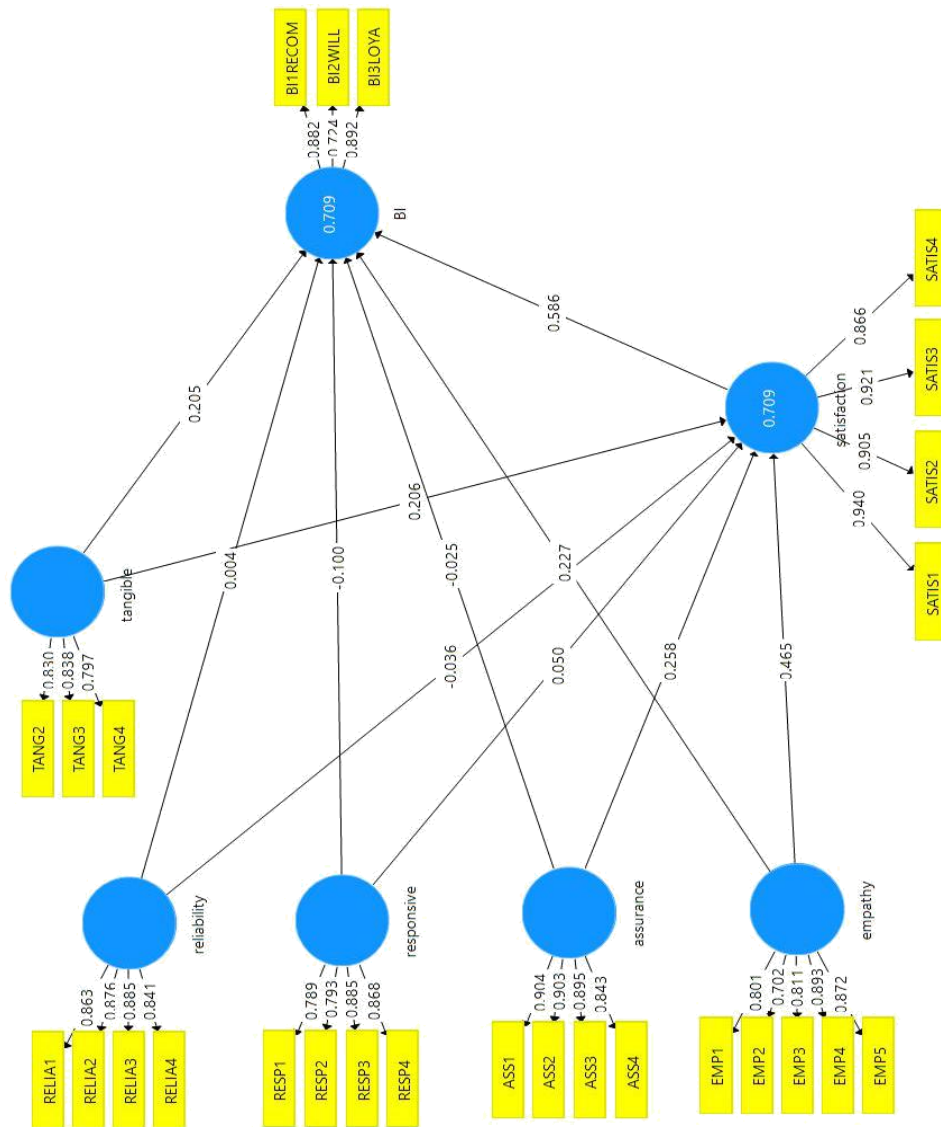


Figure 1 Measurement Model Testing

Table 5 Convergent Validity

Construct	Items	Loadings	Composite Reliability	AVE
Assurance	ASS1	0.904	0.936	0.786
	ASS2	0.903		
	ASS3	0.895		
	ASS4	0.843		
Empathy	EMP1	0.801	0.91	0.67
	EMP2	0.702		
	EMP3	0.811		
	EMP4	0.893		
	EMP5	0.872		
Reliability	RELIA1	0.863	0.923	0.75
	RELIA2	0.876		
	RELIA3	0.885		
	RELIA4	0.841		
Responsive	RESP1	0.789	0.902	0.697
	RESP2	0.793		
	RESP3	0.885		
	RESP4	0.868		
Tangible	TANG2	0.83	0.862	0.675
	TANG3	0.838		
	TANG4	0.797		
Satisfaction	SATIS1	0.94	0.95	0.825
	SATIS2	0.905		
	SATIS3	0.921		
	SATIS4	0.866		
Behavioural Intention	BI1RECOM	0.882	0.874	0.699
	BI2WILL	0.724		
	BI3LOYA	0.892		

Table 5 shows the convergent validity of this study measurement.

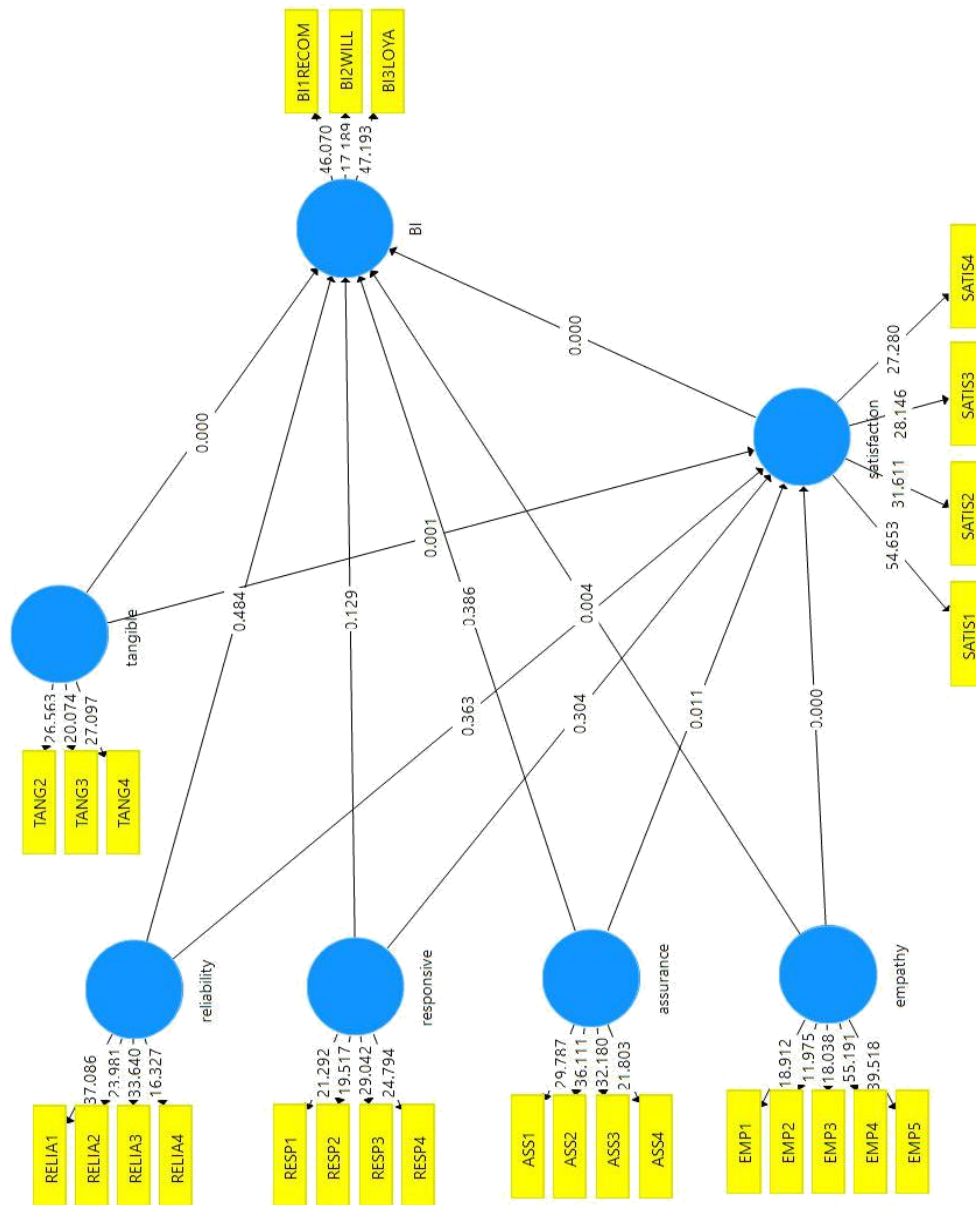


Figure 2 Structural Model Testing

Structural model

This model examines the causal links among constructs (Sang et al., 2010). In order to assess the statistical significance of the suggested model, bootstrapping method with 5,000 re-sampling was used (Hair et al. 2017).

Coefficient of Determination (R²)

The R² value indicates the amount of variance in a dependent variable is explained by the independent variables. Substantial, moderate and weak values of R² are in reference of 0,75, 0,50 and 0,25 (Hair et al., 2017). The greater the R² value, the better the structural model can be predicted. As for this research, the R² values are therefore 0.709 respectively for behavioural intentions and customer satisfaction.

Hypothesis Testing

Path coefficients were performed to determine the significance of relationships among the variables in reference to the proposed hypotheses. T-value for all the independent and dependent variables were created using Smart PLS 3 bootstrapping, in order to test the level of significance of the variables. Consequently, with bootstrapping, hypotheses H1a, H1e, H2a, H2d, H2e are indicated to be significant with t-value > 1.645. As for the results of H1, Tangibles (PSQ) (H1a: $\beta=2.06$, $p<0.01$, LL: 0.884, UL: 0.324) has a significant positive association with Behavioural Intention (BI), as was hypothesised. Likewise, Empathy (PSQ) (H1e: $\beta=0.234$, $p<0.01$, LL: 0.0654, UL: 0.403) has a significant positive relation with Behavioural Intention (BI). As for H2, Tangibles (PSQ) (H2a: $\beta=0.196$, $p<0.01$, LL:0.063, UL: 0.329) has positive significant effect on Customer Satisfaction (CS). Same goes with Assurance (PSQ) and Empathy (PSQ), having positive significant effect on Customer Satisfaction (CS) with H2d: $\beta=0.258$, $p<0.01$, LL:0.037, UL: 0.479; and H2e: $\beta=0.452$, $p<0.01$, LL:0.276, UL: 0.628 respectively. For H3, Customer Satisfaction (CS) (H3: $\beta=0.586$, $p<0.01$, LL: 0.435, UL: 0.737) demonstrated significant impact towards Behavioural Intentions (BI). While, hypotheses (H1b, H1c, H1d, H2b and H2c) failed to meet the threshold value of >1.645, marked not significant at the 0.05 significant level.

The larger the beta coefficient (β), the stronger the influence of an exogenous latent construct on the latent construct. Table 7 illustrated that, when compared to the other β scores in the framework, Empathy (PSQ) had the highest path coefficient of $\beta= 0.234$ and $\beta= 0.258$ towards Behavioural Intentions (BI), showing a higher variance and high impact on the BI. The results are as tabulated in Table 6.

Table 6 Structural Model and Hypothesis Testing

Hypothesis	Relationship	std beta	std error	t-value	RESULT
H1a	Tangibles -> BI	0.206	0.06	3.425**	Supported
H1b	Reliability -> BI	-0.003	0.099	0.04	Not Supported
H1c	Responsive -> BI	-0.096	0.09	1.114	Not Supported
H1d	Assurance -> BI	-0.03	0.088	0.287	Not Supported
H1e	Empathy -> BI	0.234	0.086	2.641**	Supported
H2a	Tangibles -> Satisfaction	0.196	0.068	3.037**	Supported
H2b	Reliability -> Satisfaction	-0.025	0.104	0.349	Not Supported
H2c	Responsive -> Satisfaction	0.056	0.098	0.513	Not Supported
H2d	Assurance -> Satisfaction	0.258	0.113	2.286**	Supported
H2e	Empathy -> Satisfaction	0.452	0.09	5.152**	Supported
H3	Satisfaction -> BI	0.586	0.077	7.664**	Supported

Mediation Analysis

The mediating effect of Customer Satisfaction (CS) between Perceived service quality and behavioural intentions. The results for indirect effect (Preacher and Hayes, 2004, 2008) demonstrated that CS (H4a: $\beta=0.116$, $p<0.01$, LL: 0.0278, UL: 0.204) mediates the relationship between Tangibles (PSQ) and BI. Assurance (PSQ) (H4d: $\beta=0.152$, $p<0.05$, LL: 0.0148, UL: 0.289) and Empathy (PSQ) (H4e: $\beta=0.264$, $p<0.01$, LL: 0.146, UL: 0.382) respectively with BI were also shown to have been mediated by CS. The mediation analysis is reported in Table 7.

Table 7 Mediation Analysis

Hypothesis	Relationship	Std Beta	Std Error	t-value	Confidence Interval LL	Interval UL	Outcome
H4a	Tangibles -> Satisfaction -> BI	0.116	0.045	2.658**	0.0278	0.2042	Mediation
H4b	Reliability -> Satisfaction -> BI	-0.016	0.062	0.344	-0.13752	0.10552	Not Mediation
H4c	Responsive -> Satisfaction -> BI	0.034	0.059	0.5	-0.08164	0.14964	Not Mediation
H4d	Assurance -> Satisfaction -> BI	0.152	0.07	2.153*	0.0148	0.2892	Mediation
H4e	Empathy -> Satisfaction -> BI	0.264	0.06	4.509**	0.1464	0.3816	Mediation

Discussion

In this study, most of the respondents had only visited a hospital once every few months. The outcome of this study was in parallel with a study done by Cheah, (2018) conducted in Sabah, Malaysia. Most of the participants frequented visited hospital for para-pharmaceuticals and non-prescription medications. It is interesting to find out that only Tangibles (PSQ) and Empathy (PSQ) are significant positive predictors of behavioural intentions, as hypothesised (H1a and H1e), whereas, Assurance (PSQ), Reliability (PSQ) and Responsiveness (PSQ) (H1b, H1c and H1d) have shown to be not supported as a positive predictor of Behavioural intentions. The result also showed that Empathy (PSQ) post more impact on customer satisfaction. The results have substantiated and contradicted prior research.

Tangible, Assurance and Empathy discovered to have positive relationship on Customer Satisfaction as according to the suggested hypothesis (H2a, H2d and H2e), whereas reliability and responsiveness could not demonstrate a significant relationship with customer satisfaction (H2b and H2c). The result also showed that empathy post more impact on customer satisfaction (Sarker, Md & Uddin, Borhan, 2017) have comparable results which supported assurance and empathy having significant relationship with customer satisfaction in Bangladesh's retail private commercial banking sector. In the H3, customer satisfaction alone was empirically significantly anticipated on behavioural intentions in this research. Some research in the literature on consumer marketing has shown a similar relationship (Hartline and

Jones, 1996; Selnes, 1993; Zeithaml et al., 1988). The findings of the research showed that satisfaction generally has a positive impact on the behaviour intent.

The results for mediation showed that customer satisfaction functions as mediator of tangible, assurance, and empathy respectively with Behavioural intentions (H4a, H4d and H4e) but a mediating role for customer satisfaction between reliability and responsiveness respectively with Behavioural intention (H4b and H4c) were not established. These results reflect Osman & Sentosa (2013), which endorsed customer satisfaction as a mediator between quality of service and customer loyalty in Malaysia's rural tourism sector. Based on the results, assurance has an indirect impact upon the behavioural intentions with customer satisfaction as mediation, despite not being endorsed in their direct connection.

Conclusion

This study comprehends trends and variables that affect the behavioural intention among visitors or patients of the hospitals in Sabah. Identifying and understanding which construct influences behavioural intentions could have a significant business implication, directly or indirectly (customer satisfaction as mediation). It is important to establish benchmarks for constructs being considered and to continuously monitor their performance through customer feedback. Those findings could be used in developing and implementing strategies among public and private hospitals in Sabah.

Customer satisfaction was linked to enhanced behavioural intentions and behavioural intentions are driven by their satisfaction with the experience in relation to the service quality aspect of Tangibles, Assurance and Empathy in particular. Based on this analysis, since the indirect impact of Assurance and Empathy are seen as a stronger driving force for behavioural intentions, marketing strategies and efforts in promoting their service quality should seek to establish Assurance and Empathy, with a focus on improving customer satisfaction that would contribute to improving behavioural intentions.

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References

- Aagja, J.A. and Garg, R. (2010), "Measuring perceived service quality for public hospitals (PubHosQual) in the Indian context", *International Journal of Pharmaceutical and Healthcare Marketing*, Vol. 4 No. 1, pp. 60-83.
- Ali, Faizan & Amin, Muslim. (2013). *The Influence of Physical Environment on Emotions, Customer Satisfaction and Behavioural Intentions in Chinese Resort Hotel Industry*.
- Anderson, E.W. (1998), "Customer satisfaction and word of mouth", *Journal of Service Research*, Vol. 1 No. 1, pp. 5-17
- Anthanasopoulos, A., Gounaris, S. and Sathakopoulos, V. (2001), "Behavioural responses to customer satisfaction: an empirical study", *European Journal of Marketing*, Vol. 35 Nos 5/6, pp. 687-707.
- Antonides, G. and Van Raaij, F.W. (1998), *Consumer Behaviour: A European Perspective*, Wiley, London.
- Argawal, J. and Malhotra, N.K. (2005), "An integrated model of attitude and affect: theoretical foundation and an empirical investigation", *Journal of Business Research*, Vol. 58 No. 4, pp. 483-93.

- Assael, H. (2004). *Consumer behaviour: A strategic approach*, Boston: Houghton Mifflin Company. pp. 216
- Babakus, E. and Boller, G.W. (1991), “An empirical assessment of the SERVQUAL scale”, *Journal of Business Research*, Vol. 24 No. 3, pp. 253-268.
- Bei, L.T. and Chiao, Y.C. (2001), “An integrated model for the effects of perceived product, perceived service quality, and perceived price fairness on consumer satisfaction and loyalty”, *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behaviour*, Vol. 14, pp. 125-40.
- Borneo Post Online. (December 12, 2010) Public versus private on medical care. <http://www.theborneopost.com/2010/12/12/public-versus-private-on-medical-care/>
- Boulding, William & Kalra, Ajay & Staelin, Richard & Zeithaml, Valarie. (1993). A Dynamic Process Model of Service Quality: From Expectations to Behavioral Intentions. *Journal of marketing research*. 30. 7-27.
- Brady and Christopher J. Robertson (2001). Searching for a Consensus on the Antecedent Role of Service Quality and Satisfaction: An Exploratory Cross-National Study. *Journal of Business Research*, 51 (1), 53-60.
- Caruana, A. (2002). Service loyalty: the effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, Vol. 36, pp. 811-828.
- Cronin and Steven A. Taylor (1994), “SERVPERF versus SERVQUAL: Reconciling Performance-Based and Perceptions-Minus- Expectations Measurement of Service Quality,” *Journal of Marketing*, 58 (January), 125-131.
- Cronin, Jr, J & Brady, Michael & Hult, Tomas. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing*. 76. 193-218.
- Cronin, Jr, J & Taylor, Steve. (1992). Measuring Service Quality - A Reexamination And Extension. *The Journal of Marketing*. 56. 55-68.
- Dabholkar, P.A., Shepherd, C.D. and Thorpe, D.I. (2000), “A comprehensive framework for service quality: an investigation of critical conceptual and measurement issues through a longitudinal study”, *Journal of Retailing*, Vol. 73 No. 2, pp. 139-73
- Economic Transformation Programme; Healthcare. <http://etp.pemandu.gov.my/Healthcare@-Healthcare.aspx>.
- Finkelstein, B.S., Harper, D.L. and Rosenthal, G.E. (1999), “Patient assessments of hospital maternity care: a useful tool for consumers?”, *Health Services Research*, Vol. 34 No. 2, pp. 623-640.
- Gaur, S.S., Xu, Y., Quazi, A. and Nandi, S. (2011), “Relational impact of service providers' interaction behavior in health care”, *Managing Service Quality*, Vol. 21 No. 1, pp. 67-87.
- Goldstein, S.M. and Schweikhart, S.B. (2002), “Empirical support for the Baldrige Award framework in US hospitals”, *Health Care Management Review*, Vol. 27 No. 1, pp. 62-75.
- Gooding, S.K.S. (1995), “Quality, sacrifice, and value in hospital choice”, *Journal of Health Care Marketing*, Vol. 15 No. 4, pp. 24-31.
- Gotlieb, Jerry B., Dhruv Grewal and Stephen W. Brown (1994), “Consumer Satisfaction and Perceived Quality: Complementary or Divergent Constructs?” *Journal of Applied Psychology*, 79 (6), 875-885.
- Grönroos, C. (1984), “A service quality model and its marketing implications”, *European Journal of Marketing*, Vol. 18 No. 4, pp. 36-44.
- Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2014), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, SAGE, Los Angeles, CA.

- Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2017), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2nd ed., Sage, Thousand Oaks, CA.
- Hartline, M.D. and Jones, K.C. (1996), "Employee performance cues in a hotel service environment: influence on perceived service quality, value and word-of-mouth intentions", *Journal of Business Research*, Vol. 35 No. 3, pp. 207-215.
- Hassali, M. A., Mak, V. S. and See, O. G. 2014. *Pharmacy practice in Malaysia*. *J Pharm Pract Res*, 44: 125-128.
- Kessler, D.P. and Mylod, D. (2011), "Does patient satisfaction affect patient loyalty?", *International Journal of Health Care Quality Assurance*, Vol. 24 No. 4, pp. 266-273.
- Lazarus, R.S. (1982), "Thoughts on the relation between emotion and cognition", *American Psychology*, Vol. 37 No. 9, pp. 1019-24.
- Lazarus, R.S. (1991), *Emotion and Adaptation*, Oxford University Press, New York, NY.
- Lewis, B.R. (1991). *Service quality: an international comparison of bank customers' expectations and perceptions*", *Journal of Marketing Management*, Vol. 7 No. 1, pp. 47-62.
- Nitzl, C., Roldan, J.L. and Carrion, G.C. (2016). *Mediation analysis in partial least squares path modelling: helping researchers discuss more sophisticated models*. *Industrial Management & Data Systems*, Vol. 116 No. 9, pp. 1849-1864.
- Oliver, R. (1997), *Satisfaction: A Behavioural Perspective on the Consumer*, McGraw Hill, New York, NY.
- Oliver, R.L. (1980). *A cognitive model of the antecedents and consequences of satisfaction decisions*. *Journal of Marketing Research*, Vol. 17, pp. 460-469.
- Oliver, R.L. (1993). *A conceptual model of service quality and service satisfaction: compatible goals, different concepts*. Teresa, A.S., David, E.B. and Stephen, W.B. (Eds), *Advances in Marketing and Management*, JAI Press, Greenwich, CT, pp. 65-85.
- Osman, Z., & Sentosa, I. (2013). *Service Quality and Customer Loyalty in Malaysian Rural Tourism: A Mediating Effect of Trust*. *International Journal of Marketing Practices*, 1, 31-42.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1988). *SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality*. *Journal of Retailing*, Vol. 64 No. 1, pp. 12-40.
- Riadh Ladhari, (2009) "Service quality, emotional satisfaction, and behavioural intentions: A study in the hotel industry", *Managing Service Quality: An International Journal*, Vol. 19 Issue: 3, pp.308-331.
- Richter, N.F., Sinkovics, R.R., Ringle, C.M. and Schlägel, C. (2016), "A critical look at the use of SEM in international business research", *International Marketing Review*, Vol. 33 No. 3, pp. 376-404.
- Rui Biscaia, Abel Correia, Masayuki Yoshida, António Rosado, João Marôco, (2013) "The role of service quality and ticket pricing on satisfaction and behavioural intention within professional football", *International Journal of Sports Marketing and Sponsorship*, Vol. 14 Issue: 4, pp.42-66.
- Rust, R.T. and Oliver, R.L. (1994), "Service quality: insights and managerial implications from the frontier", in Rust, R.T. and Oliver, R.L. (Eds), *Service Quality: New Directions in Theory and Practice*, Sage, New York, NY, pp.1-19.
- Ryu, G. and Han, J.K. (2009), "Word-of-mouth transmission in settings with multiple opinions: the impact of other opinions on WOM likelihood and valence", *Journal of Consumer Psychology*, Vol. 19 No. 3, pp. 403-15.

- Sang, S., Lee, J.D. and Lee, J. (2010), “E-government adoption in Cambodia. a partial least squares approach”, *Transforming Government: People, Process and Policy*, Vol. 4 No. 2, pp. 138-157.
- Sarker, Md & Uddin, Borhan. (2017). Influence of Service Quality on Customer Satisfaction in Retail Banking: A Study on Some Private Commercial Banks in Bangladesh.
- Sayyed Mohsen Allameh, Javad Khazaei Pool, Akbar Jaber, Reza Salehzadeh, Hassan Asadi, (2015) ""Factors influencing sport tourists' revisit intentions: The role and effect of destination image, perceived quality, perceived value and satisfaction"", *Asia Pacific Journal of Marketing and Logistics*, Vol. 27 Issue: 2, pp.191-207.
- Schiffman, L. G., & Kanuk, L. L. (2004). *Consumer behaviour*, 8th ed. Upper Saddle River, New Jersey: Pearson Prentice Hall. pp.256
- Selnes, F. (1993), “An examination of the effect of product performance on brand reputation, satisfaction and loyalty”, *European Journal of Marketing*, Vol. 27 No. 9, pp. 19-35.
- Sik Sumaedi, I Gede Mahatma Yuda Bakti, Tri Rakhmawati, Nidya J. Astrini, Tri Widiyanti, Medi Yarmen, (2014). The empirical study on patient loyalty: The role of trust, perceived value, and satisfaction (a case study from Bekasi, Indonesia), *Clinical Governance: An International Journal*, Vol. 19 Issue: 3, pp.269-283.
- Solomon, M. R. (2002). *Consumer behaviour*. UpperSaddle River, New Jersey: Prentice Hall. Pp.200
- Zeithaml, V.A., Berry, L.L. and Parasuraman, A. (1988), “Communication and control processes in the delivery of service quality”, *Journal of Marketing*, Vol. 52 (April), pp. 35-48.
- Zeithaml, V.A., Berry, L.L. and Parasuraman, A. (1996), “The behavioral consequences of service quality”, *Journal of Marketing*, Vol. 60 No. 2, pp. 31-46.

ANALYSIS OF LEARNING THROUGH MAPPING ACTIVITIES-INFLUENCE OF DIALOGUE

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Abstract: *While others could patiently jot down the important points gathered in a lecture, an out-spoken fresher student at the front row was noticed as yawning, scratching the head, distracting others and at last, drooped. Concerns over the scenario had urged the course instructor to reflect and redesign students' learning to cognitively engage the most fidgety candidate to the learning process. Interaction with the fidgety character was performed at maximum to promote thinking by intermittent query that directed the candidate to focus, think through the presented material and understand the importance of the knowledge laid in the input process. The mode of classroom conversations and mapping activities as the entailing tools had assisted in 'personalising' learning to the batch of fresher students who were uniquely colourful, intelligent but comfortable memorising learning materials. The output of integrating the principles of Scholarship of Teaching and Learning (SoTL) to overcome the rare challenge of fidgety character in the classroom has indeed transformed the initially disheartening learning atmosphere into a classroom of active participants. Analysis shows fulfilment of the criteria of dialogue outlined by Wolfe and Alexander. These were engendered by the interactivity of mapping activities and the ensuing preparation by the instructor. The elements of dialogue were prominent to cognitively engage students to learning. The approach is thus one of the experimented initial steps as a small building block of the bigger goal of developing functional knowledge workers.*

Keywords: *Fidgety, Cognitive, Mapping, Thinking Classroom, Dialogic, SoTL.*

Introduction

Excess of energy and tension can be dissipated by fidgeting (Markel, 2014) but an out-of-control fidgets may be disruptive as it suggests a person's inability to interact in discrete manner. Fidgety, from one perspective, is a phenomenon associated to brain chemistry giving rise to one's difficulty to stay still (Mind, 2013). Manifested by restless, uneasy, agitated state of behaviour, fidgety and the underlying health issue may remain unearthed until a form of social interplay takes place. Classroom provides an interplay where teaching can help sense the gravity of the problem oftentimes visible from the way learners cope with the learning process.

The presence of fidgety character in a classroom, however, could pose a challenging situation; demotivation to both instructors and learners, loss and non-learning of the fidgety learner if the situation prolonged and annoyance of those who had long invested an unconditional willingness to learn. With an ingrained idea that classroom should offer the maximal learning and thinking opportunity, the challenge has justified the mission to design a conducive learning atmosphere custom-made for the pleasant inclusiveness of the learner facing the unique circumstance of the residual adolescence years.

Unique Small Mass

Based on the instructor's personal experience, a 17 years course mate was the youngest that she had back in her 1990s varsity classroom. The way things appeared, there seemed no maximum age limit for one to enrol into a varsity study programme. Back then, a high level of note-taking skills, aptitude in English language and the ability to embrace ethical standards were prerequisites for not only entry to university undergraduate but also the deciding factors for conquering learning and graduation.

For the course entitled, Biomass for Pulp Production which is part of a core course IWK103 Pulp Production and Paper Recycling, enrolling candidates were between the age of 19 to 20 years, 12 electing as core courses for the Bachelor of Technology degree in Bioresource, Paper and Coatings Technology (BPC) and two candidates from other School of Biological Sciences enrolling as minor course. The small classroom size enabled better monitoring of the individual student's learning and as research shows, a higher possibility of better students' performance (Maisel, 2006).

Small classroom also enabled easy handling of diversity and abnormal behaviour. Fidgety is one of the unique challenges and for an instructor, an ardent duty was to ensure learning activities could transform the fidgety behaviour into a good learner. Indeed, learning and succeeding are all-students' rights and the essence of this is to support thinking, commensurate with an observant philosophy stating, "If our attempt is to be successful, we must be ready to learn thinking" – Heidegger in Wegerif (2010).

Reason for Charting Dialogue

The design adopting mapping activity and inquiry as a way of constructing a map was initially regarded as enquiry-based approach. However, the criteria of the designed classroom revealed elements of receptiveness, giving room for free expression of ideas and rationalising them and unique correctional strategy, among others, were beyond the scope of inquisitive approach. The possibility of fulfilling the criteria of dialogue is hereby analysed. and this presentation attempts to assess the teaching criteria regarded as 'dialogic' was giving such effect as increasing literacy skills (Lee, 2016), freeing more learning opportunity (Lee, 2016), aiding students to achieve the greatest cognitive potential as posited by Alexander (Simon, 2018) and hence greater meaning in learning.

Essential Learning Elements in Mapping

Mapping as the pre-identified thinking tool with a needful range of benefits was the adopted tool to awaken minds, stimulate curiosity and keep the thinking process going. On a simple single layer topical map sketched for guiding a classroom discussion, principal points and the underlying meanings can be visualised as a way of ensuring cognitive connectivity and rule out the deceptive learning manifested through physical engagement. The approach also defied all together, the traditional classroom lecture and drill type of assessment although all done with the best intentions of sensing learning. Learning, on the contrary, was allowed on the basis of meaningful communication amongst learners in the presence of the course instructor as referral point and moderator. The quality of communication is hereby analysed to check the coincidental overlap and the degree of fulfilment of Bakhtin's concept of dialogic talk and Alexander's dialogic teaching. In the inquisitive approach adapted to the thinking classroom for 2016/17 batch of fresher students, mapping as the driver to thinking (Ghazali, 2016) and communication (Ghazali, 2018) was adopted. Owing to the elements of interactivity, human relations that was believed to have eliminated the robotic type of monologue interaction (Wegerif, 2010) was engendered. Mapping was also chosen as a guiding tool as survey shows

that students unanimously agreed that map is a powerful visual of knowledge, difficult to construct but a very helpful reference. In terms of dialogue, the multi-modality that a map brings about, is analogous to the effect of graphics in giving multi-modal dialogue as proposed by Wegerif (2007) by broadening or deepening of the dialogue space. These were packaged together with the original thinking classroom (TC 1.0) to provide solution to the persistent and new learning challenges stated in the proceeding section.

Problem Statement

Fidgety character is a new concern and a challenge regarded as a touchstone for a classroom design that would in a package overcome the prevailing ineptitude in the learning language or medium of instruction that earlier researcher, Lahesvouri (2013) posited as giving profound effect on the development of thinking skill. The ensuing challenges include instructor-learner language barrier, poor note-taking, poor listening skill and semantic inability, to name a few. Indeed, literature has shown the power of language as a force constantly “interacting with, shaping and reacting with the ideas that precede and those to come, with words posing the cues to the answer” (Middendorf, 1992).

Thinking classroom designed with dialogue and guided by map was therefore designed to support learning taxonomy and reduce rote learning by enhancing learners’ reasoning ability. The approach is also aimed at directing students to the ability of using the knowledge in new situations (Mayer 2004). As a result of the intervention, classroom sessions that had normally been 50% lecture were revamped and redesigned to suit the learning community. This was done as part of the touchstone of responsibility in providing the right conditions (Kumar, 2012; Robinson, 2013) to allow every learner to grow and blossom. Inquisitive atmosphere was designed by interfacing with mapping as a powerful visualisation tool. The idea was to provoke thinking and to allow students to understand the learning contents objectively despite the aforesaid language circumstances. This commensurate with the whole idea of learning posited by Wegerif (2010), which is learning to think better.

Dialogic 2016/17 Classroom

The elements of a ‘dialogic discourse’ defined as the quality of classroom talk to promote understanding by holding the different perspectives together (Wegerif, 2010) was embedded in the Thinking Classroom™ as elsewhere described by Ghazali (2017). The measure transformed the so called ‘traditional’ Thinking Classroom (TC1.0) to Dialogic Thinking Classroom (TC2.0).

Research Questions

The designed interactivity in the thinking classroom had apparently transformed the fidgety behaviour, hereby addressed as “Jay” to an energetic, committed learner. This study delves into these questions:

Q1: What were the evidenced of ‘dialogue’ occurring in the mapping activities?

Q2: How did dialogue in mapping activities transform the classroom by design?

Having appreciated the transformed behaviour of Jay from week 3 onwards, the instructor then attempted to identify the way dialogic thinking was embedded in the Thinking Classroom with mapping. In the attempt to unravel the research questions, three objectives were set and these are as framed as follows:

Objectives

1. To chart Jay’s learning experience at pre- and post-dialogic intervention.

2. To understand the transformative effect of dialogue.
3. To understand the dialogic elements in map-assisted classroom conversations and identify other triggering factors.

Design and Methodology

Sensing Needs of Batch 2016/17

In the first two weeks of the semester, students’ needs analysis was performed by reflection of students behavioural engagement in class, quality of notes - which implied students’ note-taking skills, the present characters, level of cooperation and reason behind hesitance to participate. The presence of a fidgety behaviour, hereby addressed as Jay, were central in deciding the design of classes through the consecutive weeks. The effects of the cyclical reflection throughout the first two weeks had affected both students learning and instructional plans. Among other participants addressed in subsequent section is “Bob” who was the clown of the class and “Ash” who manifested behavioural transformation.

Personalisation Approaches

Jay’s lack of ability to focus had prompted the instructor to assign Jay an important role to play in every learning session (tasking). Jay was appointed the “Dialogue Star” who was given ample opportunities to speak out, pose questions as a way of triggering thinking, and dialogue. The instructor chose to be at the back of the classroom (Closest to G6, also see Fig. 1) to observe students’ participation and changed position when the needs for giving feedback to misconception arose. Besides fidgety behaviour, there was also a less grievous affective elements such as poor self-confidence that prevented the manifestation of the true intellectual abilities of the learners. This is grouped in an apparent learning engagement terms as shown in Table 1.

Table 1: Grouping of Students by Participation

Active (AE, BE)		Moderately Active (<BE, <AE)		Passive	
CE	xCE	CE	xCE	CE	xCE
G1	G2	G3	G4	G5	G6

AE=Affective engagement; BE=Behavioural engagement; CE=Cognitive engagement; x=absence of.

TC2.1 was principally designed for making all (G1 to G6) students talk. In a map-based dialogic thinking classroom (TC2.1), the central idea would be drawn on the whiteboard or mahjong paper as the central keyword to form a single-layer brainstorming map. Maps are also the tool to help the instructor sense and assess the occurring dialogue by breadth or depth. In certain sessions, responses to the central idea as initiated by Jay, the Dialogue Star, were drawn as the points breeding from the central keyword. The breeding points were given by Jay’s classmates based upon their understanding of lectures captured in their notes and lecture handouts. Next was to call upon the learners to elaborate on the points they suggested, allowing freedom to choose their position as well as freedom to write on the whiteboard. At the end, Jay was normally requested to wrap up the dialogue. Basically, each student was given at least one opportunity to coordinate the classroom talk. In this kind of dialogue the position of the instructor was flexible depending on needs.

Analysis

The map constructed by students was analysed by comparing with previously constructed map. Figure 1 presents the original output when students were thinking through the topic of process efficiency. Significant conversations were also recorded as a few students preferred expressing

their views verbally. Important marks on the map were also tracked to relate to the synchronous learning. Qualitative assessment of students verbal and mapping responses were evaluated. These were ongoing assessment of learning and assessment for learning to influence the subsequent class designs.

Outcome and Analysis

Time as an Uncontrolled Domain

Table 2 presents the effects of dialogic elements on the thinking classroom design. As a consequence of embedding interactivity that emphasised careful listening to learners' responses, providing tactful feedback to learners' responses and maximal attempts for accommodating to the new views and thinking rather than strictly adhering to the textbook contents, the duration of the planned input and assessment processes changed tremendously.

Table 2: Approximate Time Consumption Pattern by the Varying Intervention
Estimated Duration of Activities (Minutes)

Input and Purpose		TC1.0	TC2.1	TC2.2
Instructor		50 (Lecture)	30 (Lecture)	10 (Briefing)
Assessment For Learning	For	20 Quiz	20 (Clarification, Q&A)	60 (Reporting Observation)
Assessment of Learning	of	20 Mark Quiz Together	20 (Verbatim)	10 Minutes (Debrief)
Feedback		Instant verbatim + Written for individuals	Instant verbatim + Written for individuals	Written + follow-up lecture on fibrillation
Student Learning Time	Learning	Group and Individual	Predominantly Group	Group

NB: TC1.0 ≡ 'Traditional' Thinking Classroom | TC2.0 ≡ Dialogic Thinking Classroom | TC2.1 ≡ Dialogic Thinking Classroom with map as supporting tool | TC2.2 ≡ Dialogic Thinking Classroom with microscopy - to discuss elsewhere.

Transformation by Dialogue through Tasking

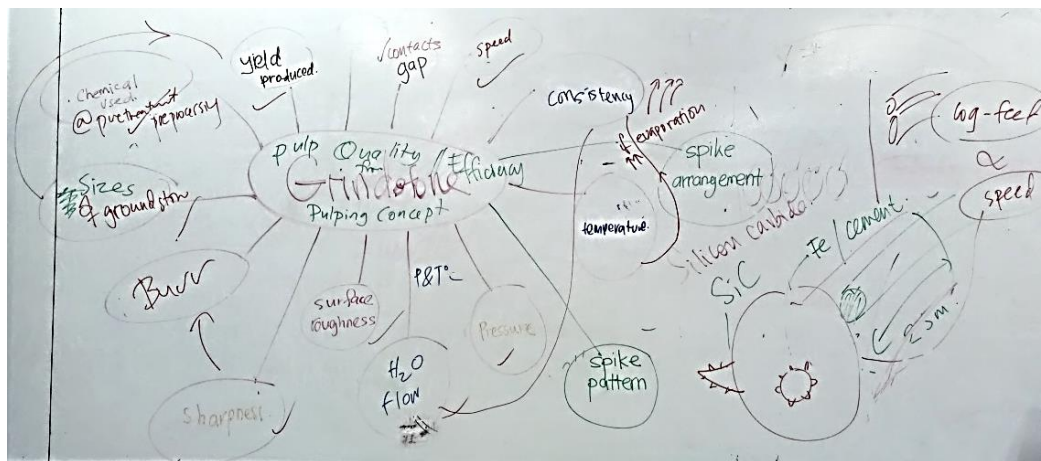
Appointment of Jay as a dialogue star was observed to have reduced Jay's fidgety behaviour significantly. Jay was loudest in the class mainly as he shared information, joked about facts related to the learning material, posed questions to twit his classmates to imagine, demonstrated or summarised certain points to check if he had understood stuff accurately and sought clarification. According to Gutierrez (2016), verbalising of knowledge has strong association with better performance and the transformation of Jay from a fidget to an energetic learner provides a live evidence of this.

Sensing Dialogic Thinking from Map Expansion

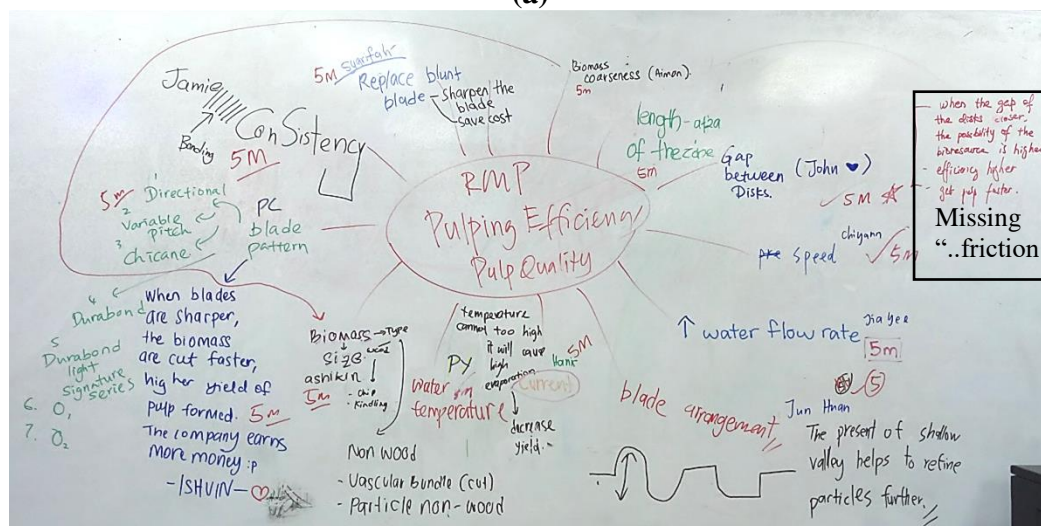
The instructor normally began mapping activity after a 30 minutes lecture. Jay, the dialogue star was sometimes appointed to role-play as examiner to mark the answers written by his classmates. A couple of times Jay was also assigned as dialogue coordinator. In such instance the instructor intervened to prevent misconception. If Jay was required to be normal participant, Jay would have to orally present the overall meaning of the map constructed together in the classroom.

It is noteworthy that only simple maps were used to initiate discussion because the primary idea was to engage learners to learning from the three domains, which were affective (A), behavioural (B) and cognitive (C). The missing phrase ("friction of", Fig. 1b) on the right

were also evidence of cognitive engagement from the ensuing freedom of thought and action. The missing (verbalised) phrase implied higher speed of thought in comparison to the hand capacity for speed at writing, as findings of Schafer (2010) shows.



(a)



(b)

Figure 1: Map Representing the Central and Breeding Ideas Generated During the Classroom Dialogue (a) Factors Affecting Grinding Efficiency with “Grindstone” as Central Keyword and (b) Factors Affecting Refining Efficiency with “RMP” as Central Keyword.

Reflection on the speed of dialogue, “Bob” could have been excited about the opportunity to be expressive in the classroom and very keen of externalising the meaning of the keyword he wrote on the map for sharing with his classmates. The maps in Figure 1, overall, provides evidence of energetic participation of students electing the course as core and minor subjects.

The breadth and depth of the classroom dialogue was the deciding factor for expansion of the map. In relation to the resultant changes in Fig. 1, Fig. 2 presents the original map based upon the points covered in the previous year. By comparing and contrasting, the two maps demonstrate the changes that were driven by dialogic discourse occurring in the 2016/17 classrooms through TC2.1. The depth of the discourse and handling of varying perspectives had not only added points but had also given students the experience of intellectual social interplay, which characterises a community practising ‘dialogic thinking’. The aforesaid

elaborations offered by each student whether by verbatim or by writing would serve as the breeding points, responsible for the map expansion. This is an enhancement of students' ability for reasoning, which in turn helps reduce rote learning -the lowest learning order in Bloom's Taxonomy).

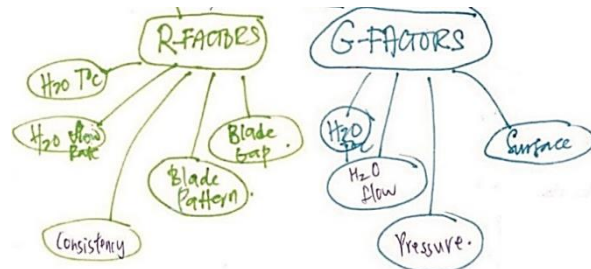


Figure 2: Single Layer Map Initially Developed without Dialogue

Embedding Dialogue in Map-assisted Conversation

An example of query from learners that triggered the path to reasoning is “What if..”, normally came from Jay. The instructor's feedback to the pattern of question normally involved cause-and-effect specificity. The transcription to illustrate the scenario:

- (1) Learner1: *What if we grind sisal right after harvesting?*
- (2) Instructor: *Grinding only suits dry, lightweight biomass, such as Baby's Breath.*
- (3) Instructor: *Imagine slicing sisal right after harvest.. what would likely be the experience?*
- (4) Instructor: *Reflect on the video on decortication of sisal. Was it a waste-free, clean process?*
- (5) Learner2: *No.. sticky green stuff came out.*
- (6) Instructor: *Now imagine slicing the fresh sisal leaves.*
- (7) Learner3: *Yes.. we can put the stickies on the face and improve skin texture (class - laugh) – Hanis, demonstrate to us.*

The immediate illustration of grinding practicality by picking Baby's Breath (BB) as an example was an important aid to help student visualise pre-processing of fibrous dry biomass, which involved very simple processing technique. Owing to the nature of the biomass, pre-processing could skip washing, cutting and debarking as normally laid in textbooks for such huge biomass as wood logs. Samples of BB was brought to the class to allow students to appreciate the lightweight feature. The authoritative nature of response in line 2 as necessary to swiftly gear into the correct thinking path to rule out misconception.

In the next line the instructor invited learners to imagine the contrasting feature of sisal in comparison to BB. For granularity, the instructor referred to the video on decortication of sisal that not only shows the size and weight of the biomass but also the entailing green liquid waste flushed to the stream. At this point, Bob acted as clown of the class and hilariously suggested an application of the green waste, which is very similar to aloe-vera extract. This marked the learning engagement beyond behavioural engagement but a cognitive connection that allowed translation of a scientific content to application with spontaneity. This prompted better readiness to pursue more learning and express more curiosity.

Reflection and Elements of Dialogue

The map transformation from Figure 2 to the matured elaboration depicted upon Figure 1 is an evidence of student’s confidence in the ideas they were generating throughout the classroom conversation. Students’ ability to think beyond Figure 2 was driven by repeated cycles of stating, clarifying and reasoning, which were parts and puzzle of the process of drawing the more logical ‘ideal truth’ lamented by Wegerif (2013) as being the outcome of the process of the dialogue itself.

The batch’s manifested commitment to participate in the learning sessions was mainly portrayed by Jay and Ash. While Ash was more accurate in her verbal presentation of answers, Jay transformed from a fidget to the ‘super-addressee’ described by Bakhtin’ as the conversant who “always seeks responsive understanding, does not stop at immediate understanding but presses further and further (indefinitely)”. Since the number of ‘Super-addressee’ made the majority, the dialogue is regarded as ‘shared enquiry’. Questions posed by suffixing with “What if..”, for instance, also invited the instructor to map out criteria (of biomass, for instance) to needs (processing needs, e.g.). The synergistic energy dissipated by both learners and the instructor was plausibly the trigger to Ash’s participation which was also a transformation. A memorable remark voiced by Ash was on the logical monetary benefits of resource recovery, “..collect the waste, ..sell and make money”, for instance, signalled cognitive engagement, internalisation and an expression of internal dialogue from a learner who was initially reserved and present misconceived ideas. The recorded transformation may be regarded as dialogic illumination which had noteworthy repercussions. The resultant learning atmosphere had directed “collaborative construction of knowledge” and this is an illustration of an ultimate dialogic illumination.

Besides map and conversation journeys, positioning of the instructor in the classroom also influenced students’ readiness to participate in class. Figure 3 presents the two frequent position (♥) taken by the instructor as a symbol of passing the learning autonomy to students.

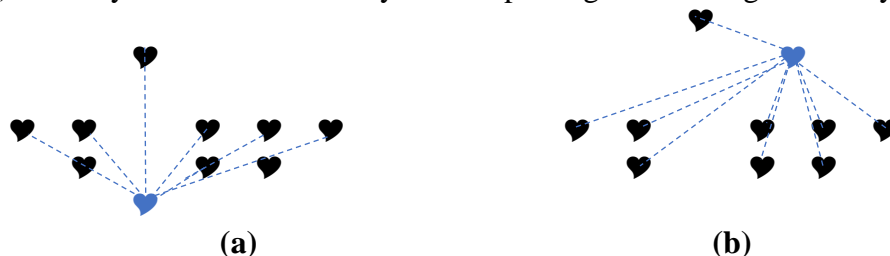


Figure 3: Dialogic Illumination by repositioning of the instructor (a) at the back of the class and (b) in front of the class

The lines in Fig. 3 represent “dialogic illumination” or simply, line of interactivity and connectivity between learners and the instructor, as students coordinating the class discussion were positioned at the front and centre. The position at the stage centre was normally reserved for dialogue star and the instructor would sit right opposite to agree and encourage him continue and coordinate class dialogue – the latter often happened if Jay had uncertainties. Despite the circumstance Jay was in, his genuine response to his level of understanding illuminates a great potential of his self-improvement. In conditions of misconception or false response to Jay’s uncertainty, the instructor would take the position in Figure 3b and intervened without belittling the serious efforts Jay had put in coordinating the lively class dialogue.

The criteria of dialogues embedded in the described classrooms are marked in the accomplishment column as checklist, in Table 3.

Table 3: Checklist of Dialogic Education Criteria by the Guideline of Wolfe and Alexander

CRITERIA OF TALK	ACCOMPLISHMENT	CHALLENGES
Asking real question	Attempted	Cognitive exhaustion die to needs to be alert.
Allow time for learners to think and respond	Allowed reasonable time by providing cues.	Time limitation.
Open up possibilities; use 'perhaps', 'might'	"What if.."	
Develop line of arguments through connected questions	Done by asking students to imagine process* and the incurring problems if a wrong decision is made or a wrong answer was given by students.	*Not all could visualise. Solution: Live demonstration by video or real sample in class.
Design opportunities for students to talk; ask questions or make statements	Several students are made to talk by assigning map-related tasks	
Design opportunities for students to actively participate	Done; map fill-up and presentation, ask questions.	Time on development of Plan A and Plan B to ensure good execution.
Build learners' interest	Showed video/visuals, the diverse practices; beyond textbooks, history and issues.	

Criteria of instructor	Accomplishment	Challenges
Possess good knowledge of contents	Up-to-date and encourage e-literacy by guide of keywords on map	
Questions match purpose	Directed towards gauging understanding (assessment of learning) and decides on next intervention (assessment for learning).	Time required for cyclical reflections.
Encourage learning talk via support of group and standalone	Group was normally represented by the same extrovert. Turn taking was therefore implemented.	Language; inability to express in both English and national languages.
Listen well and extend meaning	Tendency to be authoritative is high especially close to the last minutes	
Initiate dialogue but withdraw when necessary	Done by often taking the non-centre position.	
Learners given turn to moderate class talk	Done – with priority given to Jay.	Class is comfortable with the idea. No one felt seriously threatened.

At this point we shall appreciate the attempted dialogic approaches through mapping activities and the diverse ways of facilitating dialogue as the cornerstone for other skills or simply "metacognition" as posited by Fisher (2007). To the instructor, this is one of the synchronous gateways for functionalising classrooms as the main learning platform where learners and instructor are ideally appointed to meet.

Final Analysis & Conclusion

Having been the eyewitness of the 14 learning sessions spanning over 28 formal hours, the instructor noted the continuum of rapport and interactivity that had occurred. With the blessing of time, the uncontrolled domain of learning, class was overall, interactive and she has to acknowledge the cooperative and colour of the 14 students as the co-constructors of knowledge. The initial annoyance of 'ADHD' character portrayed by Jay, thus far mentioned as fidgety behaviour had successfully been overcome by the positive energy of the classroom. The transformation of Jay from a disengaged fidget to a dialogue star who coordinated

energetic, interactive and very healthy learning atmosphere was not coincidental, however, but implemented by careful analysis, design and preparation of Plan A backed by Plan B.

As an instructor, the touchstone was to walk with students through their learning journey and it was a special mandate for her to support the learning journey of a special Jay who could be facing an unknown level of difficulty coping with his unique circumstances. Driven by empathy she devoured from mentoring and Mental Health Facilitation (NBCC-i) trainings, it came to the instructor that it was important to encourage participation, to share their perspectives of the learning materials by not offending wrong responses but rectify by soft measures without leaving scientific reasoning and logical thinking aside. This persuasive element within dialogic radar could also be the reason for least Ash to daringly look straight into the instructor's eyes when expressing views while figuring out answers through internal dialogue. In fact, Ash's progress and responses gave the true reflection of:

“Beyond the dialogue of the voices, then, is a dialogue of minds.” Alexander 2005.

Backing up one classroom design with multiple design of synchronous activities led to dynamic changes in the instructional plans. The process was complex effort and required sacrifice of the time that could have been invested in the publication of papers in the disciplinary research, which is of more value for the a research university lecturer's key performance indicator and promotion. However, reaping the fruit of seeing important transformations in Jay and Ash and the extraordinary energy of the classroom as a result, was a mandate that could not be left without understanding and sharing with the global teacher community.

Acknowledgement

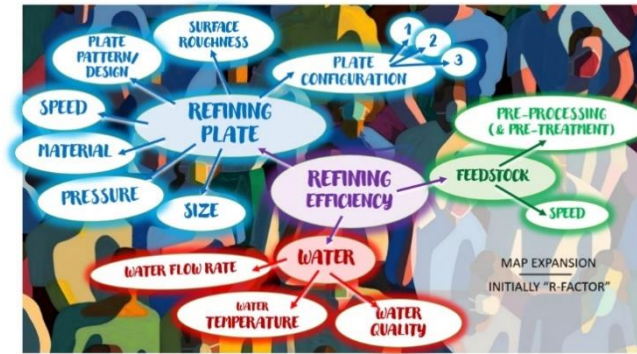
Special thanks to IWK103 students 2016/2017 academic year. If “Education is a journey of self-realization” as drawn by Dr Satish Kumar, I have, with sincerity attempted to walk the journey with my students for half a semester. Hope they have enjoyed the short journey!

References

- Alexander, R. (2004). Dialogic teaching and the study of classroom talk. In *International Conference keynote address* (Vol. 44, No. 3, pp. 103-111).
- Anon. (2016). Fidgeting Disorder. Retrieved from ic.steadyhealth.com/fidgeting-disorder
- Davies, M. (2011). Concept mapping, mind mapping and argument mapping: what are the differences and do they matter?. *Higher education*, 62(3), 279-301.
- Ghazali, A. (2016). Map Interpretation: Tool for Rapid Learning and Assessment Lens for Cognitive Engagement. In *Assessment for Learning Within and Beyond the Classroom* (pp. 285-294). Springer, Singapore.
- Ghazali, A. (2017). Chapter 2 Rapid Grasp of Concepts in Analysis in Esa, N., & Lah, S. C. (Eds.). *Local Knowledge Transfer Mechanisms (Penerbit USM)*. Penerbit USM.
- Harding, R. H. (2011). Recognizing the Signs of Students Mental Health Problems. *SEEN Magazine*. Retrieved from www.seenmagazine.us
- Kumar, S. (2015). The Real Meaning of Education - Holistic Education. Retrieved from https://www.youtube.com/watch?v=_AxY_TOW1xU
- Markel, G. (2014). The Fidget Factor. Retrieved from demonsofdistractions.com.
- Mayer, R. E. (2002). Rote versus meaningful learning. *Theory into practice*, 41(4), 226-232.
- Middendorf, M. (1992). Bakhtin and the Dialogic Writing Class. *Journal of Basic Writing*, 11(1), 34-47.

- Mind. (2013). Hypomania and mania. Retrieved from <https://www.mind.org.uk/information-support/types-of-mental-health-problems/hypomania-and-mania>
- Lehesvuori, S. (2013). Towards dialogic teaching in science: Challenging classroom realities through teacher education. *Jyväskylä studies in education, psychology and social research*, (465).
- Robinson, K. (2013). TED Talk Education. Retrieved from https://m.youtube.com/watch?v=dilnw_dP3xk
- Scott, P. H., Mortimer, E. F., & Aguiar, O. G. (2006). The tension between authoritative and dialogic discourse: A fundamental characteristic of meaning making interactions in high school science lessons. *Science education*, 90(4), 605-631.
- Wegerif, R. (2010). Chapter 2: What is Dialogic Education. Retrieved from elac.ex.ac.uk/dialogiceducation/userfiles/DEIACH1.pdf
- Wegerif, R. (2013). *Dialogic: Education for the internet age*. Routledge.
- Wegerif, R. (2013). Learning to think as becoming dialogue: as ontologic-dialogic account of learning and teaching thinking. *Interplays between dialogical learning and dialogical self*, 27-25.
- Wegerif, R. (2007). *Dialogic education and technology: Expanding the space of learning* (Vol. 7). Springer Science & Business Media.
- Hennessy, S., Rojas-Drummond, S., Higham, R., Márquez, A. M., Maine, F., Ríos, R. M., ... & Barrera, M. J. (2016). Developing a coding scheme for analysing classroom dialogue across educational contexts. *Learning, Culture and Social Interaction*, 9, 16-44.
- Zuiker, S. J., Anderson, K. T., Jordan, M. E., & Stewart, O. G. (2016). Complementary lenses: Using theories of situativity and complexity to understand collaborative learning as systems-level social activity. *Learning, Culture and Social Interaction*, 9, 80-94.
- Lee, R. (2016). Implementing dialogic teaching in a Singapore English language classroom. *RELC Journal*, 47(3), 279-293.
- Gutiérrez, R. (2016). Effects of dialogic reading in the improvement of reading comprehension in students of primary education. *Revista de Psicodidáctica*, 21(2), 303-320.
- Fisher, R. (2007). Dialogic teaching: Developing thinking and metacognition through philosophical discussion. *Early Child Development and Care*, 177(6-7), 615-631.
- Schafer, J. (2019). *Psychological narrative analysis: A professional method to detect deception in written and oral communications*. Charles C Thomas Publisher.
- Simon, D. E. (2018) It's Good to Talk: Moving Towards Dialogic Teaching. Impact – Journal of the Chartered College of Teaching, URL: <https://impact.chartered.college/article/egan-simon-moving-towards-dialogic-teaching/> Accessed September 16, 2020.
- Maisel, S. (2006). Does Class Size Matter? An Update <http://nces.ed.gov/nationreportcard/reading>

APPENDIX: MAPS RECONSTRUCTED FOR ORGANISATION BASED UPON STUDENTS' ORIGINAL MAP ON THE WHITEBOARD (FIGURE 1)



(a)



(b)

Figure A1: Map Representing the Central and Breeding Ideas Generated During the Classroom Dialogue (a) Factors Affecting Grinding Efficiency with “Grindstone” as Central Keyword and (b) Factors Affecting Refining Efficiency with “RMP” as Central Keyword.

Table A1: Criteria of Talk

	CUMMULATIVE	DISPUTATIONAL	EXPLORATORY
ENGAGEMENT	Do-not-challenge: no exploration of reasoning	Defeating	Critical: explicit reasoning
STANCE	Accept preference of the majority	Fixed;	Flexibilised by the dialogic space
INTENTION	Group Harmony	Narrow; self-image	For the best of functionality
OPENNESS	Suppression of truth is regarded as necessity	Self interest	Reciprocal: Learn from each other
RELATIONSHIP	Uphold sense of belonging to the group.	Non-mutual	Shared; long-term benefit
BENEFIT	Short-term	None	Long-term

Having fulfilled the criteria of communication outlined by Wegerif (2013), the interactivity of the classroom is thus classifiable as Exploratory Talk.

PENDEKATAN SOSIOBUDAYA VYGOTSKY DALAM PENDIDIKAN AWAL KANAK-KANAK

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Abstrak: Artikel tinjauan sistematik ini memberi tumpuan kepada pendekatan Sosiobudaya Vygotsky dalam konteks pendidikan awal kanak-kanak yang menumpukan kepada pengajaran pembelajaran dan perkembangan yang dapat dicapai melalui persekitaran sosiobudaya pelajar. Artikel ini dibina dengan melakukan kajian-kajian lepas atau sorotan literatur bagi mendapatkan maklumat berkaitan pendekatan sosiobudaya Vygotsky yang merujuk terhadap aspek pengajaran pembelajaran dan perkembangan pelajar. Sementara itu, kaedah pelaporan artikel ini menggunakan item pelaporan pilihan untuk kajian sistematik dan Meta-Analisis (PRISMA) atau Systematic Literature Review (SLR) article yang diadaptasi untuk kajian semula penyelidikan semasa di samping menggunakan dua pangkalan data utama iaitu Scopus dan Web of Science. Oleh itu, usaha pencarian ini telah menghasilkan sejumlah 26 artikel yang telah ditapis dan dianalisis secara sistematik dan kemudian tinjauan berjaya merumuskan enam tema utama yang terkandung dalam pendekatan sosiobudaya Vygotsky iaitu, tema Sosial, tema Bahasa, tema Proses, tema Pembelajaran bermakna, tema Pembina-pengetahuan, dan Artifak. Secara keseluruhan, analisis lebih lanjut mengenai enam tema telah menghasilkan lima sub-tema. Penemuan kajian ini telah merungkai lebih mendalam tentang sosiobudaya daripada perspektif Vygotsky sebagai asas kepada perkembangan kanak-kanak.

Kata kunci: Sosiobudaya Vygotsky, PRISMA, sosial, bahasa, proses, bermakna, pembina, pendekatan.

Pengenalan

Bagi memahami bagaimana pandangan Vygotsky, (1978) dalam pendidikan awal kanak-kanak, ia dapat ditelusuri menerusi perspektif falsafah dan perkembangan budaya-sejarah atau *culture-historical*. Pendekatan Vygotsky adalah sebagai pendekatan Budaya-Sejarah yang mempunyai definisi tersendiri dan sangat spesifik tentang apa yang dimaksudkan dengan istilah budaya dan sejarah. Istilah sejarah dalam pendekatan ini merujuk tentang proses psikologi yang unik bagi manusia serta aliran perkembangan proses sejarah tersebut. Vygotsky, (1987) menyatakan bahawa budaya-sejarah mempunyai hubung kait mengenai alat "minda" atau *tools of minds* yang lebih tinggi, dan fungsi minda. Definisi budaya dalam pendekatan budaya-sejarah Vygotskian memberi tumpuan terhadap satu komponen budaya yang merangkumi pelbagai tanda dan simbol yang sebenarnya berfungsi sebagai alat budaya. Kemudian peranannya dalam perkembangan proses mental manusia yang unik yang dikenali sebagai fungsi mental yang lebih tinggi (Vygotsky, 1997). Sehubungan itu, pendekatan budaya-sejarah ini telah terbina melalui konteks pembelajaran dan perkembangan sosiobudaya yang melihat bagaimana alat budaya dan amalan budaya khusus yang digunakan untuk mengajar dan mempelajarinya mampu mempengaruhi perkembangan fungsi mental yang lebih tinggi dalam diri individu dan kumpulan tertentu.

Selain itu, pemahaman tentang alat budaya harus dilihat terlebih dahulu tentang konsep alat dari sudut pandang Vygotsky, yang mana kepercayaan Vygotskian adalah manusia menggunakan alat, membuat alat baru, dan mengajar orang lain cara menggunakannya (Vygotsky, 1978; Jaipaul & James, 2013). Oleh itu, Vygotskian membahagikan proses mental

kepada fungsi minda yang lebih rendah dan fungsi minda yang lebih tinggi. Fungsi ini semula jadi dan bergantung terutamanya pada kematangan untuk berkembang. Hal ini kerana, Natalie, (2016) menyatakan apabila kanak-kanak mencapai tempoh matang dalam pembelajaran sekitar usia 6 tahun fungsi kognitif akan mengalami perubahan yang cerdas. Di samping itu, kanak-kanak juga berupaya mengurus maklumat dan pengetahuan yang berlaku secara berperingkat (Piaget, 1999).

Material & Metodologi

Bahagian ini menerangkan lima sub-utama, iaitu PRISMA, sumber, proses tinjauan semula sistematik [kriteria kemasukan dan pengecualian], serta analisis data.

PRISMA

PRISMA atau Item Pelaporan Pilihan untuk Ulasan Sistematik dan Meta-Analisis adalah standard yang diterbitkan untuk menjalankan sistematik tinjauan literatur. Secara amnya, standard penerbitan diperlukan untuk membimbing penulis dengan maklumat yang berkaitan dan perlu yang akan membolehkan penulis menilai dan meneliti kualiti dan ketegasan dalam skop pengkajian semula. Sebagai tambahan, PRISMA menekankan pada laporan ulasan bahawa menilai percubaan rawak yang juga dapat digunakan sebagai asas dalam melaporkan tinjauan sistematik untuk penyelidikan (Moher et al. 2009). PRISMA juga sesuai digunakan dalam bidang sains sosial yang memfokuskan bidang pendidikan awal kanak-kanak mengenai keperluan kajian semula secara sistematik, serta mengenal pasti kemasukan dan pengecualian dalam suatu skop kajian tersebut. Oleh itu, melalui PRISMA, ia membolehkan penyelidik benar-benar dapat melihat dan mengenal pasti kandungan sebenar sesuatu bidang ilmu yang berkaitan dalam pendidikan awal kanak-kanak.

Sumber

Kaedah tinjauan kajian ini dilakukan dengan menggunakan dua pangkalan data utama, iaitu *Scopus* dan *Web of Science* yang mana kedua-dua pangkalan data itu kukuh dan merangkumi lebih dari 500 bidang kajian termasuk kajian pendidikan awal kanak-kanak. Khususnya, *Scopus* mengindeks sejumlah lebih 5670 jurnal yang berkaitan dengan pendidikan awal kanak-kanak, manakala indeks *Web Sains (Social Science Citation Indexed)* bilangan 211 jurnal yang berkaitan dengan kajian pendidikan awal kanak-kanak. Walau bagaimanapun, harus diingat bahawa tidak ada pangkalan data yang sempurna atau menyeluruh termasuk *Scopus* dan *Web of Science*.

Sehubungan itu, (Younger (2010); Hayrol et al, 2018) mencadangkan agar penyelidik menjalankan proses pencarian mereka menggunakan lebih banyak pangkalan data untuk meningkatkan kemungkinan mendapatkan artikel yang berkaitan. Oleh itu, kajian ini dilakukan usaha pencarian manual pada beberapa sumber yang mampan seperti *Science Direct*, *Taylor Francis*, *Aosis*, dan *Springer*, dan menganalisis serta membuat pertimbangan tentang pangkalan data yang boleh dipercayai yang mengandungi jurnal yang berkaitan dengan pendidikan awal kanak-kanak. Sebagai contoh, *Taylor & Francis* telah menerbitkan lebih daripada 5 juta artikel, ini termasuklah bidang pendidikan awal kanak-kanak, perkembangan awal kanak-kanak, dan banyak lagi disiplin ilmu berkaitan. Sementara *Science Direct* menerbitkan lebih 890 judul penerbitan yang berkaitan kepada kajian pendidikan awal kanak-kanak.

***Systematic Review process and Meta- Analysis [PRISMA]
[Kemasukan dan Pengecualian]***

Pengenalan

Proses tinjauan sistematik kajian ini terdiri daripada tiga peringkat utama. Peringkat pertama adalah pengenalan kata kunci, diikuti dengan proses mencari istilah yang berkaitan dan serupa berdasarkan tesaurus, kamus, ensiklopedia, dan penyelidikan masa lalu. Oleh itu, rentetan carian di pangkalan data *Scopus* dan *Web of Science* adalah dibangunkan pada bulan Mei 2020 setelah semua berkaitan kata kunci berjaya ditentukan. Perkara paling penting, adalah penyelidikan semasa berjaya mendapatkan sejumlah 91 artikel dari kedua-dua pangkalan data. Seperti yang dinyatakan sebelum ini, pencarian berdasarkan manual pada kata kunci serupa dilakukan pada pangkalan data lain yang menghasilkan sejumlah 1 artikel tambahan. Secara keseluruhan, 29 artikel diambil pada peringkat pertama proses tinjauan sistematik.

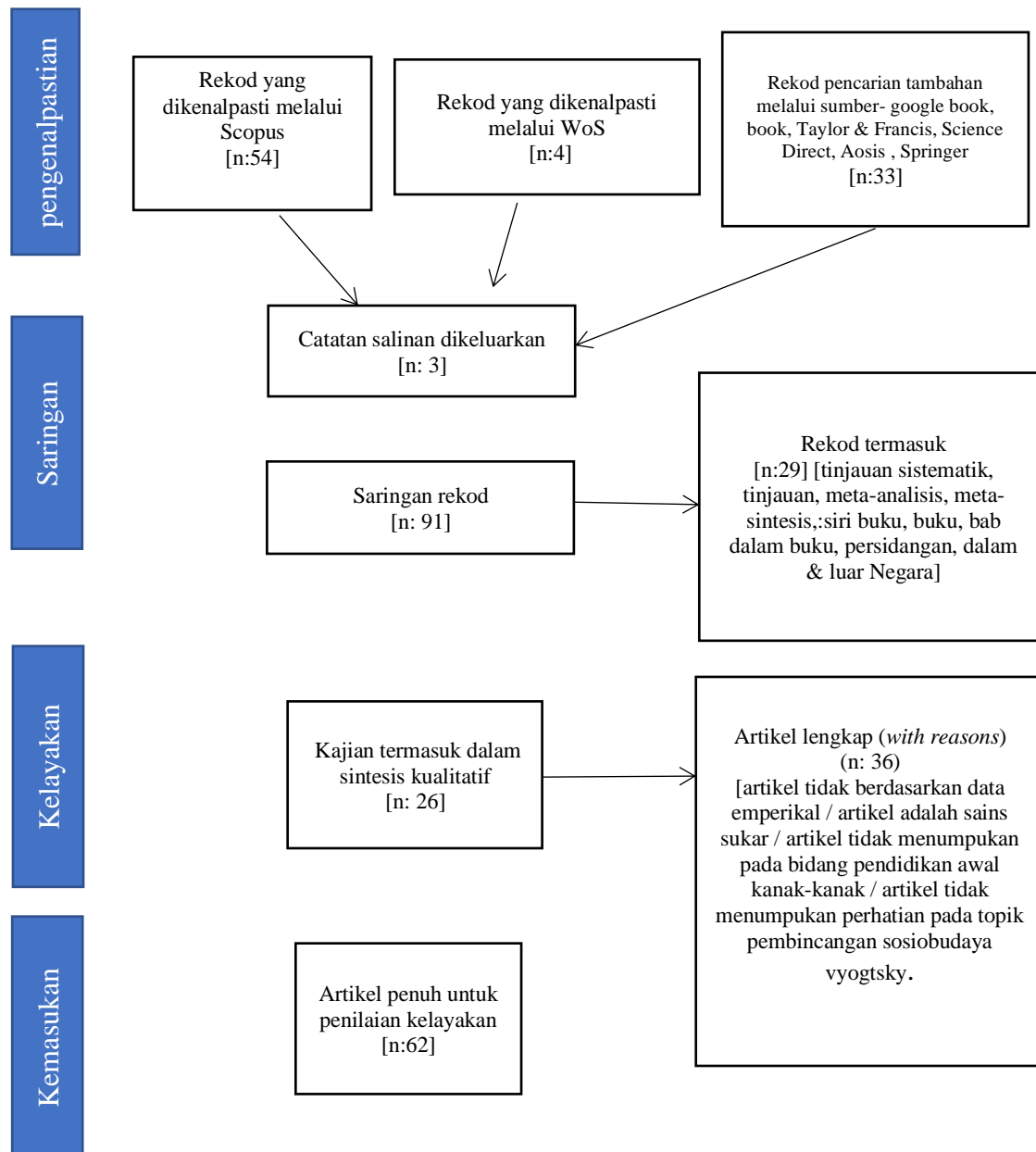
Pemeriksaan

Penyaringan peringkat pertama ini adalah untuk mengasingkan dan membuang salinan yang sama dengan artikel yang telah dijumpai. Dalam kes ini, sebanyak tiga artikel dikecualikan semasa peringkat pertama, sementara 91 artikel disaring berdasarkan beberapa kriteria kemasukan dan pengecualian yang akan ditentukan dalam pengkajian semula pada peringkat kedua. Kriteria pertama adalah jenis literatur yang mana pengkaji memutuskan untuk fokus hanya kepada jurnal (artikel penyelidikan), hal ini supaya ianya bertindak sebagai sumber utama yang menawarkan data empirikal. Maka itu, ini menunjukkan bahawa segala penerbitan didalam bentuk tinjauan sistematik, tinjauan, meta-analisis, meta-sintesis, siri buku, buku, bab dalam buku, dan proses persidangan dikecualikan dalam penyelidikan semasa.

Perkara ini penting kerana sesuatu rujukan akan menentukan ciri kerelevannya sebagai suatu ilmu yang baharu diterokai dan dihasilkan. Oleh itu, tempoh 5 tahun dipilih bagi jangka masa artikel semasa Zamri, (2017) Kajian. Di samping itu, perlu diberi perhatian bahawa tinjauan ini tertumpu pada artikel yang diterbitkan dalam bahasa Inggeris dan bahasa melayu. Hal ini kerana, selaras dengan pendidikan awal kanak-kanak yang kian mengembang di luar dan dalam negara apatah lagi teori Vygotsky sudah selari dan terkenal dalam bidang pendidikan awal kanak-kanak, maka wajarlah kiranya tinjauan sistematik ini diterokai secara meluas. Yang paling penting, adalah artikel yang diterbitkan dalam jurnal bidang sains sosial, pendidikan dan pendidikan awal kanak-kanak serta lain-lain jurnal semasa dipilih untuk meningkatkan kemungkinan pengambilan artikel yang berkaitan. Secara keseluruhan, sejumlah 29 artikel dikecualikan berdasarkan kriteria ini yang telah dinyatakan.

Kelayakan

Pada peringkat ketiga, sebanyak 62 artikel disiapkan untuk peringkat kelayakan. Dalam peringkat ini, perkara penting yang perlu dinilai merangkumi penulisan yang menepati kajian, ini termasuklah kesesuaian, tajuk, abstrak, dan isi utama dan semua artikel ini dikaji secara menyeluruh untuk memastikan bahawa ianya memenuhi kriteria kemasukan dan sesuai untuk digunakan dalam kajian ini untuk mencapai objektif kajian semasa. Oleh itu, sebanyak 36 artikel adalah dikecualikan kerana tidak berdasarkan data empirikal dan dianggap sebagai artikel sains sukar yang tidak menumpukan perhatian kepada pendekatan sosiobudaya Vygotsky dalam pengajaran pembelajaran bilik darjah. Akhirnya, sejumlah 26 artikel dipilih dan dianalisis (lihat Rajah).



Rajah 1: Diagram kajian (diadaptasi dari Moher et al., 2009).

Pengabstrakan Dan Analisis Data

Pada bahagian ini, pengkaji melakukan tinjauan intergratif iaitu proses tinjauan teknik menganalisis dan mensintesis. Tinjauan ini menyelidik pelbagai reka bentuk penyelidikan sama ada kaedah kuantitatif, kualitatif atau kaedah campuran. Kajian ini dijalankan bagi memenuhi syarat semua bentuk data telah dipilih dan analisis. Sehubungan itu, analisis tematik telah digunakan bagi proses menghasilkan dan mengembangkan tema dan sub-tema. Dalam analisis tematik, terdapat empat fasa yang dibina oleh pengkaji dalam menghasilkan dan mengembangkan tema dan sub-tema. Fasa pertama adalah sebanyak 26 artikel terpilih dan dinilai dengan penuh ketelitian, mencari kesesuaian, kerelevanan, perkaitan, serta isi penulisan yang benar-benar relevan dan akhirnya menjawab topik kajian. Fasa kedua adalah pengkaji mencipta kumpulan bermakna melalui kaedah pengkodan data yang boleh digunakan melalui pengenalpastian tema, konsep dan idea untuk data yang lebih berkaitan (Sandelowski, 1995;

Patton, 2015). Fasa ketiga adalah proses-proses tersebut telah menghasilkan sejumlah enam tema utama iaitu sosial, bahasa, proses, pembelajaran bermakna, pembina-pengetahuan, dan artifak. Fasa keempat adalah pengkaji melakukan proses setiap ciri tema, konsep, dan idea mempunyai kaitan antara satu sama lain di dalam tema tersebut dan kemudian diperkembangkan dalam bentuk sub-tema. Dengan proses yang telah dilaksanakan ini, maka terhasil lima sub-tema.

Dapatan

Penemuan Umum Dan Latar Belakang Kajian Semula.

Analisis telah menghasilkan lima tema dan 6 sub-tema berkaitan dengan pendekatan sosiobudaya Vygotsky. Seperti yang ditunjukkan dalam jadual 3, enam tema adalah melibatkan aspek Sosial [tiga sub-tema], Bahasa [dua sub-tema], Proses, Pembelajaran Bermakna, Pembina-Pengetahuan, dan Artifak [satu sub-tema]. Artikel yang telah dipilih iaitu sejumlah 26 artikel menumpukan kepada pendidikan awal kanak-kanak luar dan dalam negara (Sonja et al, 2020; Im & Choi, 2020; Tammy, 2020; Nagisa, 2020), lima kajian pendidikan prasekolah pada tahun 2019 (Zora, 2019; Mary, 2019; Eric, 2019; Siew & Mariani, 2019; dan Abdul et al, 2019). Enam artikel pada tahun 2017 (Lasttika & Kangas, 2017; Yu, 2017; Ulil, 2017; Soenju, 2017; Jasper et al, 2017; dan Ching & Nirmala, 2017). Pada tahun 2016 sebanyak tujuh artikel yang ditemukan iaitu (Karim, 2016; Natalie, 2016; Yu, 2016; Susan, 2016; Dongju, 2016; Yonghee et al, 2016; dan Su et al, 2016). Akhir sekali, sebanyak empat artikel 2015 telah ditemukan iaitu (Carol & Vukelich, 2015; Carol Murhphy, 2015; Jenny & Brenda, 2015; dan Johanna & Christiane, 2015).

Penemuan utama

Bahagian ini membincangkan enam tema utama iaitu Sosial, Bahasa, Proses, Pembelajaran bermakna, Pembina-pengetahuan, dan Artifak bersama dengan 5 sub-tema. [lihat gambar lampiran]

Sosial

Aktiviti yang diwujudkan oleh guru mestilah bercirikan sosial pelajar di mana pelajar tidak berseorangan dalam menyelesaikan pembelajaran akan tetapi diadakan secara berkolaboratif atau kumpulan. Dalam sosialisasi juga, pelajar dapat membiasakan diri bergaul dengan rakan sekelas, saling bekerjasama menyiapkan tugas, atau menyelesaikan satu aktiviti pembelajaran secara kumpulan. Berpandukan ciri sosial Vygotsky, kanak-kanak mendapat banyak manfaat kerana ciri sosial yang telah diketengahkan oleh Vygotskian ini bukan semata-mata ciri sosial biasa tanpa makna lain, akan tetapi sosial yang bercirikan pembelajaran. Hal ini terbukti misalnya dengan aktiviti simulasi yang bercirikan sosial situasi seperti simulasi jual beli, pembuatan kek dan banyak lagi yang mencerminkan budaya dari perspektif sejarah Vygotsky. Selain itu, kanak-kanak juga didedahkan kepada aspek sosial yang positif, bermakna, dan memberi pengalaman kepada kanak-kanak khususnya. Dengan sosial yang telah diterangkan ini, perkembangan sosial kanak-kanak akan terus meningkat setiap kali aktiviti bercorakkan teori Sosiobudaya Vygotsky dilaksanakan sekaligus kanak-kanak berani berada dalam situasi tempat umum, dapat menghilangkan rasa takut dan mengelakkan pengasingan diri dalam aktiviti kelas mahu pun luar persekolahan. Oleh itu, antara sub-tema yang berkaitan dengan aspek sosial Sosiobudaya Vygotsky melibatkan tiga aspek penting iaitu perkembangan emosi, perkembangan sendiri, dan aspek persekitaran.

Perkembangan emosi

Emosi kanak-kanak prasekolah masih dibawah tahap belum mencapai kematangan kerana pada usia mereka, kanak-kanak belum berkemampuan dalam mengendalikan dan mengurus emosi sendiri. Di prasekolah gurulah yang bertanggungjawab memainkan peranan menyampaikan pelbagai ciri emosi kepada kanak-kanak pada setiap kali sesi pembelajaran diadakan. Emosi kanak-kanak tidak boleh dipandang ringan oleh guru, kerana ianya menimbulkan kesukaran guru dalam penyampaian ilmu pengetahuan kepada mereka. Oleh itu, memetik petikan Yonghee et al, (2015) menyatakan kanak-kanak hendaklah didedahkan dengan pembelajaran yang bercirikan keseronokan, keterujaan, menyukai pembelajaran yang telah diberikan dan merasa tenang, serta selesa ketika kanak-kanak ini menjalani pembelajaran mereka. Dengan ciri emosi positif tersebut kanak-kanak dapat mengikut aktiviti pembelajaran dengan baik dan penyerapan maklumat ke minda berlaku dengan lancar. Psikologi menjelaskan bahawa belajar dalam keadaan menggembirakan dapat membentuk dan memanam emosi positif dalam diri kanak-kanak.

Aspek persekitaran

Penyampaian menumpukan terhadap aktiviti yang memerlukan keluasan persekitaran khas untuk melakukan sebarang aktiviti seperti berkumpulan. Setiap aktiviti pembelajaran budaya yang dikendalikan kanak-kanak mempunyai ruang persekitaran khas, luas dan tersedia. Misalnya, aktiviti melukis yang menggambarkan persekitaran atau bilik khas untuk melukis, aktiviti membuat kek yang berada di persekitaran dapur, aktiviti menyelesaikan masalah secara kolaboratif di mana persekitaran beraktiviti harus ada dan disediakan. Tujuan sebenarnya mengapa persekitaran ini penting adalah supaya dapat menyokong kognitif, sosial, keramahan, interaksi, dan penerokaan lebih mendalam terhadap aktiviti yang kanak-kanak sedang selesaikan tanpa ada sebarang gangguan ruang persekitaran yang sempit, pelanggaran perabot atau berselisih dengan tubuh badan kanak-kanak dan akhirnya mereka tidak dapat memfokuskan sepenuh perhatian terhadap penerokaan aktiviti tersebut (Dongju, 2015). Bagi persekitaran luar, kanak-kanak harus dilepaskan, dibebaskan dan dibiarkan meneroka aktiviti permainan tanpa ada arahan yang ketat daripada guru. Waktu perlu diberikan kepada mereka untuk meneroka agar kanak-kanak dapat bergembira dengan permainan mereka sendiri, tingkah laku yang bersatu secara bersosial, merasai nikmat bermain dengan menunjukkan pelbagai aspek emosi, sekaligus meningkatkan perkembangan fizikal kanak-kanak.

Perkembangan sendiri

Menerusi aktiviti yang disertai, kanak-kanak belajar tentang erti kerjasama, saling bertolak ansur dan paling penting mencapai keyakinan diri melakukan aktiviti bersama rakan. Hal ini menunjukkan kanak-kanak dapat membuang perasaan rasa rendah diri, kurang yakin, tidak percaya diri dan pelbagai lagi persepsi negatif apabila bergaul dengan rakan sekelas. Bila mana perkembangan sendiri kanak-kanak ini menunjukkan arah yang positif, tingkah laku kanak-kanak itu sendiri akan menunjukkan keinginan untuk melibatkan diri dalam aktiviti (Yonghee et al, 2016).

Bahasa

Dalam teori Sosiobudaya Vygotsky (1978), aspek bahasa telah ditekankan berulang kali kerana bahasa merupakan alat minda dan alat budaya yang tercipta sepertimana yang telah diperjelaskan dalam aliran sejarah kemunculan sosiobudaya manusia. Vygotsky berpandangan bahawa sesuatu aktiviti mental manusia difahami, diketahui dan dikeluarkan daripada minda melalui pengantaraan iaitu bahasa. Dalam sejarah manusia, pelbagai bahasa telah tercipta dan

kemudian bahasa ini telah diperkembangkan dari generasi ke generasi secara turun-menurun sehingga kini. Oleh itu, sub-tema bagi aspek bahasa adalah Literasi awal dan Komunikasi, dan kemudian diperkembangkan menerusi [*Private speech, Drawing speech, Written speech*], menjadi tonggak kepada bahasa budaya Vygotskian.

Literasi awal & Komunikasi

Menurut Vygotsky, (1978) bermula daripada literasi awal kanak-kanak sehinggalah berkembang menjadi suatu ciri interaksi yang sebenarnya merupakan ciri budaya. Literasi awal penting untuk perkembangan kanak-kanak kerana melalui literasilah kanak-kanak mampu berinteraksi (Siew & Mariani, 2019). Vygotskian menerangkan bahawa kemahiran literasi awal merupakan asas kejayaan kanak-kanak memperoleh dua jenis kemahiran iaitu kemahiran berkaitan dengan makna dan kemahiran berkaitan dengan kod. Bagi kemahiran berkaitan dengan makna ia merangkumi aspek bahasa dan konsep pengetahuan, perbendaharaan kata, dan kebolehan memahami tulisan teks. Manakala kemahiran berkaitan kod adalah suatu ciri pemahaman bahawa kata-kata yang diucapkan daripada unsur pertuturan yang lebih kecil (fonologi dan kesedaran fonemik) memahami bahawa perkataan terdiri daripada huruf yang mewakili bunyi pertuturan (prinsip abjad) dan memahami perkataan kosa kata yang celik (bentuk perkataan -suku kata) dan bagaimana pita ucapan mencetak (kesedaran) (Carol, 2015). Maka itu, ia sangat bertepatan dengan pandangan Vygotsky (1978) bahawa kemampuan mental manusia wujud dalam konteks interaksi (inter psikologi) yang menumpukan terhadap interaksi sosial. Penyelidikan pendidikan awal kanak-kanak (Berthelsen et al., 2009; Rogoff, 2003) telah menyatakan bahawa kanak-kanak adalah setara dengan orang dewasa melalui hubungan interaksi mereka. Dengan itu, kanak-kanak turut dianggap penting dalam berinteraksi kerana ketika mereka sedang berinteraksi kanak-kanak sebenarnya sedang mempelajari aspek perbendaharaan kata, tatabahasa, dan kosa kata.

Dalam konteks Sosibudaya Vygotsky (1978), pembelajaran menggunakan alat budaya tidak tercapai sekiranya interaksi terhadap alat budaya tidak ada. Maka, interaksi itu amat penting dalam konteks sosiobudaya Vygotsky. Dalam hal ini, interaksi itu wujud dalam istilah berdialog dengan guru, pelajar lain, mahu pun alat budaya itu sendiri. Dalam aktiviti berkumpulan, kanak-kanak sudah semestinya akan mewujudkan satu interaksi bertujuan menyelesaikan tugas yang diberi. Bagi menjayakan aktiviti tersebut, pastinya kanak-kanak bukan sahaja saling berinteraksi antara satu dan yang lain, malah mereka juga berinteraksi dengan alat budaya tersebut yang bercirikan penerokaan tugas aktiviti. Seperti (Im et al, 2020) menyatakan didalam ciri interaksi kanak-kanak, mereka saling berdialog untuk menyelesaikan tugas yang diberi. Dengan adanya interaksi sedemikian, tugas yang diberi itu dapat diselesaikan. Maka inilah yang dimaksudkan interaksi sosiobudaya Vygotsky.

Kemahiran komunikasi kanak-kanak tidak dapat dicapai sekiranya guru kurang mendedahkan kanak-kanak terhadap interaksi ketika di prasekolah. Dalam hal ini, bagi meningkatkan kemahiran komunikasi kanak-kanak, guru harus bijak mengelola dan mengendalikan pengajaran pembelajaran bilik darjah. Sebarang aktiviti yang dirancang dan dilaksanakan harus memenuhi selengkapnya aspek perkembangan kanak-kanak. Sehubungan dengan itu, semua aktiviti harus menekankan kemahiran dan kualiti yang penting bagi kanak-kanak, agar mereka terus belajar dan berkembang, aktif, reflektif, dan akhirnya mendapat kemahiran berkomunikasi dengan orang lain (Sonja et al, 2020). Apabila kanak-kanak sudah mahir dalam berkomunikasi, mereka boleh memandu sendiri aktiviti mereka, menjayakan tugas secara kolaboratif serta berkebolehan menggunakan pelbagai corak komunikasi seperti mahir bercerita.

Private speech

Menurut Vygotsky, pada tahun-tahun prasekolah kanak-kanak mula menggunakan ucapan mereka bukan hanya untuk berkomunikasi dengan orang lain tetapi juga untuk berkomunikasi dengan diri mereka sendiri dalam bentuk ucapan baru dan peribadi atau “*private speech*” yang muncul (Vygotsky, 1987). *Private speech* adalah permulaan ucapan peribadi yang menandakan perkembangan penting dalam pengaturan diri. Hal ini dijelaskan lagi oleh (Bodrova et al., 2011; Jaipaul & James, 2013) yang mana bermula dengan mengatur tindakan praktikal mereka, anak-anak memperluas penggunaan ucapan peribadi mereka untuk menggunakannya untuk mengatur pelbagai proses mental mereka dan kemudian digunakan untuk tindakan kanak-kanak dengan cara “arahan diri”, dan mengubah fungsinya terhadap tingkah laku mereka. Justeru, bermula daripada ucapan biasa, berubah kepada ucapan ringkas dan kata tunggal untuk komunikasi diri sendiri. Kemudian ucapan peribadi berubah menjadi pemikiran lisan atau dalam makna lain ialah pengambilalihan alat-alat kebudayaan.

Drawing Speech

Bagi alat budaya *drawing speech* kanak-kanak akan belajar fungsi instrumental bagi ucapan menulis untuk mengembangkan kemampuan mental mereka. Ciri lukisan yang dihasilkan oleh kanak-kanak dalam *drawing speech* ini lebih kepada bahan ucapan grafik yang unik, cerita grafik tentang dan lebih banyak ucapan. Dengan itu, *drawing speech* membolehkan kanak-kanak belajar menggunakan tanda simbol untuk mewakili mesej.

Written Speech

Sementara *Written speech* perkembangan bahasa tulisan bermula daripada perkembangan budaya, dan penguasaan persekitaran. Mengikuti aliran tersebut, kanak-kanak akan membina fungsi instrumental melalui awal menulis yang mampu mengembangkan kapasiti mental mereka dengan cara menggunakan simbol bertulis sebagai alat bantu ingatan. Bertepatan dengan petikan (Luria, 1998) menunjukkan bahawa kanak-kanak dalam usia tiga tahun lebih gemar menggunakan simbol bertulis sebagai alat ingatan. Penemuan Luria menjelaskan kemampuan anak-anak pada usia tiga tahun dilihat melakukan ulangan sebutan dalam setiap apa yang ditulis di atas kertas [misalnya "membaca" dan "membaca semula" coretan mereka]. Selain itu, Vygotsky, (1978) turut menjelaskan bahawa tulisan akar kanak-kanak pada lukisan menyimpulkan bahawa terdapat fungsi yang sama dengan perkataan bertulis yang menyampaikan ciri dan objek penting. Pemindahan ini bersifat *idiosyncratic* iaitu ucapan lukisan dengan cara konvensional untuk merakamkan ucapan dengan perkataan bertulis. Vygotsky berpendapat, akar tulisan anak-anak ke lukisan awal mereka, menyimpulkan bahawa gambar-gambar ini digunakan dalam fungsi yang serupa dengan kata-kata tertulis, yang hanya menyampaikan ciri-ciri penting dan tetap objek.

Dari itu Vygotsky menyimpulkan bahawa gambar anak-anak kecil adalah "ucapan grafik yang unik, cerita grafik mengenai sesuatu serta lebih banyak ucapan daripada perwakilan (Vygotsky, 1997). Hal ini bermaksud, belajar menulis tidak bermula dari belajar membentuk huruf tetapi bermula dari belajar menggunakan tanda simbolik untuk mewakili mesej. Pembelajaran huruf membekalkan komponen terakhir untuk memindahkan kanak-kanak dari bentuk pertuturan ke arah konvensional untuk merakam ucapan dalam perkataan bertulis. Sesuai dengan kepercayaannya bahawa pengajaran yang baik harus memimpin perkembangan dan tidak mengikutinya. Oleh itu, Vygotsky menyimpulkan bahawa nilai belajar menulis lebih awal, bukan dalam konteks mempersiapkan anak-anak untuk sekolah formal, tetapi dalam konteks yang lebih luas menggunakan alat budaya untuk menyokong pembangunan fungsi mental yang lebih tinggi (Lastikka, 2017; Mariani & Siew, 2019; Zora, 2019).

Proses

Dalam teori pembelajaran Sosiobudaya Vygotsky, ciri pembelajaran ini tidak melibatkan produk tetapi melibatkan proses sebagai cara mendapatkan pengetahuan. Dalam erti kata lain, alat budaya dikenali sebagai alat minda dan perkembangan kanak-kanak adalah berlandaskan alat budaya tersebut. Oleh itu, didalam pendekatan Vygotsky, pelbagai alat minda telah diketengahkan termasuklah penggunaan *props, make believe play, writing* dan banyak lagi. Memetik petikan Karim, (2016) menyatakan bahawa pembinaan pengetahuan dalam konteks Sosiobudaya Vygotsky adalah menerusi proses mediasi yang melibatkan alat dan artifak fizikal. Selain itu, fokus utama yang perlu diperhatikan di sini adalah ciri sosial itu merupakan pembelajaran utama kanak-kanak di mana Vygotsky (1978) menjelaskan bahawa Sosiobudaya adalah suatu proses pembelajaran kanak-kanak kerana mereka terlibat dalam aktiviti sosial tersebut (Lastikka, 2017; Yu, 2017; Nagisa, 2020).

Pembelajaran Bermakna

Vygotsky (1978) berpendapat bahawa pembelajaran kanak-kanak tidak berlaku secara langsung tetapi berlaku dengan adanya medium sebagai pengantara yang bersifat konkrit (Karim, 2016). Medium pembelajaran yang dimaksudkan ini ialah alat budaya yang menghubungkan antara individu dan pengetahuan. Misalnya, di persekitaran murid terdapat banyak bangunan yang tinggi, guru meminta murid melihat bangunan tersebut dan mengaitkannya dengan konsep matematik iaitu ukuran panjang. Selepas itu, guru meminta murid mengeluarkan pembaris dan bersama-sama cuba mengukur ukuran panjang pembaris tersebut. Menerusi contoh pembelajaran yang diberikan, sudah pasti alat budaya yang digunakan ialah pembaris sebagai alat minda kepada murid (Johanna & Christiane, 2015). Sehubungan dengan itu, pendekatan Sosiobudaya ini bukanlah semata-mata tidak bernilai dalam diri kanak-kanak tetapi sebenarnya kanak-kanak telah didedahkan dari awal usia mereka tentang pengalaman pembelajaran yang lebih bermakna di peringkat prasekolah lagi.

Pembina-Pengetahuan

Vygotsky, (1896) memperkenalkan Zon Perkembangan Proksimal atau ZPD yang melihat pelajar sebagai pembina pengetahuan, bukannya sebagai penerima pengetahuan. Dalam ZPD Vygotsky menjelaskan bahawa kerumitan hubungan antara pembelajaran dan perkembangan serta peralihan yang dinamik membentuk proses mental yang boleh dikongsi dengan individu lain. Vygotsky menggunakan ZPD kerana beliau memahami bahawa perkembangan kanak-kanak bukan merupakan titik dalam skala tetapi merupakan kelanjutan dari kemahiran dan kecekapan pada tahap penguasaan yang berbeza. Kemahiran dan kecekapan ini tidak menentukan tahap perkembangan kanak-kanak tetapi potensi pembelajarannya. Tanpa bimbingan atau kerjasama individu yang lebih kompetensi atau berkemahiran, proses pembelajaran itu tidak terlaksana melainkan pelajar sebagai pembina pengetahuannya sendiri.

Artifak

Medium konsep Vygotskian mencadangkan bahawa hubungan berlaku dengan dengan dunia tidak berlaku secara langsung "*direct*" tetapi berlaku dengan wujudnya medium pengantaraan menerusi fizikal dan alat simbolik. Sebagaimana alat minda atau "*tools of mind*" Vygotskian yang tergolong dalam alat simbolik yang dilakukan dengan kudrat fizikal manusia. Menurut Lantolf, (2004) konsep pengantaraan menunjukkan bahawa hubungan sesama manusia dengan dunia tidak berlaku secara langsung tetapi "*dimediasi*" dengan alat minda dan simbolik. Memetik petikan Lantolf, (2001) mengungkap intipati perantaraan dalam perkembangan manusia iaitu konsep utama teori Sosibudaya adalah ketekalan aktiviti mental manusia yang

dimediasi. Perantara ini mempunyai peranan dan fungsi atau lebih tepat lagi alat budaya tersebut mempunyai ciri perkembangan yang menyeluruh kerana kanak-kanak itu sendiri yang bertanggungjawab memahami pembelajaran. Maka, melalui peranan tersebut kanak-kanak telah mempromosikan hubungan sosial dan interpersonal (Richard & Rodger, 2001; Su et al, 2016).

Manusia tidak bertindak secara langsung dalam dunia fizikal tetapi, sebaliknya, bergantung pada alat dan aktiviti, alat simbolik atau tanda, untuk dijadikan pentaraan dan mengatur hubungan individu dengan individu lain (Vygotsky, 1978). Maka, Fizikal dan alat simbolik adalah artifak yang diciptakan oleh budaya manusia dari masa ke semasa dan disediakan pada generasi hadapan (Vygotsky, 1978). Seperti alat fizikal manusia yang menggunakan artifak simbolik untuk membina hubungan tidak langsung atau pentaraan manusia dan dunia (Karim, 2016). Dengan itu, memetik petikan daripada Lastikka, (2017) di mana penggunaan alat minda ini memberi peluang kepada kanak-kanak dalam melibatkan diri secara aktif supaya mereka berpeluang merasai pengalaman yang berharga sekaligus meningkatkan daya imaginasi kanak-kanak. Antara ciri alat budaya Vygotsky ialah merangkumi *play, make believe play, private speech, written speech, drawing speech, play classroom, center planning wheel*.

Perbincangan

Dalam bahagian ini, penulis menerangkan pendekatan Sosiobudaya Vygotsky yang mendasari makalah ini secara keseluruhan. Tumpuan perbincangan ini mengandungi penjelasan yang lebih mendalam atau “*in-depth exploring*” yang merangkumi tema dan sub-tema yang telah disenaraikan dan keseluruhan intipati pendekatan Sosiobudaya Vygotsky. Oleh itu, Tiga idea penting pembentukan asas Sosiobudaya Vygotsky ialah (a) Penekanan pada perkembangan atau analisis genetik sebagai kaedah untuk memahami aspek tertentu dan fungsi mental, (b) tuntutan bahawa fungsi mental individu mempunyai asal-usul sosial, (c) penekanan terhadap sifat tindakan manusia yang dimediasi (Wertsch, 1991). Justeru, Vygotsky (1998) telah memperkenalkan teori perkembangan mental atau minda yang paling kuat sehingga kini. Teori perkembangan mental ini dapat diterokai dalam konteks Sosiobudaya Vygotsky dengan memahami konsep bahawa pengetahuan dan pembelajaran adalah mendalam. Maka, bagi memperincikan lagi aspek perbincangan ini agar ianya mudah difahami adalah dengan menerangkan tentang idea yang telah disenarikan dan prinsip yang mendasari Sosiobudaya Vygotsky (1978). Perkara pertama yang penting dalam teori Sosiobudaya adalah dengan menunjukkan asal-usul pembinaan pengetahuan seharusnya tidak dicari dalam fikiran tetapi dalam interaksi sosial yang dibina diantara “lebih dan kurang” pengetahuan seseorang individu (Lantolf, 2004). Misalnya individu A mahir dalam berbahasa, manakala individu B pasif. Dengan wujudnya aktiviti yang menuntut kepada aspek sosial individu A dan individu B akan mewujudkan suatu bentuk komunikasi sosial. Dalam komunikasi tersebut ia akan membentuk suatu cerita yang disusun melalui tindakan dan bahasa, misalnya komunikasi dialog yang diwujudkan kanak-kanak ketika mereka sedang beraktiviti (Natalie, 2016).

Dalam konteks Sosiobudaya Vygotskian, pembinaan pengetahuan adalah proses mediasi Sosiobudaya yang dipengaruhi oleh alat dan artifak fizikal dan psikologi (Lantolf, 2004). Walqui, (2006) turut menyatakan bahawa terdapat prinsip utama yang mendasari Sosiobudaya Vygotsky. Iaitu (a) pembelajaran mendahulukan perkembangan, (b) bahasa adalah wahana utama (alat) pemikiran, (c) mediasi adalah pusat pembelajaran, (d) interaksi sosial adalah asas pembelajaran dan perkembangan [pembelajaran adalah proses perantisan dan internalisasi di mana kemahiran dan pengetahuan diubah dari sosial menjadi kognitif], (e) Zon Perkembangan Proximal (ZPD) adalah ruang aktiviti utama di mana pembelajaran berlaku, (f)

konsep kesatuan tingkah laku dan kesedaran atau penyatuan fikiran dan interaksi sosial. Ke semua yang telah dinyatakan merupakan teori perkembangan yang didasari oleh pendekatan Sosiobudaya Vygotsky kerana ia menentukan dengan tepat apa yang membentuk perkembangan manusia. Sementara itu, Vygotsky turut membuat perbezaan yang jelas antara bentuk perkembangan biologi dan bentuk perkembangan sosiosejarah, yang mana kematangan biologi terungkap seiring dengan waktu tidak menjadi perkembangan sekiranya tidak dipupuk. Untuk memamatkan ciri biologi tersebut ia harus didedahkan kepada bentuk tingkah laku atau interaksi sosial yang baru. Maka, anggapan asas yang menyokong teori Sosiobudaya adalah aktiviti mental manusia mengalami proses mediasi di mana artifak yang dibina secara simbolik dan Sosibudaya serta bahasa memainkan peranan penting dalam kehidupan mental individu (Vygotsky, 1978/1995). Pandangan ini menjelaskan di mana pembelajaran adalah proses mediasi atau “pengantaraan” yang menuntut kepada aspek tingkah laku sosial individu dengan menumpukan terhadap bahasa sebagai medium interaksi antara kanak-kanak dan anggota masyarakat lain yang lebih berpengalaman termasuklah komunikasi keluarga, guru dan rakan sebaya.

Kemudian, bagi bidang psikologi, pandangan Vygotskian adalah memahami bagaimana aktiviti sosial dan minda manusia disusun melalui artifak dan hubungan sosial yang dibina secara budaya (Karim, 2016). Seperti yang telah diperjelaskan oleh petikan sebelumnya, dari perspektif Sosiobudaya, pembelajaran dimediasi oleh proses yang pertama kali dipengaruhi oleh pelbagai kaedah simbolik yang menumpukan sepenuhnya kepada aspek bahasa. Natalie, (2016) berpendapat bahawa medium sosial seiring dengan dialog yang mencetuskan bentuk fungsi mental manusia yang lebih tinggi. Oleh yang demikian, artifak, sosial, dan bahasa adalah saling berhubung kait dan dimediasi secara simbolik didalam Sosiobudaya dengan tujuan pembelajaran seterusnya pemerolehan maklumat pengetahuan (Lastikka, 2017). Diantara alat simbolik adalah seperti nombor dan sistem aritmetik, muzik, seni dan bahasa dan sebagainya (Vygotsky, 1978; Karim, 2016).

Pendekatan Sosiobudaya Vygotsky meneroka bukan sahaja untuk fungsi individu, akan tetapi mempunyai hubungan dengan fungsi lain. Penerokaan ini boleh dilihat dalam perkembangan situasi sosial yang mempunyai amalan sosial yang saling berkait dengan aktiviti yang berlaku didalam proses sosial tersebut. Misalnya, di persekitaran prasekolah kanak-kanak terdedah dengan aktiviti yang spesifik untuk pelajaran di kelas dan amalan pengajaran. Oleh itu, pemikiran harian mereka berdasarkan pengalaman berubah menjadi konsep yang disebut sebagai konsep “*saintifik*” atau “benar” (Nagisa, 2020). (Vygotsky, 1978; Jaipaul & James, 2013).

Menelusuri konsep Zon Perkembangan Proksimal atau “*Zone of Proximal Development*” (ZPD) Vygotsky, (1978) menyatakan bahawa ZPD mempunyai hubung kait dengan konsep model mentor. Konsep ZPD menyiratkan bahawa individu kurang berpengetahuan [iaitu pelajar] terlibat dalam perubahan perkembangan melalui interaksi dengan rakan sekelas yang lain yang boleh menjadi pembimbing kepada mereka. Selain daripada rakan sebaya, guru juga bertindak sebagai pembimbing pelajar dalam pembelajarannya dengan bertindak sebagai fasilitator. Dorongan lain yang lebih ketara bermula tahap perkembangan paling proksimal sambil memberikan bantuan yang selaras. Ohta, (2002) menyatakan peranan fasi (guru) tentang aktiviti kelas berada dalam keadaan berubah-ubah, dengan menjadi rakan sekelas atau sebaya dapat menjadi ahli pembimbing dengan menyumbang pengetahuannya sedikit demi sedikit kepada pelajar. Idea ini telah ditekankan oleh (Lantolf dan Parlenko, 1995; Karim, 2016; Lastikka, 2017; Yu, 2017) yang menyatakan bahawa “individu, tidak seorang pun yang memenuhi syarat sebagai pakar, akan tetapi ia seiring dapat bersatu dari sikap kolaboratif dan bersama-sama membina ZPD di mana

setiap orang menyumbang sesuatu dari interaksi” (Lantolf & Panvlenko, 1995; J.Eric, 2019; Zora, 2019). Umpamanya satu situasi yang dapat diperhatikan meletakkannya secara berbeza semasa aktiviti kolaboratif, kemudian pembimbing mengajar dan saling belajar antara satu sama lain. Sokongan hubungan seumpama itu lebih tepat disebut sebagai perancah atau “*Scaffold*” yang hanya berperanan sebagai pembimbing dan kemudian individu itu sendiri mengharungi dan meneroka pembelajarannya secara aktif (Vygotsky, 1978; Donato, 1988; Yu, 2017; Ching, 2017).

Selanjutnya, kualiti proses tentang apa yang dicapai oleh kanak-kanak dalam bilik darjah Vygotsky ialah aspek kualiti yang berorientasi memaparkan kepentingan keberhasilan kanak-kanak seperti aspek kualiti alat budaya yang diberikan, interaksi guru dan pelajar yang berkualiti tinggi, serta pengintegrasian tema dan kurikulum (Susan, 2016) yang menjurus terhadap penekanan pada latihan yang sesuai untuk perkembangan kanak-kanak. Sebagai tambahan, Mary, (2019) mengatakan bahawa kualiti proses juga memberi tumpuan kepada hubungan antara guru dan pelajar yang responsif, pembelajaran dan perkembangan yang aktif dan dipimpin oleh pelajar serta penglibatan keluarga dalam semua aspek pembelajaran kanak-kanak. Selain itu, pembelajaran proses ini tidak berlaku dengan mudah. Ini kerana, kanak-kanak seperti dilihat lebih tertumpu ke arah bermain dan beraktiviti. Ramai para ilmuan lain akan bertanya bagaimana struktur pembelajaran kelas Vygotsky ini berjalan? Seperti yang sudah dimaklumkan pada penulisan sebelumnya, kanak-kanak ini belajar secara ‘proses’ di mana alat budaya Vygotsky itulah yang berfungsi memberi mereka pengetahuan yang dilakukan melalui sosiobudaya. Maka, ketika kanak-kanak itu sedang bermain dengan alat budaya, minda mereka sebenarnya sedang membuat penaakulan perkembangan yang menyeluruh dan ketika inilah guru harus mempraktikkan keberhasilan atau keberkesanan taakulan tersebut (Vygotsky, 1978).

Kesimpulan

Kesimpulannya, kertas ini dibina berdasarkan anggapan dan pandangan bahawa apa yang dituntut oleh Vygotsky mengenai pembelajaran dan perkembangan pelajar berlaku dalam ruang lingkup Sosiobudaya. Pendekatan sosiobudaya ini menumpukan kepada budaya yang berfungsi sebagai alat minda sebagai faktor meningkatkan perkembangan kanak-kanak. Ciri penting yang diketengahkan dalam makalah ini adalah keunggulan teori Sosiobudaya iaitu alat minda atau “*tools of mind*” yang sememangnya bersifat secara semula jadi yang mempunyai banyak disiplin ilmu yang boleh diterokai oleh kanak-kanak tanpa disedari oleh mereka. Maka, dengan kajian *PRISMA* ini telah menjeleaskan dengan lebih terperinci bahawa perkembangan minda manusia adalah ke arah dalam konteks sosiobudaya sebenar.

Rujukan

- Abdul Halim Masnon, Nur Ellina Anthony, Nur Arifah Syahindah Zainudin. 2019. The level of teaching knowledge preschool teacher's in Malaysia. *Asia Pasific Journal of Research In Early Childhood Education*, 39-48.
- Bakhtin.M.M. 1981. *The dialogic imagination*. (M.Holquist, Ed, C. Emerson & M.Hobuist, Trans.). Austin: University: Texas Press.
- Barbara Rogoff. 2003. *The Cultural Nature of Human Development*. Oxford: Oxford University Press.
- Betty Hart, Todd R. Risley. 1995. *Meaningful Differences in the Everyday Experience of Young American Children*. Michigan: University of Michigan.

- Carol Murphy. 2015. Young children's early deductive reasoning in number: A dialogic and linguistic approach. *Asia Pasific Journal of Research In Early Childhood Education*, 2-25.
- Carol Vukelich. 2015. supporting young children's language learning through teacher's use of evidence-based intruotional strategies. *Asia Pasifik Journl of Research in Early Childhood Education* , 1-18.
- Ching Ting Tan, Nimala Rao. 2017. Hoe do children learn? Beliefs and practices reported by kindergarten teachers in Singapore. *Asia Pasific Journal of Research In Early Childhood Education*, 81-112.
- Christoper Peterson. 2006. *A Primer in Positive Psychology*. Madison Avanue New York: Oxford University Press.
- DiPardo, A.,& Potter,C. 2003. *Beyond Cognition: A Vygotskian perspective on emotionality and teacher's professional lives*. In A. Kazulin, B.Gindis, V.S.Ageyev, & S.M.Miller (Eds.), *Vygotsky's educational theory in cultural context (pp.317-346)*. Cambridge: Cambridge University Press.
- Donato, R.,. 1994. *Collective scaffolding in second language learning*. In J.P.Lantolf & G.Appel (Eds.), *Vygotskian approaches to second language research (pp.33-56)*. . Norwood: NJ:Albex.
- Donato,R.,. 1988. *Beyond group: A psycholinguistic rational for collective activity in second-language learning (Unpublished doctoral dissertation)*. Nework, DE: University of Delaware.
- Dongju Shin. 2016. Research on children outdoor play: Analysis of published Journal Articles in Korea from 2005 to 2015. *Asia Pasific Journal of Research In Early Childhood Education*, 29-46.
- Donna Berthelsen, Jo Brownlee, Eva Johansson. 2009. *Participatory Learning in the Early Years*. New York: Routledge Tylor & Francis Group.
- Eun, B. 2008. *Making connection: Grounding professional development in the development theories of Vygotsky*. *The Teacher Educator*, 43, 134-155.
- Guskey, T.R. 2000. *Evaluating professional development*. . Thousand Oaks, CA: Crowin Press.
- Howard Kirschenbaun, Valeria Land Henderson. 1989. *The Carl Rogers Reader*. Boston, New York: Houghton Mifflin Company.
- Im, Haesung, Choi, Jinkyung. 2020. Latent profiles of Korean preschool teachers three facets of pedagogical content knowledge in early mathematics. *Asia Pasific Journal of Research In Early Childhood Education*, 1-26.
- J.Eric Wilkinson, Chia-Pin Kao. 2019. Aspects of socio-emotional learning in Taiwan's pre-schools: An exploratory study of teacher's perspectives. *International Journal of Child Care and Education Policy*.
- Jack C. Richards. & Theodore S. Rodgers. 2001. *Approaches and methods in language Teaching*. Cambridge: Cambridge University Press.
- Jasper Vincent Alontaga, Sofia Irina Gomez, Lara Patricia Marano, Jeanne Paula Pajarillo. 2017. The use of music and movement activities in learning children's problem behaviors. *Asia Pasific Journal of Research In Early Childhood Education*, 39-55.
- Jean Piaget. 1999. *Play, Dreams and Imitation in children*. Great Britain: Routledge Taylor & Francis Group.
- Jenny Young-Loveridge, Brenda Bicknell. 2015. Number-fact knowledge and mathematical problem-solving of five-to seven year olds. *Asia Pasific Journal of Research In Early Childhood Education*, 27-43.

- Johanna Zollner, Christiane Benz. (2015). The role of units in the concepts of length for four-to-six-year-old children. *Asia Pasific Journal of Research In Early Childhood Education*, 67-83.
- Karim shabani. 2016. Applications of Vygotsky's Sociocultural Approach for Teacher's Professional Development. *Tylor & Francis Group Education. Cogent Education*, 3:1252177.
- Lantolf, J.P. 2001. *Sociocultural theory and SLA*. In R.B. Kaplan (Ed.), *Handbook of applied linguistics* (pp.101-119). Oxford: Oxford University Press.
- Lantolf, J. P. 2004. *Overview of sociocultural theory*. In O.S. John, K.Van Esch, & E, Schalkwijk (Eds.), *New insights in second language learning and teaching. Annual Review of Applied Linguistics*, (pp.13-34). Oxford: Oxford University Press.
- Lantolf, J. P., Pavlenko, A.1995. *Sociocultural theory and second language acquisition. Annual Review of Applied Linguistics*, (15,108-124).Oxford: Oxford University Press.
- Lastikka Anna- Leeng, Kangas Jonna. 2017. Ethical reflections of interviewing young children: Opportunities and challenges for promoting children's inclusion and participant. *Asia Pasific Journal of Research In Early Childhood Education*, 85-110.
- Mary L. Porterfield, Catherine Scott-Little. 2019. Policy levers to promote cultural competence in early childhood programs in the USA: Recommendation from system specialists. *International Journal of Child Care and Education Policy*.
- Michael Quinn Patton. 2015. *Qualitative Research & Evaluation Methods*. Oaks California: SAGE Publications Inc.
- Moher, D. Liberati, A., Tetzlaff., Altman, D,G.,The PRISMA Group. 2009. *Preferred reporting items for systematic reviews and meta-analysis: the PRISMA statement*. PLoS Med. 6 (7).
- Nagisa Nakawa. 2020. Proposing and modifying guided play on shapes in mathematics teaching and learning for zambian preschool children. *South African Journal of Childhood Education*, 2233-7674.
- Natalie Robertson. 2016. The complexity of preschool children's dramatic play behavior and play styles in Australia: A mixed methods study. *Asia Pasific Journal of Research In Early Childhood Education*, 71-92.
- Ohta, A. 2000. *Rethinking interaction in SLA: Developmentally appropriate assistance in the zone of proximal development and the acquisition of L2 grammar*. In J. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp.97-114). Oxford: Oxford University Press.
- Sandelowski. 1995. *Qualitative analysis: What is it and how to begin*. Res. Nurs, Health 18,371-375.
- Seonju Ko Soong. 2017. The impact on social relationships of shared picture book reading in early learning classrooms in South Korea: An exploratory study. *Asia Pasific Journal of Research In Early Childhood Education*, 25-43.
- Siew Kim Siew, Mariani Binti Md Nor. 2019. Supporting preschool children's early writing with self - regulated learning strategies. *Asia Pasific Journal of Research In Early Childhood Education*, 69-93.
- Sonja Sheridan, Pia Williams, Susanne Garvis. 2020. Competence to teach a point of intersection for Swedish preschool quality. *Asia Pasific Journal of Research In Early Childhood Education*, 77-98.
- Su-Jeong Wee, So Jun Kim, Kyoung Jin Kim. (2016). Children's understanding of racial diversity through role - play: A case study of kindergarten in south Korea. *Asia Pasific Journal of Research In Early Childhood Education*, 125-149.

- Susan Grieshaber . 2016. Play and policy in early childhood education in the Asia Pasific Region. *Asia Pasific Journal of Research In Early Childhood Education*, 7-28.
- Tammy Somerwill, Helen Klieve, Beryl Exley. 2020. Preschool educators' readiness to promote children's emotional competence. *Asia Pasific Journal of Research In Early Childhood Education*, 135-158.
- Uli Abshor. 2017. The project approach on environment education: An action research for children's social-emotional. *Asia Pasific Journal of Research In Early Childhood Education*, 1-20.
- Vygotsky, L. 1978/1995. *Mind in society: The development higher psychological processes.* (M.cole, V.John-Steiner, S. Sribner, & E.Souberman, Eds., and Trans.) . Cambrigde, Ma: Harvard University Press.
- Vygotsky, L.S. 1998. *Infancy.* In R.W. Reiber (Eds.,) works of L.S. Vygotsky (vol.5,pp.207-241). New York, NY: Plenum Press.
- Vygotsky,L.S. 1981. *The development of higher forms of attention in childhood.* In J.V.Wertesch (Eds.), *The concept of activity in Soviet psychology* (pp.189-240). Armonk, Ny: Sharpe.
- Vyotsky, L. S. 1987/1934. *Thinking and speech* (N.Minick, Trans.) In R.W.Rieber & A.S. Carton (Eds.,), *The Collected works of L.S. Vygotsky: Vol 1. Problem of general psychology* (pp.39-285). New York, NY: Plenum Press.
- Walqui, A. . 2006. *Scaffolding intruction for English language learners: A conceptual framework.* Cambridge: Sharpe.
- Wenger,E. 2007. *Communités of practice: A brief introduction.*
- Wertsch, J.V. 1991. *Voices of the mind: A sociacultural approach to mediated action.* Cambridge, MA: Harvard University Press.
- Yonghee Hong, Haejeon Kim, Wooyong Jeun. 2016. A study on what makes young children happy. *Asia Pasific Journal of Research In Early Childhood Education*, 47-70.
- Yonghee Hong, Younge Ra, Hyunjin Jang. 2015. A study on young children's perceptions and experiences of happiness. *Asia Pasific Journal of Research In Early Childhood Education*, 39-64.
- Yu-Ting Chen. 2016. Collaborative action research on th implementation of science thematic curriculum for young children . *Asia Pasific Journal of Research In Early Childhood Education*, 45-66.
- Yu-Ting Chen. 2017. Collaborative action research on the implementation of a preschool aesthetic tematic curriculum. *Asia Pasific Journal of Research In Early Childhood Education*, 1-23.
- Zamri Mahamood Yahya Othman. 2017. *Penulisan Akademik dalam bidang Sains Sosial.* Bangi: Universiti Kebangsaan Malaysia.
- Zora Syslova. 2019. The relation between reflection and the quality of a preschool teacher's education performance. *International Journal of Child Care and Education Policy.*

PENGGUNAAN APLIKASI ‘*VIDEO-CONFERENCE*’ DALAM PENGAJARAN DAN PEMBELAJARAN: PERSEPSI PELAJAR DIPLOMA AKAUNTASI (DAT) POLISAS

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Abstrak: Pembelajaran mudah alih atau e-pembelajaran atau m-pembelajaran semakin popular di Institusi Pengajian Tinggi (IPT) dan bukanlah satu fenomena baru. Namun semenjak Malaysia diserang Pandemik COVID-19, pembelajaran secara mudah alih ini seakan menjadi satu kewajipan pada semua IPT. Objektif kajian ini adalah untuk melihat sejauhmana aplikasi ‘Video-Conferencing’ memberi kesan kepada PdP. Pengumpulan data dijalankan melalui kaedah tinjauan menggunakan borang soal selidik ke atas 48 orang responden yang terdiri daripada pelajar semester 5 Diploma Akauntasi (DAT) Politeknik Sultan Haji Ahmad Shah, Kuantan. Kajian ini dianalisis dengan menggunakan Sistem Statistical Package for Social Science (SPSS) versi 17.0. Semua keputusan yang diperolehi di terangkan dalam bentuk jadual. Dapatan kajian menunjukkan kebanyakan responden menggunakan ‘Video-Conferencing’ dalam pembelajaran. Keputusan menunjukkan responden tiada masalah dalam penggunaan ‘Video-Conferencing’ dalam pembelajaran. Walau bagaimana pun responden tidak bersetuju bahawa pembelajaran melalui ‘Video-Conferencing’ mencapai objektif dan hasil pembelajaran kursus.

Keywords: Aplikasi, Video-Conferencing, Pengajaran dan Pembelajaran

Pengenalan

Pada Mac 2020 negara Malaysia dikejutkan dengan kes positif ‘*Coronavirus*’ atau COVID-19 yang semakin hari semakin meningkat sehingga pada 16 Mac 2020 kes kumulatif meningkat kepada 553 kes, ekoran itu Perdana Menteri Malaysia Tan Sri Muhyiddin Yasin telah mengumumkan Perintah Kawalan Pergerakan (PKP) selama 14 hari bermula 18 Mac 2020 sehingga 31 Mac 2020 yang mana ini merupakan fasa pertama (Berita Harian 16 Mac 2020). PKP ini memakan masa hampir 3 bulan sehingga memberi impak yang besar kepada semua sector termasuk sektor pendidikan. Apabila Perdana Menteri mengumumkan semua sekolah dan IPT perlu ditutup semasa pandemik COVID-19 dan pasca COVID-19 yang masih belum ada ubatnya, masyarakat sudah semestinya perlu bersedia dengan amalan pendidikan berbeza berbanding sebelum ini. Sudah pastinya pihak berwajib memikirkan pendekatan lain bagi memastikan sesi pembelajaran dapat dilaksanakan dalam tempoh PKP ini. Pendidikan tinggi adalah antara sektor yang menerima kesan signifikan daripada pandemik COVID-19. Empat aspek utama, iaitu governan dan sistem pengurusan IPT, pengajaran dan pembelajaran, penyelidikan dan inovasi serta pengantarabangsaan dan perancangan strategik sedang mengalami proses pembedahan seiring dengan impak COVID-19.

Oleh itu, satu perkara yang pasti adalah dalam amalan penjarakan fizikal, interaksi sesama manusia perlu dieratkan lagi melalui alat telekomunikasi. Secara idealnya, pembelajaran maya perlu diteruskan menggunakan pelbagai pendekatan, sama ada pembelajaran dalam talian secara bersemuka (*synchronous learning*) ataupun secara tidak bersemuka (*asynchronous learning*). *Learning tools* yang digunakan boleh disesuaikan mengikut keperluan pembelajaran; bagi mereka yang mempunyai akses internet boleh mengikuti kelas menggunakan *Microsoft Teams*, *Facebook live* atau *Google Classroom*. Interaksi juga boleh dilaksanakan melalui pelbagai aplikasi chat, yang membolehkan pelajar dan pengajar berbincang mengenai pembelajaran pada bila-bila masa. Amalan ini telah dibuktikan oleh institusi yang mengamalkan pembelajaran dalam talian sepenuhnya.

Walaupun terdapat banyak persoalan dari pelbagai pihak sama ada pengajaran dan pembelajaran secara maya khususnya tentang keberkesanan pelaksanaan PdP maya kerana factor jurang digital. Namun, Prof Madya Dr Mohd Izani Mohd Zain (2020) mengatakan bahawa kita percaya hal ini boleh kita tangani dengan baik melalui pelbagai pilihan pendekatan. Apa yang lebih penting, capaian internet perlu ditambah baik secara berterusan kerana kita tidak mahu melihat ada pihak yang gagal mendapat hak pendidikan hanya kerana masalah akses. Dan juga pendidikan tinggi di Malaysia pasca COVID-19 semakin intim dengan teknologi dan pada masa yang sama, universiti semakin mengenal erti kemanusiaan. Keseimbangan teknologi dan kemanusiaan sangat penting ketika ini. sepanjang situasi COVID-19 ini, universiti kita telah cakna dan banyak belajar. Belajar untuk berubah dan mengenal hakikat penubuhan untuk terus berkesinambungan. Perubahan dalam kesinambungan ini akan membentuk bagaimana rupa baharu pendidikan tinggi negara.

Pernyataan Masalah

Di Malaysia, kajian menunjukkan bahawa e-pembelajaran (*e-Learning*) telah meningkatkan keberkesanan dalam pendidikan atau latihan di IPT khususnya institusi yang mengamalkan pendidikan terbuka dan jarak jauh atau yang mengamalkan mod pembelajaran teradun. Ramai pelajar yang berminat mengikuti kursus dalam talian serta mempunyai pandangan positif terhadap kursus dalam talian ini (Yusup, et.al 2008). Pembelajaran secara dalam talian secara bersemuka (*synchronous learning*) ataupun secara tidak bersemuka (*asynchronous learning*) menjadi keutamaan dalam sistem pendidikan negara Malaysia khususnya semasa pandemik ini.

Sejajar dengan pengembangan ini, penggunaan e-pembelajaran dalam proses PdP di institusi-institusi pendidikan membawa kepada peredaran teknologi pendidikan yang baharu iaitu m-pembelajaran. M-pembelajaran terhasil dari kaedah pembelajaran jarak jauh (d-Learning) dan pembelajaran secara elektronik (*e-Learning*) yang bertujuan untuk menjadikan proses pembelajaran lebih fleksibel dan mudah alih (Arif Nawi & Mohd Isa Hamzah 2013).

Dalam kepelbagaian penggunaan e-pembelajaran dalam kalangan pelajar IPT terdapat sebahagian yang melihat akan kekuatan dan kelemahan terhadap penggunaan e-pembelajaran. Oleh itu, penyelidik ingin mengetahui apakah persepsi pelajar IPT terhadap penggunaan aplikasi '*Video-Conferencing*' dalam PdP.

Objektif Kajian

Mengetahui persepsi pelajar tentang penggunaan aplikasi '*Video-Conferencing*' dalam PdP.
Mengetahui kekuatan dan kelemahan aplikasi '*Video-Conferencing*' dalam PdP.
Menganalisa impak PdP melalui '*Video-Conferencing*'.

Persoalan Kajian

Sejauhmanakah persepsi pelajar tentang penggunaan aplikasi '*Video-Conferencing*' dalam PdP.

Apakah kekuatan dan kelemahan aplikasi '*Video-Conferencing*' dalam PdP.

Adakah penggunaan aplikasi '*Video-Conferencing*' membantu pelajar menguasai dan memahami hasil pembelajaran.

Kepentingan Kajian

Kepentingan kajian ini dijalankan adalah untuk mengetahui persepsi pelajar dalam penggunaan aplikasi '*Video-Conferencing*' dalam PdP sama ada pelajar menghadapi cabaran dalam menggunakan aplikasi tersebut. Dalam kajian ini, dapat diketahui impak penggunaan aplikasi '*Video-Conferencing*' kepada pelajar.

Hasil kajian ini juga diharap dapat dijadikan bahan rujukan oleh pihak-pihak tertentu agar aplikasi ini ditambahbaik dan dijadikan sebagai medan utama dalam pembelajaran jarak jauh atau pembelajaran pada masa akan datang.

Batasan Kajian

Kajian ini dijalankan ke atas pelajar Diploma Akauntasi (DAT) semester 5 sesi Disember 2019 Politeknik Sultan Haji Ahmad Shah, Kuantan, Pahang. Pelajar Diploma Akauntasi dipilih sebagai responden kerana jurusan tersebut banyak melibatkan sistem pengiraan. Oleh itu, penyelidik ingin mengetahui sama ada PdP melalui '*Video-Conferencing*' adalah bersesuaian ataupun tidak bagi pelajar tersebut.

Kajian Keperpustakaan

Pengajaran dan pembelajaran melalui e-pembelajaran (*e-Learning*) sudah lama di pratikan di Malaysia khususnya universiti yang mengamalkan pendidikan terbuka dan jarak jauh atau yang mengamalkan mod pembelajaran teradun. Namun, tahun 2020 PdP secara atas talian merupakan satu keperluan dan keutamaan ekoran panmedik COVID-19.

Kajian oleh Kee-Man Chuah (2013) bertujuan untuk mengenal pasti persepsi pelajar tentang penggunaan media sosial dalam pembelajaran Bahasa Inggeris dan kekuatan kelemahan penggunaan media sosial dalam pembelajaran Bahasa Inggeris. Borang soal selidik telah diedarkan kepada 100 orang pelajar prasiswazah yang mengikuti kursus pengukuhan Bahasa Inggeris. Hasil daripada analisa mendapati, media sosial dapat meningkatkan minat pelajar untuk mempelajari Bahasa Inggeris. Aplikasi-aplikasi media sosial memberikan konteks dan kemudahan yang baik untuk pembelajaran bahasa.

Terdapat banyak kajian telah dijalankan dalam penggunaan e-pembelajaran dalam pengajaran dan pembelajaran di peringkat Institusi Pengajian Tinggi (IPT). Dr Yusup Hashim (2012) menjelaskan bahawa pendekatan dan rekabentuk pembelajaran dijangka mengalami perubahan pada abad ke-21. Ramai pelajar yang belajar melalui perbincangan dalam talian, mendengar podcast, menonton youtube, menghadiri kuliah atau webinar dalam talian, refleksi dan kolaborasi dalam talian. Perkembangan ini disokong oleh perkembangan dalam peralatan teknologi yang canggih dan efektif seperti computer tablet dan *cellphone* yang lebih mudah alih. Beliau juga berpendapat bahawa kemahiran dalam pedagogi pembelajaran dalam talian harus ada pada setiap orang guru. Mahizer Hamzah (2006) berpendapat bahawa m-pembelajaran memainkan peranan penting di dalam pembelajaran kerana kebebasan pelajar belajar dan memperolehi maklumat menjadikan m-pembelajaran sangat digemari. M-pembelajaran bukanlah sesuatu yang suk dilaksanakan di Malaysia apabila adanya kecanggihan teknologi. Mohd Anuar Abdul Rahman et. al (2010) menjelaskan bahawa pelajar

kurang berminat belajar melalui e-pembelajaran, walau bagaimanapun kemahiran pelajar mengakses e-pembelajaran sangat tinggi. Ini bermakna pelajar mempunyai kemahiran yang tinggi dalam melayari sistem ini. Pencapaian akademik pelajar akan meningkat sekiranya e-pembelajaran digunakan secara maksimum. Manakala Syed Lamsah Syed Chear (2017) membuat kajian berkaitan pengajaran dan pembelajaran melalui aplikasi Whatsapp dan Telegram di Universiti Swasta. Kajian ini bertujuan untuk penerimaan pelajar dalam menggunakan kedua-dua aplikasi tersebut dalam pembelajaran dan juga kesediaan institusi dalam menyediakan sumber-sumber bagi menjayakan m-pembelajaran. Hasil kajian mendapati bahawa pengajaran melalui aplikasi Whatsapp dan Telegram berpotensi untuk meningkatkan kemampuan pelajar dalam menguasai hasil pembelajaran. Dalam kajian Tze (2014) menunjukkan bahawa m-pembelajaran mampu meningkatkan keyakinan pelajar untuk menguasai objektif pembelajaran.

Bukan hanya pelajar perlu bersedia dalam menghadapi penggunaan aplikasi teknologi Web 2.0 malahan tenaga pengajar juga perlu bersedia menghadapi teknologi ini bagi menjamin kualiti hasil pembelajaran. Sebagaimana yang dijelaskan oleh Anshu & Ashish (2017), staf akademik disaran memainkan peranan membimbing pelajar terlebih dahulu menguasai teknologi bagi membangunkan pedagogi pengajaran yang sesuai. Bouhnik & Deshen (2014) menjelaskan bahawa pendidik perlu sensitive dan bersifat membimbing apabila menggunakan Whatsapp dan Telegram kerana sesi interaktif yang tidak terkawal boleh menjejaskan emosi pelajar dan prestasi akademik.

Kajian Rintis

Kajian rintis merupakan kajian yang dijalankan sebelum set soal selidik digunakan dalam kajian sebenar. Kajian rintis dijalankan terlebih dahulu untuk memastikan tahap kebolehpercayaan dan kesahan soal selidik yang digunakan. Menurut Mohd Najib Abdul Ghafar (1999), kajian rintis yang dijalankan membolehkan kita menentukan dengan mudah kesesuaian bahasa yang digunakana dalam item-item soal selidik yang dibentuk.

Penyelidik telah menjalankan kajian rintis kepada 10 orang pelajar Diploma in Business Study (DBS) semester 5 sesi Disember 2019 Politeknik Sultan Haji Ahmad Shah, Kuantan, Pahang. Pemilihan pelajar dari jurusan ini dilakukan kerana untuk menyamai sebab-sebab yang dinyatakan dalam batasan kajian.

Metodologi Kajian

Metodologi kajian merupakan satu kaedah yang digunakan dalam setiap penyelidikan atau kajian untuk mengumpul atau menganalisis data (Ahmad Sunawari Long 2008). Ia juga sangat penting dalam sesebuah penyelidikan atau kajian kerana sebagai langkah atau prosedur untuk mencapai objektif yang dicadangkan (Ahmad Mahdzan Ayob 1993). Aspek-aspek yang akan dihuraikan dalam metodologikajian ialah rekabentuk kajian, persamplan, instrument kajian dan juga kaedah analisis data.

Reka Bentuk Kajian

Menurut Kalinger (1973), reka bentuk kajian ialah sebagai panduan dalam sesuatu kajian untuk memberi jawapan yang jelas terhadap persoalan kajian berdasarkan kepada persoalan kajian. Kajian yang dijalankan ini adalah berbentuk deskriptif. Statistic deskriptif menunjukkan fenomena atau perkara-perkara yang berlaku dan hubungannya dengan pembolehubah serta tafsiran perkataan yang wujud. Reka bentuk kajian yang digunakan adalah berbentuk kajian deskriptif dengan menggunakan kaedah kuantitatif. Instrument soal selidik diedarkan kepada semua pelajar Diploma Akauntasi semester 5 POLISAS. Kajian secara deskriptif adalah kajian

terhadap perkara yang sedang berlaku. Kaedah ini melibatkan pengumpulan data, membuat interpretasi (tasksiran), perbandingan dan keperluan secara umum (Van Dale 1993).

Sampel Kajian

Sampel adalah satu populasi berkadar kecil untuk pemerhatian dan analisis terpilih. Bertentangan dengan sesetengah pendapat umum, sampel tidak dipilih sembarangan. Ia dipilih dalam satu cara yang sistematik secara rambang supaya peluang atau operasi kebarangkalian boleh digunakan (Best dan Kahn 1993). Seramai 60 orang sampel dipilih dari pelajar Diploma Akauntasi semester 5 POLISAS. Pelajar akauntasi dipilih sebagai responden kerana jurusan tersebut banyak melibatkan sistem pengiraan. Oleh itu, penyelidik merasa bertanggungjawab untuk membuat kajian terhadap responden untuk mendapatkan maklum balas tentang penggunaan 'video-conferencing' dalam PdP.

Instrumen Kajian

Instrumen yang digunakan dalam kajian ini adalah berbentuk borang soal selidik yang akan diedarkan kepada responden untuk mendapat maklumbalas yang merangkumi beberapa item. Menurut Majid Konting (2005) soal selidik merupakan alat ukur yang digunakan dalam penyelidikan pendidikan. Soal selidik digunakan untuk mendapatkan maklumat yang tepat berkenaan fakta-fakta seperti kepercayaan, perasaan, kehendak dan sebagainya.

Analisis Kajian

Data sola selidik untuk kajian di analisis dengan menggunakan program *Statistic Package for the Social Sciences* (SPSS) versi 17.0. Proses penganalisan melibatkan kaedah statistik deskriptif yang menggunakan peratus dan frekuensi. Penggunaan kaedah ini adalah menjawab kepada soalan kajian.

Analisis Dan Keputusan

Dapatan kajian ini akan dibahagikan kepada empat bahagian. Bahagian A ialah berkaitan demografi responden, bahagian B ialah persepsi pelajar tentang penggunaan aplikasi 'Video-Conferencing' dalam PdP, bahagian C pula ialah fasiliti ICT dan capaian internet, manakala bahagian D ialah impak PdP melalui 'Video-Conferencing'.

Jadual 1: Demografi Responden

Kategori	Bil	Peratusan
Jantina		
Lelaki	4	8.3
Perempuan	35	72.9
Missing	9	18.8
Jumlah	48	100.0
Bangsa		
Melayu	33	68.8
Cina	1	2.1
India	4	8.3
Missing	10	20.8
Jumlah	48	100.0
Tempat Tinggal		
Bandar	18	37.5
Luar Bandar	17	35.4
Lain-lain	3	6.3
Missing	10	20.8
Jumlah	48	100.0

Jadual 1 memaparkan demografi peserta kajian yang melibatkan seramai 48 responden terdiri daripada pelajar semester 5 Diploma Akauntasi Politeknik Sultan Haji Ahmad Shah, Kuantan. Berdasarkan jadual di atas, satu rumusan dapat bahawa seramai 4 orang (8.3%) pelajar lelaki dan 35 orang (72.9%) pelajar perempuan yang menjadi responden dan 9 orang pelajar yang tidak menjawab soal selidik. Manakala responden terdiri daripada bangsa Melayu, Cina dan India. Melayu seramai 33 orang (68.8%), Cina seramai 1 orang (2.1%) dan India seramai 4 orang (8.3%). Terdapat 10 orang responden yang tidak menjawab soal selidik. Bagi tempat tinggal responden terdiri daripada pelbagai iaiti yang berasal dari bandar seramai 18 orang (37.5%), luar bandar 17 orang (35.4%) dan lain-lain 3 orang (6.3%). Responden yang tidak menjawab soal selidik seramai 10 orang (20.8%).

Jadual 2: Persepsi Pelajar tentang Penggunaan Aplikasi *Video-Conferencing* dalam PdP

Pernyataan	Sangat tidak setuju	Tidak setuju	Setuju	Sangat setuju
Saya sedia pembelajaran melalui <i>Video-Conferencing</i>	4(8.3%)	8(16.7%)	25(52.1%)	1(2.1%)
Saya aktif menggunakan <i>Video-Conferencing</i>	5(10.4%)	13(27.10%)	19(39.6%)	1(2.10%)
<i>Video-Conferencing</i> membantu mengikuti kursus dengan lebih baik	3(6.30%)	18(37.5%)	17(34.4%)	-
Saya mempunyai persepsi positif terhadap pembelajaran melalui <i>Video-conferencing</i>	4(8.3%)	13(27.10%)	19(39.6%)	2(4.2%)

Jadual 2 membincangkan analisis data terhadap persepsi pelajar tentang penggunaan aplikasi *Video-Conferencing* dalam PdP. Pada keseluruhannya, didapati tahap persetujuan responden terhadap setiap item dalam konstruk ini adalah tinggi dan sangat memuaskan. Hasil perincian analisis data mendapati responden bersetuju pada tahap yang tinggi dan interpretasi yang sangat memuaskan terhadap pernyataan yang pertama, iaitu “saya sedia pembelajaran melalui *Video-Conferencing*”. Hal ini dapat dilihat melalui peratusan setuju sebanyak 52.1%. Namun begitu terdapat juga responden yang tidak setuju iaitu sebanyak 16.7%, diikuti sangat tidak setuju sebanyak 8.3% dan hanya seorang responden yang menjawab sangat setuju dengan 2.1%. Bagi pernyataan yang kedua “saya aktif menggunakan *Video-Conferencing*” seramai 19 orang responden menjawab setuju dengan 39.6% dan sebanyak 27.10% responden tidak setuju dengan pernyataan tersebut, diikuti sangat tidak setuju sebanyak 10.4%. Hanya seorang responden sangat setuju dengan 2.1%. Seterusnya bagi pernyataan “*Video-Conferencing* membantu mengikuti kursus dengan lebih baik” responden bersetuju dengan pernyataan tersebut dengan peratusan sebanyak 34.4%, diikuti tidak setuju sebanyak 37.5% dan 6.3% sangat tidak setuju serta tiada responden yang sangat bersetuju. Bagi pernyataan “saya mempunyai persepsi positif terhadap pembelajaran melalui *Video-Conferencing*” responden bersetuju dengan peratusan tertinggi iaitu sebanyak 39.6%, diikuti oleh tidak setuju 27.1%, sangat tidak setuju 8.3% dan 4.2% bagi yang sangat bersetuju.

Rumusan yang dapat dibuat tentang persepsi pelajar tentang penggunaan aplikasi *Video-Conferencing* dalam PdP menunjukkan tahap persetujuan yang tinggi dan interpretasi yang sangat memuaskan dalam kalangan responden.

Jadual 3: Fasiliti ICT dan Capaian Internet

Pernyataan	Sangat tidak setuju	Tidak setuju	Setuju	Sangat setuju
Kemudahan ICT adalah baik	2(4.2%)	7(14.6%)	28(58.3%)	1(2.1%)
Saya tidak menghadapi masalah talian (kredit yang mencukupi)	2(4.2%)	10(20.8%)	23(47.9%)	3(6.3%)
Capaian internet di tempat saya adalah jelas	4(8.3%)	10(20.8%)	16(33.3%)	5(10.4%)
Talian internet ditempat saya adalah jelas	4(8.3%)	11(22.9%)	18(37.5%)	5(10.4%)

Jadual 3 membincangkan analisis tentang fasiliti ICT dan capaian internet di tempat responden. Pada keseluruhannya, didapati tahap persetujuan responden terhadap setiap item dalam konstruk ini adalah tinggi dan interpretasi yang sangat memuaskan. Hasil dapatan kajian menunjukkan responden bersetuju pada tahap yang tinggi dan interpretasi yang sangat memuaskan terhadap pernyataan yang pertama “kemudahan ICT adalah baik” dengan peratusan bersetuju sebanyak 58.3%. Namun, ada juga responden tidak bersetuju iaitu sebanyak 14.6%, diikuti sangat tidak bersetuju sebanyak 4.2% dan hanya seorang yang sangat bersetuju iaitu dengan 2.1%. Bagi pernyataan seterusnya “saya tidak menghadapi masalah talian (kredit yang mencukupi)” responden juga bersetuju dengan 47.9%. Manakala responden yang tidak setuju sebanyak 20.8%, diikuti oleh sangat setuju 6.3% dan 4.2% bagi responden yang sangat tidak bersetuju. responden bersetuju dengan pernyataan yang ketiga iaitu “capaian internet di tempat saya adalah jelas” dengan peratusan sebanyak 33.3%. Terdapat juga responden yang tidak setuju sebanyak 20.8%, diikuti oleh sangat setuju 10.4% dan sangat tidak setuju 8.3%. Pernyataan “talian internet ditempat saya adalah jelas” menunjukkan responden bersetuju sebanyak 37.5%, diikuti oleh 22.9% tidak setuju, sangat setuju 10.4% dan 8.3% sangat tidak setuju.

Berdasarkan data yang di analisis menunjukkan responden bersetuju bahawa capaian internet ditempat mereka adalah baik.

Jadual 4: Impak PdP Melalui *Video-Conferencing*

Pernyataan	Sangat tidak setuju	Tidak setuju	Setuju	Sangat setuju
Meningkatkan motivasi untuk mengikuti sesuatu kursus	-	14(29.2%)	24(50%)	-
Kefahaman terhadap objektif dan hasil pembelajaran kursus	1(2.1%)	15(31.2%)	21(43.8%)	1(2.1%)

Pembelajaran melalui <i>Video-Conferencing</i> membantu saya lebih memahami objektif dan hasil pembelajaran kursus	1(2.1%)	21(43.8%)	16(33.3%)	-
Pembelajaran melalui <i>Video-Conferencing</i> lebih mudah diikuti berbanding kuliah konvensional	3(6.3%)	19(39.6%)	16(33.3%)	-

Jadual 3 membincangkan analisis tentang impak PdP melalui *Video-Conferencing*. Pada keseluruhannya, didapati responden kurang bersetuju dengan PdP melalui *Video-Conferencing*. Hasil dapatan kajian menunjukkan responden bersetuju pada tahap yang tinggi dan interpretasi yang sangat memuaskan terhadap pernyataan yang pertama “meningkatkan motivasi untuk mengikuti sesuatu kursus” dengan peratusan bersetuju sebanyak 50% dan ramai juga responden yang tidak bersetuju dengan peratusan sebanyak 29.2%. Bagi pernyataan seterusnya “kefahaman terhadap objektif dan hasil pembelajaran kursus” responden yang bersetuju dengan 43.8%, diikuti oleh tidak setuju 31.2%, bagi sangat setuju dan sangat tidak setuju masing-masing mewakili sebanyak 2.1%. Bagi pernyataan “pembelajaran melalui *Video-Conferencing* membantu saya lebih memahami objektif dan hasil pembelajaran kursus” responden tidak bersetuju dengan peratusan sebanyak 43.8%, diikuti setuju sebanyak 33.3% dan sangat tidak setuju sebanyak 2.1%. Responden juga tidak bersetuju dengan pernyataan “pembelajaran melalui *Video-Conferencing* lebih mudah diikuti berbanding kuliah konvensional” dengan peratusan sebanyak 39.6%, diikuti bersetuju 33.3%, dan sangat tidak setuju 6.3%.

Berdasarkan analisis di atas responden tidak bersetuju bahawa pembelajaran melalui *Video-Conferencing* boleh memberi kefahaman berbanding kuliah secara bersemuka. Walaupun peratusan antara tidak setuju dengan setuju tidak menunjukkan peratusan yang ketara namun boleh menjejaskan pembelajaran responden.

Kesimpulan

Secara keseluruhannya, dapatan dari kajian ini menunjukkan bahawa persepsi pelajar DAT semester 5 POLISAS terhadap penggunaan *Video-Conferencing* dalam PdP sangat positif penerimaannya. Kebanyakan responden sudah bersedia untuk menggunakan *Video-Conferencing* dalam PdP pada masa akan datang. Walaupun terdapat sesetengah responden yang fasiliti ICT tidak begitu memuaskan namun tidak memberi halangan untuk mereka meneruskan pembelajaran. Kajian ini juga telah melihat impak PdP melalui *Video-Conferencing* bahawa objektif pembelajaran kurang memuaskan berbanding kuliah secara bersemuka. Oleh itu, pengajar harus bijak dalam mengendalikan PdP melalui *Video-Conferencing* bagi mencapai objektif dan hasil pembelajaran sesuatu subjek.

Rujukan

- Ahmad Mahdzan Ayob. (1993). *Kaedah Penyelidikanj Sosioekonomi*. Dewan Bahasa dan Pustaka: Kuala Lumpur.
- Ahmad Sunawari Long. (2009). *Pengenalan Metodologi Penyelidikan Pengajian Islam*. UKM: Bangi.

- Aliff Nawawi & Mohd Isa Hamzah. (2013). Tahap Penerimaan Telefon Bimbit sebagai M-Pembelajaran dalam Pendidikan. *Journal of Islamic and Arabic Education*, 5(1): 1-10.
- Anshu, M. & Aishah, K.A. (2017). Mobile Learning: Readiness and perceptions of teachers of Open Universities of Commonwealth Asia. *Journal of Learning for Development*, 4(1): 58-71.
- Best J.W & Kahn, J.V. (1998). *Research in Education*. 8th ed. M.A: Allyn and Bacon.
- Bouhnik, D. & Deshen, M. (2014). WhatsApp goes to school: Mobile instant messaging between teachers and students. *Journal of Information Technology Education: Research*, 13: 217-231.
- Kee-Man Chuah. (2013). Aplikasi Media Sosial dalam Pembelajaran Bahasa Inggeris: Persepsi Pelajar Universiti. *Issue in Language Studies*, 2(1): 56-63.
- Kerlinger, F.N. (1973). *Foundations of Behavioral Research*. Fort Worth: Holt, Rinehart and Winston.
- Mahizer Hamzah. (2006). M-Pembelajaran: Era Baru dalam Pembelajaran. *Prosiding Seminar Kebangsaan Pendidikan Teknik dan Vokasional*, pp. 150-155.
- Mohd Anuar Abdul Rahman & Erda Yumiza Ibrahim. (2010). *Penggunaan E-Pembelajaran dan Hubungannya dengan Pencapaian Akademik Pelajar di Fakulti Pendidikan, Universiti Teknologi Malaysia, Skudai, Johor*. UTM: Skudai.
- Mohd Izani Mohd Zain. (2020). Pendidikan Tinggi Di Malaysia Pasca Covid-19: Perubahan dalam Kesenambungan. Diambil daripada <http://astrowani.com/berita-malaysia>.
- Mohd Izzat Mohd Khalizan. (2020, Mac 16). Covid-19: PM Umum Perintah Kawalan Pergerakan Mulai Rabu. Diambil daripada <http://www.mstar.com.my>.
- Mohd Najib Abdul Ghafar. (1999). *Penyelidikan Pendidikan*. Penerbit UTM: Skudai.
- Syed Lamsah Syed Chear. (2017). Pengajaran dan Pembelajaran Melalui Aplikasi Whatsapp dan Telegram di Universiti Swasta. *Jurnal Pendidikan Malaysia*, 42(2).
- Tze, Y.S., Dewika, N., & Devandra, A. (2014). Improving students engagement through social media: A case study of a private university in Malaysia using facebook. *International Journal e-Education, e-Business, e-Management and e-Learning*, 4(6): 396-409.
- Yusup Hashim. (2012). Penggunaan e-Pembelajaran dalam Pengajaran dan Pembelajaran yang Berkesan. Diambil daripada <https://www.researchgate.net/publication/2826422078>.

PENGUNAAN PERISIAN KURSUS MULTIMEDIA INTERAKTIF UNTUK MENINGKATKAN PEMIKIRAN ALGEBRA DALAM MURID-MURID TAHUN 4 (USING INTERACTIVE MULTIMEDIA COURSEWARE TO IMPROVE ALGEBRA THINKING AMONG YEAR 4 STUDENTS)

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Abstrak: Teknologi multimedia memberi kesan dan menghasilkan interaksi kerjasama murid-murid, guru-guru serta teknologi maklumat dalam pembelajaran yang menwujudkan persekitaran yang kondusif untuk pembelajaran aktif. Menurut TIMSS (2011) hasil pentaksiran menunjukkan bahawa kemahiran kognitif seperti aplikasi dan penaakulan di Malaysia perlu dipertingkatkan. Pentingnya murid-murid di peringkat sekolah rendah yang perlu beralih dari aritmetik konkrit ke bahasa simbolik algebra seperti yang dinyatakan dalam PPPM. Rasional kajian memberi pendedahan kepada murid-murid Tahun 4 dalam bidang Algebra tentang pemahaman pembolehubah, ungkapan dan persamaan. Perisian Pemikiran Algebra digunakan sebagai alat bantu pengajaran bagi memudahkan pembelajaran dan pengajaran. Tujuan kajian ini menjurus kepada keberkesanan terhadap pencapaian motivasi, keseronokan dan keyakinan dalam penggunaan pengajaran dan pembelajaran perisian multimedia terhadap pemahaman dan penguasaan konsep pemikiran Algebra. Objektif kajian pertama iaitu merekabentuk dan menghasilkan perisian kursus multimedia interaktif dengan menggunakan model ADDIE. Objektif kedua pula, mengkaji kesan perisian kursus pemikiran multimedia interaktif dalam membantu meningkatkan pemikiran Algebra dalam kalangan murid-murid Tahun 4 bagi menguji kesan perisian kursus iaitu pemahaman konsep pemikiran Algebra serta pencapaian konsep pemikiran Algebra dengan menentukan kesan pembelajaran perisian kursus pemikiran Algebra melalui menggunakan rangka kerja Kieran (2016). Reka bentuk kuasi-eksperimen digunakan ke atas kumpulan rawatan dan kumpulan kawalan. Kajian ini melibatkan murid-murid dari Sekolah SJKT Menglembu dan Sekolah SJKT Desa Pinji sebanyak 84 sampel kajian dari Tahun 4. Dapatan kajian akhir intervensi jelas menunjukkan bahawa pembelajaran menerusi perisian kursus pemikiran Algebra telah berjaya mempertingkatkan tahap pemikiran Algebra iaitu Min bagi kumpulan rawatan bagi aktiviti pengajaran dan pembelajaran adalah 1.27 manakala Min bagi kumpulan kawalan adalah 1.57. Kajian terhadap pemikiran Algebra perlu dilanjutkan dengan melibatkan sampel yang lebih besar dan memastikan kajian seperti ini boleh digunakan melalui media teknologi maklumat bagi meningkatkan proses pengajaran dan pembelajaran di peringkat sekolah rendah.

Kata Kunci: Teknologi multimedia, perisian kursus, rangka kerja,

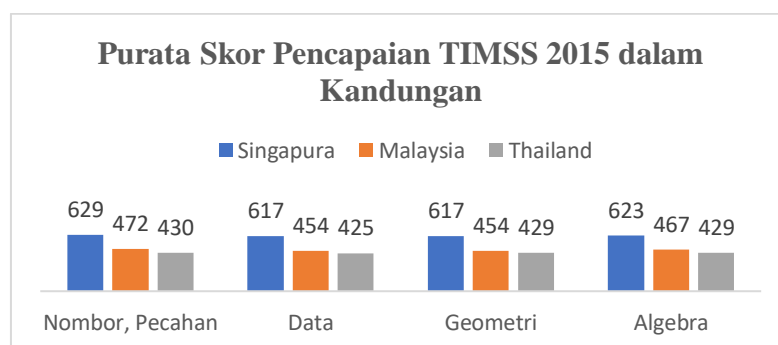
Abstract: Multimedia technology impacts and creates collaborative interactive learning between students, teachers and information technology that creates a conducive environment

for active learning. According to an assessment done by TIMSS (2011), resulted that cognitive skills such as application and reasoning need to be improved among Malaysian. Hence, is important to implement this approach to students at the primary school level who will be changing from concrete arithmetic to the symbolic language of algebra as stated in PPPM (2013-2025). The rationale of this study is to expose year four students in the field of Algebra on the understanding of variables, expressions and equations. Algebra thinking courseware is used as a teaching aid to facilitate learning and teaching. The purpose of this study to evaluate the effectiveness of the achievement of motivation, fun and confidence from teaching and learning multimedia courseware, on the understanding and mastering of the Algebra thinking concept. The first objective of the study is to design and produce interactive multimedia courseware using the ADDIE model. Second objective is to study the effect of interactive multimedia thinking courseware in improving Algebra thinking among year 4 students. This is to test the effectiveness of the courseware, which are to understand the concept of Algebra thinking and to evaluate the achievement of Algebra thinking concept by determining the learning effect of Algebra thinking courseware by using the Kieran framework (2016). Quasi-experimental design was applied to the treatment group and the control group. The sample size used was 84 students, who are from SJKT Menglembu School and SJKT Desa Pinji. The findings of the final intervention study clearly show that learning through Algebra thinking courseware has successfully improved the level of Algebra thinking which the mean for the treatment group was 1.27 while the mean for the control group was 1.57. Studies on Algebra thinking need to be extended by involving a larger sample size and ensure that such studies can be used via information technology media to improve the teaching and learning process at the primary school level.

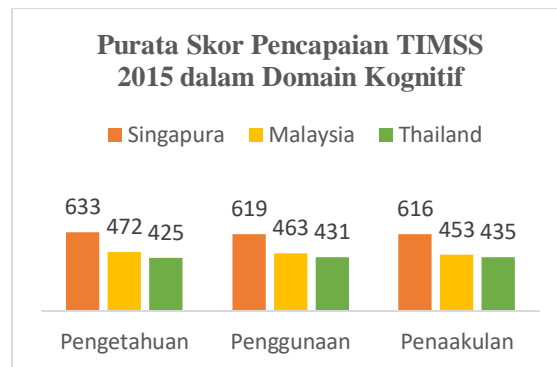
Keywords: Multimedia technology, courseware, framework

Pengenalan

Mengikut PPPM (Malaysia K. P., Pelan Pembangunan Pendidikan Malaysia 2013-2025, 2012), (Malaysia K. P., www.moe.gov.my, 2013) sepanjang dua dekad yang lalu, pentaksiran antarabangsa seperti *Programme for International Student Assessment* (PISA) dan *Trends in International Mathematics and Science Study* (TIMSS), telah muncul sebagai kaedah perbandingan langsung tentang kualiti keberhasilan pendidikan merentas pelbagai sistem. Laporan Trends International Mathematics and Science Study (TIMSS) 2015 dalam purata skor pencapaian Algebra di negara kita menunjukkan pencapaian yang kurang memuaskan berbanding dengan Singapura dan Thailand. Laporan ini telah muncul sebagai kaedah perbandingan langsung tentang kualiti keberhasilan pendidikan merentas pelbagai sistem. Kaedah ini mentaksir pelbagai kemahiran kognitif seperti aplikasi dan penaakulan.



Rajah 1: Purata Skor Pencapaian TIMSS 2015 dalam Kandungan



Rajah 2: Purata Skor Pencapaian TIMSS 2015 dalam Domain Kognitif

Di Malaysia aspek pemikiran algebra di Tahun 4 belum diperkenalkan secara terbuka kepada murid-murid. Oleh yang demikian, konsep algebra perlu diperkenalkan kepada murid-murid terutamanya ketika murid-murid di Tahun 3. Manfaatnya murid-murid perlu beralih dari aritmetik konkrit ke bahasa simbolik algebra seperti yang dinyatakan dalam PPPM (Malaysia K. P., Pelan Pembangunan Pendidikan Malaysia 2013-2025, 2012).

Pembelajaran pemikiran algebra sukar untuk kebanyakan murid-murid di peringkat rendah mahupun menengah kerana penekanan pada hafalan peraturan abstrak. Para penyelidik bidang algebra mengatakan bahawa kepakaran sering bergantung pada strategi persepsi-motor untuk membuat peraturan ini bermakna dan tidak dapat diingati. Notasi algebra adalah domain asas untuk memahami semua bidang matematik pada Aras Tinggi dan kemahiran berfikir kritis serta penyediaan pelbagai kerjaya (Ottmar, 2017).

Pencapaian hasil ujian dengan memahami dan menguasai konsep-konsep Algebra sukar dikuasai oleh murid-murid di peringkat menengah. Menurut artikel, (Ariffin, 2017) mendapati majoriti murid-murid tidak suka kepada penyelesaian masalah kerana ia sukar difahami terutama soalan bukan rutin. Punca paling utama ialah kelemahan murid-murid untuk mentafsir soalan yang dikemukakan seterusnya menukarkan ayat tersebut kepada simbol matematik. Peranan guru adalah untuk mewujudkan situasi pengajaran sehingga terjadi proses pembelajaran pada diri murid-murid. Jika situasi yang terjadi tidak mewujudkan proses pembelajaran pada diri murid-murid maka guru perlu mengubah strategi pengajaran dengan pelbagai teknik

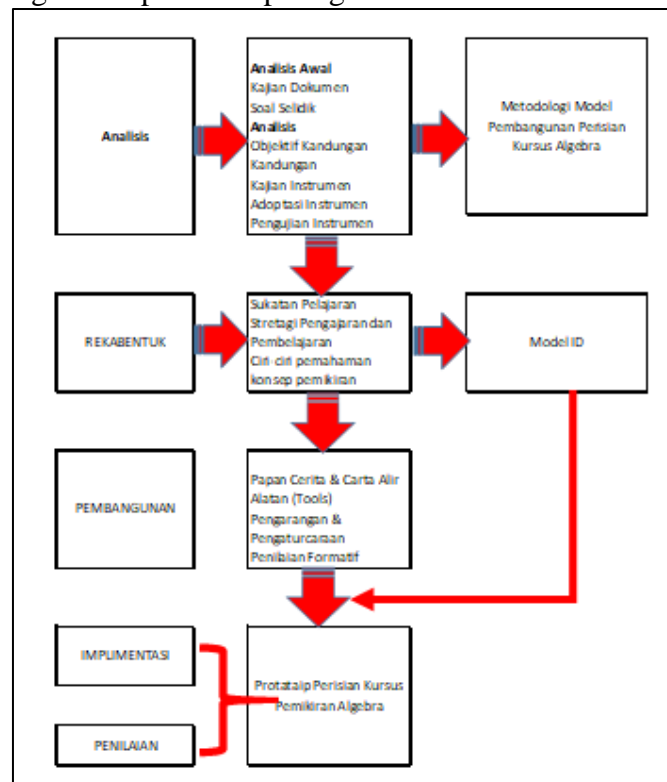
Mengikut penyelidikan oleh (Pardimin, 2018), cabaran mengenai pengajaran dan pembelajaran matematik boleh dilihat dalam beberapa isu seperti penggunaan kaedah tradisional, kekurangan kreativiti guru dan ilustrasi rumit. Keperluan kaedah yang strategik dan inovatif untuk membantu pengajaran dan pembelajaran (PdP) dalam Matematik di sekolah rendah perlu dipertimbangkan dengan serius. Artikel ini menghuraikan model aplikasi pembelajaran matematik asas yang menggunakan penggunaan multimedia. Penemuan menunjukkan bahawa membangunkan model pengajaran dan pembelajaran (pdp) matematik ilustrasi akan memberikan nilai yang mendalam kepada keseluruhan proses dalam meningkatkan persekitaran yang menyeronokkan untuk memupuk tahap pemahaman tentang penyerapan pembelajaran matematik. Kajian ini dapat meningkatkan tahap minat dalam pembelajaran matematik di sekolah rendah dengan membuat multimedia interaktif. Model media pembelajaran multimedia interaktif akan digunakan untuk memupuk minat murid-murid dan memudahkan untuk memahami bahan pembelajaran matematik asas.

Menurut artikel (Sinclair, 2016), perkembangan dalam media digital yang sentiasa berubah dalam perkakasan dan perisian, serta jurang antara jenis persekitaran yang dinilai oleh penyelidik. Setelah beberapa contoh yang telah dianalisis dan direka oleh penyelidik-

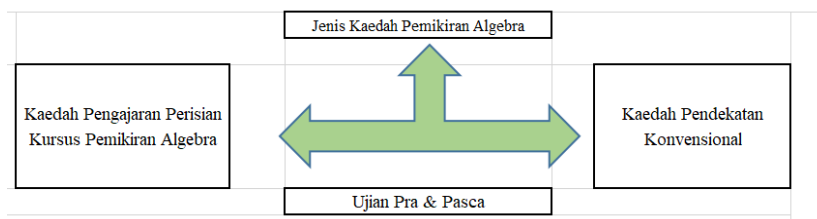
penyelidik didapati bahawa, media digital lebih memihak kepada persekitaran yang lebih terbuka dan menyokong aspek konseptual dan prosedur pembangunan konsep. Walau bagaimanapun, pembangunan perisian sedemikian mungkin terhad. Perisian tidak seperti buku teks dan memerlukan penyelenggaraan berterusan, menaik taraf dan menyesuaikan diri dengan sistem pengendalian baru. Penyelidik telah menyerlahkan beberapa keputusan reka bentuk yang berbeza berkaitan dengan pembelajaran matematik di gred K-2.

Rasional kajian ini untuk memberi pendedahan kepada murid-murid Tahun 4 dalam bidang Algebra tentang pemahaman pembolehubah, ungkapan dan persamaan. Di samping itu memastikan kesan pengajaran yang memberi motivasi, keseronokan dan keyakinan melalui penggunaan perisian multimedia dan memudahkan pengajaran terhadap pemahaman konsep Algebra dalam kalangan murid-murid Tahun 4. Kajian ini juga bagi mengenalpasti tahap pemahaman dan pencapaian konsep Algebra dalam kalangan murid-murid Tahun 4. Dengan cara ini, guru dapat membuat pilihan bagi amalan pengajaran dan pembelajaran yang lebih baik dan berkesan kepada murid-murid Tahun 4.

Perisian Pemikiran Algebra digunakan sebagai Alat Bantu Pengajaran bagi memudahkan pembelajaran dan pengajaran (PdP) Tahun 4. Terdapat dua objektif digariskan iaitu pertamanya merekabentuk dan menghasilkan perisian kursus multimedia interaktif untuk meningkatkan pemikiran Algebra dalam kalangan murid-murid Tahun 4. Objektif keduanya mengkaji kesan perisian kursus pemikiran multimedia interaktif dalam membantu meningkatkan pemikiran Algebra dalam kalangan murid-murid Tahun 4. Berdasarkan pada objektif, kajian dibahagikan kepada dua peringkat iaitu:



Rajah 3: Peringkat I - Perancangan Perisian Kursus Algebra berdasarkan Model ADDIE



Rajah 4: Peringkat II- Kepenggunaan Perisian Kursus Pemikiran Algebra

Kerangka Konsepsi kajian pembangunan dan kepenggunaan perisian kursus pemikiran Algebra ini menerangkan dua peringkat kajian. Hasil kajian ini penting kepada murid-murid tahun empat kerana dengan kajian ini murid-murid dapat memahami konsep asas Algebra. Di samping itu, murid-murid tahun empat dapat menggunakan perisian Algebra bagi memahami dan menguasai konsep Algebra iaitu pembolehubah, ungkapan dan persamaan. Perisian Algebra juga akan menjadi panduan kepada guru-guru dalam pengajaran topik baharu Algebra. Guru senang memandu murid-murid melalui pengalaman dan pengetahuan serta mewujudkan kolaborasi dengan membina persekitaran yang positif. Panduan ini akan meningkatkan prestasi dalam mata murid-muridan matematik, khususnya dalam tajuk Algebra. Pengajaran berpusatkan murid-murid ini, jelas memperlihatkan murid-murid dapat memperoleh kebebasan untuk menentukan proses pembelajaran dalam menjana kemahiran dan pengetahuan.

Tinjauan Literatur

Transformasi pendidikan melalui KSSR (2011) mempunyai rasional yang kukuh serta mengikut kehendak perubahan waktu dan selaras dengan cabaran semasa. Segala penambahbaikan dalam kurikulum dilakukan bagi menyediakan warga negara kita untuk menghadapi arus pemodenan dalam mengenalpasti dengan cabaran abad ke-21. Hal ini jelas dapat dilihat dalam objektif Standard, K., & Rendah, S. (2011) yang lebih berfokuskan ke arah kemahiran-kemahiran seperti mengira, berfikir, belajar, saintifik dan teknikal. Kemahiran-kemahiran ini meliputi skop yang lebih luas seperti kemahiran dalam teknologi dan maklumat. Kemahiran-kemahiran dalam KSSR juga diperlukan bagi menyiapkan diri menghadapi cabaran masa hadapan dan mempertingkatkan lagi jati diri daripada peringkat akar umbi lagi. Kemahiran asas yang telah ditambah ke dalam KSSR ialah kemahiran menaakul. Di tahap 1, tumpuan adalah kepada penguasaan asas 4M manakala di tahap 2, fokus adalah terhadap pengukuhan dan aplikasi 4M.

Buku teks tahun 4 matematik (KSSR, 2014) menggabungkan idea-idea para pendidik yang berperanan dalam penilaian memastikan kandungan yang memenuhi kehendak Kurikulum Standard Sekolah Rendah (KSSR) yang dihasratkan oleh KPM (2011). Kandungan buku tersebut menyelitkan Algebra dengan memperkenalkan melalui anu dalam penambahan dan anu dalam penolakan. Dengan berfokuskan murid-murid sekolah rendah yang berumur dari 6 tahun hingga 12 tahun, dokumen rangka kerja pemikiran algebra oleh Kieran (2016) memudahkan ciri-ciri penyelidikan yang telah dinyatakan dalam algebra. Kajian ini merupakan asas penyelidikan yang mengembangkan ciri-ciri pemikiran algebra dan cara pemikiran ini dapat dikembangkan kepada murid-murid di sekolah rendah (6 tahun hingga 12 tahun) dan di sekolah menengah rendah. Antara konsep penting yang diperkenalkan dalam dokumen ini termasuk: a) Amalan yang berkaitan dengan aktiviti penggolongan, b) Amalan berkaitan dengan sifat operasi dan struktur berangka, c) Perwakilan hubungan antara kuantiti, dan d) Memperkenalkan notasi alfanumeri.

Di Kementerian Pendidikan Malaysia bahagian Pengurusan Jemaah Nazir dan Jaminan Kualiti (2015) mengatakan bahawa matematik sekolah rendah merupakan salah satu bidang yang dapat mengembangkan intelektual individu dalam membuat penaakulan logik, visualisasi

ruang, analisis dan pemikiran abstrak. Tujuan pembelajaran mata murid-muridan matematik menyediakan peluang untuk murid-murid melaksanakan tugas secara kreatif dan mengalami keseronokan apabila dapat mengetahui sesuatu yang baru. Murid-murid mengembangkan kemahiran berfikir, numerasi, penaakulan dan menyelesaikan masalah melalui aplikasi matematik. Kemahiran sedemikian meningkatkan minat murid-murid memmurid-muridi mata murid-muridan matematik di luar bilik darjah dan seterusnya di peringkat pengajian yang lebih tinggi. Menurut DSKP Matematik Tahun 4 (2011), Kurikulum Standard Sekolah Rendah bagi mata murid-muridan Matematik adalah untuk membina pemahaman murid-murid tentang konsep nombor, kemahiran asas dalam pengiraan, memahami idea matematik yang mudah dan berketrampilan mengaplikasikan pengetahuan dan kemahiran matematik secara berkesan dalam kehidupan harian.

Zulkfli (2013) mengatakan bahawa fokus utama Standard, K., & Rendah, S. (2011) ialah kemahiran asas ICT, perkembangan fizikal, kognitif, sikap dan nilai bagi Tahap 1 (Tahun 1 hingga 3) penguasaan 3M iaitu membaca, mengira dan menulis. Pembelajaran matematik bagi tahap 1 ini berfokus kepada penguasaan kefahaman, kemahiran matematik dan aplikasi asas serta penguasaan numerasi. Manakala bagi Tahap 2, pembelajaran matematik adalah berfokus kepada penguasaan kefahaman, kemahiran matematik dan aplikasi yang lebih kompleks. Penekanan kurikulum matematik tahun 4 dibahagikan kepada pengukuhan dan aplikasi kemahiran 4M serta menguasai kemahiran yang lebih kompleks perkembangan fizikal, kognitif, sikap dan nilai. Fokus pengajaran dan pembelajaran Matematik Kurikulum Standard Sekolah Rendah memberi keutamaan kepada pemahaman dan penguasaan pengetahuan bagi membolehkan murid-murid mengaplikasikan konsep, prinsip dan proses matematik yang dimurid-muridi. Penekanan kepada aspek perkembangan pemikiran murid-murid secara matematik dibina dan dikembangkan melalui proses pengajaran dan pembelajaran di dalam bilik darjah berdasarkan prinsip berikut iaitu penyelesaian masalah, komunikasi, penaakulan, membuat perkaitan dan perwakilan serta penggunaan teknologi dalam matematik. DSKP Matematik Tahun 4 (2011) merangkumi empat bidang pembelajaran iaitu Nombor dan Operasi; Sukatan dan Geometri; Perkaitan dan Algebra; dan Statistik dan Kebarangkalian.

Pembangunan Bank Pendidikan di Negara Jamaica melalui program semak semula bersama kerajaan Amerika Utara dengan Kementerian Pendidikan dan Kebudayaan Negara Jamaica mengubah kurikulum matematik pada 1999. Program pendidikan rendah di negara Jamaica menerima kurikulum rendah mula mendedahkan tajuk Algebra pada umur 10 tahun (Grade 4). Pengajaran Algebra mula diterapkan di Jamaica pada penggal kedua dan ketiga. Pencapaian yang diharapkan pada penggal kedua merupakan murid-murid dikehendaki menerangkan maksud dan dapat menggunakan formula yang mudah. Kemahiran seperti menerangkan n - ayat, pernyataan masalah dan menulis n - ayat, mencari penggantian nilai, menyelesaikan persamaan yang mudah. Manakala penggal ketiga pula, pencapaian yang diharapkan merupakan murid-murid dapat mencari nilai yang dikehendaki melalui kaedah penggantian, menangka / memanipulasi ungkapan dan menerangkan strategiknya, mereka satu cerita penyelesaian masalah yang mempunyai sekurang-kurangnya dua langkah penyelesaiannya.

Tezer, M., & Cumhur, M. (2017) menurutnya pendekatan konstruktivism untuk pembelajaran. bagi membina idea baharu berdasarkan kepada idea lama murid-murid. Pendekatan 5E ini juga sesuai dengan semua peringkat umur. Bermula dengan Engage (penglibatan), Explore (Penerokaan), Explain (Penerangan), Elaborate (Pengolahan) dan juga Evaluate (Penilaian) yang membolehkan murid-murid dan guru untuk mengalami aktiviti yang biasa, dengan menggunakan pengetahuan asas, untuk membentuk makna dan akhirnya meningkatkan kefahaman kepada konsep dengan berterusan.

Pengajaran dan pembelajaran matematik dengan bantuan teknologi maklumat adalah satu pendekatan moden. Kajian Kamali-Mohammadzadeh, F., Behzadi, M. H., Shahvarani, A., & Hosseinzadeh-Lotfi, F. (2014) mengkaji kesan penggunaan perisian Buaya ICT 605 dalam pengajaran carta aliran, berdasarkan konstruktivisme dan selaras dengan matlamat tingkah laku, pencapaian murid-murid dalam matematik. Menurutnya model konstruktivisme untuk murid-murid belajar apabila mereka mengambil bahagian secara aktif dalam proses pembelajaran.

Artikel Adawiyah, R., Muin, A., & Khairunnisa, K. (2017, January) membincangkan keupayaan kreatif-induktif penaakulan matematik murid-murid. Menurutnya penaakulan adalah salah satu keupayaan yang perlu dibangunkan dalam proses pembelajaran matematik murid-murid. Melalui pemikiran murid-murid diharapkan dapat mengetahui bahawa matematik bukanlah formula tetapi untuk memahami, membuktikan dan membuat kesimpulan.

Menurut Rahayuningrum, R. H. (2011), pembelajaran multimedia interaktif adalah proses pembelajaran menggunakan media yang menggabungkan dua unsur atau lebih media, terdiri dari teks, grafis, gambar, foto, audio, video dan animasi secara terintegrasi, dilengkapi dengan alat kawalan yang dapat dioperasikan oleh pengguna. Pembelajaran multimedia berguna untuk menyalurkan idea serta dapat merangsang pemikiran, perasan, perhatian dan kehendak murid-murid proses pengajaran dan pembelajaran.

Menurut Ismail, M. S. (2016) dalam artikel gaya pembelajaran dan kemahiran berfikir aras tinggi dalam kalangan murid-murid teknikal menerangkan bahawa usaha membantu murid-murid menguasai kemahiran berfikir dengan lebih baik dan meningkatkan prestasi akademik mereka, gaya pembelajaran yang dicenderung oleh murid-murid harus dikenal pasti. Kajian ini adalah bertujuan untuk menganalisis hubungan dan perbezaan gaya pembelajaran terhadap tahap kemahiran berfikir aras tinggi (KBAT) dalam kalangan murid-murid teknikal. Dapatan kajian juga menunjukkan murid-murid menguasai kemahiran membanding, mengklasifikasi, induksi, deduksi, analisis ralat, pembinaan sokongan, abstrak dan penganalisan perspektif, kesemuanya berada pada tahap sederhana. Kesimpulannya, gaya pembelajaran yang berbeza tidak mempengaruhi tahap penguasaan KBAT dan murid-murid berpeluang menguasai KBAT tanpa mengira gaya pembelajaran yang dicenderung.

Wallace, D. (2019), berpendapat bahawa pedagogi untuk penalaran kuantitatif akan lebih berguna apabila digambarkan dari segi teori pembelajaran. Sebagai contoh, teori kitaran Pembelajaran Kolb merangkumi pelbagai kaedah pengajaran dan meletakkannya dalam konteks yang dapat membantu guru-guru membuat keputusan praktikal. Teori ini juga mencadangkan soalan penyelidikan yang akan menguji kesahihannya atau memperbaiki utiliti untuk guru. Artikel ini bertujuan membantu pembaca yang menggambarkan nombor.

Kajian Keijzer, R., & Boersma, G. (2016) melaporkan prospektif guru-guru Belanda tahun Keempat dalam pendidikan guru, yang mencapai tahap rendah dalam matematik. Guru-guru dan murid-murid belum menjalani ujian matematik ketika di tahun tiga. Data dikumpul melalui temuduga dan soal selidik. Penyelidik mendapati bahawa beberapa aspek, seperti soalan mengenai sikap murid-murid terhadap matematik, penyampaian pengajaran yang lemah mempengaruhi murid-murid dan guru lain. Keseronokan belajar yang paling rendah membawa kepada pencapaian sekadar lulus ujian kerana kecekapan matematik terhad mereka. Sebaliknya, penyelidik berpendapat bahawa sokongan terhad dalam latihan guru mereka, dan kekurangan bahan latihan juga menyebabkan kegagalan dalam ujian.

Artikel Chung, V. Q., & Thuy, P. T. D. (2018), kajian tentang peranan penting dan ciri-ciri kecerdasan emosi dalam mengajar Matematik melalui aktiviti pengalaman di sekolah rendah. Penyelidik menganalisis dan menunjukkan gambaran dan peluang untuk mengembangkan kecerdasan emosi murid-murid di beberapa kawasan di Vietnam.

Penyelidikan kecerdasan Emosi EQ menjadi asas yang membantu orang memahami diri mereka sendiri, bekerja sendiri, dan berkolaborasi dengan dengan orang lain. Pembangunan kecerdasan emosi untuk murid-murid sekolah rendah akan memainkan peranan yang penting dan menjadi landasan untuk membentuk serta membangunkan kebolehan bersama: pendirian dan penciptaan diri; komunikasi dan kerjasama; menyelesaikan masalah kreatif. Kecerdasan emosi adalah aspek penting yang menghubungkan 3 set: IQ (*Intelligence Quotient*), EQ (*Emotional Quotient*) dan AQ (*Abbreviation as quoted*) dan merupakan pelarut yang membentuk kompleks intelek manusia; EQ mewujudkan momentum untuk IQ untuk mempromosikan, mengintegrasikan dengan AQ untuk memecahkan. Pembelajaran matematik melalui pembelajaran pengalaman memberi peluang kepada murid-murid sekolah rendah untuk mencapai pelbagai, kompleks yang berubah-ubah, dan matematik kompleks serta situasi tidak berstruktur. Keadaan emosi sentiasa muncul dan berubah, ini merupakan ciri matematik yang menarik melalui pengalaman berhubung kecerdasan emosi. Mengambil kesempatan ini, setiap guru akan mencari penyelesaian pedagogi yang sesuai, menyumbang kepada perkembangan kecerdasan emosi untuk murid-murid sekolah rendah, dan pada masa yang sama mengembangkan bentuk kecerdasan lain; asas untuk membina generasi rakyat Vietnam seterusnya dalam revolusi perindustrian 4.0.

Metodologi Kajian

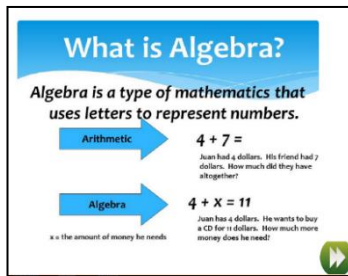
Dalam kajian kuasi-eksperimen ini, penyelidik hanya menggunakan kelas-kelas Tahun 4 di Sekolah Jenis Kebangsaan (Tamil) Menglembu dan Sekolah Jenis Kebangsaan (Tamil) Desa Pinji yang terletak di pinggir Bandaraya Ipoh yang sedia ada tanpa mengubah kedudukan dan memilih pencapaian murid-murid. Sebanyak 84 orang murid-murid digunakan sebagai sampel kajian. Jadual 1 menunjukkan reka bentuk kuasi-eksperimen bagi kaedah ujian pra-pasca kumpulan - kumpulan tidak seimbang:

Kumpulan	Pra Ujian	Variable Bebas	Pasca Ujian
Kumpulan Rawatan (KR)	Kelas Rawatan	Pendekatan Multimedia	Kelas Rawatan
Kumpulan Kawalan (KK)	Kelas Kawalan	Pendekatan Tradisional	Kelas Kawalan

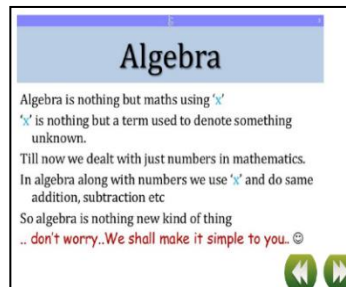
Jadual 1: Reka Bentuk Kajian Kuasi Eksperimen Ujian Pra dan Pasca Tidak Seimbang

Setiap sekolah dibahagikan kepada 2 kumpulan iaitu Kumpulan Kawalan (KK) dan Kumpulan Rawatan (KR). KK dan KR menjalani ujian pra secara manual untuk meninjau sejauhmana murid-murid mengetahui atau memahami konsep Algebra. Selepas ujian pra, KK akan melalui proses kuasi eksperimen iaitu dengan proses menjalankan Pengajaran dan Pembelajaran secara manual dalam Pengajaran dan Pembelajaran. Manakala kumpulan KR akan diajar konsep Algebra dengan menggunakan CD sebagai multimedia interaktif. Kedua-dua proses tersebut akan dijalankan selama 8 waktu Pengajaran dan Pembelajaran. KK dan KR juga akan menjalani ujian pasca pada akhir pembelajaran bagi menentukan pemahaman konsep dalam pencapaian tajuk Algebra yang telah dimurid-muridi. Hasil daripada ujian pasca juga akan dianalisis bagi melihat perbezaan antara keupayaan atau kebolehan kedua-dua kumpulan dengan kaedah pembelajaran yang berbeza.

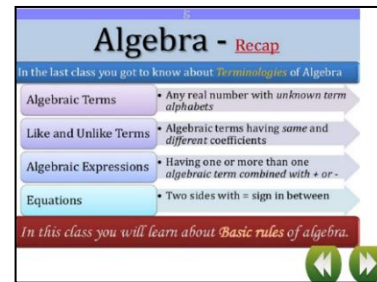
Berikut adalah contoh-contoh pengajaran yang dibina dalam perisian kursus pemikiran algebra.



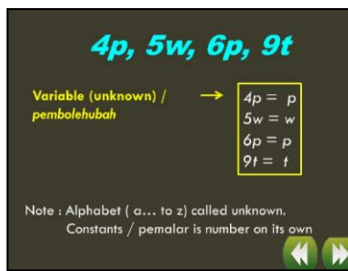
Berbezaan Aritmetik dan Algebra



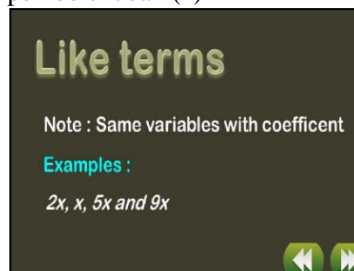
Pengenalan tentang topik Algebra. Cara mengenali pembolehubah (x)



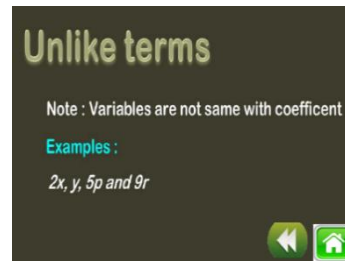
Terma-terma Algebra



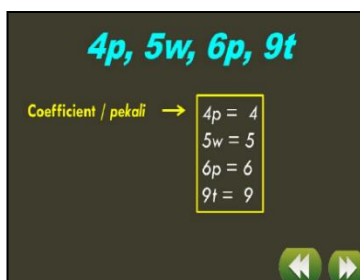
Penerangan tentang pembolehubah sebagai huruf



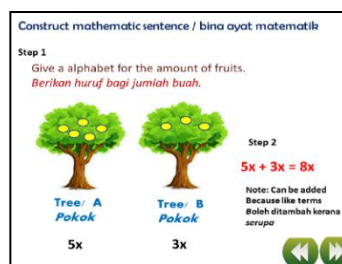
Penerangan tentang terma nilai serupa



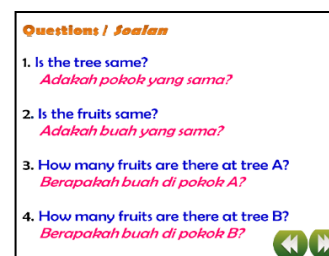
Penerangan tentang terma nilai bukan serupa



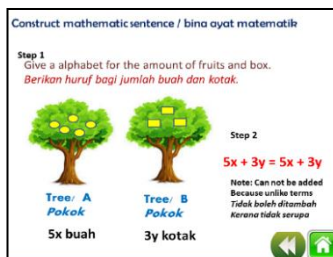
Penerangan tentang terma nilai pekali



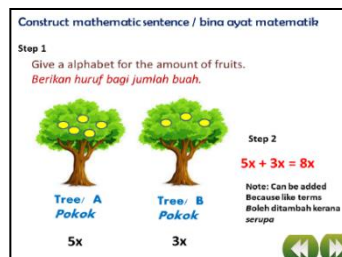
Diberi situasi untuk membina ayat matematik dan menerangkan konsep Algebra



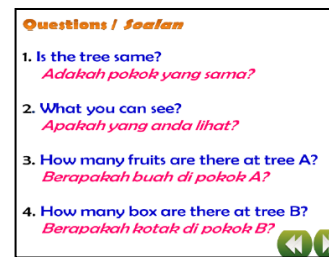
Murid-murid perlu menjawab soalan. Soalan ini akan menjadi panduan untuk memahami dan menjawab situasi gambar pokok (pembolehubah serupa)



Diberi situasi untuk membina ayat matematik dan menerangkan konsep Algebra (pembolehubah bukan serupa)



Diberi situasi untuk membina ayat matematik dan menerangkan konsep Algebra (pembolehubah serupa).



Soalan ini akan menjadi panduan untuk memahami dan menjawab situasi gambar pokok (pembolehubah bukan serupa)

Rajah 5: Pengajaran pertama mengikut ciri rangka kerja Kieran (2016)

Read the statement.
Baca pernyataan berikut.
Note: discuss the answer with your Teacher.


23 subtract from k
 23 tolak dari k

158 less than q
 158 kurang dari q

r more than s
 r lebih dari s

4 times than m
 4 kali lebih m

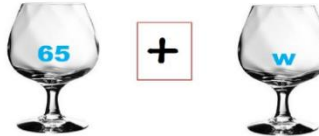

10 equally given to y
 10 diagihkan sama dengan y



Guru meminta murid membaca pernyataan yang diberi

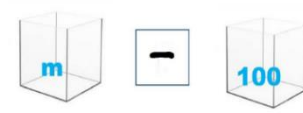

Students are asked to answer orally.
 # pelajar diminta menjawab secara lisan.

65 more than w
 65 lebih daripada w



Murid-murid diminta membaca pernyataan (operasi tambah) kemudian murid melihat gambar dan menerangkan pernyataan yang telah dibaca.

m taken out from 100
 m ambil dari 100



Murid-murid diminta membaca pernyataan (operasi tolak) kemudian murid melihat gambar dan menerangkan pernyataan yang telah dibaca.

3 times p
 3 kali p

Murid diminta membaca pernyataan (operasi darab) kemudian murid melihat gambar dan menerangkan pernyataan yang telah dibaca.

25 divided into 5
 25 dibahagikan kepada 5


Murid diminta membaca pernyataan (operasi bahagi) kemudian murid melihat gambar dan menerangkan pernyataan yang telah dibaca.

Question and Solution
 # Soalan dan Penyelesaian


100 + y

In a bowl there are 100 marbles. After few marbles are added in the bowl, what is the total marbles in the bowl?
 Dalam sebuah bekas terdapat 100 guli. Selepas beberapa guli ditambahkan dalam bekas, berapakah jumlah guli dalam bekas tersebut?

Solution
 Penyelesaian : 100 + y




Murid diminta membaca soalan penyelesaian masalah kemudian guru menerangkan cara membentuk ayat matematik bagi operasi tambah.




Total marbles in the bowl are 10. After few marbles are taken from the bowl, what is the remaining marbles in the bowl?
 Jumlah guli yang ada dalam sebuah bekas adalah 10. Selepas mengeluarkan 8 guli dari bekas, berapakah guli yang baki dalam bekas tersebut?

Solution
 Penyelesaian : 10 - q




Murid-murid diminta membaca soalan penyelesaian masalah kemudian guru menerangkan cara membentuk ayat matematik bagi operasi tolak.



Total marbles in the bowl are 9. Three times of the marbles are added in the bowl, what is the total marbles in the bowl?
 Jumlah guli dalam bekas ialah 9. Tiga kali ganda guli dimasukkan dalam bekas itu, berapakah jumlah guli dalam bekas tersebut?

Solution
 Penyelesaian : 9a



Murid-murid diminta membaca soalan penyelesaian masalah kemudian guru menerangkan cara membentuk ayat matematik bagi operasi darab.

Rajah 6: Pengajaran kedua mengikut ciri rangka kerja Kieran (2016)

<p>What is Algebraic Expression? <i>Apa itu Ungkapan Algebra?</i></p> <p>$P + 3 = 5$ $Q - 5 = 25$ $30 + 25 = G$ $K \times 5 = 40$ $T + 2 = 35$</p> <p><i>Students asked to read the mathematics statement above. Murid diminta membaca pernyataan diatas.</i></p>	<p>Teacher will explain the method of solving. <i>Guru akan menerangkan cara penyelesaian.</i></p> <p>$Q - 5 = 25$ $Q = 25 + 5$ $Q = 30$</p>	<p>$K \times 5 = 40$ $K = 40 \div 5$ $K = 8$</p>	<p>$30 + 25 = G$ $30 + 25 = G$ $55 = G$</p>
<p>$P + 3 = 5$ $P = 5 - 3$ $P = 2$</p>	<p>$T + 2 = 35$ $T = 35 - 2$ $T = 33$</p>		

Murid-murid diminta membaca 5 pernyataan ayat matematik bagi menerangkan maksud ungkapan Algebra. Kemudian guru akan menerangkan satu demi satu soalan operasi tolak, tambah, darab dan bahagi.

<p>Students read the statement. Construct mathematics sentence with the help of teacher. <i>Murid membaca pernyataan. Bina ayat matematik dengan bantuan guru.</i></p> <ol style="list-style-type: none"> 5 parcels of equal weight 45m kg. What is the weight of 3 parcels? <i>5 parcel beratnya sama 45m kg. Berapakah berat bagi 3 parcel?</i> If 6 kg of tea cost RM24x, what is the cost of 2 kg of tea? <i>Jika 6 kg teh berharga RM24x, berapakah harga bagi 2 kg teh?</i> Share 35x stamps equally among 5 girls. How many stamps does each girl get? <i>Kongsi 35x stem secara sama rata kepada 5 perempuan. Berapa stem setiap perempuan dapat?</i> 	<p>Question / Soalan 1</p> <p>5 parcels of equal weight 45m kg. What is the weight of 3 parcels? <i>5 parcel beratnya sama 45m kg. Berapakah berat bagi 3 parcel?</i></p> <p>5 parcels = 45m kg 3 parcels = ?</p> <p>$\frac{3}{5}$ parcels \times 45m kg = _____</p>
<p>Question / Soalan 2</p> <p>If 6 kg of tea cost RM24x, what is the cost of 2 kg of tea? <i>Jika 6 kg teh berharga RM24x, berapakah harga bagi 2 kg teh?</i></p> <p>6 kg tea = RM24x 2 kg tea = ?</p> <p>$\frac{2}{6}$ kg tea \times RM24x = _____</p>	<p>Question / Soalan 3</p> <p>Share 35x stamps equally among 5 girls. How many stamps does each girl get? <i>Kongsi 35x stem secara sama rata kepada 5 perempuan. Berapa stem setiap perempuan dapat?</i></p> <p>5 girls = 35 stems 1 girl = ?</p> <p>$\frac{1}{5}$ girls \times 35 stems = _____</p>

Murid-murid diminta membaca 5 pernyataan penyelesaian masalah. Murid-murid diminta membina ayat matematik. Setiap soalan diberi penyelesaian langkah demi langkah.

Rajah 7: Pengajaran Ketiga mengikut ciri rangka kerja Kieran (2016)

<p>The Equation / Persamaan</p> <p>One of the basic concepts of algebra is the equation. The main thing to know about an equation is that everything on one side of the equal sign (=) must equal everything on the other side of the equal sign. <i>Salah satu konsep asas algebra adalah persamaan. Perkara yang penting harus diketahui tentang persamaan adalah semua yang satu belah tanda (=) mesti sama dengan belah lagi denan tanda tersebut.</i></p> <p><i>Example / Contoh</i></p> <p>$3 + 4 = 7$ $3 + 4 = 2 + 5$</p>	<p>Simple Equation / Persamaan yang mudah</p> <p>Here is a simple equation with x as the variable: <i>Disini adalah persamaan mudah dengan pembolehubah x</i></p> <p>$x + 5 = 7$</p> <p>What does x = ?</p> <p>$x = 2$ because $2 + 5 = 7$.</p>	<p>What is Algebraic Expression Equation? <i>Apa itu Persamaan Ungkapan Algebra?</i></p> <p>$Y + 3 = 5$ $M - 5 = 27$ $30 + 9 = U$ $L \times 5 = 15$ $R + 2 = 8$</p> <p>EQUATION? PERSAMAAN?</p> <p><i>Students are require to say in mathematic statement. Murid diminta sebut = dalam ayat matematik.</i></p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Penerangan tentang maksud persamaan dan contoh persamaan yang mudah sebagai contoh

Slide ini menerangkan persamaan ungkapan Algebra. Murid-murid diminta fokus pada tanda =.

Solve the equation given.
Selesaikan persamaan yang diberi.

1. $q + 26 = 20 + 16$
 $q =$ _____

2. $30 - k = 9 + 8$
 $k =$ _____

3. $42 + m = 77 - 21$
 $m =$ _____

4. $u \times 4 = 32 - 8$
 $u =$ _____

5. $w \div 3 = 3 + 15$
 $w =$ _____

- teacher will guide
- Dibimbing oleh guru

Slide bagi soalan persamaan. Guru akan membimbing murid.

Total sweets in the bowl are 19. I take out few sweets from the bowl, remaining sweets are 1. How many sweets are taken out from the bowl?
Jumlah gula-gula dalam bekas adalah 19. Saya telah mengambil sedikit gula-gula dari bekas, baki gula-gula dalam bekas adalah 1. Berapakah gula-gula yang telah diambil bekas itu?
Find value of sweets taken.
Cari nilai gula-gula yang diambil.

SOLUTION
#PENYELESAIAN

Soalan 1

Solution / *Penyelesaian:*

19 total sweets / jumlah gula-gula
 $q =$ sweets taken / diambil
1 = balance sweets / baki gula-gula
 $19 - q = 1$
 $19 - 1 = q$

Rangka jawapan

Lee has q books. She bought 50 books from the book shop. He has total 120 books. How many q books he has?
Lee mempunyai q buku. Dia membeli 50 buah buku dari kedai buku. Jumlah buku yang dia milik ialah 120. Berapa buah buku dia ada?
Find the value of q .
Cari nilai bagi q .

SOLUTION
#PENYELESAIAN

Solution / *Penyelesaian:*

19 total sweets / jumlah gula-gula
 $q =$ sweets taken / diambil
1 = balance sweets / baki gula-gula
 $19 - q = 1$
 $19 - 1 = q$

Soalan 2 dan rangka jawapan - 2 soalan panjang penyelesaian masalah diberi. Langkah-langkah penyelesaian diberi sebagai penanda di slide tersebut.

Rajah 8: Pengajaran keempat ciri keempat bagi rangka kerja Kieran (2016)

Dapatan Kajian

Secara umumnya, perisian kursus pemikiran Algebra yang dibangunkan ini, mengandungi 4 pengajaran (*Learning*) yang mana di setiap pengajaran disertakan contoh dan aktiviti bagi pemahaman konsep murid-murid. Pengajaran yang dirancang dalam perisian Kursus Pemikiran Algebra adalah seperti berikut:

Kumpulan	Analisis	N	Aktiviti 1	Aktiviti 2	Aktiviti 3	Aktiviti 4
Kawalan	Min	35	1.14	1.31	1.45	1.57
	SD		0.355	0.471	0.505	0.502
Rawatan	Min	49	1.08	1.16	1.18	1.27
	SD		0.277	0.373	0.391	0.446

Jadual 2: Statistik Deskriptif Bagi Kumpulan Rawatan dan Kumpulan Kawalan dalam penggunaan serta Aktiviti Pengukuhan

Petunjuk:

N = Bilangan Sampel

M = Min

SD = Sisihan Piawai

Aktiviti 1 = Aktiviti Pengukuhan 1

Aktiviti 2 = Aktiviti Pengukuhan 2

Aktiviti 3 = Aktiviti Pengukuhan 3

Aktiviti 4 = Aktiviti Pengukuhan 4

Nilai Min bagi empat ciri dalam penggunaan pemikiran algebra sebagai alat dan menghubungkaitkan dengan keempat-empat ciri tersebut menunjukkan penurunan dalam kumpulan kawalan berbanding dengan kumplan rawatan kajian. Aktiviti pertama hingga keempat dalam kajian menjadi bukti bagi penguasaan ciri-ciri pemikiran algebra. Dapatan kajian akhir intervensi iaitu pengajaran keempat jelas menunjukkan bahawa pembelajaran menurusi perisian kursus pemikiran Algebra telah berjaya mempertingkatkan tahap pemikiran

Algebra iaitu min bagi kumpulan rawatan bagi aktiviti pengajaran dan pembelajaran adalah 1.27 manakala min bagi kumpulan kawalan adalah 1.57.

Penutup

Somasundram, P., Akmar, S. N., & Eu, L. K. (2019) kajian bagi generalisasi pencorakkan yang merupakan salah satu unsur yang paling penting dalam memajukan pemikiran fungsi di sekolah rendah yang membawa kepada asas bagi algebra dalam pendidikan. Dapatan menunjukkan tiada korelasi antara kebolehan keupayaan untuk pencorakkan dan pencapaian matematik. Dengan minat yang semakin meningkat dalam mengintegrasikan pemikiran fungsi dalam pengajaran dan pembelajaran sekolah rendah, kebolehan mungkin menarik para pendidik untuk mengenal pasti cara pembentuk pencorakkan dapat menggalakkan pemikiran fungsional dan membawa kepada asas yang kukuh untuk pembelajaran algebra bagi peringkat pembelajaran menengah. Para pendidik matematik, pembuat dasar, dan penyelidik percaya bahawa Algebra harus menjadi sebahagian daripada kurikulum pendidikan dasar. NCTM (National Council of Teachers of Mathematics), pada tahun 2000, telah membenarkan integrasi Algebra ke dalam kurikulum Matematik pada peringkat awal.

Melanjutkan kajian yang melibatkan sampel yang lebih besar iaitu termasuk murid-murid berprestasi tinggi. Melalui kajian tersebut, dapat dikenalpasti kesan pembelajaran menerusi perisian kursus pemikiran Algebra kepada akademik murid-murid yang berbeza. Sekiranya kajian menunjukkan terdapat perkembangan dalam tahap penguasaan pemikiran Algebra secara signifikan maka generalisasi terhadap kesan strategi pembelajaran ini dapat dilakukan dan seterusnya memperkukuh dapatan kajian ini. Di samping itu, penggunaan perisian kursus ini boleh diperluas dan dicadangkan sebagai bahan pengajaran sendiri murid-murid. Melanjutkan kajian yang melibatkan murid-murid tahap 2 yang pelbagai pencapaian. Dapatan kajian ini, pengkaji mencadangkan rangka kerja yang digunakan bagi memastikan murid-murid tahun 5 dan tahun 6 boleh menggunakan perisian kursus pemikiran Algebra.

Perisian kursus pemikiran Algebra boleh digunakan melalui media teknologi maklumat bagi meningkatkan proses pengajaran dan pembelajaran. Perisian ini boleh di muat turun melalui beberapa medium elektronik teknologi terkini seperti berbantuan komputer dan perisian, melalui sistem rangkaian (networking), perisian dan pangkalan data atau melalui sistem internet antaranya termasuklah *Telegram*, *Whatsup*, *facebook* dan sebagainya boleh dicapai oleh murid-murid di mana jua mereka berada.

Rujukan

- Adawiyah, R., Muin, A., & Khairunnisa, K. (2017, January). Mathematical Inductive-Creative Reasoning, A Theoretical Study. In *International Conference on Mathematics and Science Education*. Atlantis Press
- Chung, V. Q., & Thuy, P. T. D. (2018). Developing Emotional Intelligence of Primary Students in Teaching Mathematics through Experiential Activities in Vietnam. *American Journal of Educational Research*, 6(5), 578-585.
- Grønmo, L. S., Lindquist, M., Arora, A., & Mullis, I. V. (2015). TIMSS 2015 mathematics framework. *TIMSS*, 11-27.
- Kamali-Mohammadzadeh, F., Behzadi, M. H., Shahvarani, A., & Hosseinzadeh-Lotfi, F. (2014). Study On The Effect Of Crocodile ICT 605 Software On Mathematics Learning For Teaching Flowchart Based On Constructivism Theory. *Mathematics Education Trends And Research*.
- Kieran, C., Pang, J., Schifter, D., & Ng, S. F. (2016). Early Algebra. *Research into its nature, its learning, its teaching*. Londres: SpringerOpen.

- KPM. (2017). Kurikulum Standard Sekolah Rendah (Kssr). In B. P. Kurikulum, *Matematik Tahun Empat* (p. 46). Putrajaya.: Bahagian Pembangunan Kurikulum, Kementerian Pendidikan Malaysia,.
- Malaysia, K. P. (2012). Pelan pembangunan pendidikan Malaysia 2013-2025. *Putrajaya: Kementerian Murid-muridan Malaysia.*
- Pardimin, A., Ninsiana, W., Dacholfany, M. I., Kamar, K., Teh, K. S. M., Huda, M., ... & Maseleno, A. (2018). Developing Multimedia Application Model for Basic Mathematics Learning. *Journal of Advanced Research in Dynamical and Control Systems*, 10(14), 1347-1356.
- Rahayuningrum, R. H. (2011). Penggunaan Media Pembelajaran Multimedia Interaktif Berbantuan Komputer Untuk Meningkatkan Motivasi Belajar Dan Kemampuan Pemecahan Masalah Matematika Siswa Kelas Viif Di Smp Negeri 2 Imogiri. Peran ICT Untuk Mendukung Implementasi Pendidikan Karakter Dalam Pembelajaran Matematika.
- Sinclair, N., & Baccaglioni-Frank, A. (2016). Digital technologies in the early primary school classroom. *arXiv preprint arXiv:1602.03361*.
- Somasundram, P., Akmar, S. N., & Eu, L. K. (2019). Pattern Generalisation by Year Five Pupils. *International Electronic Journal of Mathematics Education*, 14(2), 353-362.
- Standard, K., & Rendah, S. (2011). Kurikulum standard sekolah rendah 1., 1–26.
- Wallace, D. (2019). Parts of the Whole: Theories of Pedagogy and Kolb’s Learning Cycle. *Numeracy*, 12(1), 17.

KEBERKESANAN ANIMASI CERITA RAKYAT INDIA DALAM MEMPENGARUHI MOTIVASI MURID TAHUN LIMA SJK(T) DI DAERAH KULIM

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Abstrak: Artikel ini membincangkan kajian yang mengukur keberkesanan Animasi Cerita Rakyat India dalam kalangan murid Tahun Lima SJK(T) di daerah Kulim. Kajian ini menggunakan data kualitatif untuk meneroka dua belas prinsip animasi manakala data kuantitatif sebagai pendekatan kaedah kajian. Bagi data kualitatif, sepuluh orang animator telah dipilih untuk menganalisa dua belas prinsip animasi dalam tiga siri Animasi Cerita Rakyat India menggunakan senarai semak prinsip animasi. Bagi data kuantitatif, reka bentuk eksperimen ujian-pra ujian-pasca telah digunakan untuk mengukur keberkesanan Animasi Cerita Rakyat India menggunakan borang soal-selidik. Instrumen ini mengandungi persoalan berkaitan dengan empat skala Model Motivasi ARCS oleh Keller. Seramai 108 murid dari tiga buah sekolah telah dipilih sebagai responden dan diagihkan kepada dua kumpulan (kumpulan rawatan dan kawalan) yang mengandungi 54 murid setiap satunya. Data yang dikumpul dianalisa menggunakan statistik deskriptif dan statistik inferens untuk menjawab objektif kajian yang disenaraikan. Hasil kajian mendapati terdapat perbezaan yang signifikan dalam skor min bagi ujian pra dan ujian pasca yang membuktikan Animasi Cerita Rakyat India memberikan kesan motivasi kepada murid. Ini memberi implikasi bahawa Animasi Cerita Rakyat India boleh dibangunkan bagi menghargai Cerita Rakyat India dan untuk memupuk nilai moral yang baik melalui animasi.

Kata Kunci: animasi, Cerita Rakyat India, keberkesanan, motivasi.

Abstract: The article discusses on a study to measure the effectiveness of Indian Folklore Animation among Year Five SJK(T) pupils in Kulim district. The study uses qualitative data for exploring twelve principles of animation and quantitative data for research methodology approach. For qualitative data, ten animators were selected to analyse the twelve principles of animation in three series of selected Indian Folklore Animation using a animation principles checklist. For quantitative data, a pre-test post-test experimental design was used to measure the effectiveness of Indian Folklore Animation using a questionnaire. The questionnaire consists of four scales of Keller's ARCS Model of Motivation. A total of 108 pupils from three schools was selected as respondents and were assigned into two groups (treatment and control group) consisted of 54 pupils each. Data collected was analysed using descriptive and inference statistics to answer the listed research objectives. Findings show that there are significance differences in mean score for pre-test and post-test to show that the Indian Folklore gave motivational effects to the pupils. This implies that Indian Folklore Animation could be developed for Indian Folklore appreciations and for fostering good moral values through animation.

Keywords: *animation, Indian Folklore, effectiveness, motivation.*

Pengenalan

Industri animasi turut dikenali sebagai salah satu sektor dari industri perfileman. Pengeluaran produksi animasi meningkat setiap tahun dari pelbagai negara seperti Amerika Syarikat, Jepun, negara Eropah, China, Korea dan termasuklah dari Malaysia (Fadli & Md, 2016). Kepelbagaian produk animasi bermula dari hanya animasi kertas, animasi gerak-henti (*stop-motion*) sehinggalah animasi yang menggunakan dua dimensi (2D) dan tiga dimensi (3D) (Faryna & Normah, 2017). Animasi yang mendapat tempat dalam kalangan kanak-kanak dan orang dewasa adalah siri animasi kartun yang turut dibarisi dengan watak adiwira yang diminati dan menjadi ikonik di dunia (Healy, 2020; Painter, 2017).

Perkembangan industri animasi turut membuka penggunaannya dalam bidang lain selain dari industri perfileman terutamanya dalam bidang pendidikan (Noor & Maizatul, 2019). Teknologi dan bahan kandungan animasi dikatakan mampu meningkatkan pemprosesan kognitif, pemikiran dan pemahaman berbanding bahan kandungan yang bersifat statik bergantung kepada kaedah dan situasi penggunaannya (Wang, Zhao, Mayer & Wang, 2020). Selain dari meningkatkan pemahaman, teknologi dan bahan kandungan animasi turut digunakan bagi menaikkan semangat dan motivasi dalam proses pengajaran dan pembelajaran (Saritepeci & Çakır, 2019; Hsu, 2016), meningkatkan perkembangan kognitif (Azniah, Maizatul, Nor & Nor, 2016), menimbulkan suasana pembelajaran aktif (Masuch, Maizatul, & Gadegast, 2015), meningkatkan perilaku serta sikap belajar pelajar terhadap sesuatu subjek (Maizatul & Masuch, 2007) dan membantu memerlihora ingatan kolektif dari segi sejarah, bahasa mahupun penceritaan (Azhar & Mohd, 2017; Carpe Pérez & Pedersen, 2017; Sustainable Heritage Network, 2016).

Khazanah budaya masyarakat India umpamanya boleh memanfaatkan teknologi animasi dengan menghasilkan kandungan animasi yang berkisarkan kepada pembentukan watak, adat resam, cerita lisan dan cerita rakyat yang berkisar kebudayaan masyarakat India di Malaysia. Kajian berkaitan dengan aspek kebudayaan masyarakat India di Malaysia harus di dokumentasikan sebagai satu koleksi dokumentasi dalam bentuk digital terutama dalam aspek sistem normatif, kepercayaan, budaya ekspresif dan budaya kebendaan (Ponniamah, 2016). Hasil positif dari kajian terdahulu telah mencetuskan motivasi bagi kajian ini dilaksanakan dalam memastikan pemerlihoraan khasanah budaya dapat disimpan dan dijadikan koleksi dokumentasi bagi generasi akan datang.

Penyataan Masalah

Pemerlihoraan khasanah budaya masyarakat India di Malaysia dalam bentuk digital terutamanya dalam industri animasi masih agak kecil (Benny & Wenny, 2017; Faryna, Normah, & Mohd, 2016). Walaupun animasi di Malaysia dimulakan dengan siri animasi pendek *Hikayat Sang Kancil* pada tahun 1978 (Hassan, 2007), siri animasi dalam konteks budaya dan masyarakat India di Malaysia perlu diberi perhatian. Salah satu masalah yang diutarakan dalam menghasilkan siri animasi terutamanya di Malaysia adalah berkaitan dengan naratif dan penceritaan (Muhammad & Dahlan, 2019). Naratif dan penceritaan wujud dalam cerita rakyat dalam kalangan masyarakat India di Malaysia, namun penghasilan kandungan dalam bentuk animasi perlu digiatkan. Tidak dinafikan kewujudan watak Mutu, Jarjit, Raju dan Uncle Muthu (animasi *Upin & Ipin*), watak Gopal (animasi *BoBoiBoy*) dan watak Jeneral Rama (animasi *Agen Ali*) sedikit sebanyak memberi ruang dalam memperkenalkan konteks masyarakat majmuk di Malaysia (Dahlan, 2015).

Kajian terdahulu turut melihat kesan penggunaan animasi dalam kalangan masyarakat terutama dari aspek nilai dan budaya. Normaliza, Awang dan Nik (2017) mendapati integrasi nilai dan budaya memberi pengaruh yang tinggi dalam siri animasi *The Kingfisher Stories* yang berlandaskan sepuluh cerita rakyat Melayu. Nilai dan budaya yang dimaksudkan berkaitan dengan nilai kebaikan, berdikari, beradab, sikap hormat, kasih sayang, adil, berani, kebersihan fizikal dan mental, jujur, kerja keras, kerja sama, kesedaran, bersyukur, rasional dan semangat bermasyarakat (Normaliza, Awang, & Nik, 2017). Integrasi nilai dan budaya yang diterapkan dalam siri animasi berkenaan dapat membantu generasi muda memahami dan mengamalkan nilai dalam kehidupan seharian. Ianya bertepatan dengan penerapan nilai murni seperti yang dinyatakan dalam Falsafah Pendidikan Kebangsaan (Kementerian Pendidikan Malaysia, 2020).

Kajian berkaitan dengan elemen pendidikan yang diterapkan dalam kandungan animasi turut diberi perhatian. Kandungan animasi telah dijadikan sebagai bahan bantu mengajar bagi guru menyampaikan ilmu dalam subjek tertentu (Quah & Roseline, 2020). Seringkali subjek matematik, sains, bahasa dan sejarah dikatakan sukar dikuasai oleh murid dan animasi dikatakan berjaya meningkatkan pemahaman (Aizu, Nor & Norasikin, 2017; May, Maizatul & Amri, 2017), pencapaian akademik (Theinmoli & Maizatul, 2017) dan motivasi (Roghdaryanti & Maizatul, 2019) dalam kalangan murid.

Tujuan dan Objektif Kajian

Kajian ini bertujuan untuk mengukur keberkesanan Animasi Cerita Rakyat India sebagai bahan pembelajaran dalam meningkatkan motivasi dalam kalangan murid Tahun Lima SJK(T) di daerah Kulim. Objektif kajian ini adalah untuk:

- 1) Menganalisa dua belas prinsip animasi dalam tiga siri Animasi Cerita Rakyat India,
- 2) Menguji keberkesanan Animasi Cerita Rakyat India sebagai bahan pembelajaran dalam kalangan murid Tahun Lima, dan
- 3) Mengukur tahap motivasi murid Tahun Lima berlandaskan Model Motivasi ARCS (*Attention, Relevance, Confidence and Satisfaction*) dalam penggunaan Animasi Cerita Rakyat India sebagai bahan pembelajaran.

Kaedah Kajian

Reka Bentuk Kajian

Kajian ini dibahagikan kepada dua fasa iaitu fasa keperluan asas dan fasa pelaksanaan. Fasa keperluan asas melibatkan analisis dua belas prinsip animasi dalam siri Animasi Cerita Rakyat India. Bagi mencapai objektif pertama kajian, reka bentuk tatacara kumpulan berfokus (*focus group*) telah dilaksanakan menggunakan senarai semak prinsip animasi. Tatacara kumpulan berfokus merupakan satu perbincangan yang melibatkan lima hingga sepuluh orang pakar bagi memperolehi maklumat berkaitan dengan pengalaman, tanggapan, reaksi atau kepercayaan pakar terhadap produk atau kandungan yang dibina. Fasa pelaksanaan melibatkan pengujian keberkesanan Animasi Cerita Rakyat India sebagai bahan pembelajaran dalam kalangan murid Tahun Lima dan pengukuran tahap motivasi mereka. Bagi mencapai objektif kedua dan ketiga kajian, reka bentuk kajian eksperimen yang melibatkan ujian pra dan ujian pasca bagi mengukur keberkesanan Animasi Cerita Rakyat India dan tahap motivasi murid berlandaskan Model Motivasi ARCS.

Responden Kajian

Sepuluh orang animator (tujuh orang lelaki dan tiga orang perempuan dengan purata umur 39 tahun) telah dipilih dalam fasa keperluan asas. Ianya bertujuan untuk menganalisa dua belas prinsip animasi dalam siri Animasi Cerita Rakyat India menggunakan senarai semak prinsip

animasi. Seramai dua orang mempunyai pengalaman dalam industri animasi dan setara selama 1-3 tahun, enam orang berpengalaman selama 4-6 tahun dan dua orang mempunyai pengalaman melebihi tujuh tahun dalam industri animasi dan setara. Bagi fasa pelaksanaan yang melibatkan reka bentuk kajian eksperimen seramai 108 murid Tahun 5 dari tiga buah sekolah dari daerah Kulim telah dipilih sebagai responden. Memandangkan bilangan murid Tahun 5 agak sedikit, kesemua murid Tahun Lima dari ketiga-tiga sekolah dipilih menjadi responden. Mereka telah diagihkan kepada dua kumpulan (kumpulan rawatan dan kawalan) dengan masing-masing mengandungi 54 orang responden. Pengagihan murid kepada dua kumpulan ini dilaksanakan oleh guru kelas masing-masing dan penyelidik tidak mempunyai penglibatan secara langsung bagi proses pengagihan ini.

Instrumen Kajian

Instrumen pertama yang digunakan dalam kajian ini ialah tiga siri Animasi Cerita Rakyat India sebagai bahan pembelajaran atau bahan rawatan. Terdapat tiga Animasi Cerita Rakyat India yang terpilih untuk kajian ini iaitu *The Blind Vulture* dihasilkan oleh studio animasi Maha Cartoon TV berlandaskan dari sastera *Panchatantra*, *Robber's Sacrifice* yang berlandaskan dari sastera *Hitopadesha* dan *Rabbit's Dream* berlandaskan dari sastera *Jathaka* dihasilkan oleh studio animasi MagixBox. Kedua-dua studio animasi ini berpusat di India. Pemilihan tiga Animasi Cerita Rakyat India adalah berlandaskan faktor populariti setiap siri animasi sebagai cerita rakyat, penggunaan Bahasa Inggeris sebagai bahasa pengantar dan elemen nilai murni yang dibawa oleh setiap penceritaan.

Instrumen kedua yang digunakan bagi menganalisis dua belas prinsip animasi di dalam tiga siri Animasi Cerita Rakyat India adalah senarai semak prinsip animasi. Senarai semak prinsip animasi diambil dari Dua Belas Prinsip Animasi yang diperkenalkan oleh animator dari Disney Studio (Gottlieb, 2017). Senarai semak ini telah melalui proses kesahan kandungan oleh tiga orang pakar yang dilantik. Nilai kesahan kandungan bagi senarai semak ini didapati tinggi dengan 81 peratus. Bermakna, senarai semak berkenaan boleh ditadbir dalam kajian ini kerana nilai kesahannya yang melebihi 70 peratus (Sidek & Jamaludin, 2005).

Instrumen ketiga adalah ujian pemahaman berkaitan dengan pengetahuan dalam Animasi Cerita Rakyat India. Ujian pemahaman ini disediakan oleh guru Bahasa Tamil Tahun Lima dan diambil dari ujian pemahaman yang biasa digunakan dalam pengajaran dan pembelajaran murid Tahun Lima di SJK(T) di Malaysia. Sebanyak 23 soalan terkandung di dalam ujian pemahaman (UP_pra) yang berkaitan dengan Animasi Cerita Rakyat India. Bagi ujian pasca, kedudukan 23 soalan telah diubah bagi mendapatkan keputusan yang lebih jitu (UP_pasca).

Instrumen keempat adalah borang soal-selidik yang dibina berpandukan Model Motivasi ARCS. Model ini merupakan model instruksi khusus untuk menganalisis motivasi yang melibatkan empat skala iaitu perhatian (*attention*), relevan (*relevance*), keyakinan (*confidence*) dan kepuasan (*satisfaction*) (Karabatak & Polat, 2019). Borang soal-selidik kajian ini mengandungi persoalan berkaitan dengan empat skala Model Motivasi ARCS berkenaan dan turut melalui proses kesahan kandungan oleh tiga orang pakar yang dilantik. Nilai kesahan kandungan bagi borang soal-selidik pula adalah tinggi dengan 87 peratus.

Prosedur Menjalankan Kajian

Kajian yang terbahagi kepada dua fasa ini dimulakan dengan fasa keperluan asas dengan tatabara kumpulan berfokus bersama sepuluh animator dalam menganalisis dua belas prinsip animasi dalam tiga siri Animasi Cerita Rakyat India yang terpilih. Proses analisis menggunakan senarai semak yang telah disahkan kandungannya oleh tiga orang pakar. Setelah keputusan

pemetaan siri Animasi Cerita Rakyat India dengan dua belas prinsip animasi diperolehi dan ketiga-tiga siri ini telah dipersetujui pakar untuk digunakan dalam kajian ini, fasa kedua bermula.

Fasa kedua melibatkan reka bentuk kajian eksperimen di tiga buah sekolah di daerah Kulim. Kesemua murid Tahun 5 dari tiga buah sekolah berkenaan telah diagihkan kepada dua kumpulan (kumpulan rawatan dan kawalan) dengan masing-masing mengandungi 54 orang responden. Jadual 1 menunjukkan data demografi bagi responden yang terlibat dari tiga sekolah berkenaan.

Jadual 1: Data Demografi Responden

Sekolah	Kumpulan			
	Rawatan		Kawalan	
	Lelaki	Perempuan	Lelaki	Perempuan
Sekolah A	7	7	11	14
Sekolah B	8	8	9	9
Sekolah C	12	12	6	5
Jumlah berdasarkan gender	27	27	26	28
Jumlah berdasarkan kumpulan	54		54	
Jumlah keseluruhan responden	108			

Pelaksanaan kajian eksperimen dimulakan dengan Sekolah A dan diikuti dengan Sekolah B dan Sekolah C. Prosedur yang sama digunakan bagi ketiga-tiga eksperimen. Prosedur kajian dimulakan dengan ujian pra bagi kumpulan rawatan dan kumpulan kawalan. Bagi ujian pra, semua responden dari kedua-dua kumpulan diminta untuk menjawab ujian pemahaman (UP_pra) dengan 23 soalan Animasi Cerita Rakyat India dalam masa 20 minit. Semua jawapan ujian seterusnya dikumpulkan dan ditanda oleh guru yang terlibat.

Seterusnya, kedua-dua kumpulan dibahagikan kepada dua ruangan pembelajaran yang berbeza. Bagi kumpulan rawatan yang ditempatkan di makmal komputer sekolah, responden diminta untuk menonton ketiga-tiga siri Animasi Cerita Rakyat India melalui saluran YouTube secara sendiri dimulai dengan *The Blind Vulture* dan seterusnya *Robber's Sacrifice* dan diakhiri dengan *Rabbit's Dream*. Prosedur selama 60 minit ini turut dipantau oleh guru pelatih dan penyelidik. Bagi kumpulan kawalan yang ditempatkan di bilik darjah, pengajaran konvensional oleh guru selama 60 minit menggunakan kaedah penceritaan secara verbal.

Usai 60 minit pengajaran guru dan tontonan siri animasi, semua responden dari kedua-dua kumpulan dikumpulkan semula untuk pelaksanaan ujian pasca. Semua responden diminta untuk menjawab 23 soalan dari ujian pemahaman (UP_pasca) yang disediakan berkaitan pengetahuan mereka dalam Animasi Cerita Rakyat India. Guru yang terlibat menanda jawapan bagi ujian berkenaan. Akhir prosedur, semua keputusan dikumpulkan untuk dianalisis.

Analisis Kajian

Kajian ini menggunakan kaedah statistik deskriptif yang menjelaskan data kuantitatif menggunakan peratusan, purata (min) dan sisihan piawai. Kaedah inferensi turut digunakan bagi menghuraikan keputusan skor ujian yang dilaksanakan oleh responden yang diuji secara ujian pra dan ujian pasca.

Dapatan Kajian

Dapatan kajian dibahagikan kepada dua iaitu keputusan pemetaan dan keputusan eksperimen.

Keputusan Pemetaan

Keputusan pemetaan siri Animasi Cerita Rakyat India dengan dua belas prinsip animasi yang diperolehi dari senarai semak prinsip animasi adalah seperti di Jadual 2. Keputusan ini menjelaskan objektif kajian yang pertama iaitu menganalisa dua belas prinsip animasi dalam tiga siri Animasi Cerita Rakyat India.

Jadual 2: Pemetaan Senarai Semak Siri Animasi Cerita Rakyat India dengan Dua Belas Prinsip Animasi

Siri Animasi Cerita Rakyat	<i>The Blind Vulture</i> (<i>Panchatantra</i>)	<i>Robber's Sacrifice</i> (<i>Hitopadesha</i>)	<i>Rabbit's Dream</i> (<i>Jathaka</i>)
Dua Belas Prinsip Animasi			
<i>Squash and Stretch</i> (Tekan dan Lentur)		✓	✓
<i>Staging</i> (Penataan Gerak)		✓	✓
<i>Secondary Action</i> (Gerakan Pendukung)		✓	
<i>Timing</i> (Sela Masa)	✓	✓	✓
<i>Solid Drawing</i> (Lakaran Padu)	✓	✓	✓
<i>Appeal</i> (Daya Tarikan)			
<i>Follow Through and Overlapping Action</i> (Gerakan Mengikuti dan Aksi Pertindanan)			✓
<i>Slow In, Slow Out</i> (Gerakan Perlahan Masuk dan Keluar)	✓		
<i>Exaggeration</i> (Melebih-lebih)		✓	
<i>Arch</i> (Lengkungan)			
<i>Anticipation</i> (Antisipasi)			✓
<i>Straight Ahead and Pose to Pose</i> (Kehadapan dan Peraga)	✓	✓	✓

Berdasarkan Jadual 2, animasi *The Blind Vulture* dari sastera *Panchatantra* menggunakan empat prinsip animasi berbanding *Robber's Sacrifice* dari sastera *Hitopadesha* dan *Rabbit's Dream* dari sastera *Jathaka* yang masing-masing menggunakan tujuh prinsip animasi. Perbezaan penggunaan prinsip animasi ternyata bergantung kepada faktor populariti setiap siri animasi yang mana animasi *Hitopadesha* (497 likes; 4 September 2020) dan *Rabbit's Dream* (335 likes; 4 September 2020) dari studio animasi MagixBox lebih popular berbanding dari *The Blind Vulture* (210 likes; 4 September 2020) yang dihasilkan oleh studio animasi Maha Cartoon TV. Dari jadual berkenaan didapati terdapat dua prinsip animasi yang tidak digunakan dalam ketiga-tiga animasi yang dipilih iaitu prinsip *appeal* (daya tarikan) dan *arch* (lengkungan).

Keputusan Eksperimen

Bagi menguji keberkesanan Animasi Cerita Rakyat India sebagai bahan pembelajaran dalam kalangan murid Tahun Lima, skor ujian dilaksanakan melalui ujian pra dan ujian pasca.

Jadual 3: Perbezaan Min bagi Ujian Pra dan Ujian Pasca bagi Kumpulan Rawatan

Kumpulan		N	Min	Sisihan Piawai	df	T	Sig(2-tailed)
Rawatan	Ujian Pra	54	76.11	10.90	53	-3.782	.000*
	Ujian Pasca	54	84.22	10.11			

* $\alpha = .05$

Perbandingan skor bagi min ujian murid sebelum (ujian pra) dan selepas (ujian pasca) dari setiap sekolah dilakukan menggunakan ujian-t untuk pengukuran berulangan (*paired-samples t-test*). Ia digunakan apabila pelbagai data pengukuran bagi individu yang sama digunakan untuk dibuat perbandingan. Dapatan secara keseluruhannya menunjukkan murid yang mengikuti pembelajaran menggunakan tiga siri Animasi Cerita Rakyat India (responden kumpulan rawatan) berada pada tahap tinggi [$t = -3.782, p > .05$] berbanding responden kumpulan kawalan. Ini menunjukkan wujud perbezaan skor ujian selepas eksperimen antara kumpulan murid yang menggunakan berbanding kumpulan murid dengan pembelajaran konvensional.

Bagi mengukur tahap motivasi murid Tahun Lima terhadap dalam penggunaan Animasi Cerita Rakyat India sebagai bahan pembelajaran, ujian-t digunakan terhadap empat skala motivasi iaitu perhatian, relevan, keyakinan dan kepuasan untuk kumpulan rawatan sahaja. Keputusan digambarkan melalui Jadual 4.

Jadual 4: Perbezaan Min dan Sisihan Piawai bagi Empat Skala Motivasi (Perhatian, Relevan, Keyakinan dan Kepuasan)

Skala	t	df	Sig (2-tailed)	Mean Difference	95 % Confidence Interval of the Difference	
					Lower	Upper
Perhatian	52.92	53	.000	4.10	3.94	4.25
Relevan	65.66	53	.000	4.22	4.09	4.35
Keyakinan	60.06	53	.000	4.30	4.16	4.44
Kepuasan	59.53	53	.000	4.19	4.05	4.33

Kesemua skala motivasi iaitu perhatian, relevan, keyakinan dan kepuasan mencatatkan perbezaan min yang tinggi dengan masing-masing sebanyak 4.10, 4.22, 4.30 dan 4.19. Ini menunjukkan kesemua responden dalam kumpulan rawatan memberikan perhatian yang tinggi dalam penggunaan tiga siri Animasi Cerita Rakyat India sebagai bahan pembelajaran. Mereka juga memberikan persetujuan signifikan yang tinggi berkaitan dengan skala relevan tentang penggunaan tiga siri Animasi Cerita Rakyat India sebagai bahan pembelajaran. Semua responden juga memberikan indikator keyakinan yang tinggi bagi ketiga-tiga siri Animasi Cerita Rakyat India ini. Kepuasan tinggi turut dicatatkan oleh responden bagi penggunaan tiga siri Animasi Cerita Rakyat India sebagai bahan pembelajaran.

Rumusan

Secara umumnya, hasil kajian mendapati terdapat perbezaan yang signifikan dalam skor min bagi ujian pra dan ujian pasca yang membuktikan Animasi Cerita Rakyat India memberikan kesan motivasi kepada murid. Ini memberi implikasi bahawa Animasi Cerita Rakyat India

boleh dibangunkan bagi menghargai Cerita Rakyat India dan untuk memupuk nilai moral yang baik melalui animasi.

Rujukan

- Aizu Khalili Zohedi, Nor Hasbiah Ubaidullah, & Norasikin Fabil (2017). Aplikasi prinsip animasi exaggeration, kemahiran berfikir kritis dan kreatif serta model motivasi ARCS terhadap topik integer matematik tingkatan satu. *Journal of ICT in Education (JICTIE)*, 4(1), 52-65.
- Azhar Ahmad & Mohd Mahzan Awang (2017). Perbezaan aplikasi TMK dalam pengajaran dan pembelajaran sejarah berpandukan demografi guru. *Jurnal Penyelidikan Pendidikan*, 18, 92-104.
- Azniah Ismail, Maizatul Hayati Mohamad Yatim, Noor Azida Sahabudin & Nor Zuhaidah Mohamed Zain (2016). Keupayaan murid sekolah rendah mempelajari dan menerokai bahasa pengaturcaraan visual. *Journal of ICT in Education (JICTIE)*, 3(1), 89-97.
- Benny Muhdaliha & Wenny Maya Arlena (2017). Representasi etnisitas Melayu, China dan India Malay. *Global Komunika*, 1(1), 40-50.
- Carpe Pérez, I.C. & Pedersen, H. (2017). Preserving the collective memory and re-creating identity through animation. Proceedings from the *3rd International Conference on Computer Graphics & Animation*.
- Dahlan Abdul Ghani (2015). Upin & Ipin: Promoting Malaysian culture values through animation. *Historia y Comunicacion Social*, 20(1), 241-258.
- Fadli Abdullah & Md Sidin Ahmad Ishak (2016). *Developing animation curricula for institutions of higher learning in Malaysia: Industry and academic perspectives*. Kuala Lumpur: University of Malaya Press.
- Faryna Mohd Khalis & Normah Mustaffa (2017). Cultural inspirations towards Malaysian animation character design. *Malaysian Journal of Communication*, 3(1), 487-501.
- Faryna Mohd Khalis, Normah Mustaffa, & Mohd Nor Shahizan Ali (2016). The sense of local identity characteristic in Malaysian animation. *International Journal of Arts & Sciences*, 9(3), 485- 496.
- Gottlieb, J.V. (2016). Neville Chamberlain's Umbrella" 'Object' lessons in the history of appeasement. *Twentieth Century British History*, 27(3), 357-388.
- Hassan Abdul Muthalib (2007). From mousedeer to mouse: Malaysia animation at the crossroads. *Inter-Asia Cultural Studies*, 8(2), 288-297.
- Healy, M. (2020). The art of Disney costuming: Heroes, villains, and space between. *Fashion, Style & Popular Culture*, 7(4), 571-574.
- Hsu, K-C. (2016). *Social gamification in multimedia instruction: Assessing the effects of animation, reward strategies, and social interactions on learners' motivation and academic performance in online settings*. PhD Dissertation: University of Kansas.
- Karabatak, S. & Polat, H. (2019). The effects of the flipped classroom model designed according to the ARCS motivation strategies on the students' motivation and academic achievement levels. *Education and Information Technologies*, 25, 1475-1495.
- Kementerian Pendidikan Malaysia (2020, 4 Sept). Falsafah Pendidikan Kebangsaan. Diperolehi dari <https://www.moe.gov.my/>
- Maizatul Hayati Mohamad Yatim & Masuch, M. (2007). GATELOCK: A game authoring tool for children. Proceedings of the *6th International Conference on Interaction Design and Children*. 173-174.
- Masuch, M., Maizatul Hayati Mohamad Yatim, & Gadegast, P. (2015). Developing software for children: Experiences from creating a 3D drawing application. *Mensch & Computer Interaktion 2007: Interaktion im Plural*, 179.

- May Asliza Tan Zalilah, Maizatul Hayati Mohamad Yatim, & Amri Yusoff (2017). Explanation identity of basic programming and conceptual change through the game scene. *Journal of Engineering and Science Research*, 1(2), 93-100.
- Muhammad Nurakram Mohammed Ghazali & Dahlan Abdul Ghani (2019). The importance of great storytelling in Malaysia animation industries. *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, 8(11S2), 231-235.
- Noor Fatasya Idla Abdullah & Maizatul Hayati Mohamad Yatim (2019). Tahap persetujuan pelajar tingkatan dua terhadap penggunaan koswer penceritaan digital bagi matapelajaran sejarah. *International Journal of Heritage, Art and Multimedia*, 2(6), 51-61.
- Normaliza Abd Rahim, Awang Azman Awang Pawi, & Nik Rafidah Muhamad Affendi (2017). Integration of values and culture in Malay folklore animation. *Pertanika Journal Social Sciences & Humanities*, 26(1), 359-374.
- Normaliza Abd Rahim, Awang Azman Awang Pawi, & Nik Rafidah Muhamad Affendi (2017). Dissemination of values and culture through the e-folklore. *TOJET: The Turkish Online Journal of Educational Technology*, 16(1), 32-36.
- Painter, M. (2017). HEROES: A duet in mixed reality. Proceedings of the *ACM SIGGRAPH*, 8, 1-2.
- Ponnamah M. Muniandy (2016). *Kebudayaan masyarakat Tamil Malaysia dalam antologi cerpen RE.Karthigesu*. Tesis Doktor Falsafah. Serdang: Universiti Putra Malaysia.
- Quah, W.B. & Roseline Anak Kok (2020). “Alangkah baik dengan adanya alat bantu mengajar”: Persepsi pelajar terhadap penggunaan fotokit bagi subjek kaunter hadapan. *Journal of ICT in Education (JICTIE)*, 7(1), 16-29.
- Roghdaryanti Hashim & Maizatul Hayati Mohamad Yatim (2019). Hubungan antara motivasi dan penerimaan dengan pencapaian akademik pelajar dalam pembelajaran menggunakan m-pembelajaran di kolej vokasional. *International Journal of Humanities, Management and Social Science*, 2(2), 89-94.
- Saritepeci, M. & Çakır, H. (2019). The effect of digital storytelling activities used in a social studies course on student engagement and motivation. *Educational Technology and the New World of Persistent Learning*, (pp. 24-55). IGI Global.
- Sidek Mohd Noah & Jamaludin Ahmad. (2005). *Pembinaan modul: Bagaimana membina modul latihan dan modul akademik*. Serdang: Penerbit Universiti Putra Malaysia.
- Sustainable Heritage Network (2016, 25 February). Decolonizing language through animation: The Monash Country Line Archive [Video file]. Retrieved from <https://vimeo.com/154645531>
- Theinmoli Munusamy & Maizatul Hayati Mohamad Yatim (2017). Keberkesanan penggunaan kaedah Frog VLE terhadap pencapaian matematik sekolah rendah. *Journal of ICT in Education (JICTIE)*, 4(1), 66-73.
- Wang, F., Zhao, T., Mayer, R.E., & Wang, Y. (2020). Guiding the learner's cognitive processing of a narrated animation. *Learning and Instruction*, 69, 101357.

KAJIAN ASPIRASI KERJAYA KEUSAHAWANAN KE ARAH PEMBUDAYAAN KEUSAHAWANAN DI KALANGAN MAHASISWA INSTITUSI PENGAJIAN TINGGI DI PANTAI BARAT SABAH

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Abstract: *Malaysia sedang dalam proses mengubah keadaan masyarakat daripada masyarakat yang bergantung kepada kerajaan kepada masyarakat yang bekerja sendiri. Kerajaan menyarankan agar masyarakat lebih cenderung kepada membuat kerja sendiri dengan tidak mengharapkan bantuan orang lain. Matlamat ini adalah bagi mengenalpasti aspirasi kerjaya keusahawanan dalam kalangan pelajar institusi pengajian tinggi (IPT) di Pantai Barat Sabah. Kajian ini mengkaji faktor-faktor push yang mempengaruhi pemilihan kerjaya keusahawanan. Kaji selidik telah diedarkan kepada 350 responden dari tujuh buah IPT awam dan swasta di sekitar Pantai Barat Negeri Sabah. Kajian menggunakan SPSS untuk menganalisa hasil dapatan kajian. Hasil kajian menunjukkan secara keseluruhannya pelajar IPT masih berminat untuk menjadi usahawan dan menunjukkan sikap positif terhadap kerjaya usahawan. Selain itu, terdapat pelajar mempunyai tahap ciri keusahawanan yang tinggi. Akan tetapi daripada hasil kajian ini juga menunjukkan pelajar masih kurang yakin dari aspek ciri keusahawanan berani mengambil risiko. Berdasarkan dapatan kajian, beberapa cadangan dikemukakan sebagai panduan dalam usaha untuk mencetuskan aspirasi kerjaya keusahawanan dalam kalangan pelajar IPT di Pantai Barat negeri Sabah. Dalam kajian ini dicadangkan bagi menjayakan hasrat tersebut, semua pihak termasuk pelajar, universiti, pensyarah, kementerian, ibu bapa dan masyarakat harus mengambil peranan. Selain itu, dicadangkan juga agar pihak kementerian meneruskan usaha dan program kearah membudayakan keusahawanan diteruskan di kalangan pelaaajr IPT.*

Keywords: *Kerjaya, keusahawanan, pelajar IPT, pendidikan perniagaan dan keusahawanan, pendidikan tinggi*

Pengenalan

Malaysia dalam era menuju sebuah negara maju kini tidak pernah lelah dalam usaha mengubah keadaan masyarakat daripada masyarakat yang bergantung kepada kerajaan kepada masyarakat yang bekerja sendiri. Kerajaan menyarankan agar masyarakat membuat kerja sendiri dengan tidak mengharapkan bantuan orang lain untuk menyara diri dan keluarga. Ini bermaksud kerajaan secara tidak langsung telah menggalakkan masyarakat untuk berniaga dan menjadi usahawan (Pelan Pembangunan Pendidikan Malaysia 2015-2025, 2016). Menurut Zaidatol (1993), seseorang usahawan muncul bukan kerana memiliki ciri personaliti semulajadi atau dilahirkan, tetapi kerana pelbagai faktor lain dan boleh dilatih. Maka dengan itu, terdapat kajian yang menyatakan bahawa kerjaya keusahawanan dipengaruhi oleh latar belakang pekerjaan ibu bapa seseorang usahawan dan keluarga memainkan peranan dalam mengalakkan kredibiliti

keusahawanan sebagai satu kerjaya (Hisrich, 2000). Pernyataan ini disokong oleh Nor Aishah (2002) yang mendapati wujudnya perkaitan yang agak kuat antara kerjaya keluarga dengan pemilihan kerjaya usahawan.

Maka dengan itu, artikel ini adalah bertujuan menganalisa kecenderungan pelajar Institusi Pengajian Tinggi Awam dan Swasta (IPTA/S) dan aspirasi mereka dalam membudayakan keusahawanan sebagai kerjaya pilihan mereka kelak bila bergraduasi. Skop kajian ditumpukan kepada pelajar IPTA/S adalah kerana golongan ini merupakan golongan yang akan berada dalam pasaran buruh mahir dan separuh mahir serta mereka merupakan golongan yang akan berdepan dengan keadaan peluang pekerjaan yang terhad selepas bergraduasi. Selain itu, mereka merupakan golongan yang diharapkan dapat mencorak negara pada masa hadapan. Graduan daripada peringkat dsijil, diploma dan ijazah sarjana muda ini mempunyai pelbagai kepakaran daripada segi ilmu pengetahuan yang dipelajari yang boleh dimanfaatkan di pelbagai peringkat industri.

Ulasan Literatur

Teori Entrepreneurial Intention

Menurut Coleman dan DeLeire (2003), daripada konsep psikologi tahap kawalan yang dirasakan seseorang dikaitkan dengan kejayaan atau kegagalan hasil dalam situasi yang diberikan. Ini juga merujuk kepada lokus kawalan. Lokus kawalan dalaman menunjukkan bahawa jangkaan hasil seseorang bergantung pada kemampuan dan kawalannya sendiri. Ini berhubungkait dengan pembuktian tentang kepentingan lokus kawalan dalam menentukan hasrat seseorang untuk menjadi usahawan. Selain itu, melalui kajian lepas (Miller, Vries, dan Toulouse, 1982) menjelaskan bahawa orang yang mempunyai lokus kawalan dalaman yang tinggi cenderung untuk melakukan lebih banyak usaha terutama di peringkat awal pengeluaran perniagaan. Ini juga diperkukuhkan dalam kajian Nicolaou et al. (2008). Kajian ini menunjukkan bahawa individu yang mempunyai lokus kawalan dalaman yang tinggi menunjukkan prestasi yang lebih baik daripada mereka yang mempunyai lokus kawalan luaran dalam mengurus dan mengekalkan perniagaan mereka.

Selain daripada lokus kawalan, usahawan yang menerapkan pengambilan risiko tingkat tinggi terbukti memiliki pengaruh yang lebih baik dalam membuat strategi dan dalam perniagaan. Seseorang usahawan juga didorong oleh peluang yang berorientasikan tindakan dengan mengambil risiko yang dikira memberi mereka keyakinan dan pengaruh yang diperlukan dalam pembuatan perniagaan. Ini berkesinambungan dengan Roszkowski, Delaney, dan Cordell (2009), pengambilan risiko disifatkan sebagai tahap ketidakpastian seseorang yang yakin untuk bertahan dan percaya mampu mengatasi sesuatu keadaan dan tindakan. Maka menurut Bandura (1994) menyatakan bahawa kepercayaan dan harapan diri sebagai proses dalaman seseorang yang dijelaskan dalam teori kognitif sosial seperti keberkesanan diri menjadi perantara niat dan tingkah laku seseorang. Niat untuk meneruskan keusahawanan sebagai kerjaya dapat dikesan dengan melihat tahap keberkesanan diri dalam diri seseorang.

Peranan Institusi Pengajian Sebagai Pembentuk Aspirasi Keusahawanan

Kajian oleh O'Connor (2013) menyatakan bahawa usahawan dengan tahap pembelajaran formal yang lebih tinggi dalam bidang atau pengajian keusahawanan mampu menunjukkan peningkatan niat dalam memilih keusahawanan sebagai pilihan kerjaya mereka. Ini telah disokong oleh kajian Minniti et al. (2006) menunjukkan korelasi positif antara pelajar yang belajar di institusi pengajian tinggi dengan niat keusahawanan jika dibandingkan dengan individu yang tidak mempunyai Pendidikan dalam bidang keusahawanan. Di dalam kajian Heinonen dan Poikkijoki (2006) telah mengenalpasti bahawa objektif pembelajaran

keusahawanan formal adalah bagi memahami keusahawanan, bertindak dengan cara keusahawanan, dan belajar menjadi usahawan. Ditambah lagi dengan kajian oleh Fayolle dan Gailly (2008) yang telah berpendapat bahawa proses pembelajaran keusahawanan adalah pengetahuan yang diperoleh dengan cukup yang boleh mendorong perubahan sikap dan persepsi keusahawanan yang akan mewujudkan niat untuk memilih kerjaya sebagai usahawan. Selain itu, keadaan ini juga akan memfokuskan pengetahuan yang diperoleh sepenuhnya secara praktikal dan sebagai kerja profesional.

Kemahiran Keusahawanan

Seorang pelajar yang memiliki kualiti keusahawanan dikatakan boleh membantu membangunkan diri mereka sebagai seorang usahawan yang berjaya kelak. Menurut Fayolle et. Al (2010) yang menyatakan bahawa keusahawanan diukur dalam tiga cara kemahiran; i) menilai pengetahuan pelajar dan berdasarkan peperiksaan; ii) menilai kursus dan guru melalui kaji selidik pelajar; iii) menilai pekerjaan dan status pendapatan peserta selepas program berakhir. Akan tetapi pendapat ini tidak mendapat kata sepakat iaitu mengenai kriteria seseorang yang perlu digunakan untuk menilai keberkesanan program seperti keusahawanan (Hogan, 2007). Kajian oleh Mullan (2001) telah menggunakan kriteria seperti masa, kesan konteks, aspek kewangan, elemen alam sekitar, faktor peribadi, sosial status, peranan model atau faktor keluarga, minat, dan motivasi. Manakala menurut Mohamed Khaled (2011) pula kemahiran keusahawanan boleh dipupuk dan dikukuhkan melalui nilai-nilai dan budaya keusahawanan semasa pengajian seorang pelajar yang akan menjamin pelajar untuk menjadikan keusahawanan sebagai kerjaya selepas tamat pengajian.

Selain itu, Hytti dan Gorman (2004) menyatakan bahawa kaedah pengajaran yang sesuai di dalam memupuk aspirasi dan kemahiran keusahawanan adalah melalui penggunaan media, ceramah atau seminar. Malah, menurut penyelidik juga percaya bahawa kaedah praktikal amat sesuai bagi memudahkan dan mengukuhkan kepentingan dalam kerjaya keusahawanan termasuk aktiviti-aktiviti kehidupan sebenar di dunia luar (Ida Kamalawati, 2013).

Nilai Keusahawanan Mahasiswa

Hodgkinson (1992) menyatakan bahawa lokus kawalan dimanipulasi oleh jumlah keupayaan individu. Maka bagi individu yang berada di peringkat tinggi dalam organisasi lebih berwibawa dalam kedudukan eksekutif lebih cenderung memiliki lokus dalaman yang tinggi kawalan. Hal ini disebabkan oleh fakta bahawa keadaan memungkinkan mereka untuk mengendalikan hal-hal yang pasti akan mengubah keadaan sebelumnya. Sebaliknya, individu berpangkat rendah atau mereka yang tidak mempunyai kuasa atau tanggungjawab yang diberikan selalunya akan menunjukkan lokus kawalan luaran. Individu-individu ini percaya bahawa sebarang usaha yang dilakukan tidak akan memberi kesan kepada hasilnya. Namun begitu menurut Forte (2005), persepsi seseorang terhadap lokus kawalan dalaman dapat ditingkatkan dengan peningkatan tahap kematangan dan pertumbuhan psikologi. Tambahan lagi minda yang matang dan kedudukan psikologi yang kuat membolehkan seseorang individu untuk mendapatkan tempat kawalan dalaman yang lebih tinggi walaupun tanpa diberi kuasa yang berwibawa atau berada di peringkat jawatan yang lebih tinggi. Ini disimpulkan bahawa orang yang mempunyai lokus kawalan dalaman yang tinggi cenderung untuk melakukan aktiviti keusahawanan. Bird (1988) konsisten dengan kajian berkenaan yang menunjukkan bahawa tahap kawalan lokus dalaman yang lebih tinggi mendorong orang untuk mengambil sesuatu dengan lebih serius, walaupun dalam keadaan kecil dan tidak signifikan di dalam organisasi. Individu berkenaan juga cukup berhati-hati dalam tindakan mereka dan menguruskan risiko dengan baik. Maka

kesimpulannya, ini menunjukkan bahawa lokus kawalan sebagai faktor yang signifikan mempengaruhi niat keusahawanan (Ahmed, 1985).

Usahawan yang mempunyai kecenderungan mengambil risiko lebih cenderung berprestasi lebih baik dan berjaya daripada individu yang tidak mempunyai kekuatan dalam pengambilan risiko. Oleh demikian, ditunjukkan bahawa niat untuk membuat perniagaan pada umumnya gagal jika sekiranya ketahanan atau persediaan kepada risiko (Kimball, Sahm dan Shapiro, 2008). Maka kesimpulannya bahawa seseorang yang biasanya gagal dalam perniagaan adalah individu yang mempunyai tahap kepercayaan kepada penciptaannya yang rendah. Ini berbeza dengan individu yang berani mengambil risiko dalam perniagaan kerana mereka mengetahui tentang keperluan dan risiko dan kemungkinan masa depan dari perniagaan yang mereka rancang.

Selain itu, kajian terdahulu juga menunjukkan bahawa keberkesanan diri dianggap sebagai ciri keperibadian yang secara umum dikonsepsikan dalam menjalankan sesuatu tugas (Badura, 2010; Schunk, 1991; Maddux, 2012; Schwarzer, 2014). Seseorang itu mungkin mahir berkomunikasi di hadapan umum tetapi kurang mahir dalam pengiraan. Oleh itu, keberkesanan diri dalam keusahawanan adalah kepercayaan individu terhadap kemampuannya untuk terlibat dalam aktiviti keusahawanan seperti membuat, mengekalkan, dan mengekalkan perniagaan. Kajian Barling dan Beattie (1983) menunjukkan bahawa terdapat hubungan signifikan antara keberkesanan diri dan niat keusahawanan. Di dalam kajian Wang, Wong, dan Lu (2002) telah menggunakan keberkesanan diri sebagai factor untuk mengetahui niat keusahawanan dan dalam penghasilan hubungan positif antara satu sama lain.

Kajian sebelumnya juga menunjukkan bahawa individu yang mempunyai tahap pencapaian yang tinggi cenderung lebih cekap dan berkesan menggunakan usaha yang lebih tinggi dalam menjalankan tugas serta mempunyai rasa tanggungjawab yang tinggi. Golongan ini juga berjaya menghasilkan idea yang lebih inovatif daripada mereka yang mempunyai tahap pencapaian yang lebih rendah (McClelland, 1978; 1987). Penyelidik terdahulu mempunyai dapatan kajian serupa berkenaan kesan keperluan pencapaian terhadap niat keusahawanan (Hansemark, 1999; Gürol dan Atsan, 2006). Kajian berkenaan menyatakan bahawa keinginan kejayaan dari segi wang, kemasyhuran, dan/atau kedudukan dalam kehidupan memainkan peranan besar dalam niat untuk terlibat dalam aktiviti keusahawanan dan memulakan perniagaan sendiri.

Seterusnya, menurut Bandura (1989) salah satu sikap utama yang sering dimiliki oleh seorang usahawan terutamanya usahawan yang berjaya, adalah kawalan peribadi. Individu yang mempunyai rasa kawalan peribadi yang tinggi dapat meningkatkan kawalan terhadap tindakan dan pemikiran mereka, serta didorong oleh motivasi dan bukannya perasaan dan emosi. Sehubungan itu juga, Shepherd dan McMullen (2002) telah menyatakan bahawa kawalan peribadi yang dirasakan pada seorang usahawan adalah yang mempunyai kekuatan untuk mengembangkan kepercayaan dari orang lain untuk melakukan perkara yang betul untuk perniagaan seperti membina hubungan pelanggan yang baik, pengurusan sumber manusia yang adil, dan juga menguruskan kewangan dengan sewajarnya.

Greenberger dan Sexton (1987) telah mengkaji hubungan kawalan peribadi dan niat dalam menceburkan diri dalam bidang keusahawanan. Hasil dalam kajian ini telah menunjukkan bahawa terdapat hubungan yang signifikan antara kawalan peribadi dan niat keusahawanan. Ini disokong oleh Simon et al. (2000) yang berpendapat bahawa kecekapan keusahawanan akan mencapai tahap yang optimum apabila mempunyai kawalan peribadi yang tinggi. Ini bermaksud seseorang yang mempunyai kawalan peribadi yang tinggi akan menilai persekitaran, peluang, dan sumber daya mereka dengan lebih baik sehingga mereka mempunyai keyakinan untuk memulakan perniagaan yang mereka sukai.

Harga diri ditakrifkan sebagai keyakinan diri individu dan kecekapan yang dirasakan dalam menjalankan perniagaannya (Solymossy 1998). Selain itu menurut Stimpson et al. (1991), didefinisikan bahawa harga diri berkaitan dengan kepercayaan diri dan kompetensi yang dirasakan seseorang dalam hubungannya dengan urusan dan perniagaannya. Oleh yang demikian, adalah signifikan jika harga diri dimasukkan sebagai antara factor di dalam penentu niat keusahawanan (Robinson et al., 1991). Maka kesimpulannya individu dengan harga diri yang tinggi akan mendapat skor yang lebih tinggi dalam niat keusahawanan. Oleh itu, ini juga menunjukkan bahawa melalui harga diri akan menunjukkan banyak perbezaan antara usahawan dan bukan usahawan.

Methodologi

Sampel yang disasarkan untuk kajian ini adalah 350 pelajar senior yang terdiri daripada populasi pelajar tahun akhir di beberapa institusi pengajian tinggi di Pantai Barat, Sabah yang mengambil sijil, diploma dan ijazah pertama. Ciri pemilihan sampel adalah dari pelbagai etnik, program, dan tahun akhir pengajian serta melibatkan kedua-dua jantina sebagai lelaki dan wanita. Kaedah persampelan dalam kajian ini adalah *convenience sampling* dengan mendapatkan maklumat pelajar yang mengikuti kursus Keusahawanan dari penyelarass kursus di IPTA/S masing-masing. Perjumpaan khas yang telah diadakan untuk mendapatkan maklumat dengan mengedarkan borang soal selidik dalam bahasa Melayu dan Inggeris. Responden dikehendaki menjawab sendiri soal selidik berkenaan. Di samping itu, soal selidik atas talian *google* juga diedarkan kepada responden yang gagal hadir dalam pertemuan yang telah diatur dengan IPTA/S.

Maklumat yang diperolehi meliputi profil responden seperti jantina, bangsa, jurusan pengajian, pilihan keusahawanan sebagai kerjaya dan alasan, kursus keusahawanan yang pernah dihadiri, minat dan sikap terhadap kerjaya keusahawanan, latar belakang pekerjaan ibu bapa, pendapatan ibu bapa dan ahli keluarga peniaga. Selain itu, para pelajar diminta memberi maklumat tentang faktor-faktor utama yang mempengaruhi mereka dalam memilih kerjaya keusahawanan, ciri keusahawanan yang dimiliki, minat dan sikap mereka terhadap kerjaya keusahawanan.

Skala Five-Likert digunakan (Skor 1- Sangat tidak setuju/Tidak mempengaruhi Skor 5 - Sangat setuju/Sangat mempengaruhi) kepada faktor pemilihan dan penolakan yang mempengaruhi niat aspirasi keusahawanan. Untuk aspirasi kerjaya keusahawanan pada masa hadapan, pelajar harus menyatakan sama ada mereka merancang untuk menceburkan diri dalam bidang keusahawanan selepas tamat pengajian atau tidak. Dari jumlah 350 responden hanya 251 borang soal selidik yang boleh digunakan iaitu mewakili 72 peratus reponden yang boleh digunakan dan mewakili pelajar di IPTA / S di Pantai Barat Sabah.

Analisis Data dan Dapatan

Dapatan kajian ini dibahagikan kepada empat bahagian, iaitu: (1) Minat pelajar terhadap kerjaya usahawan, (2) Faktor-faktor mempengaruhi pemilihan kerjaya keusahawanan, dan (3) Tahap ciri keusahawanan. Dari segi profil responden, Jadual 1 menunjukkan perincian seperti berikut:

Jadual 1: Profil Responden

Item		Frekuensi	Peratusan
Jantina	: Male	77	31.0%
	: Female	174	69.0%
Pengalaman Lepas dalam Kerjaya	: Ya	197	78.5%
Keusahawanan	: Tidak	54	21.5%
Tahap Pendidikan	: Sijil	10	3.9%
	: Diploma	80	31.9%
	: Ijazah Pertama	161	64.2%
Pengambilan Kursus	: Elektif	61	24.3%
	: Jangka Pendek (Kurang 2 tahun) – di Universiti	158	62.9%
	: Jangka Pendek (Kurang 2 tahun) – Agensi Luar	18	7.2%
	: Jangka Panjang (Lebih 2 tahun) – di Universiti	10	4.0%
	: Jangka Panjang (Lebih 2 tahun) – Agensi Luar	4	1.6%

Melalui Jadual 1 di atas, responden seramai 251 adalah menjalankan perniagaan secara separuh masa walaupun terdapat 54 responden (21.5%) yang tidak mempunyai pengalaman dalam keusahawanan. Responden merupakan pelajar Tahun akhir dan senior yang sedang mengikuti pengajian dalam pelbagai peringkat pengajian; sijil, diploma dan ijazah pertama.

Kecenderungan Keusahawanan Siswazah

Jadual 2 menunjukkan bahawa pelajar adalah cenderung kepada Keusahawanan Siswazah. Jadual ini menunjukkan kecenderungan pelajar kepada aktiviti keusahawanan tanpa mengira jantina. Jadual 2 menunjukkan bahawa tiada perbezaan signifikan mengikut jantina kepada aspirasi keusahawanan di kalangan mahasiswa IPTA/S.

Jadual 2 Perbezaan Jantina Kepada Aspirasi Keusahawanan Siswazah

Item	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig.
Jantina	0.941	0.333	0.510	249	0.611
Equal variances assumed					
Equal variances not assumed			0.500	96.021	0.618

Faktor Mempengaruhi Aspirasi Keusahawanan Pelajar IPTA/S

Manakala Jadual 3 adalah menunjukkan Faktor yang mempengaruhi Aspirasi Keusahawanan Pelajar IPTA/S.

Jadual 3 Faktor Mempengaruhi Aspirasi Keusahawanan Pelajar IPTA/S

Faktor	Min
Proses pembelajaran kursus keusahawanan	2.86
Kursus keusahawanan yang diikuti	3.65
Persediaan kepada risiko perniagaan yang dipelajari	2.98
Bantuan sokongan oleh kerajaan negeri	3.80
Sokongan pihak berkaitan	3.59
Sokongan ahli keluarga	3.56
Peranan media tempatan	3.71
Kekurangan simpanan dan aset persendirian	1.94
Kekurangan maklumat memulakan perniagaan	1.70
Risiko diluar jangkaan	3.75
Indikator ekonomi semasa	3.46
Ketakutan kepada kegagalan	1.51
Cukai atau fi memulakan perniagaan	3.54
Kesukaran mencari buruh/pembantu	3.46

Tahap Ciri Keusahawanan Dalam Kalangan Pelajar IPTA/S

Jadual 4 adalah merupakan ciri keusahawanan siswazah yang dapat digarap di dalam kajian ini.

Jadual 4 Ciri Keusahawanan Siswazah IPTA/S

Ciri	Min	SD
Lokus kawalan	3.82	1.09327
Pengambilan risiko	3.65	1.04521
Keberkesanan diri	3.78	1.04014
Keperluan kepada Pencapaian	3.12	0.9826
Kawalan peribadi	3.71	1.01642
Keyakinan Diri	3.68	1.12656

Implikasi dan Perbincangan

Kajian ini membuktikan bahawa perbezaan jantina lelaki dan perempuan tidak memberikan perbezaan yang signifikan kepada aspirasi keusahawanan di kalangan pelajar. Hasil daripada kajian ini, di dapati pelajar lelaki dan perempuan menjadikan keusahawanan sebagai aspirasi kerjaya pilihan mereka.

Hasil daripada kajian ini, didapati secara puratanya pelajar bersetuju dan berpandangan positif dengan lapan faktor yang mempengaruhi aspirasi siswazah dalam keusahawanan sebagai kerjaya pilihan. Dua faktor lagi pelajar adalah neutral atau tidak pasti dan manakala tiga faktor lagi pelajar tidak bersetuju faktor berkenaan dan percaya factor berkenaan mempengaruhi aspirasi keusahawanan siswazah. Faktor bantuan sokongan oleh kerajaan negeri mendapat skor setuju tertinggi daripada faktor mempengaruhi aspirasi keusahawanan siswazah. Selain daripada itu, pelajar juga bersetuju dengan faktor peranan media tempatan, kursus keusahawanan yang diikuti, sokongan pihak berkaitan dan sokongan keluarga. Pelajar juga mempunyai sikap yang positif dan tidak bersetuju dengan factor seperti ketakutan kepada kegagalan, kekurangan simpanan dan aset persendirian serta kekurangan maklumat perniagaan sebagai faktor halangan kepada aspirasi keusahawanan siswazah. Manakala bagi faktor risiko luar jangkaan, cukai atau fi memulakan perniagaan serta kesukaran mencari buruh atau pembantu merupakan antara factor penghalang kepada aspirasi keusahawanan pelajar.

Kesimpulannya, pelajar bersikap positif terhadap kerjaya keusahawanan sebagai kerjaya pilihan mereka.

Dari aspek ciri keusahawanan, secara keseluruhannya pelajar memiliki ciri berkenaan dan bersetuju dengan pernyataan bagi setiap ciri. Ini membuktikan bahawa pelajar mempunyai ciri keusahawanan dan menjadikan keusahawanan sebagai aspirasi kerjaya mereka. Ciri keusahawanan yang mendapat skor tertinggi adalah lokus kawalan dan keberkesanan diri pelajar sebagai usahawan. Selain itu, ciri kawalan peribadi, pengambilan risiko dan keyakinan diri merupakan ciri yang terdapat pada pelajar IPTA/S di sekitar pantai barat Sabah.

Kesimpulan

Kajian ini mengenal pasti aspirasi kerjaya keusahawanan dalam kalangan pelajar IPTA/S di Pantai Barat Sabah. Faktor-faktor tarikan dan tolakan (push & pull) yang mempengaruhi pemilihan kerjaya keusahawanan tersebut dikaji bagi membantu pihak pembuat polisi, pembuat keputusan dan juga penyedia perkhidmatan Pendidikan di dalam memperkukuhkan lagi usaha membantu bakal graduan dari segi persediaan menjadi seorang usahawan. Lebih daripada separuh pelajar yang dikaji menyatakan pilihan mereka untuk menjadikan keusahawanan sebagai aspirasi kerjaya. Ini dikuatkan lagi dengan ciri-ciri keusahawanan yang ada pada para pelajar berkenaan.

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Rujukan

- Ahmed, S.U. (1985), "nAch, risk-taking propensity, Locus of Control and entrepreneurship", *Personality and Individual Differences*, Vol. 6 No. 6, pp. 781-2.
- Bandura, A. (1986). *Social foundation of thought and action: A socialcognitive view*. Englewood Cliffs, NJ: Prentice-Hall
- Bandura, A. (1994). Self-Efficacy. Dlm *encyclopedia of human behavior*. Jil. Vol. 4. Orlando: Academic Press
- Fayolle, A., Basso, O., & Bouchard, V. (2010). Three Levels of Culture and Firms' Entrepreneurial Orientation: A Research Agenda. *Entrepreneurship & Regional Development*, 22(7/8), 707-730.
- Fayolle, A., Gailly, and Lassas-Clerc, N. (2006). Assessing the impact of entrepreneurship education programmes: A new methodology. *Journal of European Industrial Training*, Vol. 30(9), pp. 701-720.
- Forte, A. (2005, April/May). **Locus of control and the moral reasoning of managers**. *Journal of Business Ethics*, Vol. 58, 65-77.
- Greenberger, D. B., & Sexton, D. L. (1988). An interactive model for new venture creation, *Journal of Small Business Management*, 26(3), 107-118.
- Hisrich, R.D. & Peters, M.P. (2000). *Entrepreneurship*. Edisi Ke 4. Boston: Irwin McGraw Hill. Malaysia. 1980.
- Hisrich, R.D. (2000), "*Can psychological approaches be used effectively: an overview*", *European Journal of Work and Organizational Psychology*, Vol. 9 No. 1, pp. 93-6.
- Hogan, R. L. (2007). "The historical development of program evaluation: Exploring the past and present," *Online Journal of Workforce Education and Development*, vol. 2, no. 4, pp. 1-14.

- Ida Kamalawati, A. B. (2013). Entrepreneurship education inTVET curriculum. [Online]. Available at: http://politeknik.gov.my/webjpp2/penyelidikan/paper/files/Ida%20Kamalawati_Entrepreneurs%20Education%20in%20TVET%20Curriculum.pdf
- Mc Mullan, W. and Boberg, A. (2001). "The relative effectiveness of projects in teaching entrepreneurship," *Journal of Small Business and Entrepreneurship*, Vol. 9 (9), pp. 14-24.
- McMullan, E.D. and Long, W.A. (1987), "Entrepreneurship education in the nineties", *Journal of Business Venturing*, Vol. 2, pp. 261-75.
- Miller, D., Kets de Vries, M., & Toulouse, J.-M. (1982). Top Executive Locus of Control and Its Relationship to Strategy-Making, Structure, and Environment. *Academy of Management Journal*, 25(2), 237-253.
- Mohamed Khaled, N. (2011). Opening speech text: Malaysia Polytechnics Entrepreneurship Centre (MPEC), Politeknik Sultan Salahuddin Abdul Aziz Shah, Shah Alam, 30 Oktober.
- Mohd Amir Shariffudin Hashim, Barjoyai Bardai, Rogayah Md Zain & Zulkifli Senteri, (1995). Program Usahawan Muda: Kajian keberkesanan peningkatan motivasi dan minat terhadap keusahawanan di kalangan pelajar sekolah menengah. *Jurnal Pendidikan*, Vol. 20, pp. 67-83.
- Moravec, J. W. (2008). A new paradigm of knowledge production in higher education. *The Horizon*, Vol. 16 (3), pp. 123-136.
- Nor Aishah Buang (2002). *Asas Keusahawanan*. Shah Alam Penerbit Fajar Bakti.
- Norasmah, O., Ahmad Azmi, M. A. and Mohd Fauzi, M. J. (2007). Entrepreneurial Index of Malaysian Universities Students: in *Entrepreneurship & Business Competitiveness*, June, pp. 56-70.
- Norasmah, O., Norhafiza, O. and Rahmah, I. (2012). *The International Proceedings of the Economics Development and Research: Economics, Trade and Development*, Singapore: IACST Press, Vol. 36, pp. 84-89.
- Norfadhilah, N. and Norasmah, O. (2012). Entrepreneurship Program Evaluation in Polytechnics: Lecturers Perspectives. *International Proceedings of the Economics Development and Research: Economics, Trade and Development*. Singapore: IACST Press, Vol. 36, pp. 1-6.
- Pelan Pembangunan Pendidikan Malaysia 2015-2025, (2016). Kementerian Pengajian Tinggi Malaysia.
- Rancangan Malaysia Ketiga. Kuala Lumpur: Percetakan Nasional Berhad. Malaysia, (1990).
- Rancangan Malaysia Ketujuh. Kuala Lumpur: Percetakan Nasional Berhad.
- Robinson, P. B., Stimpson, D. V., Huefner, J. C., & Hunt, H. K., (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship Theory and Practice*, 15(4), 13-31
- Zaidatol Akmaliaiah Lope Pihie and Habibah Elias, (2008), *Competencies needed by Entrepreneurs: Implication for best practices*. Penerbit UPM, Serdang, UPM: UPM Press

KEBOLEHGUNAAN APLIKASI MUDAH ALIH (E-MATHONE) BAGI KURSUS MATEMATIK KEJURUTERAAN 1 DI POLITEKNIK MERLIMAU

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Abstract: Tujuan kajian ini dijalankan adalah untuk meninjau keberkesanan penggunaan bahan gamifikasi terhadap pencapaian pelajar bagi topik nombor kompleks. Responden kajian ini terdiri daripada enam puluh orang pelajar daripada jabatan kejuruteraan yang mengambil kursus Matematik Kejuruteraan 1. Responden akan dibahagikan kepada dua kumpulan iaitu kumpulan rawatan yang menggunakan bahan gamifikasi semasa proses pengajaran dan pembelajaran manakala kumpulan kawalan menggunakan kaedah pengajaran tradisional semasa sesi pengajaran dan pembelajaran. Reka bentuk kajian ini menggunakan kuasi eksperimen bagi mengetahui adakah terdapat perbezaan sebelum dan selepas penggunaan bahan gamifikasi tersebut. Kaedah kuasi eksperimental digunakan apabila responden tidak dapat diagihkan secara rawak di mana sampel telah diaturkan terlebih dahulu contohnya bilangan pelajar di dalam sesuatu kelas yang telah ditentukan terlebih dahulu. Kedua-dua kumpulan pelajar akan diberikan soalan ujian pra dan pasca kemudian data tersebut akan dianalisis menggunakan SPSS versi 22 dengan menggunakan kaedah Ujian T Sampel Tidak Bersandar (Independent Sample T-Test) bagi melihat perbezaan markah ujian pra dan pasca kedua-dua kumpulan. Pada peringkat awal kedua-dua kumpulan telah diberikan ujian pra dan hasilnya menunjukkan tidak terdapat perbezaan yang signifikan antara kedua-dua kumpulan tersebut. Selepas ujian pasca dilaksanakan, didapati terdapat perbezaan yang signifikan antara kumpulan rawatan dan kumpulan kawalan tersebut. Oleh itu dapat disimpulkan bahawa pendekatan gamifikasi dapat membantu dalam meningkatkan kefahaman pelajar terhadap topik nombor kompleks jika dibandingkan dengan penggunaan kaedah tradisional sepenuhnya di dalam sesi pengajaran dan pembelajaran.

Keywords: Gamifikasi, Pengajaran Dan Pembelajaran, Kuasi Eksperimen

Pengenalan

Dunia pendidikan pada zaman digital ini bersifat global dan acapkali dikaitkan dengan kaedah pengajaran dan pembelajaran berasaskan teknologi (Nasir, 2020). Begitu juga dengan kemajuan teknologi komunikasi dan maklumat (ICT) menjadikan masyarakat dunia dan sesebuah organisasi semakin terkait antara satu sama dalam satu perkampungan dunia tanpa sempadan (Chear, 2017). Arus kemajuan dalam teknologi maklumat menjadikan masyarakat dunia dan kesemua organisasi mempunyai perhubungan yang rapat antara satu dengan yang lain tanpa sempadan. Arus kemajuan teknologi ini memberi kesan kepada bidang pendidikan. Pendekatan pengajaran pada masa sekarang memerlukan kombinasi teknologi di dalam penyampaian maklumat oleh pengajar kepada pelajar. Salah satu kaedah penyampaian yang sedang berkembang dalam bidang pendidikan adalah pembelajaran yang menggunakan pendekatan telefon pintar atau pendekatan m-pembelajaran. M-pembelajaran ataupun mobil pembelajaran merupakan antara kaedah pengajaran yang tidak dapat ditolak oleh IPT dimana kaedah ini sesuai dengan gaya hidup pelajar pada hari ini yang menjadikan telefon pintar

mereka adalah satu keperluan (Nawi & Isa Hamzah, 2013). Menurut Wahab & Ahmad (2014), pelajar universiti di Malaysia melihat telefon bimbit sebagai satu keperluan kerana ia mengubah kaedah pembelajaran di institusi pengajian tinggi (Syed Yahya, 2012). Pelajar menggunakan telefon pintar misalnya untuk berkongsi nota antara rakan-rakan sekelas, merakam aktiviti, dan juga mengambil gambar tugas sebagai rujukan atau bahkan menggunakan bluetooth untuk berkongsi maklumat. Telefon pintar boleh merapatkan hubungan sesama rakan di samping berinteraksi dengan pelbagai kandungan merangkumi elemen multimedia seperti gambar, muzik, dan video. Di samping aplikasi telefon pintar iaitu WhatsApp dan Telegram, ramai pendidik telah membangunkan aplikasi yang berkonsepkan pengajaran dan pembelajaran yang boleh dimuat turun melalui platform *google play store* mahupun *appstore* (Wahab & Ahmad, 2014). Kesan daripada trend ini, aplikasi mudah alih adalah salah satu kaedah pengajaran yang dikatakan mampu mengubah pendekatan pengajaran mengikut kehendak generasi Z pada masa sekarang (Deraman, 2017). Aplikasi mudah alih boleh diklasifikasikan sebagai sebarang aplikasi yang dibuat menggunakan perisian-perisian pengarang dan dimuat naik ke portal-portal pengurusan aplikasi seperti Google Play, Apps Store dan sebagainya (Wahab & Ahmad, 2014). Berdasarkan aplikasi mudah alih ini, pelajar boleh mengakses dengan memuat turun bahan kursus, maklumat dan aplikasi buku-buku teks elektronik di mana-mana sahaja mereka berada dalam suasana mengikut keselesaan mereka, dan ini akan sentiasa menjadi pilihan untuk mendapatkan maklumat berbanding melalui komputer riba atau komputer meja. Aplikasi mudah alih yang dibangunkan ini juga mempunyai elemen multimedia yang mampu membantu pelajar untuk meningkatkan pemahaman mereka sesi pengajaran dan pembelajaran (Nilgun, 2011). Salah satu tarikan melalui kaedah pembelajaran ini adalah ciri bilik sembang (*chat room*) dan papan perbincangan (*discussion board*) yang dapat meningkatkan motivasi pelajar dalam mempelajari sesuatu melalui kaedah ini (Abdul Ghani & Baharudin, 2016).

Objektif

Objektif kajian ini dijalankan adalah untuk:

- i. Membangunkan aplikasi mudah alih eMathOne yang menerapkan teori konstruktivisme, behaviour dan kognitif.
- ii. Menenal pasti kebolegunaan aplikasi mudah alih eMathOne bagi kursus Matematik Kejuruteraan 1.

Kajian Literatur

Perubahan drastik yang berlaku dalam perkembangan teknologi telah memberi impak yang besar kepada bidang pendidikan termasuk kaedah pembelajaran pelajar (Nasir, 2020). Corak pedagogi dan pembangunan bahan-bahan inovasi dalam bahan pembelajaran dan pengajaran (PdP) turut mengalami revolusi yang positif. Serentak dengan perubahan dalam teknologi maka perubahan juga akan berlaku kepada kaedah pembelajaran. Corak pedagogi telah berubah selari dengan perubahan teknologi sesuai dengan lanskap pendidikan maya pada masa kini. Kini, berlaku perubahan yang ketara yang menjerus kepada perubahan gaya pembelajaran yang sentiasa bersifat dinamik dalam bidang pendidikan (Siraj, 2004). Kaedah pedagogi juga berubah daripada tradisional kepada bentuk atas talian. Pada masa sekarang kaedah pembelajaran lebih kepada pendekatan mobil yang menggunakan peralatan teknologi mudah alih yang selalu digunakan untuk proses pembelajaran antaranya adalah telefon pintar, computer riba dan pembantu digital (PDA). Menurut Prensky (2001) M-Pembelajaran adalah konsep pembelajaran berbantuan ICT yang menggunakan peralatan mudah alih khasnya peralatan mudah alih yang terkini seperti PDA, telefon bimbit dan komputer riba. Inovasi dalam M-Pembelajaran telah memberi peluang kepada golongan pendidik untuk meneroka dan mencipta

pelbagai aktiviti baru dalam proses pengajaran dan pembelajaran di samping menambahkan bahan pengajaran mereka bagi mempelbagaikan kaedah pengajaran di samping penggunaan kaedah konvensional (Muhammad, 2019). Kajian ini disokong oleh McGrath (2013), pendekatan pembelajaran dalam bentuk mobil ini dapat memberikan inisiatif kepada pelajar jarak jauh yang memerlukan nota dan bahan pembelajaran yang bersifat interaktif. Ini adalah kerana, pembelajaran berasaskan mobil ini membolehkan pelajar dan pensyarah boleh menjalankan aktiviti PdP di mana-mana sahaja mengikut keperluan (Papastergiou, 2009).

Pembelajaran Berasaskan Atas Talian dalam Matematik

Pembelajaran atas talian adalah bermaksud aktiviti pembelajaran dan pengajaran yang berlangsung dengan menggunakan teknologi digital dengan kelengkapan peralatan teknologi seperti telefon pintar, komputer riba, tablet dan sebagainya. Di zaman teknologi ini, telefon bimbit memainkan peranan yang penting dalam kehidupan seharian sebagai alat untuk berkomunikasi dan telah berjaya menarik minat terutamanya kepada golongan muda (Hamdan, 2016). Begitu juga dapatan Ardi (2017), pembelajaran matematik menggunakan kaedah m-pembelajaran mampu memberikan kesan positif ke atas pembelajaran pelajar kerana kaedah ini menerapkan pelbagai teori pembelajaran seperti teori konstruktivisme, kognitifisme, teori kawalan dalam usaha menarik perhatian pelajar terhadap pembelajaran matematik. Penggunaan kaedah m-pembelajaran mampu membantu mengurangkan ketakutan pelajar terhadap subjek matematik tidak kira golongan rendah, menengah mahupun peringkat institusi (Tengku Zawawi Tengku Zainal, 2009). Ini disokong oleh Mohamad Nurizwan (2014), kaedah pembelajaran matematik perlu dipelbagaikan supaya menarik minat pelajar dalam masa yang sama boleh meningkatkan tahap motivasi pelajar terhadap pembelajaran matematik.

Penggunaan M-Pembelajaran Dalam Pembelajaran

Kaedah m-pembelajaran ini mempunyai corak pembelajaran yang unik kerana ianya dapat memberikan maklumat-maklumat yang terkini pada bila-bila masa (Abd Rahman & Hashim, 2011). Di samping itu, m-pembelajaran dapat membenarkan pelajar mengikut pembelajaran di mana-mana sahaja berdasarkan keupayaan masing-masing serta mengikut kesesuaian masa sendiri (Nasir, 2020). Penggunaan kaedah ini juga dikatakan mampu menjimatkan masa belajar kerana kebanyakan m-pembelajaran mengandungi nota dan latihan yang membenarkan pelajar untuk membuat aktiviti ulangkaji tanpa perlu mencari bahan pembelajaran (Amirullah, 2018). Ini di sokong oleh kajian Rosdi (2016), pelajar dapat meningkatkan keberkesanan pembelajaran melalui m-pembelajaran. Menurut kajian Lamsah (2017), pelajar didapati mempunyai tahap pengetahuan mengenai yang tinggi dalam penggunaan teknologi mudah alih dalam pembelajaran yang mampu memberikan impak yang positif di dalam aktiviti pembelajaran mereka. Selain daripada itu, pelajar juga secara tidak langsung dapat mencapai maklumat secara meluas kerana mereka boleh berhubung dengan pelajar lain dengan menggunakan ruang sembang, papan buletin dan sebagainya (Hamdani, 2014).

Metodologi

Kajian ini adalah berbentuk kuantitatif iaitu satu tinjauan soal selidik bagi menjawab persoalan kajian. Data kajian ini diperolehi daripada soal selidik pelajar yang diedarkan secara atas talian. Soal selidik yang digunakan adalah berbentuk skala likert dan seramai lima puluh enam (56) orang pelajar daripada semester satu (1) yang terdiri daripada dua program iaitu Diploma Kejuruteraan Mekanikal dan Diploma Kejuruteraan Elektrik di Politeknik Merlimau telah dipilih sebagai responden bagi mendapatkan data kajian. Pemilihan responden semester satu (1) ini adalah kerana pelajar-pelajar ini mengambil kursus DBM 10031 iaitu Matematik

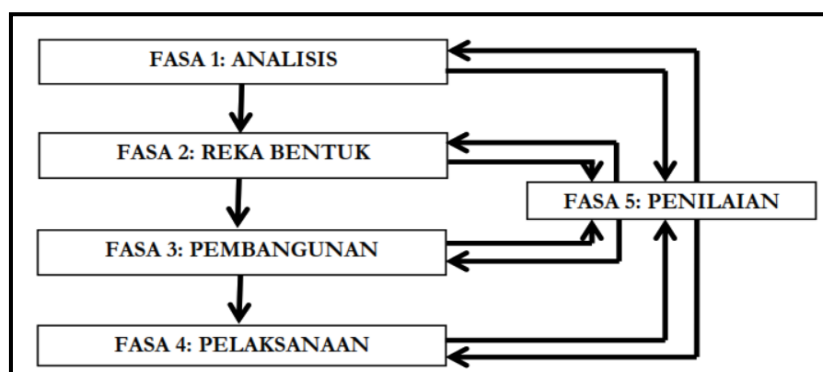
Kejuruteraan 1. Penyelidik menggunakan perisian SPP v22 untuk analisis data yang diperolehi daripada responden. Hasil daripada analisis yang dilakukan, nilai alpha Cronbach bagi item soal selidik ini adalah 0.94. Nilai alpha Cronbach ini adalah untuk mendapatkan kesahan dan kebolehpercayaan item soal selidik (Kamal, 2013). Menurut Bond & Fox (2015), skor nilai alpha Cronbach yang diterima adalah daripada nilai 0.71 hingga 0.99 seperti dalam Jadual 1.

Jadual 1: Nilai Kebolehpercayaan Alpha Cronbach, (Bond & Fox, 2015)

Skor Alpha Cronbach	Interprestasi Kebolehpercayaan
0.9-1.0	Sangat baik dan efektif dengan tahap konsistensi yang tinggi
0.7-0.8	Baik dan boleh diterima
0.6-0.7	Boleh diterima
<0.6	Item perlu dibaiki
<0.5	Item perlu digugurkan

Reka bentuk Pembangunan Aplikasi

Aplikasi ini dibangunkan dengan berpandukan model reka bentuk pengajaran ADDIE yang mempunyai lima proses iaitu Analysis (analisis), Design (reka bentuk), Development (perkembangan), Implementation (pelaksanaan), dan Evaluation (penilaian). Model ADDIE ini adalah salah satu model yang sinonim dengan penyelidikan bahan bagi tujuan PdP. Ini dapat dibuktikan dengan kajian Youngmin Lee (2014), yang memperbaiki bahan pengajaran yang berbentuk multimedia bagi tujuan proses pengajaran dan pembelajaran di Emporia State University Korea Selatan dengan menggunakan model ADDIE. Menurut Youngmin Lee (2014), bagi memperbaiki bahan tersebut perlu mengikut langkah proses kerja model ADDIE dengan betul. Penyelidik memilih untuk menggunakan model ADDIE sebagai model reka bentuk pengajaran kerana model ADDIE merupakan salah satu model reka bentuk yang sesuai digunakan sebagai panduan utama dalam penghasilan sesuatu bahan yang berkaitan dengan bidang pendidikan (Sidek, 2011). Model ini juga sesuai digunakan dalam pembangunan bahan kerana reka bentuk model ADDIE ini boleh melakukan proses pengulangan bagi setiap fasa sehinggalah mencapai standard yang ditetapkan dan setiap satu fasa adalah berkait antara satu sama lain. Sekiranya fasa tersebut tidak dapat dilaksanakan dengan baik proses tersebut boleh diulang sehingga ia dapat disiapkan dengan lengkap.



Rajah 1: Proses Pembangunan berpandukan Model ADDIE

(Gagne, Wager, Golas & Keller, 2005)

Aplikasi Mudah ALih eMathOne

Pembangunan aplikasi mudah alih eMathOne ini dibangunkan dengan menggunakan perisian open source iaitu Google Sites sebagai asas pembinaan portal pembelajaran dan perisian

appsgeyser digunakan untuk menghasilkan fail apk (android application package). Fail apk ini adalah fail yang akan digunakan untuk memasang (*install*) aplikasi ini supaya ianya boleh beroperasi di dalam telefon pintar yang menggunakan operasi Android. Aplikasi mudah alih eMathOne ini menerapkan teori pembelajaran konstruktivisme, kognitif dan behaviour yang supaya aplikasi ini mencapai matlamat pembelajaran pada masa sekarang.

Analisis Kajian

Demografi Responden

Resonden kajian ini terdiri daripada lima puluh enam (56) orang pelajar dan taburan jantina bagi responden ialah lima belas (15) orang pelajar perempuan dan empat puluh satu (41) pelajar lelaki. Jadual 2 menunjukkan taburan responden mengikut jantina dan umur.

Jadual 2: Taburan Responden mengikut Jantina

Jantina	Bilangan	Peratus (%)
Lelaki	41	73
Perempuan	15	27
Jumlah	56	100

Penilaian Pelajar Terhadap Kebolegunaan Aplikasi eMathOne

Bagi menjawab persoalan kajian ini, pengkaji menggunakan skor peratus analisis min bagi memperoleh nilai skor hasil daripada maklum balas responden. Bagi penentuan tahap skor peratus dan kebergunaan aplikasi mudah alih jadual skor peratus adalah seperti dalam Jadual 3.

Jadual 3: Skor Peratus dan Kebergunaan Bahan Gamifikasi

Skor Peratus(%)	Kebergunaan bahan gamifikasi
80 – 100	Sangat Tinggi
65 – 79	Tinggi
50 – 64	Sederhana
40 – 49	Rendah
0 - 39	Sangat Rendah

Jadual 4: Skor Peratus dan Min Kebolegunaan Aplikasi Mudah Alih

No	Item	Skor Peratus	Min	Tahap
S1	Kandungan dalam aplikasi ini mudah digunakan.	84	3.93	Sangat Tinggi
S2	Paparan di dalam aplikasi ini membolehkan anda melihat kandungannya dengan mudah.	80	4.14	Sangat Tinggi
S3	Fail boleh dimuat turun dengan mudah	80	4.29	Sangat Tinggi
S4	Menu navigasi membantu anda menggunakan aplikasi dengan mudah.	82	4.27	Sangat Tinggi
S5	Pautan yang disediakan daripada satu antara muka ke antara muka yang seterusnya memudahkan penggunaan aplikasi ini.	86	4.34	Sangat Tinggi
S6	Menu navigasi menggunakan bahasa yang mudah difahami.	82	4.16	Sangat Tinggi
S7	Aplikasi ini menggunakan jenis tulisan (font) yang sesuai	89	4.46	Sangat Tinggi

S8	Aplikasi ini menggunakan saiz tulisan yang sesuai	91	4.50	Sangat Tinggi
S9	Aplikasi ini menggunakan warna tulisan yang sesuai dan mudah dibaca	89	4.48	Sangat Tinggi
S10	Imej yang dipaparkan dalam aplikasi ini adalah jelas	96	4.52	Sangat Tinggi
S11	Saiz imej yang dipaparkan dalam aplikasi ini adalah sesuai	98	4.61	Sangat Tinggi
S12	Video yang disediakan dalam aplikasi ini bersesuaian dengan topik yang dipelajari.	95	4.66	Sangat Tinggi
S13	Video dalam aplikasi ini dapat dimainkan dengan mudah	91	4.37	Sangat Tinggi
S14	Paparan video dalam aplikasi ini jelas	96	3.64	Sangat Tinggi
S15	Animasi dalam aplikasi ini menarik	98	4.66	Sangat Tinggi
S16	Animasi yang digunakan tidak mengganggu pembelajaran	98	4.59	Sangat Tinggi
S17	Aplikasi mudah alih ini membantu saya dalam pembelajaran	91	4.41	Sangat Tinggi
S18	Aplikasi mudah alih ini memudahkan saya dalam pencarian bahan pembelajaran bagi kursus Matematik Kejuruteraan 1	88	4.39	Sangat Tinggi
S19	Aplikasi ini mampu memberikan meningkatkan motivasi dalam pembelajaran	88	4.46	Sangat Tinggi
S20	Aplikasi ini membolehkan saya dan rakan-rakan belajar secara berkumpulan	89	4.43	Sangat Tinggi
S21	Aplikasi ini mudah digunakan	88	4.55	Sangat Tinggi
S22	Aplikasi ini menyediakan nota dan bahan rujukan yang terkini	89	4.54	Sangat Tinggi
S23	Aplikasi ini menyediakan latihan untuk kegunaan pelajar	95	4.61	Sangat Tinggi
S24	Persembahan maklumat dalam aplikasi ini mudah untuk diikuti	95	4.55	Sangat Tinggi

Jadual 4 menunjukkan hasil analisis kebolehgunaan aplikasi mudah alih eMathOne yang telah dibangunkan. Secara keseluruhannya, hasil dapatan menunjukkan nilai min purata berada pada tahap skor yang tinggi iaitu 4.66. Manakala jumlah keseluruhan min bagi setiap item juga berada pada aras tinggi iaitu ($M > 3.5$). Hasil daripada dapatan analisis ini jelas menunjukkan jumlah skor juga berada pada tahap yang sangat tinggi. Ini dapat disimpulkan bahawa aplikasi mudah alih ini memberikan kepuasan kepada pengguna dan aplikasi ini boleh digunakan dengan baik oleh pengguna.

Item S15 yang mendapat 98% menunjukkan bahawa animasi yang digunakan dalam aplikasi ini dapat membantu menarik perhatian pelajar dalam penggunaan aplikasi ini sekali gus menarik perhatian mereka untuk mempelajari topik yang dipelajari. Bagi item S20 dan S22 yang mendapat 89% pula dapat disimpulkan bahawa aplikasi ini boleh digunakan oleh pelajar yang ingin belajar secara sendiri mahu pun secara berkumpulan dengan adanya nota dan bahan rujukan serta soalan-soalan yang berkaitan yang terkini di dalam aplikasi ini. Hal ini akan memudahkan mereka membuat sesi ulangkaji di luar kelas. Bagi item S7, S8 dan S9 pula berkaitan dengan reka bentuk antara muka aplikasi di mana pemilihan jenis, saiz dan warna tulisan yang sesuai digunakan di dalam aplikasi mudah alih ini.

Perbincangan

Secara keseluruhan, hasil daripada kajian ini didapati aplikasi mudah alih ini mempunyai kebolegunaan yang baik dan pengguna dapat menggunakan aplikasi ini dengan baik. Pembangunan aplikasi mudah alih ini juga menunjukkan bahawa pelajar mempunyai sumber dan bahan rujukan yang mudah untuk di akses bagi tujuan pembelajaran mereka, dapat ini disokong oleh Ardi (2017), pembelajaran matematik yang menggunakan kaedah m-pembelajaran dapat meningkatkan motivasi pelajar kerana pelajar pada masa sekarang amat tertarik dengan penggunaan telefon pintar.

Selain daripada penggunaan teknologi digital, penyelidik juga mengambil kira reka bentuk isi kandungan yang dapat menarik perhatian pelajar iaitu dengan menyediakan ruangan bilik sembang bagi memberikan kemudahan kepada pelajar untuk berkomunikasi dengan rakan-rakan dan juga pensyarah. Pendekatan ini secara tidak langsung akan mengurangkan jurang komunikasi di kalangan kedua-dua pihak. Pensyarah juga akan mengikuti perkembangan pembelajaran pelajar secara berterusan.

Di samping itu, aplikasi mudah alih ini dapat memenuhi keperluan pelajar dalam proses pembelajaran dan pengajaran mereka. Ini membuktikan bahawa aplikasi mudah alih ini dapat memberangsangkan pengguna untuk terus menggunakan aplikasi mudah alih ini.

Kesimpulan

Pendekatan pembelajaran menggunakan m-pembelajaran ini telah membuka perspektif baru kepada golongan pendidik dan pelajar supaya lebih memanfaatkan teknologi digital bagi memantapkan lagi proses pengajaran dan pembelajaran yang berlangsung. Di samping itu ianya dapat menjadikan mereka seiring dengan kemajuan teknologi terkini. Dengan penggunaan gabungan kaedah konvensional dan teknologi digital ini, dapat membantu pelajar mendalami ilmu matematik ini dengan lebih baik dan ianya mampu untuk menghapuskan pemikiran pelajar yang beranggapan matematik adalah subjek yang membunuh mereka. Justeru warga pendidik serta pembangun teknologi harus mengembeling tenaga terus memperkembangkan dan meluaskan lagi penggunaannya selaras dengan dasar Pelan Pembangunan Pendidikan Malaysia 2015-2025 (Pendidikan Tinggi) khususnya berkaitan pembelajaran sepanjang hayat (lonjakan 3), graduan Technical Vocational Education and Training (TVET) berkualiti (lonjakan 4), ekosistem inovasi (lonjakan 7), dan pembelajaran dalam talian tahap global (lonjakan 8).

Rujukan

- Abd Rahman, & Hashim, M. H. M. (2011). M-Pembelajaran Dalam Pendidikan Teknik Dan Vokasional (PTV) Di Malaysia. *Persidangan Kebangsaan Penyelidikan Dan Inovasi Dalam Pendidikan Dan Latihan Teknik Vokasional*, 1–11.
- Abdul Ghani, F. S., & Baharudin, H. (2016). Pendekatan ‘ Mobile Learning ’ Dalam Meningkatkan Motivasi Pelajar. *Kolokium Pendidikan Bahasa Arab 2016 (Kobar 16) Fakulti Pendidikan, Universiti Kebangsaan Malaysia 10 Disember 2016*, (1), 194–205.
- Amirullah, G. (2018). *Pengembangan Media Pembelajaran Interaktif Pada Konsep Monera Berbasis Pengembangan Media Pembelajaran Interaktif Pada Konsep Monera Berbasis Smartphone Android*. (April). <https://doi.org/10.30738/wa.v2i1.2555>
- Ardi, S. (2017). Pembelajaran masa depan – mobile learning (m-learning) di malaysia. *Pembelajaran Masa Depan – Mobile Learning (m-Learning) Di Malaysia*, 122–129.
- Bond, T. G. & Fox, C. M. 2015. Applying the Rasch Model Fundamental Measurement in the Human Sciences. Routledge, doi:10.1207/S15327574IJT013&4_10.

- Chear, S. L. (2017). Jurnal pendidikan Malaysian journal of education. *Pengajaran Dan Pembelajaran Melalui Aplikasi Whatsapp Dan Telegram Di Universiti Swasta*, 42(2), 87–97. <https://doi.org/DOI: http://dx.doi.org/10.17576/JPEN-2017-42.02-02> Pengajaran
- Deraman, P. (2017). *KAJIAN PERSEPSI PENGGUNAAN TELEFON PINTAR DI DALAM PEMBELAJARAN DI KALANGAN KOLEJ KOMUNITI TEMERLOH*. (2002), 1–8.
- Hamdan, A., Din, R. & Abdul Manaf, S. Z. (2012). Penerimaan M-Pembelajaran dalam Sistem Pendidikan di Malaysia. The Unified Theory of Acceptance and Use of Technology (UTAUT): Satu Analisis Literatur. UKM, Malaysia 1st International Conference on Mobile Learning, Applications, and services
- Hamdani, D. S. Al. (2014). A Constructivist Approach to a Mobile Learning Environment. *International Journal of Computer Applications* (0975, 93(4), 41–46. <https://doi.org/10.5120/16206-5500>
- Ja'apar. (2017). *Bahan Bantu Mengajar (Bbm) Dalam Pengajaran Dan Pembelajaran (P&P) Di Sekolah Menengah Kebangsaan (Smk) Daerah Pontian*. 1–48.
- Kamal, S. M. (2013). *Instrumen Penilaian Kemahiran Generik Dalam Kursus Pendidikan Jasmani dan Kesihatan (PJK)*. (September).
- Khalid, F., Daud, Y., & Mohamad Nasir, M. N. (2016). " Cross-Cultural Education for Sustainable Regional Development " Bandung PERBANDINGAN PENGGUNAAN TELEFON PINTAR UNTUK TUJUAN UMUM DAN PEMBELAJARAN DALAM KALANGAN PELAJAR UNIVERSITI. *International Conference on Education and Regional Development, 2016*(November).
- Lamsah, S. (2017). Pengajaran dan Pembelajaran Melalui Aplikasi Whatsapp dan Telegram di Universiti Swasta. *Pengajaran Dan Pembelajaran Melalui Aplikasi Whatsapp Dan Telegram Di Universiti Swasta*, 42(2), 87–97. <https://doi.org/DOI: http://dx.doi.org/10.17576/JPEN-2017-42.02-02> Pengajaran
- Maslin Masrom, Amirah Syahmi nadzari & Suzaitul Akmawani Zakaria. 2016. Implementation of mobile learning apps in Malaysia Higher Education Institutions. e-Proceeding of the 4th Global Summit on Education. 14-15 Mac 2016, Kuala Lumpur, Malaysia.
- McGrath. (2013). Engaging online students through the gamification of learning materials: The present and the future. *30th Annual Conference on Australian Society for Computers in Learning in Tertiary Education, ASCILITE 2013*, 573–577.
- Mohamad Nurizwan, J. (2014). KESAN TEKNIK “HunTTO SQUARE” TERHADAP PENCAPAIAN PELAJAR BAGI MATA PELAJARAN MATEMATIK DI SEKOLAH RENDAH. *Fakulti Pendidikan Teknikal Dan Vokasional Universiti Tun Hussein Onn Malaysia*, 36.
- Muhammad. (2019). Practitioner Research Vol. 1, July, 2019, 87-110. *Practitioner Research Vol., 1*, 87–110.
- Nasir, N. (2020). *Pembangunan android dalam menyokong pengajaran dan pembelajaran Geografi : Kajian kes GeoSudut Android development in supporting Geography teaching and learning : A case study of GeoSudut*. 1(1), 126–138.
- Nawi, A., & Isa Hamzah, M. (2013). Tahap Penerimaan Penggunaan Telefon Bimbit Sebagai M-Pembelajaran dalam Pendidikan Islam. *Journal of Islamic and Arabic Education*, 5(1), 1–10.
- Nilgun, O. (2011). *THE CURRENT PERSPECTIVES , THEORIES AND PRACTICES OF MOBILE*. 10(2), 202–208.

- Papastergiou, M. (2009). Digital Game-Based Learning in high school Computer Science education: Impact on educational effectiveness and student motivation. *Computers and Education*, 52(1), 1–12. <https://doi.org/10.1016/j.compedu.2008.06.004>
- Rosdi, A. (2016). *IMPLIKASI PENGGUNAAN TELEFON BIMBIT DI BILIK KULIAH DALAM KALANGAN PELAJAR KOMUNIKASI UPM*. (August).
- Sidek, S. (2011). Membangun Dan Menguji Koswer Media Penghantaran. *1st Multimedia and Creative Content Symposium*, 5(November), 236–245.
- Siraj. (2004). Pembelajaran Mobile dalam kurikulum masa depan. *Jurnal Pendidikan, Journal on Issues of Education*, 27(July), 129–141.
- Syed Ardi Bin Syed Yahya Kamal dan Zaidatun Tasir. (t.t). Pembelajaran Masa Depan – Mobile Learning (M-Learning) Di Malaysia. Universiti Teknologi Malaysia.
- Tengku Zawawi Tengku Zainal. (2009). Isu Pengajaran Matematik: Kepercayaan dan Pengetahuan Pedagogikal Kandungan Guru. *Jurnal Pendidikan Malaysia*, 34(1), 131–153.
- Wahab, A. A. B., & Ahmad, A. (2014). *Pembangunan Aplikasi M-Pembelajaran Peribahasa Melayu Menggunakan Model*.
- Zakaria, E. (2014). Kesan penggunaan perisian geogebra ke atas keupayaan penyelesaian masalah dan pencapaian matematik pelajar. *Jurnal Pendidikan Matematik*, 2(1), 51–64.

KESILAPAN PELAPORAN ANALISIS STATISTIK DALAM SEBUAH JURNAL DI MALAYSIA

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Abstrak: *Hari demi hari, semakin banyak jurnal telah diterbitkan dan penganalisan data menggunakan statistik juga meningkat. Pelaporan analisis statistik amat penting dalam kajian terutamanya bagi kajian kuantitatif. Oleh itu, kajian ini bertujuan untuk mengenal pasti jenis kesilapan pelaporan analisis statistik dalam sebuah jurnal di Malaysia. Kaedah kuantitatif berbentuk tinjauan digunakan dalam kajian ini sebagai reka bentuk kajian. Sampel kajian terdiri daripada 117 jurnal yang diterbitkan pada tahun 2010-2019. Persampelan yang digunakan ialah persampelan bukan rawak iaitu persampelan bertujuan. Hanya jurnal kuantitatif sahaja dipilih sebagai sampel kajian. Nilai Alpha Cronbach adalah tinggi iaitu 0.839 bagi kebolehpercayaan instrumen senarai semak. Senarai semak kesilapan analisis statistik merangkumi 29 item. Data kajian dianalisis menggunakan perisian Statistical Package for Social Science (SPSS) secara deskriptif. Dapatan kajian ini menunjukkan bahawa kesilapan pelaporan analisis statistik yang mempunyai peratusan yang tertinggi dalam jurnal ialah tidak melaporkan kesahan kajian (67.7 peratus) dan tidak melaporkan hasil dapatan dengan menggunakan format APA (67.7 peratus). Penggunaan perisian analisis statistik tidak menjamin para pengkaji daripada melakukan sebarang kesilapan dalam pelaporan analisis statistik. Oleh itu, pengetahuan yang mendalam mengenai penggunaan ujian statistik yang sesuai amatlah penting untuk mendapatkan dapatan kajian yang tepat dan meningkatkan kualiti bagi sesuatu jurnal.*

Kata kunci: *Statistik, Kesilapan, Kesilapan Analisis Statistik, Analisis Statistik,*

Pengenalan

Statistik ialah satu kajian di mana pengumpulan, penganalisan dan pentafsiran berlaku berdasarkan data berangka untuk mendapatkan sesuatu informasi. Terdapat dua jenis statistik iaitu statistik deskriptif dan statistik inferensi. Statistik deskriptif merupakan satu statistik di mana proses pengumpulan, pengaturan, rumusan dan penyampaian data berlaku. Manakala statistik inferensi ialah satu statistik yang membuat kesimpulan, pengujian hipotesis, ramalan dan menentukan hubungan antara dua atau lebih pemboleh ubah. Dalam kata lain, statistik merujuk kepada memberi sesuatu makna kepada data.

Statistik merupakan suatu alat yang penting dalam pelbagai bidang akademik seperti pendidikan, kejuruteraan, psikologi, sains dan perubatan. Statistik juga penting dalam masyarakat seperti dalam bidang perniagaan dan industri. Dalam bidang akademik, statistik umpama jantung dalam sesuatu kajian terutamanya kajian yang menggunakan kaedah kuantitatif. Saban tahun, semakin banyak jurnal dan artikel telah diterbitkan dalam pelbagai bidang dan artikel menggunakan ujian statistik meningkat dengan ketara (Shabbeer, Rajashree, Pooventhan, Poornima, Manoj, Manasa & Shreemathi, 2014). Statistik deskriptif merupakan statistik yang sering digunakan dalam jurnal daripada bidang perubatan (Yergens, Dutton & Patten, 2014). Statistik deskriptif sering menjadi pilihan pengkaji kerana statistik deskriptif memudahkan pengkaji mendapat gambaran umum tentang data dan taburan pemboleh ubah

kajian yang terlibat melalui gambar rajah dan jadual. Gambar rajah dan jadual juga memudahkan para pembaca memahami tentang data bagi pembolehubah yang terlibat. Selain itu, maklumat statistik asas bagi pembolehubah seperti min dan sisihan piawai juga mudah diperoleh melalui statistik deskriptif.

Pernyataan Masalah

Hasil daripada analisis statistik yang semakin luas digunakan dalam kajian, pelbagai perisian statistik telah dibina seperti Statistical Package for the Social Sciences (IBM SPSS), Statistical Analysis System (SAS) dan STATA. Perisian analisis statistik banyak digunakan dalam kajian kerana perisian ini memudahkan pengkaji menjalankan analisis statistik berdasarkan data yang telah dikumpul. Selain itu, analisis statistik yang dijalankan menggunakan perisian statistik memberikan nilai yang mempunyai ketepatan yang tinggi berbanding mengira secara manual. Walaupun perisian statistik memudahkan pengkaji menganalisis data, pengkaji masih perlu mempunyai ilmu yang mendalam tentang analisis statistik kerana penggunaan perisian analisis statistik dalam kajian untuk menganalisis data tidak menjamin pengkaji dapat mengelak daripada melakukan kesilapan dalam analisis statistik. Pengkaji perlu mengawal prosedur penganalisan data dan mengesahkan data yang dihasilkan agar dapat mengelak daripada melakukan kesilapan dalam menganalisis statistik (Kousar & Azeez, 2015). Pengkaji juga perlu mengenal pasti analisis statistik yang sesuai mengikut jenis data pembolehubah sebelum menjalankan proses penganalisan. Ini kerana perisian statistik tetap mengeluarkan output walaupun sesuatu jenis data itu tidak sesuai dengan analisis statistik yang dijalankan. Kajian lepas mendapati bahawa artikel yang telah diterbitkan sekurang-kurangnya mempunyai satu kesilapan analisis statistik (Ercan, Karadeniz, Cangur, Ozkaya & Demirtas, 2015). Analisis statistik memainkan peranan yang penting dalam kajian kuantitatif. Jika pengkaji melakukan kesilapan dalam analisis statistik, laporan tentang dapatan kajian akan menjadi kurang tepat.

Pelbagai kajian lepas telah mengkaji tentang kesilapan analisis statistik yang dilakukan dalam jurnal dan artikel. Namun, kebanyakan jurnal dan artikel yang dikaji adalah jurnal perubatan dan jurnal psikologi dari luar negara. Kajian-kajian yang mengkaji kesilapan analisis statistik dalam jurnal di Malaysia amatlah kurang. Oleh itu, kajian ini bertujuan untuk mengenal pasti kesilapan analisis statistik yang sering dilakukan dalam jurnal di Malaysia yang berfokuskan kepada jurnal dalam bidang pendidikan. Kajian ini bukan untuk mencari salah pengkaji tetapi lebih kepada melihat kecenderungan jenis kesilapan analisis statistik yang dilakukan dalam jurnal.

Kajian Perpustakaan

Kesilapan Analisis Statistik

Kajian lepas mendapati bahawa artikel yang telah diterbitkan sekurang-kurangnya mempunyai satu kesilapan statistik (Ercan et al., 2015). Analisis statistik memainkan peranan yang penting dalam kajian kuantitatif. Jika pengkaji melakukan kesilapan dalam analisis statistik, laporan tentang dapatan kajian akan menjadi kurang tepat.

Kajian lepas telah mengenal pasti pelbagai jenis kesilapan analisis statistik yang dilakukan dalam jurnal yang diterbitkan. Antara jenis kesilapan tersebut ialah kesilapan yang berkaitan dengan nilai p iaitu kesilapan di mana pengkaji melaporkan nilai p dengan kurang tepat (Ercan, Ocakoglu, Sigirli, & Ozkaya, 2012). Nilai p yang dilaporkan dalam kajian tak sama dengan nilai p dalam output analisis statistik.

Selain itu, terdapat juga kesilapan yang berkaitan dengan ujian analisis statistik (Ercan et al., 2012). Antara kesilapan dalam kategori ini ialah kesilapan dalam penggunaan ujian analisis statistik yang betul. Contohnya, pengkaji menggunakan ujian t dua sampel tidak

bersandar bagi data yang bersandar. Selain itu, terdapat juga kesilapan dalam pemilihan analisis statistik di mana jenis data kajian tidak bersesuaian dengan ujian analisis statistik yang dijalankan. Contohnya, jenis data nominal tidak sesuai untuk mengira nilai min.

Jenis kesilapan analisis statistik berdasarkan Ercan et al. (2012) yang lain ialah kesilapan dalam melaporkan analisis statistik deskriptif. Analisis statistik deskriptif yang dijalankan bagi pembolehubah kajian bergantung kepada jenis data yang terlibat. Bagi data kategorikal iaitu data ordinal dan nominal, analisis statistik deskriptif hanya boleh melaporkan tentang frekuensi dan peratus bagi setiap pembolehubah yang terlibat contohnya bilangan pelajar lelaki dan pelajar perempuan. Selain itu, data kategorikal juga boleh membuat rumusan dengan menggunakan carta bar. Manakala bagi data numerikal, iaitu data sela dan data nisbah, pengkaji boleh menjalankan analisis statistik deskriptif dengan mengira min dan sisihan piawai bagi pembolehubah yang terlibat. Contohnya, data bagi pencapaian pelajar dalam matematik boleh dianalisis dengan mengira min dan sisihan piawai. Selain daripada mengira min dan sisihan piawai, data numerikal juga boleh dianalisis dalam bentuk histogram dan boxplot. Bentuk histogram dan boxplot juga dapat menunjukkan sama ada data bagi sesuatu pembolehubah kajian itu mempunyai taburan normal atau sebaliknya.

Kajian lepas juga telah mengenal pasti kesilapan di mana pengkaji tidak mentafsirkan data dengan tepat dan sesuai (Ercan et al., 2012). Antara contoh kesilapan bagi kategori ini ialah pengkaji menyatakan nilai p atau melaporkan bahawa sesuatu hipotesis kajian itu terdapat perbezaan yang signifikan tanpa menjalankan analisis data atau menyatakan ujian analisis statistik. Selain itu, terdapat juga kesilapan yang dilakukan oleh pengkaji di mana pengkaji membuat sesuatu kesimpulan tanpa disokong oleh analisis data.

Metodologi

Kajian ini menggunakan pendekatan kuantitatif kerana kajian kuantitatif merupakan satu pendekatan di mana pembolehubah kajian boleh diukur dan dikumpulkan sebagai data bernombor serta boleh dianalisis menggunakan prosedur statistik (Creswell, 2014). Data yang dikumpulkan dalam kajian ini adalah data bernombor. Oleh itu, pendekatan kuantitatif sesuai digunakan dalam kajian ini. Reka bentuk yang dijalankan bagi kajian ini ialah kajian tinjauan. Reka bentuk ini digunakan dalam kajian ini bagi mengenal pasti kesilapan pelaporan analisis statistik yang dilakukan dalam jurnal pendidikan di Malaysia.

Populasi yang terlibat dalam kajian ini ialah jurnal-jurnal pendidikan yang diterbitkan di Malaysia. Bagi menentukan sampel kajian, prosedur persampelan perlu dijalankan. Jenis prosedur pensampelan yang digunakan dalam kajian ini ialah persampelan bukan rawak iaitu persampelan bertujuan di mana pengkaji hanya memilih jurnal yang menggunakan pendekatan kuantitatif sebagai sampel kajian. Menurut Tongco (2007), persampelan bertujuan adalah suatu alat yang pratikal dan efisien bahkan lebih efisien daripada pensampelan rawak apabila digunakan dengan betul. Dalam kajian ini, persampelan bertujuan lebih efisien kerana pengkaji hanya memilih jurnal-jurnal yang menggunakan kaedah kuantitatif dan kaedah campuran untuk mengenal pasti kesilapan-kesilapan yang dilakukan dalam analisis statistik. Oleh itu, sampel bagi kajian ini ialah jurnal-jurnal pendidikan yang diterbitkan di Malaysia pada tahun 2010 hingga tahun 2019.

Kajian ini hanya menggunakan senarai semak bagi mengenal pasti taburan kesilapan analisis statistik. Instrumentasi ini merangkumi dua bahagian iaitu Bahagian A dan Bahagian B. Bahagian A merupakan tentang latar belakang jurnal. Bahagian B pula merupakan item tentang jenis kesilapan analisis statistik yang mengandungi 29 item yang diadaptasi daripada

jurnal Analisis Kesalahan Pelaporan Statistik bagi Tesis Doktor Falsafah (Phd) Fakulti Pendidikan, (Farah Hani, Siti Mistima & Roslinda, 2017).

Nilai Alpha Cronbach telah digunakan bagi menentukan kebolehpercayaan, iaitu keupayaan kajian dalam memperoleh nilai yang sama apabila pengukuran diulang, bagi instrumen kajian ini. Jadual 1 menunjukkan bahawa kebolehpercayaan bagi 29 item dalam item yang mengandungi item tentang jenis kesilapan analisis statistik adalah tinggi iaitu 0.839. Menurut George dan Mallery (seperti disebut dalam Gliem dan Gliem 2003, m.s. 82-88) pekali Alfa Cronbach antara 0.9 dan 0.8 merujuk kepada ketekalan dalaman yang baik. Oleh itu, item bahagian B dalam instrumen senarai semak mempunyai ketekalan dalaman yang baik.

Jadual 1: Statistik Kebolehpercayaan

Alpha Cronbach	Bilangan Item
0.839	29

Dapatan Kajian

Kajian ini hanya menggunakan statistik deskriptif bagi mendapatkan dapatan kajian yang seiring dengan tujuan kajian. Statistik deskriptif merupakan suatu kaedah yang berguna untuk meringkaskan data dan memberikan penerangan mengenai sampel (Marshall & Jonker, 2009). Oleh itu, kajian ini sesuai untuk menggunakan analisis statistik deskriptif bagi mengenal pasti peratusan dan kekerapan kesilapan analisis statistik yang sering dilakukan dalam jurnal. Statistik deskriptif dijalankan menggunakan perisian analisis statistik SPSS versi 22.

Berdasarkan Jadual 2, terdapat 52 jurnal (44.4 peratus) tidak menyatakan populasi kajian dan hanya 65 jurnal (55.6 peratus) yang menyatakan populasi dalam kajian mereka. Terdapat 71 jurnal (60.7 peratus) menggunakan teknik persampelan yang betul di mana selebihnya tidak menggunakan teknik persampelan yang betul ($n=16$, 13.7 peratus) dan tidak menyatakan teknik persampelan yang digunakan dalam kajian ($n=30$, 25.6 peratus). Sebanyak 97 jurnal (82.9 peratus) menggunakan reka bentuk kajian yang sesuai. Hanya satu jurnal (satu peratus) sahaja tidak menggunakan reka bentuk kajian yang sesuai dan 19 jurnal (16.2 peratus) tidak menyatakan reka bentuk kajian dalam kajian mereka.

Terdapat 54 daripada 117 jurnal (46.2 peratus) tidak menyatakan hipotesis nol kajian. Hanya 27 jurnal (23.1 peratus) yang menyatakan hipotesis nol yang sesuai dengan objektif. Hanya 11 jurnal (9.4 peratus) sahaja yang melakukan ujian kenormalan bagi data yang dikumpul sebelum menjalankan ujian parametrik. Terdapat 65 jurnal (55.6 peratus) tidak melakukan ujian kenormalan data. 54 daripada 117 jurnal tidak melakukan ujian kenormalan untuk data (46.2 peratus). Hanya 17 jurnal (14.5 peratus) sahaja yang melakukan ujian kenormalan.

Majoriti jurnal ($n=98$, 83.8 peratus) menggunakan ujian statistik yang betul berdasarkan jenis data yang dikaji dan hanya 19 jurnal daripada 117 jurnal (16.2 peratus) tidak menggunakan ujian statistik yang betul. 90 jurnal (76.9 peratus) menggunakan ujian parametrik/bukan parametrik yang sesuai dengan objektif kajian dan jenis data kajian. Terdapat 27 jurnal sahaja (23.1 peratus) tidak menggunakan ujian parametrik/bukan parametrik yang sesuai. Majoriti jurnal ($n=94$, 80.3 peratus) menyatakan jenis ujian yang digunakan untuk set data berkenaan apabila lebih dari satu ujian dilakukan dan terdapat 19 jurnal (16.2 peratus) tidak menyatakan jenis ujian yang digunakan.

Majoriti jurnal ($n=88$, 75.2 peratus) yang dikaji tidak menggunakan ujian t dan selebihnya menggunakan ujian t. Namun, 14 jurnal (12.0 peratus) menyatakan sama ada data bersandar atau tidak bersandar dan 15 jurnal (12.8 peratus) tidak menyatakannya dalam kajian. Semua jurnal yang menggunakan ujian t dalam kajian ($n=29$, 24.8 peratus) menggunakan

ujian bersandar untuk data bersandar atau sebaliknya dengan betul dan semua jurnal yang menggunakan ujian t bersandar menggunakan bilangan saiz sampel yang sama ($n=5$, 4.3 peratus). Hanya terdapat lima jurnal (4.3 peratus) sahaja tidak menggunakan ujian statistik yang betul berdasarkan hipotesis yang dikaji manakala 78 jurnal (66.7 peratus) menjalankan pengujian hipotesis dengan ujian statistik yang betul.

Bagi menganalisis ujian post-hoc pula, hanya lapan jurnal (6.8 peratus) sahaja yang menganalisis dengan betul dan sebanyak lapan jurnal (6.8 peratus) tidak menjalankan ujian post-hoc. Berdasarkan jurnal yang dikaji, hanya 64 jurnal (54.7 peratus) memberikan justifikasi terhadap ujian yang digunakan dalam kajian dan terdapat 53 jurnal (45.3 peratus) tidak memberikan justifikasi. Hanya 14 daripada 117 jurnal (12.0 peratus) tidak menyatakan dan menggunakan nilai P (aras signifikan) yang betul. Terdapat 28 jurnal (23.9 peratus) melakukan kesilapan dalam menggunakan min dan sisihan piawai untuk menghuraikan data yang tidak normal atau bukan parametrik. Bagi nilai perpuluhan pula, hanya satu jurnal (0.9 peratus) sahaja yang melaporkan nilai perpuluhan yang tidak sesuai.

Hasil dapatan kajian ini juga mendapati bahawa 31 jurnal (26.5 peratus) yang dikaji melaporkan nilai p sebagai $p < 0.05$ atau $p > 0.05$ dan tiga jurnal (2.6 peratus) tidak menyatakan nilai p. Dapatan juga menunjukkan bahawa 51 daripada 117 jurnal (43.6 peratus) tidak melaporkan kesahan kajian dan 34 jurnal (29.1 peratus) tidak melaporkan kebolehpercayaan kajian. Selain itu, terdapat juga jurnal yang tidak melaporkan hasil dapatan menggunakan format APA ($n=82$, 70.1 peratus).

Berdasarkan dapatan kajian ini, hanya lima jurnal (4.3 peratus) sahaja yang tidak menyatakan kesimpulan dengan disokong data kajian dan terdapat satu jurnal (0.9 peratus) tidak menyatakan kesimpulan kajian. Terdapat juga kesilapan dalam menggunakan nama yang betul untuk ujian statistik ($n=7$, 6.0 peratus) dan sembilan jurnal (7.7 peratus) tidak menyatakan ujian statistik yang digunakan dalam kajian. Hanya lima jurnal (4.3 peratus) sahaja yang tidak melaporkan rajah atau graf yang betul dan sesuai. 14 jurnal (12.0 peratus) tidak melaporkan jadual dengan betul dan sesuai. Selain itu, berlaku juga kesilapan dalam melaporkan dapatan kajian dengan betul ($n=26$, 22 peratus) dan hanya dua jurnal (1.7 peratus) tidak menggunakan istilah statistik yang betul.

Jadual 2: Taburan Kesilapan Analisis Statistik

Pernyataan	Penilaian							
	Ya		Tidak		Tidak dinyatakan		Tidak kaitan	
	N	%	N	%	N	%	N	%
Menyatakan populasi kajian.	65	55.6	52	44.4	0	0	0	0
Menyatakan bilangan saiz sampel.	117	100	0	0	0	0	0	0
Menggunakan teknik persampelan yang betul.	71	60.7	16	13.7	30	25.6	0	0
Menggunakan reka bentuk kajian yang sesuai	97	82.9	1	0.9	19	16.2	0	0
Menyatakan hipotesis nol yang sesuai dengan objektif	27	23.1	0	0	54	46.2	36	30.8
Melakukan ujian kenormalan untuk data.	11	9.4	65	55.6	0	0	41	35.0
Melakukan ujian kehomogenan varians untuk data.	17	14.5	54	46.2	0	0	46	39.3

Menggunakan ujian statistik yang betul berdasarkan jenis data yang dikaji.	98	83.8	19	16.2	0	0	0	0
Menggunakan ujian parametrik/bukan parametrik yang sesuai.	90	76.9	27	23.1	0	0	0	0
Menyatakan jenis ujian yang digunakan untuk set data berkenaan apabila lebih dari satu ujian dilakukan.	94	80.3	19	16.2	0	0	4	3.4
Menyatakan sama ada data bersandar atau tidak bersandar.	14	12.0	15	12.8	0	0	88	75.2
Menggunakan ujian bersandar untuk data bersandar atau sebaliknya dengan betul.	29	24.8	0	0	0	0	88	75.2
Bilangan saiz sampel yang sama untuk ujian-t bersandar.	5	4.3	0	0	0	0	112	95.7
Menggunakan ujian statistik yang betul berdasarkan hipotesis yang dikaji	78	66.7	5	4.3	0	0	34	29.1
Menganalisis ujian post-hoc dengan betul.	8	6.8	0	0	8	6.8	101	86.3
Memberikan justifikasi terhadap ujian yang dipilih.	64	54.7	53	45.3	0	0	0	0
Menyatakan dan menggunakan nilai P (aras signifikan) yang betul.	69	59.0	14	12.0	0	0	34	29.1
Tidak menggunakan min dan sisihan piawai untuk menghuraikan data yang tidak normal atau bukan parametrik.	89	76.1	28	23.9	0	0	0	0
Penggunaan nilai perpuluhan yang bersesuaian.	116	99.1	1	0.9	0	0	0	0
Menyatakan nilai P dan bukannya $p < 0.05$ atau $p > 0.05$	49	41.9	31	26.5	3	2.6	34	29.1
Melaporkan kesahan kajian.	66	56.4	51	43.6	0	0	0	0
Melaporkan kebolehpercayaan kajian.	83	70.9	34	29.1	0	0	0	0
Melaporkan hasil dapatan menggunakan format APA.	35	29.9	82	70.1	0	0	0	0
Menyatakan kesimpulan dengan disokong data kajian	111	94.9	5	4.3	1	0.9	0	0
Menggunakan nama yang betul untuk ujian statistik	101	86.3	7	6.0	9	7.7	0	0
Pelaporan rajah atau graf yang betul dan sesuai.	15	12.8	5	4.3	0	0	97	82.9
Pelaporan jadual yang betul dan sesuai.	102	87.2	14	12.0	0	0	1	0.9
Melaporkan dapatan kajian dengan betul.	91	77.8	26	22.2	0	0	0	0
Menggunakan istilah yang betul bagi istilah statistik yang digunakan.	115	98.3	2	1.7	0	0	0	0

Perbincangan

Pelbagai jenis perisian analisis statistik seperti SPSS, SAS dan STATA telah dibina bagi memudahkan proses penganalisisan data kajian dijalankan. Penggunaan perisian-perisian ini

akan memberikan nilai yang lebih tepat berbanding nilai yang dikira secara manual. Walau bagaimanapun, penggunaan perisian analisis statistik tidak menjamin para pengkaji daripada melakukan kesilapan dalam analisis statistik. Kajian lepas mendapati bahawa artikel yang telah diterbitkan sekurang-kurangnya mempunyai satu kesilapan statistik (Ercan et al., 2015).

Sebelum memulakan pengumpulan data kajian, antara perkara utama yang pengkaji perlu lakukan adalah mengenal pasti populasi kajian. Namun, hampir separuh jurnal yang dikaji tidak menyatakan populasi dalam kajian mereka. Menurut Banerjee dan Chaudhury (2010), pembaca harus mempunyai pemahaman mengenai populasi dari mana sampel diambil bagi menilai tahap bias pensampelan. Berdasarkan populasi dan sampel kajian yang dipilih, pembaca dapat menilai sama ada pengkaji menggunakan teknik pensampelan yang sesuai dengan kajian. Selain itu, sasaran populasi yang dilaporkan pada awal proses kajian juga dapat memastikan keseluruhan kesahan terhadap dapatan kajian (Eldredge, Weagel & Kroth, 2014).

Kaedah pensampelan merupakan satu proses dalam pemilihan sampel kajian berdasarkan sasaran populasi. Penentuan kaedah pensampelan sama ada pensampelan rawak atau pensampelan bukan rawak penting dalam kajian kerana salah satu andaian ujian parametrik yang perlu dipatuhi sebelum ujian tersebut dijalankan adalah pemerhatian yang rawak. Namun, dapatan menunjukkan bahawa terdapat sebahagian kecil tidak menggunakan kaedah pensampelan yang sesuai dan terdapat juga jurnal yang tidak menyatakan kaedah pensampelan yang digunakan dalam kajian. Dapatan ini seiring dengan kajian lepas di mana 60 peratus tesis yang dikaji tidak menyatakan teknik pensampelan (Delice, 2010).

Selain pemerhatian rawak, andaian data bertaburan normaliiuuuuuuuu98i8 dan varian yang homogen juga merupakan andaian yang perlu dipatuhi sebelum ujian parametrik dijalankan untuk menganalisis data. Namun, pengkaji mendapati separuh jurnal yang dikaji tidak melakukan ujian normaliti dan hampir separuh jurnal tidak melakukan ujian kehomogenan varians. Dapatan ini disokong dengan kajian lepas di mana hanya dua artikel sahaja yang melaporkan bahawa data kajian memenuhi andaian sebelum ujian parametrik dijalankan (Jaykaran, 2011) dan kesilapan ini merupakan kesilapan yang sering dilakukan dalam kajian (Picho & Artino, 2016). Menurut Allam, Noaman, Moneer, dan Elattar (2017), sekiranya andaian tidak dipatuhi, kemungkinan terdapat kesilapan dan pengkaji akan menafsirkan dapatan yang salah.

Kesilapan dalam pemilihan ujian statistik yang betul berdasarkan jenis data yang dikaji juga dapat ditunjukkan dalam dapatan kajian. Dapatan ini disokong oleh Allam et al. (2017), di mana 53.2% disertasi tidak menggunakan ujian statistik yang betul, dan juga disokong oleh Ercan et al. (2012). Menurut Mishra, Pandey, Singh, Keshri dan Sabaretnam (2019), pemilihan ujian statistik yang salah bukan sahaja menimbulkan beberapa masalah semasa mentafsir dapatan kajian bahkan mempengaruhi kesimpulan kajian. Selain itu, terdapat juga jurnal yang tidak menyatakan jenis ujian t yang dijalankan. Dapatan ini disokong oleh Weissgerber, Garcia-Valencia, Garovic, Milic dan Winham (2018) di mana sebilangan besar dari 179 kertas yang menjalankan ujian-t tidak menyatakan maklumat yang penting seperti jenis ujian-t yang dijalankan sama ada ujian berpasangan atau tidak berpasangan, atau dianggap varians yang sama atau tidak sama. Menyatakan ujian statistik yang jelas dalam kajian memudahkan pembaca memahami dengan mudah terhadap kajian yang dijalankan (Lee, 2016). Pelaporan yang jelas terhadap jenis ujian statistik yang dijalankan juga membolehkan pembaca mengenal pasti ujian statistik yang sesuai digunakan dan menjadikannya lebih mudah untuk mengenal pasti dan memperbaiki sebarang kesilapan yang berlaku sebelum kajian lanjutan dijalankan

(Weissgerber et al., 2018). Pengkaji juga mendapati bahawa terdapat kesilapan lain berkaitan ujian statistik iaitu tidak menggunakan ujian statistik yang betul berdasarkan hipotesis yang dikaji. Terdapat jurnal yang melaporkan tentang dapatan hipotesis kajian tanpa menyatakan ujian yang dijalankan dan hasil dapatan daripada analisis statistik yang dijalankan. Dapatan ini seiring dengan dapatan Ercan et al. (2012).

Dapatan kajian menunjukkan bahawa terdapat dua kesilapan berkaitan dengan nilai p yang berlaku dalam jurnal yang dikaji iaitu kesilapan dalam menyatakan dan menggunakan nilai p (aras signifikan) dan menyatakan nilai p dalam bentuk $p < 0.05$ atau $p > 0.05$. Dapatan ini juga dapat dibukti daripada kajian lepas di mana 90 hingga 96 peratus tidak melaporkan nilai p yang tepat (Diong, Butler, Gandevia & Héroux, 2018) dan disokong oleh Ercan et al. (2012). Namun, dapatan ini bercanggah dengan dapatan Allam et al. (2017) di mana majoriti kajian yang dikaji menyatakan nilai p yang tepat.

Dapatan kajian ini juga menunjukkan bahawa terdapat kesilapan analisis statistik di mana pengkaji menggunakan min dan sisihan piawai untuk menghuraikan data yang tidak normal atau bukan parametrik. Dapatan ini seiring dengan kajian Ercan et al. (2012). Bagi data kategorikal iaitu data ordinal dan nominal, analisis statistik deskriptif hanya boleh melaporkan tentang frekuensi dan peratus bagi setiap pembolehubah yang terlibat contohnya bilangan pelajar lelaki dan pelajar perempuan. Manakala bagi data numerikal, iaitu data sela dan data nisbah, pengkaji boleh menjalankan analisis statistik deskriptif dengan mengira min dan sisihan piawai bagi pembolehubah yang terlibat. Namun, terdapat jurnal yang mengira min bagi data kategorikal iaitu nominal. Selain itu, pengkaji juga mendapati bahawa terdapat sebahagian kecil jurnal tidak menggunakan istilah yang betul bagi istilah statistik yang digunakan. Dapatan ini disokong oleh Allam et al. (2017) di mana 77.4 peratus menggunakan istilah statistik yang tidak tepat.

Kajian lepas membincangkan bahawa terdapat beberapa punca berlakunya kesilapan dalam pelaporan analisis statistik. Punca utama yang telah dikenal pasti adalah kekurangan pengetahuan yang mendalam terhadap analisis statistik (Allam et al., 2017; Ercan et al., 2015). Hal ini berlaku kerana para pengkaji terdiri daripada pelbagai bidang seperti bidang perubatan, bidang pendidikan dan bidang industri. Para pengkaji terutamanya pengkaji yang tidak mempunyai latar belakang dalam bidang statistik menghadapi kekurangan latihan yang sesuai dalam penganalisis statistik (Ocana-Riola, 2016; West, Sakshaug & Aurelien, 2016). Apabila pengetahuan yang cetek dalam analisis statistik, pengkaji tidak dapat mengenal pasti ujian analisis statistik yang sesuai untuk digunakan bagi menjawab soalan kajian. Seterusnya, akan melakukan kesilapan dalam analisis statistik.

Selain itu, kesilapan analisis statistik berlaku dalam kajian disebabkan oleh kecuaiannya pengkaji (Nuijten, 2016). Antara kesilapan analisis statistik yang disebabkan oleh kecuaiannya pengkaji ialah nilai output statistik bagi sesuatu perkara seperti nilai p tidak konsisten dengan nilai yang dilaporkan oleh pengkaji. Kesilapan ini boleh terjadi kerana dalam kajian terdapat pelbagai ujian analisis statistik dijalankan bagi menjawab soalan kajian dan kadang-kala pengkaji terlepas pandang tentang perkara ini. Selain itu, amalan semak semula selepas laporan ditulis tidak diterapkan dalam kalangan pengkaji untuk menjadikannya sebagai satu tabiat.

Kesimpulan

Pengkaji mendapati pelbagai jenis kesilapan analisis statistik dalam jurnal yang dikaji. Antara kesilapan yang sering dilakukan ialah menggunakan ujian parametrik tanpa menjalankan ujian kenormalan data iaitu merupakan salah satu andaian yang perlu dipatuhi menjalankan ujian

parametrik. Salah satu faktor yang menjadi punca berlakunya kesilapan analisis statistik dalam jurnal ialah penyelidik tidak mempunyai pengetahuan yang mendalam terhadap analisis statistik. Oleh itu, pengetahuan yang mencukupi mengenai penggunaan ujian statistik yang sesuai amatlah penting. Pengetahuan yang mendalam mengenai kaedah statistik asas akan meningkatkan kualiti jurnal pendidikan.

Rujukan

- Allam, R., Noaman, M., Moneer, M., Elattar, I. (2017). Assessment of statistical methodologies and pitfalls of dissertations carried out at National Cancer Institute, Cairo University. *Asian Pacific Journal of Cancer Prevention*, 18(1), 231-237.
- Banerjee, A., & Chaudhury, S. (2010). Statistics without tears: Populations and samples. *Industrial Psychiatry Journal*, 19(1), 60–65.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Ed. Ke-4. California: SAGE Publications, Inc.
- Delice, A. (2010). The sampling issues in quantitative research. *Educational Sciences: Theory and Practice*, 10(4).
- Diong, J., Butler, A. A., Gandevia, S. C., & Héroux, M. E. (2018). Poor statistical reporting, inadequate data presentation and spin persist despite editorial advice. *PloS One*, 13(8), e0202121.
- Eldredge, J. D., Weagel, E. F., & Kroth, P. J. (2014). Defining and Identifying Members of a Research Study Population: CTSA-Affiliated Faculty Members. *Hypothesis: The Newsletter of the Research Section of MLA*, 26(1), 5–11.
- Ercan, I., Ocakoglu, G., Sigirli, D. & Ozkaya, G. (2012). Assessment of submitted manuscripts in medical sciences according to statistical errors. *Turkiye Klinikleri J Med Sci*, 32(5): 1381-1387.
- Ercan, I., Karadeniz, P. G., Cangur, S., Ozkaya, G. & Demirtas, H. (2015). Examining of published articles with respect to statistical errors in medical sciences. *International Journal of Hematology and Oncology*, 25(2), 130-138.
- Farah Hani Abdul Ghani, Siti Mistima Maat & Roslinda Rosli. (2017). Analisis Kesalahan Pelaporan Statistik bagi Tesis Doktor Falsafah (Phd) Fakulti Pendidikan. *Prosiding Seminar Pendidikan Serantau ke-VII 2017*, 184-192. Bangi: Penerbitan Fakulti Pendidikan Universiti Kebangsaan Malaysia.
- Gliem, J. A. & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's Alpha reliability coefficient for likert-type scales. Dalam 2003 Midwest Research to Practice Conference in Adult, Continuing and Community Education.
- Jaykaran, P. Y. (2011). Quality of reporting statistics in two Indian pharmacology journals. *Journal of Pharmacology and Pharmacotherapeutics*, 2(2), 85-89.
- Kousar, J. B. & Azeez Ahmed. (2015). The importance of statistical tools in research work. *International Journal of Scientific and Innovative Mathematical Research (IJSIMR)*, 3(12), 50-58.
- Lee S. (2016). Avoiding negative reviewer comments: common statistical errors in anesthesia journals. *Korean journal of anesthesiology*, 69(3), 219–226.
- Marshall, G. & Jonker, L. (2009). An introduction to descriptive statistics: A review and practical guide. *Radiography*, 16(4), e1–e7.
- Mishra P, Pandey C. M, Singh U, Keshri A, Sabaretnam M. (2019). Selection of appropriate statistical methods for data analysis. *Annals of Cardiac Anaesthesia*, 22(3), 297-301.
- Nuijten, M. B. (2016). Preventing statistical errors in scientific journals. *European Science Editing*, 42(2), 8-10.

- Ocaña-Riola, R. (2016). The use of statistics in Health Sciences: Situation analysis and perspective. *Statistics in Biosciences*, 8(2), 204–219.
- Picho, K & Artino, A. R. (2016). 7 deadly sins in educational research. *Journal of Graduate Medical Education*, 8(4), 483–487
- Shabbeer, H., Rajashree, Y., Pooventhan, S., Poornima, A., Manoj, G., Manasa, S. I & Shreemathi, S. M. (2014). Research design and statistical methods in Indian medical journals: A retrospective survey.
- Tongco, M. D. C. (2007) Purposive sampling as a tool for informant selection. *Ethnobotany Research & Applications*, 5, 147–158
- Weissgerber T.L, Garcia-Valencia O, Garovic V.D, Milic N.M, Winham S.J. (2018). Why we need to report more than 'Data were Analyzed by t-tests or ANOVA'. *eLife*, 7, e36163
- West, B. T., Sakshaug, J. W. & Aurelien, G. A. S. (2016). How big of a problem is analytic error in secondary analyses of survey data. *PloS ONE*, 11(6), 1-29.
- Yergens, D. W., Dutton, D. J. & Patten, S. B. (2014). An overview of the statistical methods reported by studies using the Canadian community health survey. *BMC Medical Research Methodology*, 14, 1-7.

PENGIRAAN JARAK KE DINDING LANGIT PERTAMA BERDASARKAN ISYARAT-ISYARAT DARI AL-QURAN DAN HADIS

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Abstract: *Jarak dari bumi ke tebing mahupun dinding alam semesta adalah suatu kajian yang dibuat oleh ramai saintis terutamanya dari bidang astrofizik. Antara kajian terkini iaitu kajian pasukan yang diketuai Profesor Mihran Vardayan di Universiti Oxford pada tahun 2011. Kajian mereka mendapati saiz alam semesta adalah sekurang-kurangnya 267 kali lebih besar dari 'hubble volume' pengukuran oleh Teleskop Angkasa Hubble NASA. Pada ketika itu satelit planck mampu mengesan jarak sejauh 13.8 bilion tahun cahaya. Ini bermakna dalam kajian tersebut jarak ke dinding alam semesta ialah 3.68 trilion tahun cahaya. Kajian paling terkini dibuat oleh Profesor Eithan Siegal dari Universiti Florida, USA mendapati jarak ke dinding alam semesta adalah 11.6 trilion cahaya. Kajian kami adalah pengiraan jarak ke dinding alam semesta berdasarkan lunas-lunas Al-quran dan hadis. Hasil dapatan kajian kami dibandingkan dengan kajian-kajian tersebut dan semakan jarak berdasarkan perimeter masa dari peristiwa israk mikraj.*

Keywords: *Jarak Alam Semesta, Halaju Malaikat, Al-Quran dan Hadis*

Pengenalan

Pengiraan jarak ke dinding langit pertama ini adalah berdasarkan isyarat-isyarat dari Al-Quran dan Hadis. Pemerincian ini mengambil parameter-parameter yang terlibat dan dalam pengiraan ini dan dikupuskannya berdasarkan ilmu fizik iaitu *String Theory* dan juga *Fizik Quantum Field Theory*.

Bagi pengiraan ke dinding alam semesta, isyarat-isyarat dalam Al- Quran adalah dari Surah Al Israk ayat 1, Surah As-Sajadah ayat 5, Surah Al-Fatir ayat 1, Surah Al-Maarij ayat 3 dan ayat 4, Surah Al-Hijr ayat 14 dan Surah As-Sajadah ayat 4. Manakala hadis pula adalah hadis riwayat Abu Dawud (4723), Hadis riwayat Muslim (2996),

Definisi Konsep

Jarak ke dinding langit pertama yang kami perolehi daripada isyarat-isyarat dalam Al-Quran dan Hadis adalah kupasan daripada isyarat yang menunjukkan halaju Malaikat didarab dengan isyarat yang menunjukkan masa perjalanan Malaikat. Dalam hukum fizik, jarak diperolehi dengan mendarabkan halaju dengan masa.

Sekarang mari kita lihat komponen halaju Malaikat yang d isyaratkan di dalam Al-Quran, Allah Berfirman Dalam Surah As-Sajdah ayat 5, Mafhumnya,

يُدِيرُ الْأَمْرَ مِنَ السَّمَاءِ إِلَى الْأَرْضِ ثُمَّ يَعْرُجُ إِلَيْهِ فِي يَوْمٍ كَانَ مِقْدَارُهُ ٥٠٠
أَلْفَ سَنَةٍ مِمَّا تَعُدُّونَ ﴿٥٠﴾

"Dia Mengatur Urusan Dari Langit Ke Bumi, Kemudian (urusan) itu naik kepada Nya dalam satu hari yang kadarnya (lamanya) adalah seribu tahun menurut perhitunganmu"

Dalam tafsir Ibnu Katsir, Mujahid, Qatadah dan adh-Dhanhak berkata:

"Turunnya dari para Malaikat pada jarak 500 tahun dan naiknya pada jarak 500 tahun , akan tetapi dia menempuhnya sekejap mata . "

Disini dapat kita lihat bahawa sabahagian para ulamak dan sahabat Rasulullah SAW mentafsirkan bahawa urusan perjalanan di langit adalah urusan perjalanan Malaikat. Maka urusan perjalanan Malaikat dalam ayat ini diisyaratkan dengan perbezaan masa antara kita dengan Malaikat dengan skala **1 hari berbanding 1000 tahun**. Dalam konsep fizik **String Theory** iaitu konsep fizik '**tetali tenaga**', masa adalah komponen yang berkolerasi dengan jarak serta ruang.

Kupasan disini bahawa ruang bagi dimensi yang dilalui oleh para Malaikat adalah berbeza dengan ruang yang dilalui oleh kita dari segi skalanya. Oleh itu skala tetali tenaga ataupun **String Scale** yang mana simbolnya (s) iaitu skala tetali tenaga yang merupakan komponen asas kepada ruang, jarak dan masa juga berbeza. Komponen ini dikupaskan secara terperinci didalam **gambarajah 9** dan **gambarajah 11**. Nisbah satu hari bersamaan seribu tahun adalah bersamaan **1:365250** bersamaan juga dengan nisbah jarak 1:365250.

Maka bolehlah dikatakan juga nisbah skala ruang atau dimensi yang digunakan Malaikat adalah 365250 kali lebih dari segi skala jaraknya berbanding ruangan dimensi yang kita rasai.

String Scale yang membabitkan **String Winding**, **String Tension** dan **String Length** yang menatijahkan dimensi Malaikat adalah 365250 kali lebih pada skala jaraknya berbanding dimensi kita merupakan parameter fizik yang perlu kita gunakan dalam kiraan ini. Ini menunjukkan ayunan tetali tenaga yang berkombinasi dengan kepanjangan dan ketegangan bagi dimensi Malaikat adalah 365250 kali tetali tenaga bagi dimensi yang kita alami.

Situasi ini tidak bercanggah dengan kajian yang dibuat pada tahun 2007 yang dikenali sabagai **Zwiebach Experiment**. pada Julai 2018 oleh **Professor Matsubara** dan **Professor Lars-Goran Johanson** dari **Uppsala University, Sweden**, mereka menyatakan

"are may consider a situation where it is found that the extra dimensions were bigger than what was originally through to be the case in string theory."

Mereka menyatakan bahawa dimensi yang kita tidak nampak ini (**entra dimension**) jauh lebih besar daripada jangkauan para saintis sebelum ini. Dimensi yang tidak nampak (extra dimension) ini yang bertindan dengan ruang alam langit pertama kita merupakan keluarga yang sama dengan dimensi di luar ketujuh-tujuh langit kita.

Oleh yang demikian, perbandingan antara tetali tenaga yang berasaskan air pada dimensi kita dengan tetali tenaga Arsy yang berasaskan cahaya Arsy yang bertindan dengan dimensi kita adalah 1 hari bersamaan dengan 1000 tahun manakala perbandingan antara tetali tenaga berasaskan air di dimensi kita dengan tetali tenaga berasaskan cahaya Arsy di sekitar Arsy sana adalah 1 hari bersamaan 50000 tahun.

Ini adalah bersamaan dengan isyarat dari Surah As-Sajdah ayat 5 iaitu 1 hari bersamaan 1000 tahun menurut perhitunganmu dan Surah Al-Ma'aarij ayat 4 iaitu 1 hari bersamaan 50000 tahun. Perkara ini diperincikan dalam **gambarajah 11**. Seperti yang dinyatakan sebelum ini,

urusan perjalanan di angkasa lepas adalah urusan peralanan Malaikat dan disini secara sepintas lalu kita lihat seperti ada perbezaan antara hadis riwayat Abu Dawud dan juga ayat Al-Quran Surah As-Sajdah ayat 5 serta Surah Al-Ma'aarij ayat 3 dan 4.

Hadis riwayat *Abu Dawud* adalah:

Al-Abbas bin Abdul Muthalib berkata; *Rasulullah S. A. W* bersabda: "*Tahukah Kalian berapa jarak antara langit dan bumi? Kami Menjawab Allah Dan RasulNya Lebih Mengetahui*"

Beliau bersabda:

"Antara Langit Dan Bumi Itu Jaraknya Perjalanan 500 Tahun Dan Antara Langit Yang Satu Dengan Yang Lain Jarak Perjalanannya 500 tahun, Ssdangkan Tebalnya Setiap Langit Adalah Perjalanan 500 Tahun, Antara Langit Ke Tujuh Dengan Arsy Ada Samudera, Dan Antara Dasar Samudera Dengan Permukaannya Seperti Jarak Antara Langit Dengan Bumi, Dan Allah Ta'ala Di Atas Semua Itu, Dan Tiada Yang Tersembunyi BagiNya Sesuatupun Dari Perbuatan Anak Keturunan Adam, "

Manakala ayat Al-Quran Surah As-Sajdah ayat 5 menyatakan perjalanannya Malaikat yang membabitkan satu hari bersamaan seribu tahun dan juga Surah Al-Ma'aarij dimulakan dengan "Dari Allah Tempat- Tempat Naik. "

Untuk ayat 3 dan ayat 4 pula, Allah menyatakan perbandingan 1 hari bersamaan 50000 tahun itu sebenarnya kesemua ini tiada bercanggah antara satu sama lain malah semuanya ini membentuk suatu kata kunci untuk membolehkan kita mengira jarak ke finding langit terdekat. Hadis riwayat *Abu Dawud* juga menyatakan perjalanan Malaikat adalah mengambill masa 500 tahun untuk sampai ke dinding langit terdekat berlaku sekiranya Malaikat tidak menggunakan tempat-tempat naik seperti yang dinyatakan dalam Surah Al-Ma'aarij ayat 3 iaitu "Dari Allah Tempat-Tempat Naik". Sekiranya Malaikat menggunakan tempat-tempat naik mereka hanya memerlukan masa dalam julat waktu sehari sahaja untuk semua urusan naik dan turun.

Maka bagaimana pula perbezaan antara pernyataan ayat Al-Quran dalam Surah As-Sajdah ayat 5 yang menyatakan 1 hari bersamaan 1000 tahun, manakala dalam Surah Al-Ma'aarij ayat 4 pula menyatakan 1 hari bersamaan 50000 tahun?. Sebenarnya ini pula adalah kata kunci tentang sifat tempat naik ini yang menghubungkan antara dimensi yang padat tetali tenaganya yang berasaskan air di alam materi ini dari langit satu sehingga kepada dimensi yang kurang padat tetali tenaganya yang berasaskan air dari langit ke tujuh dan ke atasnya dengan nisbah jarak antara tetali tenaga dari 1 kali sehingga 50 kali.

Ini adalah salah satu sifat *Warmhole* iaitu menghubungkan antara ketumpatan yang tinggi dengan ketumpatan yang rendah. Nisbah 1 kali sehingga 50 kali dari langit ke 1 sehingga melepasi langit ke-7 kemudian melalui ruangan samudera dan sampai ke ruangan Arsy adalah mematuhi nisbah *Fibonacci* iaitu nisbah 6 fasa seperti yang dinyatakan dalam Suran As-Sajdah ayat 4.

Maka nisbah fibonacci ini membentuk jujukan 1, 2, 3, 5, 8, 13, 20, 30 dan 50 kali. Kesan fibonacci ini membentuk pemendekkan jarak di dalam 'warmhole' tadi (Tempat Naik). Walaubagaimana pun *warmhole* ini bukannya *warmhoe* satu hala yang bersifat *black hole* yang mempunyai tempat menyedutnya dan tempat menghamburkannya. Ini (yakni tempat naik) adalah wormhole dua hala kerana bersebelahan di sebelah atas alam materi ketujuh-tujuh lapis langit yang kita kenali selama ini ada lagi pasangan alam kita iaitu *alam anti materi (anti matter universe)*. Alam anti materi ini siap terbina lebih awal dari alam materi kita dan apa yang terukir di alam itu akan diikuti sepenuhnya oleh alam materi kita melalui hubungan kitaran jaringan *warmhole* sehala dalam alam materi ke alam anti-materi dan juga jaringan *wormhole* sehala dari alam anti-materi ke alam materi kita yang cara perlaksanaanya adalah

black hole yang menyedut *fotan (photon)* dan *elektron* dari alam kita menghamburkan *Positron* melalui *white hole* dalam pasangan alam kita pada acuan yang sama (sekiranya di bumi adalah 'Ali' maka di alam anti-matter sana adalah di anti-bumi pada anti-Ali iaitu Ali dalam bentuk acuan lakaran cahaya dalam *perakam zirconium*).

Kemudian wormhole atau pun black hole pada acuan Ali di anti-materi universe akan menyedut positron untuk pergerakan akan datang (Ali) di bumi dan menghamburkannya positron tersebut di tepi black hole tadi iaitu melalui white hole dan berlaku *annihilation* membentuk *gamma rays* yang menjadi tenaga perbuatan Ali di alam materi ini. Maka apa yang sudah tertulis di *Lauh Mahfuz* akan dilaksanakan di alam kita. Dan apa yang dilakukan di alam ini sebelum itu akan terakam di lauh mahfuz.. Oleh itu, bila kita amati disini terdapat jaringan wormhole sehala yang berbentuk pasangan blackhole-whitehole pada setiap kordinat yang sama di alam ini seperti tindakan *xylem* (blackhole) dan *phloem* (whitehole) pada hujung setiap akar pokok pada setiap titik (kordinat di alam ini dan juga pasangan kepada semua titik (kordinat) di alam anti materi. Ini adalah sama tindakan yang berlaku antara lauh mahfuz dengan alam kita.

Disini dapat kita amati bahawa berlaku wormhole sehala untuk pergi yang kita lihat sebagai black hole dan wormhole sehala untuk balik yang kita lihat sebagai white hole yang seolah-olah didakap oleh satu akar yang menyambungkan alam materi kita dengan alam anti materi di sebelah sana. Maka akar itu bertindak sebagai wormhole dua hala yang boleh bergerak di dalamnya pergi berhenti mahupun patah balik seperti tempat naik dalam peristiwa mikraj Rasulullah S.A.W. Akar tersebut juga bertindak selaku wormhole yang membalut jalinan black hole - white hole antara alam materi kita dengan alam anti materi. Oleh yang demikian *supermassive black hole* yang ada di alam kita dibalut oleh *supermassive wormhole* (tempat naik) yang bersifat *Traversable Wormholes* atau pun *two way wormholes* dengan model *Zero - Tidal - Force Schwarzschild- Like - Wormholes Model* yang tidak bercanggah dengan sifat tempat naik dalam peristiwa mikraj Rasulullah S.A.W.

Maka jujukan fibonacci dan alam sifat yang sama berlaku juga di alam anti materi di sana dan semua model in diperincikan dalam *gambarajah 9*. Ini adalah perincian model tempat naik beserta penerangan dalam bentuk formula dan model matematik. Sekarang mari kita lihat perincian dan pembuktian yang mana skala ruang di lapisan sebelah atas terutama di kawasan air asalan alam semesta adalah lebih besar dari skala ruang di langit pertama kita.

Terdapat atsar para sahabat berhubung dengan perbezaan skala ruang ini.
"Ikrimah meriwayatkan bahawa Allah S.W.T meurunkan hujan dari langit dengan titisan sebesar unta, seandainya tidak ada awan dan angin yang memisah-misahkan titisan tersebut nescaya seluruh yang ada di permukaan bumi yang berupa tumbuhan dan binatang ternak akan binasa."

Apabila kita buat perbandingan saiz air pada isipadu unta dibandingkan saiz air hujan yang kita alami sekarang, kita akan dapati hasil nisbah yang menakjubkan. Isipadu air sebesar unta adalah 0.5m³. Isipadu 0.5m³ ini adalah dengan membundarkan dan mengambilkira saiz purata unta yang dikaji oleh *Dr. Salih Ahmed Babiker (Abu Salih), 1989* beliau menyimpulkan "average slaughter weight of mature, fattened desert camels was 456 KG, iaitu menghampir 0.5 tan. Maka 0.5 tan mamalia mempunyai isipadu sekitar 0.5m³, maka sekarang mari kita bandingkan dengan isipadu air hujan yang kita alami saban hari.

Dalam *The Physics Factbook, An Encyclopedia of Scientific Essays, Diameter of Raindrop* suatu analisa telah dibuat oleh para saintis terhadap 867 titisan hujan dalam suatu eksperimen semasa berlakunya hujan dan didapati saiz pertengahan titisan air hujan itu adalah antara 1.7mm - 3.2mm bersamaan 29 titisan dari jumlah keseluruhan 867 titisan. Apabila kita mengambil 3.0mm sebagai salah satu parameter titisan yang berbentuk kubus, maka isipadunya

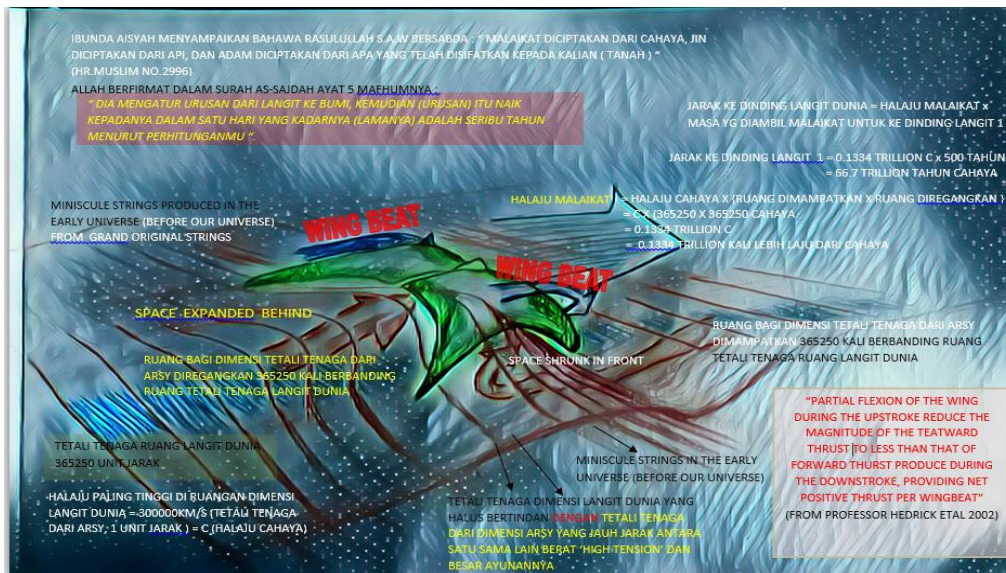
adalah bersamaan 0.0000000270m³. Apabila kita bahagikan saiz titisan hujan dari samudera sekitar Arsy iaitu 0.5m³ dengan saiz titisan hujan dibumi kita, maka kita dapati hasilnya ialah 18518518 iaitu suatu anggaran yang amat menghampiri 1 hari bersamaan 50000 tahun ataupun angka 18262500 pada nisbahnya.

Kiraan Jarak Ke Dinding Langit Pertama

Kiraan Pertama :

Bagi membuat kiraan jarak ke dinding langit pertama kita perlu melihat dua komponen utama iaitu yang pertama adalah sifat dimensi yang digunakan oleh Malaikat bagi kita memperolehi halaju Malaikat dan yang kedua adalah masa perjalanan yang diambil oleh Malaikat untuk bergerak ke dinding langit pertama.

Mari kita kupaskan komponen pertama iaitu sifat dimensi yang digunakan oleh Malaikat dan disini kita perla mengambil kira cara Malaikat bergerak didalam dimensi itu. Seperti yang kita bincangkan sebelum ini dan dengan bantuan **Gambarajah A**, kita sudah maklum bahawa sifat tetali tenaga yang berasaskan cahaya Arsy yang bertindan dengan dimensi kita di langit pertama adalah 365250 kali lebih besar jarak antara tetali tenaganya dibandingkan dengan tetali tenaga yang dirasai oleh kita iaitu tetali tenaga yang berasaskan air.



Gambarajah A

Kaedah malaikat bergerak dalam dimensi tersebut adalah berdasarkan firman Allah :
 Dalam Surah Al-Faatir ayat 1, Allah berfirman mafhumnya :

الْحَمْدُ لِلَّهِ فَاطِرِ السَّمَوَاتِ وَالْأَرْضِ جَاعِلِ الْمَلَكِيَّةِ رُسُلًا أُولِي أَجْنِحَةٍ
 مَثْنٍ وَثُلَاثٍ وَرَبْعٍ يَزِيدُ فِي الْخَلْقِ مَا يَشَاءُ إِنَّ اللَّهَ عَلَى كُلِّ شَيْءٍ
 قَدِيرٌ

"Segala puji bagi Allah Pencipta Langit Dan Bumi, Yang Menjadikan Malaikat Sebagai Utusan-Utusan Yang Mempunyai Sayap, Masing-masing Ada Dua, Tiga Dan Empat. Allah Menambahkan Pada CiptaanNya Apa Yang DikehendakiNya, Sesungguhnya Allah Maha Kuasa Atas Segala Sesuatu"

Berdasarkan ayat di atas maka jelas menunjukkan bahawa Malaikat menggunakan sayap untuk bergerak. Merentasi dimensi tersebut menggunakan sayap adalah sama analoginya seperti pergerakan burung terbang. Sebagaimana burung berkeupayaan terbang dalam

medium udara menggunakan sayapnya dalam konsep fizik bendalir begitu juga Malaikat berkeupayaan terbang dalam dimensi berasaskan cahaya dari Arsy juga dalam konsep fizik bendalir. Ini adalah disebabkan yang mula-mula sekali diciptakan Allah adalah air (menurut sebahagian besar para ulamak), kemudian dari air itu Allah menciptakan Arsy dan dari Arsy yang mempunyai bentuk ataupun formasi tetali tenaga fibonacci air tadi Allah menciptakan Malaikat iaitu dari pecahan cahaya dari bahan-bahan Arsy.

Maka Malaikat yang diperbuat dari cahaya Arsy berkeupayaan terbang dengan konsep fizik bendalir dalam ruang formasi tetali tenaga daripada cahaya Arsy. Para saintis juga bersetuju dengan konsep ini iaitu sepertimana yang kita ketahui alam kita terbina dari tetali tenaga berasaskan air (dimensi kita) dan teori ini antaranya dikaji oleh saintis yang bernama **Fabio Finelli** seorang ahli fizik dari **IASF/CNR**. Beliau menyatakan dalam artikel yang bertajuk *Cosmological dynamics of the tachyon with an inverse power-law potential*, iaitu **In presence of an additional perfect fluid, the tachyon with this potential behaves as dust or dark energy**.

Oleh yang demikian berbalik mengenai kajian kita yang menyatakan Malaikat yang diciptakan dari cahaya Arsy mampu terbang merentasi ruang (dimensi) yang berasaskan tetali tenaga Arsy (keluarga cahaya Arsy), maka disini **Professor Dr Ulf Peschel** dari **Friedrich University** pada 15 Jan 2016 menyatakan **If we can bend the light, we can make "warp drive"**, yang mana sekiranya kita dapat membentuk cahaya menjadi peralatan seperti kipas atau sayap maka kita boleh membuat kenderaan yang merentasi ruang. Oleh yang demikian Malaikat yang diciptakan dari cahaya Arsy mampu terbang dalam dimensi yang berasaskan cahaya Arsy yang bertindan dengan dimensi kita. Maka bolehlah kita mengkaji disini kaedah Malaikat bergerak merentasi ruang dengan mengambil kaedah yang hampir sama dengan kaedah burung terbang. Apabila Malaikat mengepak menarik ruang di hadapan maka ruangan ini dimampatkan, dan pada masa yang sama ruangan di bawah Malaikat yang dimampatkan tadi meregang dan kedua-dua kombinasi ini ditunjukkan kiraan dan gambarannya secara terperinci dalam **Gambarajah 10**.

Maka berlaku mampatan tetali tenaga dari dimensi Arsy yang bermagnitud 365250 kali ruangan langit 1. Gandaan dan juga kombinasi regangannya yang juga bermagnitud 365250 kali ruangan langit 1. Gandaan lebih laju dari cahaya berkadaran dengan gandaan mampatan dan regangan ruang (juga langkah ruang). Maka halaju Malaikat adalah :

$$\begin{aligned} \text{Halaju Malaikat} &= (\text{Mampatan ruang}) \times (\text{Regangan ruang}) \times (\text{Halaju Maksima dimensi kita}) \\ &= 365250 \times 365250 \times \text{halaju cahaya} \\ &= 0.334 \text{ Trillion kali halaju cahaya} \\ &= 0.334 \text{ Trillion C} = 3.334 \times 10^8 \text{ C} \end{aligned}$$

Untuk mendapatkan jarak ke dinding langit pertama maka kita mestilah mendapatkan parameter masa perjalanan ke dinding langit pertama. Untuk masa perjalanan ke arah **Sidratul Muntaha** dengan merentasi ketujuh-tujuh langit maka disini ada dalilnya berdasarkan hadis riwayat Abu Dawud iaitu perjalanan tersebut ialah 500 tahun.

Sebahagian ulamak menafsirkan perjalanan di langit adalah perjalanan Malaikat. Perjalanan Malaikat selama 500 tahun di atas adalah sekiranya Malaikat tersebut bergerak tanpa menggunakan tempat-tempat naik berdasarkan dalam firman Allah S.W.T. Dalam surah Al-Ma'aarij ayat 3 mafhumnya :

مِّنَ اللَّهِ ذِي الْمَعَارِجِ

"Dari Allah Yang Menguasai
Tempat-Tempat Turun Naik

Maka Jarak Dari Bumi Ke Dinding Langit Pertama Pada Arah Sidratul Muntaha Adalah:

Jarak Ke Dinding Langit Pertama = Halaju Malaikat Terbang & Masa diambil sekiranya tidak menggunakan Tempat Naik.

$$\begin{aligned} &= 0.1334 \text{ Trillion Kali Halaju Cahaya} \times 500 \text{ Tahun} \\ &= 66.7 \text{ Trillion Tahun Cahaya (Pada Arah Ke Sidratu} \end{aligned}$$

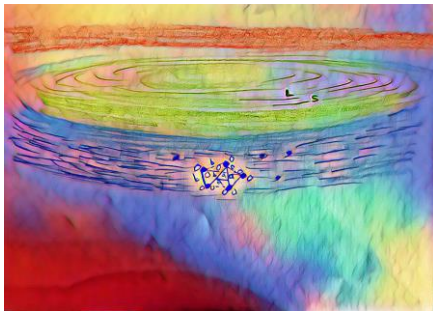
Muntaha).

Professor Eithan Siegal dan *Professor Mihran Vardanyan* masing-masing dari *Oxford University* dan *University of Florida* membuat kiraan ke dinding alam semesta dengan berpandukan kelengkungan ruang yang dapat dicerap. Oleh itu mereka telah mengira jarak terdekat ke dinding alam semesta bukannya purata jarak ataupun jarak terjauh. Kiraan yang kami perolehi tadi iaitu 66.7 Trillion Tahun Cahaya adalah jarak paling jauh ke dinding langit pertama iaitu ke pepenjur kubah arah pepohon Sidratul Muntaha ataupun tempat naik yang sifat fiziknya (*Zero-Tidal-Force Schwarzschild-like-Warmholes*). Maka untuk membandingkan kiraan kami dengan kiraan mereka kami juga perla mendapatkan jarak terdekat ke dinding alam semesta. Berdasarkan Surah As-Sajdah ayat 4, alam semesta diciptakan Allah dalam formasi nisbah 6 dalam pembentukan fibonacci ataupun *Golden Ratio (phi)*. Sepertimana firman Allah, dalam Surah As-Sajdah Ayat 4 mafhumnya seperti yang dinyatakan sebelum ini.

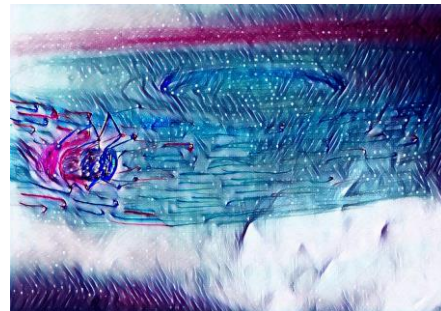
Berdasarkan penerangan dan **Gambarajah 1-9**, perhatikan bagaimana dari permulaannya Allah menciptakan tetali tenaga asalan yang merupakan sejumlah tetali tenaga yang neutral, tiada cas, tidak berpusar keluar dari kawanan tetali tenaganya. Pada awalan ini sudah ada nisbah kepanjangan antara sesama tetali tenaga itu dan jika dibahagikan antara yang panjang dengan yang pendek akan manepati nisbah fibonacci. Pada **gambarajah 2** pula terdapat tetali tenaga yang mula berpusar pada arah yang berbeza dari pusaran asal. Arah pusaran asal adalah arah lawan jam manakala sekumpulan tetali tenaga ini berpusar pada arah jam dan menyebabkan berlakunya simpulan demi simpulan sehingga membentuk formasi permata putih.

Gabungan jalinan tetali-tetali tenaga yang teramat banyak dalam formasi Fibonacci dalam pelbagai arah, sudut dan kombinasi telah membentuk *pattern* ataupun acuan yang bila terlerainya simpulan itu akan membentuk segala benda materi untuk alam kita dan anti materi untuk pasangan alam kita. Bila mana berlaku getaran yang menyebabkan terlerai semua simpulan tersebut berlakunya *spara annihilation* pengapusan sebahagian setiap pasangan tetali materi dan anti materi sebagai pacuan tenaga untuk membentuk alam anti materi dan alam materi kita disamping bergerak pada kedua-dua arah adalah formasi tetali tenaga materi untuk alam kita dan formasi tetali tonaga anti materi untuk pasangan alam kita dan ini digambarkan dalam **gambarajah 3**. Pada **gambarajah 4** pula menunjukkan perbezaan pacuan alam, alam anti materi didapati jauh lebih cepat berkembang berbanding alam materi kita. Ini adalah kerana alam materi lebih besar jisimnya dan pusaran lawan jam tetali tenaganya lebih banyak membawa bersama formasi air dari bendalir asalan alam semesta dan seterusnya membentuk bendalir lautan sendiri bagi alam materi kita manakala alarm anti materi adalah lebih ringan disebabkan ia berpusar berlawanan arah secara relatifnya dari bendalir alam semesta asalan tersebut dan pada masa yang sama kesan dari pusaran arah yang berbeza pada bendalir asalan alam semesta menyebabkan bendalir asalan alam semester membentuk formasi zirconium bersifat mutiara lautan yang merupakan perakam tenaga yang amat baik. Maka segala totali tenaga alam anti materi menerpa dengan lebih laju mangukir segala apa yang akan terjadi pada pasangannya (iaitu alam materi kita) dan bergerak bersama kanvas zirconium (parakam terbaik) yang berbentuk seperti kepompong yang berbentuk seperti tanduk kesaan dari formasi nisbah fibonacci pada kumpulan-kumpulan tetali tenaga awalan tadi. Kelihatan pada **gambarajah 4** ini beandalir lautan sendiri alam materi sudah mula terkesan dengan tenaga haba

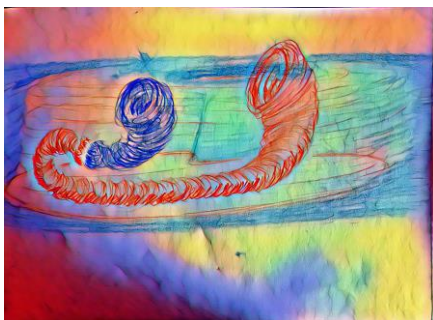
(api) yang membawa tenaganya pada pusat annihilation iaitu permisahan antara alam materi dan alam anti matery.



Gambarajah 1



Gambarajah 2.



Gambarajah 3.



Gambarajah 4

Pada *gambarajah 5* pula, kesan dari haba tadi telah memperluaskan air lautan sendin ataupun dikenali air lautan alam materi. Maka air lautan alam materi itu meluap berasap dan bertukar menjadi ruangan yang besar yang bersifat ketika ini seperti *inflation with bosonic string (Professor Alan Harvey Guth 1981)*. Manakala di permukaan lautan itu semakin meluap-luap kesan dari terkaman tenaga annihilation dari pusat pertemuan tetali tenaga lawan jam dan ikut jam (materi dan anti mater) pada jisim simpulan fibonacci permata putih tadi.

Walaubagaimanapun di pinggir permukaan luapan lautan yang berpusar lawan jam tu sudah mula terkondensasi mengeras dan membentuk seperti buih (whirlpool anomaly-different density). Sejumlah anomali pusaran ruang (whirlpool) yang membentuk buih pada skala besar menyedut semua elemen mendekatinya dan akhirnya membentuk tanah dan daripada tanah ini tercipta bumi yang terapung-apung bersama jisim-jusin yang lain di atas lautan pertama di alam materi ini. Di sebelah atasnya pula adadah ruangan bukan alam semesta (inflation) dan mula membentuk bahan-bahan terampai terdiri dari *Unsur Karbon* dan mula memadat kesan dari daya emparan pusaran *Inflation'* tadi. Maka dari bentuk asap ruangan langit pemulaan tadi mula mengeras membentuk dinding langit. Ketika ini sudah ada langit yang amat tinggi kesan dari annihilation energy tadi dan pada waktu ini permukaan lautan sudah mula mengeras dan membentuk *spinning disk emerald*.



Gambarajah 5



Gambarajah 6

Magnitud tekanan yang berlapis lapis ini melonjakkan sehingga enam lagi *spinning disk emerald* masing-masing terlonjak keluar dari dalam setiap spinning disk emerald dan berlapis-lapis seperti dalam ***gambarajah 6***. Pada watu ini, masing-masing spinning disk emerald mula merangkul ruangan di atasnya yang sepadan dengan ketumpatan dan arah vektor spinning disk emerald masing-masing. Lapisan spinning disk yang paling atas iaitu yang paling kecil mempunyai ketumpatan yang paling tinggi kesan dari tekanan yang paling tinggi tadi merangkul ruangan yang paling tumpat di atasnya berserta vektor yang sama dengannya dan juga bahan-bahan buminya.

Begitulah seterusnya spinning disk emerald yang kedua tertinggi kurang sedikit ketumpatan ruang rangkuman vektor sepadannya dan formasi ini berjujukan sehingga kebawah dan mematuhi nisbah fibonacci dari semua segi terutama dari segi jujukan ketumpatan ruangnya. Kesemua ketujuh-tujuh spinning disk emerald ini membina bahan-bahan bumi pada tingkatan masing dan merangkul ruang ketumpatan dan vektor yang sepadan masing-masing. Pada ketika inilah terkombinasinya kesemua tujuh vektor pergerakan ruang (pergerakan tetali tenaga berasaskan air) (vector of upon strings) bagi tujuh lapis alam materi kita ditambah lagi satu vektor arah utama yang didominasi tetali tenaga Arsy di luar sana pada waktu lautan air asalan alam semesta dan pembentukan Arsy serta medan pusaran tetali tenaga Arsy yang disebabkan oleh pusaran lautan air asalan alam semesta.

Maka ketika ini jumlah arah pesongan vektor tetali tenaga adalah 8 vektor ditambah lagi 3 vektor yang mana lagi 3 vektor ini adalah 2 vektor daripadanya adalah vektor yang melengkapkan 3 vektor di alam yang kita rasai dan duduki ini iaitu alam spinning disk emerald yang teratas dan satu vektor lagi para saintis mancadangkannya adalah masa. Maka ini menjadikan kesemua vektor yang terlibat adalah 11 vektor yang mana teori ini bertepatan dengan ***Eleven Dimensions Superstring Theory*** yang diperkenalkan oleh Professor Mike ***Duff*** pada tahun 1994 (sebelas dimensi tetali tenaga super).

Setelah beberapa lama rangkuman vektor dan ruang sepadan ketumpatan masing-masing, maka waktu ini mulalah terbina bahan terampai yang terdiri dari unsur karbon yang mula memadat yang memisahkan antara rangkuman yang berbeza kepadatan tetali tenaganya dan bahan terampai unsur karbon (berasal dari asap) mengeras, memadat dan membentuk langit sepertimana ditunjukkan dalam ***gambarajah 7***.



Gambarajah 7.



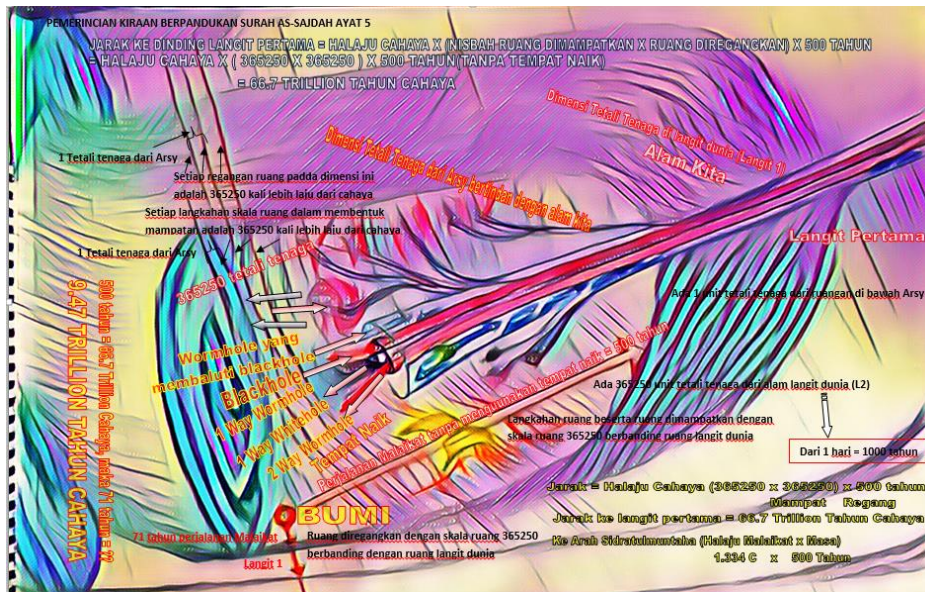
Gambarajah 8

Formasi langit-langit yang terbina ini juga mematuhi nisbah fibonacci dari segi geometrinya sepertimana juga formasi bahan-bahan bumi yang berbentuk fibonacci *spinning disk emerald* sebelum ini. Maka ada sisi yang dekat antara ketujuh-tujuh lapis langit ini dan ada juga sisi yang paling jauh. Sepertimana ditunjukkan dalam *gambarajah 7 dan 8* iaitu terbinanya sisi-sisi yang paling dekat dibahagian bawah lakaran alam materi itu dan terbinanya sisi-sisi langit yang paling jauh pada bahagian perjuru menuju sebelah kanan dan ke atas. Untuk sisi-sisi yang dekat ini, ia terlihat bersesuaian dengan petikan dari hadis riwayat Abu Dawud iaitu,

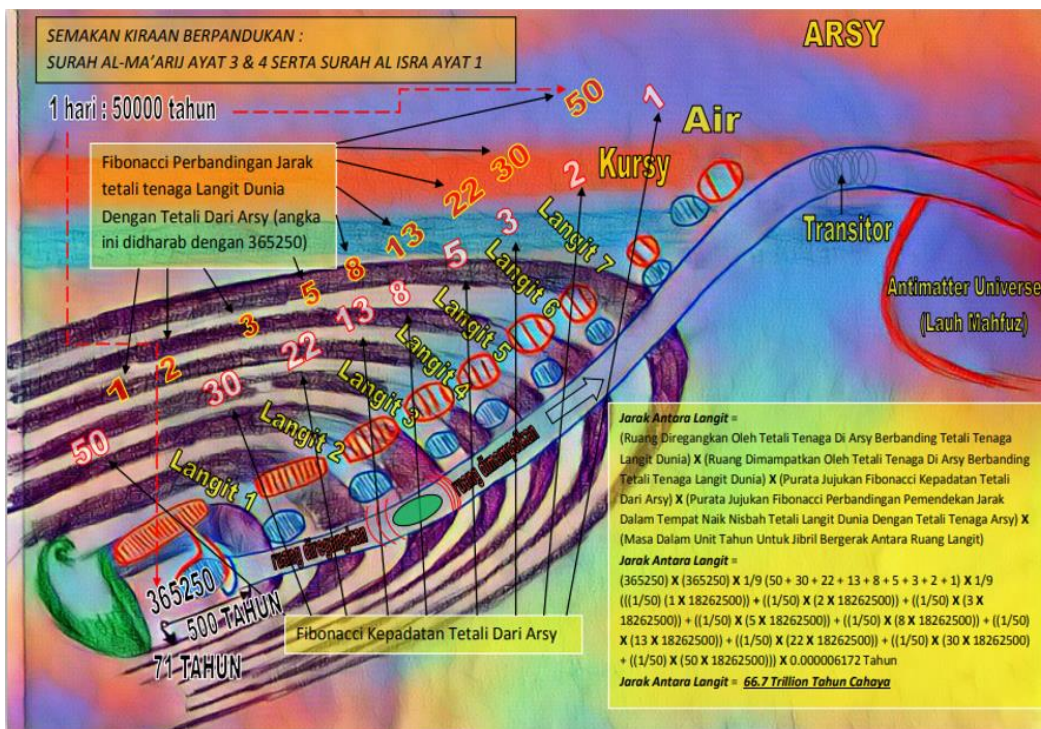
“Sesungguhnya jarak antara keduanya (langit dan bumi) boleh 71 atau 72 atau 73 tahun perjalanan, kemudian langit yang di atasnya juga seperti itu” (HR Abu Dawud no.4723)

Maka disini dapat kita kirakan jarak terdekat ke dinding langit pertama iaitu:
 Jarak Terdekat Ke Dinding Langit Pertama = Halaju Malaikat Terbang x Masa Terpendek Yang Diambil Sekiranya Malaikat Tidak Menggunakan Tempat Naik,
 = 0.1334 Trillion Kali Halaju Cahaya x 71 tahun
 = 9.714 Trillion Tahun Cahaya

Oleh itu dapatlah kita bandingkan dengan jarak terdekat ke dinding Alam Semesta yang diperolehi oleh **Professor Mihran Vardanyan** bersama pasukannya dari **Oxford University** iaitu 3.5 trillion tahun cahaya dengan menggunakan **Vayesan Model Averaging** dan juga jarak terdekat yang diperolehi oleh **Professor Eithan Siegal** dari **University Of Florida** iaitu 11.5 trillion tahun cahaya, Kajian oleh Professor Mihran Vardanyan adalah pada tahun 2011 manakala Profossar Erthan Siegal Pula pada tahun 2018. Sakarang mari kita lihat pula semakan untuk kiraan ini berdasarkan peristiwa israk mikraj. **Rasulullah S.A.W** dengan **Gambarajah 8, 9, 11, 12, 13 dan 14** sebagai diagram dalam bantuan pemahaman ini.



Gambarajah 11



Gambarajah 12

Gambarajah 8 menunjukkan dua hari terakhir proses penciptaan langit dan bumi. Proses dua hari terakhir ini adalah penciptaan cahaya pada hari rabu dan menebarkan haiwan-haiwan pada hari khamis iaitu mempersiapkan bumi dalam dua hari terakhir untuk kesesuaian manusia mendiaminya.

Manakala pada gambarajah 7 sebelum itu menunjukkan penciptaan pepohon (popohan alam semesta, akar-akar jaringan *one way wormhole*, tarikan tetali-tetali materi dengan tetali-tetali anti materi (*Experiments by Professor Carl David Anderson, M.I.T Professor, At CERN matter and anti-matter initially attract each other, and then destroy each other*) pada hari isnin dan sesuatu yang dibenci pada hari selasa. Pada dua hari ini Allah menyiapkan ketujuh-

tujuh lapis langit manakala pada gambarajah 6 sebelum itu penciptaan tanah pada hari sabtu dan gunung-ganang pada hari ahad. Dalam dua hari permulaan ini terciptanya ketujuh-tujuh bahan bumi iaitu daripada bendalir lautan sendiri alam materi, berlakunya pusaran demi pusaran (*Whirlpool Anomaly*) yang mengumpulkan bahan-bahan bumi (Tanah) dan akhirnya bahagian atas lautan ini mula membeku membentuk gunung-gunung (*dark matter*) dengan gunung ataupun bahan bumi terbesarnya *spinning disk emerald* yang jaringan gunung-gunung daripada amat pejal sehingga hanya mengkal seperti gam memegang bahan-bahan bumi dan jisim-jisim planet serta pusaran setiap awalan *solar system* dan setiap system solar tadi berpadu dan mula membentuk pusaran induk awalan galaksi dan semua ini masih berbentuk pepejal yang dipegang stabil oleh gam ataupun gunung (dark matter) yang dibawahnya lautan alam materi. Antara kajian yang menunjukkan bahan-bahan untuk bumi kita yang bulat ini tercipta terlebih dahulu dari matahari ialah *Half of Earth Water formed before the sun was born, a team led by Astronomer L. Usedare (leaves of the University of Michigan)*.

Kiraan Kedua :

Berdasarkan kajian penciptaan alam semesta yang dibentangkan ini maka dapatlah kita ketahui bahawa formasi enam fasa ataupun nisbah fibonacci terselirat disegenap proses penciptaan dalam alam semesta kita ini. Maka untuk kita menyemak jarak dari bumi ke dinding alam semesta menggunakan peristiwa Israk Mikraj, kita perlu memperincikan tempat naik atau pun laluan yang selalu digunakan oleh Jibril dan para Malaikat. Berdasarkan penerangan sebelum ini, sifat tempat naik adalah *Zero-Tidal-Force-Schwarzschild-Like-Warmholes Model*, maka halaju Malaikat yang bergerak di dalam tempat naik itu diperincikan dalam gambarajah 11 yang menunjukkan *campur tangan* nisbah fibonacci pada geometri tempat naik itu, manakala masa yang diambil untuk bergerak merentasi antara langit diperincikan berdasarkan perjalanan sejarah dalam cerita Israk dan Mikraj beserta pembuktian waktu yang tidak menyalahi riwayat kisah Israk dan Mikraj itu. Maka setelah diperolehi masa optimum berdasarkan pemerincian kisah Israk dan Mikraj dalam **Gambarajah 13 dan 14**, maka dapatlah dikira jarak ke dinding langit pertama dengan mengambil purata masa merentasi antara setiap langit dan dengan mengangap bahawa jarak antara langit adalah sama seperti mana dalam hadis riwayat *Abu Dawud* yang dinyatakan sebelum ini. Maka apabila didarabkan halaju Malaikat yang menggunakan tempat naik dan masa merentasi tempat naik itu (purata masa) dapatlah jarak ke dinding langit pertama iaitu 66.7 trillion tahun cahaya iaitu tepat dan bersamaan dengan kiraan pertama sebelum ini.

Maka Purata Masa Setiap Ruang Antara Langit Dalam Sebutan x ialah : $14,88888x = 3 \text{ minit } 14,3 \text{ saat}$

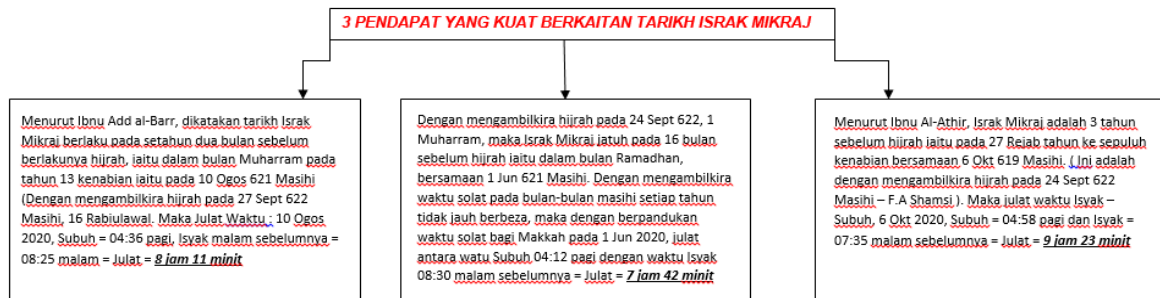
MAKA 3 MINIT 14, 8 SAAT ADALAH PURATA MASA SETIAP KALI BERGERAK MERENTASI RUANG ANTARA SETIAP LANGIT

Pemerincian Masa Diambil Untuk Merentasi Setiap Ruang Langit Dan Tebalnya :

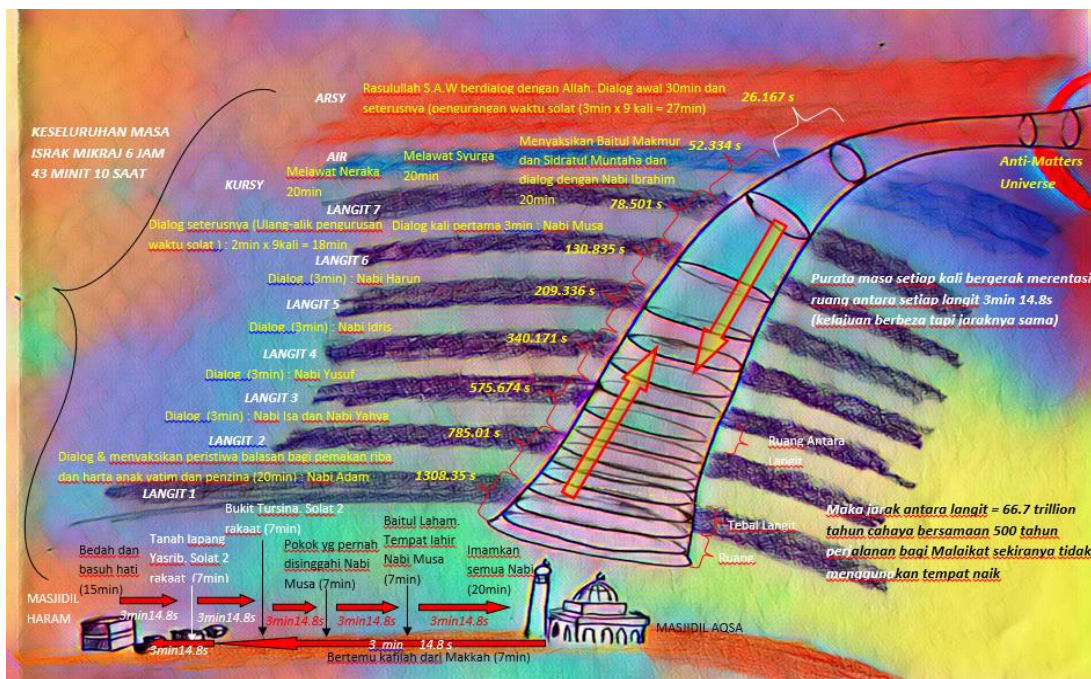
Masa Terpendek Untuk Jarak Yang Paling Diperpendekkan Dalam Tempat Naik = $x = 13 \text{ minit } 14,8 \text{ saat} / 14,88888$, maka $x = 13,0836 \text{ saat}$

Berikut adalah masa perjalanan mengikut nisbah fibonacci (disebabkan jarak yang semakin diperpendekkan dalam tempat naik) bagi merentasi setiap ruang langit dan tebalnya mengikut perspektif tempat naik yang berkadar dengan masa yang diambil untuk merentasinya :

(1308.35 saat = Langit beserta tebalnya), (785.01saat = Langit 2 beserta tebalnya), (575. 674saat = Langit 3 beserta tebalnya), (340.1 71 saat = Langit 4 beserta tebalnya), (209.336saat = Langit 5 beserta tebalnya), (130.835saat = Langit 6 beserta tebalnya), (78.501saat = Langit beserta tebalnya), (52.334 saat = Ruangan Kursi dan Ketebalan Air) dan (26.167 saat = Ruangan Di Atas Air dan Arsy).



Gambarajah 13



Gambarajah 14

Kesimpulan

Kesimpulannya dapatlah dinyatakan disini bahawa kiraan ke dinding langit terdekat iaitu 66.7 trillion tahun cahaya berada di dalam daerah yang munasabah kerana ia bertepatan dengan kiraan semakan yang menggunakan kaedah yang berbeza beserta ayat Al-Quran pada surah yang berbeza serta hadis yang berbeza dari kiraan pertama dan hasilnya tetap sama iaitu 66.7 trillion tahun cahaya dan apabila dibandingkan dengan kiraan yang diperolehi oleh **Professor Mihran Vardanyan** bersama pasukannya di **Oxford Unirversity** dengan kita mengambil sisi yang terdekat daripada kiraan 66.7 trillion tahun cahaya tadi iaitu 9.714 trillion tahun cahaya didapati amat hampir dengan dengan kiraan mereka di **Oxford University (2011)** iaitu 3.5

trillion tahun cahaya. Ianya dikira amat dekat dalam kiraan skala alam semesta. Begitu juga dengan kiraan dari *Professor Eithan Siegal* dari *University of Florida (2018)* iaitu 11.5 trillion tahun cahaya.

Rujukan

- Ayat 3 Surah Al-Ma'aarij, Tafsir Ibnu Katsir
Dr Salih Ahmed Babikery (Abu Salih). The Desert Camel as a meet animal
Ethan Siegal Ast Ethan (2018). How Large Is The Intire, Unobservable Universe?
Fabio Finelli (2003). Cosmological dynamics of the tachyon with an inverse power-law potential,
Hadis Riwayat Abu Daud (no4725) At- Tirmidzi (no 3320). Jarak Perjalanan Antara Langit dan Bumi
Mihran Vardanyan, Roberto Trotta, Joseph Silk (2011) Applications of Bayesian model averaging to the curvature and size of the Universe
Nombor 7231 Hadis Riwayat Muslim & Nombor 8323 Hadis Riwayat Ahmad
Prof Alan Harvey Guth (1997) The Inflatuanory Universe. The Quest For a New Theory of Cosmic Origin
Prof Matsubara, Prof. Lars-Goran Johanson (2018). Spacetime in String Theory: A Conceptual Clarification
Prof. Dr. Ulf Paschel (2016) An Effective Refraction Index Gradient Inside Earth Gravity Period Is Introduce.
Prof. Mike Duff & Paul Townsend (1994). Eleven Dimensions Super String Theory
Surah Al-Faatir ayat 1, Tafsir Ibnu Katsir
Surah As-Sajdah ayat 5, Tafsir Ibnu Katsir



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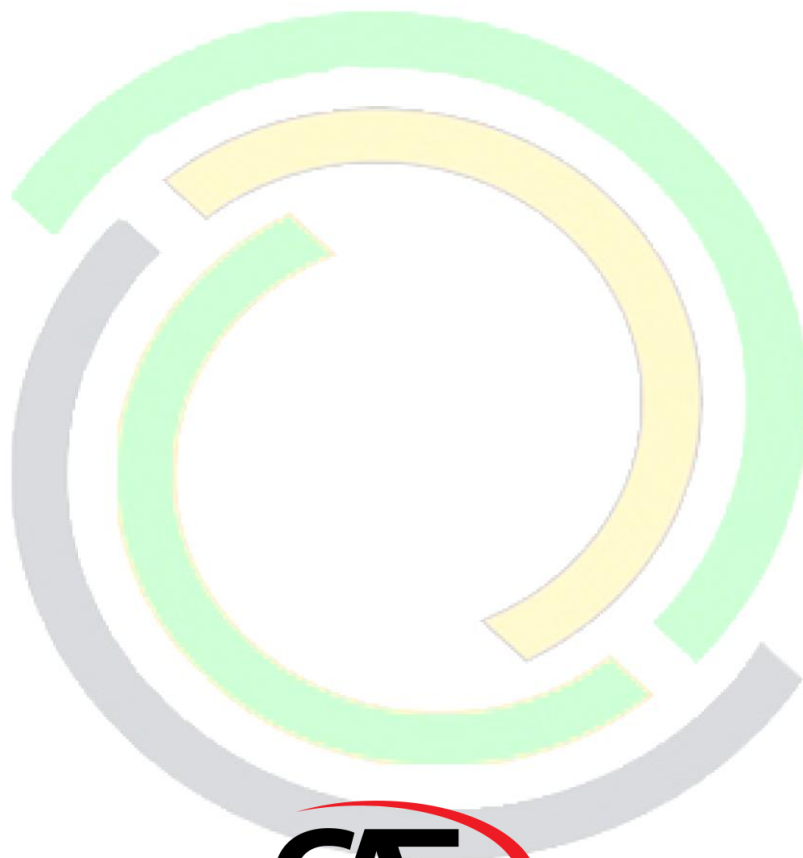
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