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Reconsidering Digital Natives' Career Choice Intention in STEM via TPB, SCCT and Media Exposure

Priscilla MOSES[a*], Phaik Kin CHEAH[b], & Tiny Chiu Yuen TEY[c]
[a] *Faculty of Creative Industries, Universiti Tunku Abdul Rahman, Malaysia*
[b, c] *Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman, Malaysia*
* priscilla@utar.edu.my/ prismo6@yahoo.com

Abstract: The role of Science, Technology, Engineering and Mathematics (STEM) is becoming undeniably important as the world constantly develops to be more technology driven. The future workforce universally will be highly STEM-oriented that the majority of the jobs will demand more STEM workers. Malaysia will need more than one million STEM-related human capital by 2020, especially with the emergence of innovative sectors. Malaysia has strived to reach a targeted ratio of 60:40 science-to-non-science students in its effort to fulfil industrial demands for sustainable development of the country. Over the years, extensive initiatives and strategies have also been implemented in producing qualified STEM graduates to meet current and future market demands. However, the goal has yet to be achieved. This scenario shows the urgent need to identify the factors that would attract more students to enter STEM careers. Previous studies have used the Theory of Planned Behaviour (TPB) and Social Cognitive Career Theory (SCCT) to examine career choices in STEM, but not comparing both the theories to represent students' STEM career choices in this digital era. Therefore, this conceptual paper proposes a research framework, drawing from the TPB and SCCT, to better fit the digital natives who are highly exposed to media in a technology-enhanced world.

Keywords: Media exposure, Digital Natives, Career choice, STEM, Theory of Planned Behaviour, Social Cognitive Career Theory

1. Introduction

According to World Economic Forum (2016), many countries have attempted to increase the number of Science, Technology, Engineering and Mathematics (STEM) graduates produced by the respective national education systems. A STEM-trained workforce is in high demand worldwide, but far too few adolescents intend to choose a career in the STEM fields (Gehrau, Brüggemann, & Handrup, 2016).

In Malaysia, 1.3 million STEM-related jobs in various sectors are expected to be available by 2020 (Curriculum Development Division, 2016). However, the Academy of Sciences Malaysia (2015) reported that various gaps exist along the STEM talent chain from secondary schools to the workforce in Malaysia. This alarming phenomenon has been identified to be a consequence from continuous declining number of students in STEM fields over the years (Curriculum Development Division, 2016; Shahali, Ismail, & Halim, 2016; Ministry of Education, 2013).

Since the 1970s, Malaysia has undertaken many initiatives to meet the target ratio of 60:40 science-to-non-science students in schools (Academy of Sciences Malaysia, 2015; Shahali et al., 2016). However, the goal has yet to be achieved to supply sufficient talents to pursue careers in STEM (Academy of Sciences Malaysia, 2015; Curriculum Development Division, 2016; Shahali et al., 2016; Hamid, 2017; Ministry of Education, 2013). It was reported that only 42% of secondary school students in Malaysia chose to do Science in 2016, and approximately 41% were enrolled in the Science stream in 2017 (Curriculum Development Division, 2016; Hamid, 2017; Ministry of Education, 2013). These figures imply that STEM interests among the native digital users to take up science and mathematics have been constantly dwindling for many years. If the undesirable trend is not addressed effectively, Malaysia will not be able to produce the in-demand future engineers,

scientists and innovators for the upcoming challenging years (Academy of Sciences Malaysia, 2015; Hamid, 2017).

Therefore, Malaysia has further strived to ensure the country has sufficient qualified STEM graduates. Among the strategies to engage STEM at the school level was involving students in STEM career-oriented programmes such as engineering, information technology, innovation and design (Curriculum Development Division, 2016). Besides, schools are also committed to implement a more technology-enhanced curriculum and modern pedagogical approach to make STEM more attractive to the younger generation who have grown up as digital natives (Curriculum Development Division, 2016; Shahali et al., 2016).

Despite much efforts and investments devoted to STEM education in Malaysia, many digital natives continue to turn away from pursuing STEM-related careers, leading to depletion in the STEM talent pool. The current trend of students enrolling in Science stream also remains undesirable, contributing to an even more worrying state as Malaysia advances closer to 2020 (Academy of Sciences Malaysia, 2015; Ministry of Education, 2013). According to Shahali et al. (2016), Malaysia will undergo a deficit of 236,000 professionals in STEM-related fields, while the country is in urgent need of 493,830 skilled STEM workers by 2020. Academy of Sciences Malaysia (2015) indicated that advanced countries have approximately 30% trained STEM workers in their workforce. In contrast, Malaysia, a developing country only targets 3% out of 15 million of the total workforce to be STEM workers by 2020 (Academy of Sciences Malaysia, 2015), only one tenth of the proportion compared to advanced countries. All these indicators show that Malaysia is facing difficulties to supply the much needed STEM talents to support the country's national aspirations and sustainable development.

2. Literature Review

Various types of theoretical models have been used in discussing STEM and career choice. Among them were Theory of Planned Behaviour (TPB) and Social Cognitive Career Theory (SCCT).

TPB suggested that human behaviour can be predicted by investigating the intention to perform a particular behaviour (Ajzen, 1991). According to Ajzen (1991), decision-making processes are the preludes to making a decision whether an individual intend to perform a specific behaviour. These processes are the three motivational factors in TPB, namely attitude towards the behaviour, subjective norm and perceived behavioural control (Ajzen, 1991). These factors combined will constitute an individual's intention to execute choices and behaviours (Ajzen, 1991; Mishkin, Wangrowicz, Dori, & Dori, 2016).

TPB has been employed extensively by researchers in the past to predict various types of intentions and behaviours (Teo & Lee, 2010; Mishkin et al., 2016). In recent years, it has been used to investigate intentions and behaviours in the contexts of career choice (Akmaliah & Hisyamuddin, 2009; Krupat, Camargo, Strewler, Espinola, Fleenor, & Dienstag, 2017), and STEM (Lin & Williams, 2016; Mishkin et al., 2016).

The SCCT developed by Lent, Brown, and Hackett is based on Bandura's (1986) Social Cognitive Theory, a more general theoretical framework that focuses on psychosocial functioning (Lent, Brown, & Hackett, 1994). Meanwhile, the SCCT is a more refined theory used to explain research that are related to career choices (Dutta et al., 2015; Lent et al., 1994). It is also used to understand the development of academic and career interest, the choice about education and career, and the factors that influence academic and career success (Chachashvili-Bolotin, Milner-Bolotin, & Lissitsa, 2016; Lent et al., 1994, 2011). The SCCT consists of key components such as self-efficacy, outcome expectation, environmental support and barrier, goal, and choice action (Chachashvili-Bolotin et al., 2016; Lent et al., 1994). As one of the most prominent career choice theoretical models in literature, the SCCT has also been applied in many STEM-related contexts (Chachashvili-Bolotin et al., 2016; Dutta et al., 2015; Lent et al., 2011; Sahin, Gulacar, & Stuessy; 2015).

3. Conceptualisation

3.1 Career Choice Intention Models Comparison

Although both the TPB and SCCT are well-established in the literature, it is proposed that the existing models used to examine students' career choice intention to be reconsidered. This paper emphasises that today's students are unlike students when the TPB (1991) and SCCT (1994) were first developed. The models are regarded to be not sufficient to represent the scenario in the current technology driven world. Hence, comparisons and adaptations are proposed in this conceptual paper to better fit the current scenario which comprise students who grow up as digital natives.

Therefore, this paper aims to (i) integrate the overlapping components from TPB and SCCT to develop a more convergent model in explaining students' career choices in STEM, and prove that (ii) media exposure is a crucial key when discussing digital natives' career choices in STEM.

3.2 Integrating TPB and SCCT

The TPB and SCCT are reasonably homologous to each other in terms of structure, particularly in their respective core components. This is supported by Sahin et al. (2015) who suggested that the TPB is associated with SCCT in career choices because both theoretical models emphasise on self-efficacy and societal influences as the precursors to behavioural action.

3.2.1 Attitude towards the Behaviour and Outcome Expectation

In the TPB, attitude towards the behaviour is guided by behavioural beliefs which place heavy emphasis on the expected consequences of a particular behaviour (Ajzen, 1991). In other words, an individual's attitude towards performing a given behaviour based on the individual's evaluation that executing a particular behaviour will result in certain consequences (Ajzen, 1991, 2002). Hence, attitude towards the behaviour is defined as the degree to which an individual posits a favourable or unfavourable evaluation towards performing a certain behaviour (Ajzen, 1991, 2002; Bandura, Adams, & Beyer, 1977; Boyd & Vozikis, 1994; Kyle, White, Hydec, & Occhipinti, 2014; Mishkin et al., 2016; Solesvik, 2011; Stone, Jawahar, & Kisamore, 2009).

Likewise, the SCCT defined outcome expectation as an individual's belief about the imagined consequences or outcomes of performing particular behaviour (Bandura et al., 1977; Bonitz, Larson, & Armstrong, 2010; Boyd & Vozikis, 1994; Kier, Blanchard, Osborne, & Albert., 2014; Lent et al., 1994, 2000, 2002). Further, Lent et al., (1994, 2000) explained that outcome expectation represents a person's perceived likelihood or evaluation concerning a future state of matters that performing the action will lead to a certain consequence. It can be reflected with questions such as "if I do this, what will happen?", "what will happen if I do this?" (Boyd & Vozikis, 1994; Lent et al., 1994, 2000, 2002).

Both attitude towards the behaviour from the TPB (Ajzen, 1991, 2002) and outcome expectation from the SCCT (Lent e al., 1994, 2000) are defined similarly as a person's estimation that a given behaviour will produce particular outcome. Hence, this study integrates attitude towards the behaviour and outcome expectation as both denote the same concept.

3.2.2 Perceived Behavioural Control and Self-efficacy

Ajzen (2002) explained that perceived behavioural control and self-efficacy are indeed similar terms that conceptualise a person's perceived ability to perform an action or a series of behaviours. Both the term perceived behavioural control and self-efficacy were used in general discussions of the relations among other constructs within the TPB (Ajzen, 1991).

In the TPB, perceived behavioural control refers to the extent of perceived ease or difficulty of performing a certain behaviour. It is also defined as an individual's perception of whether he or she has the ability and control over the execution of a behaviour (Ajzen, 1991, 2002; Bandura, 1986; Kyle et al., 2014; Mishkin et al., 2016; Stone et al, 2009). According to Ajzen (1991), control beliefs which constitute to the basis of perceived behavioural control explain the presence of factors that

facilitate or hinder the occurrence of certain behaviour. It speaks the perception of ease or difficulty of performing the behaviour of interest.

The definition of self-efficacy in the SCCT is consistent with perceived behavioural control in TPB. According to (Ajzen, 1991), self-efficacy refers to an individual's personal beliefs in regards with his or her ability to perform a particular behaviour or action (Lent et al., 1986, 1994, 2002). Self-efficacy in the SCCT is also linked to the perception of having the power to produce effects based on one's actions (Bonitz et al., 2010). In the SCCT, Lent et al. (2002) elaborated that self-efficacy is likely to vary across individuals according to different occupational domains. Evidently, both perceived behavioural control and self-efficacy entail an overlapping concept. Thus, it is proposed to assimilate these two terms into one construct in the integrated model.

3.2.3 Subjective Norm and Immediate Proximal Context

Contextual influences proximal to choice behaviour in the SCCT is collectively named as the proximal environmental influences (Lent et al., 2002). Lent et al. (2000) defined it as the levels of support and barriers such as financial and emotional support from family, inadequate financial and education support, and opportunities available to the individual. Besides, this term also refers to the supports or barriers that may aid or hinder one's ability in making choices (Kier et al., 2014). In essence, the concept of proximal environmental influences encompass a wide spectrum of contextual factors that facilitate or obstruct an individual's ability to perform a behaviour.

Lent et al. (2000) employed the concentric circles to further explain environmental influences in the SCCT. The concentric model consists of three layers: an individual locating in the innermost circle, surrounded by the individual's immediate proximal context, followed by the larger societal context (Lent et al., 2000).

Immediate proximal context is an individual's immediate environment consisting of the individual's proximal referents or significant others such as family, friend, teacher, role model, school counsellor and prospective employer (Lent et al., 2000). Lent et al.'s (1994, 2000) immediate proximal context shows a conceptual overlap with Ajzen's (1991, 2002) subjective norm which is defined as an individual's perceived social pressure from important others to perform or avoid a certain behaviour (Ajzen, 1991, 2002; Kyle et al., 2014; Mishkin et al., 2016; Shevlin & Millar, 2006; Solesvik, 2011; Teo & Lee, 2010). Subjective norm is resulted from normative beliefs which are related to the normative expectations of significant others (Ajzen, 1991, 2002). The referents could be friends, parents, siblings, role models and other family members (Ajzen, 1991).

Therefore, the researchers proposed that both subjective norm and immediate proximal context are conceptually alike. The two terms similarly emphasise the importance of significant others, particularly the proximal referents (e.g.: parents, friends and teachers) in influencing an individual's decision to perform a behaviour.

3.2.4 Intention and Goal

A goal plays an important role in the self-regulation of behaviour, and it helps to shape or guide a behaviour (Lent et al., 1994). According to Bandura (1986), a goal is ''the determination to engage in a particular activity or to effect a particular future outcome" (as cited in Lent et al., 1994, p. 85). It involves intended behaviour such as a plan to fulfil the enactment of a behaviour. Fryer and Elliot (2008) also defined a goal as a cognitive representation of a future object that the organism is committed to approach or avoid.

Equal to goal, intention is described as the most proximal determinant that will lead to a behaviour (Ajzen, 1991, 2002; Kyle et al., 2014; Stone et al., 2009). According to Ajzen (1991), intention captures motivational factors that influence a behaviour. It is an indication of how hard people are willing to try, and how much of an effort they are planning to exert, in order to perform the behaviour.

Furthermore, Lent et al. (1994) defined a choice goal as the intention to commit in a specific action. Both of goal and intention refer to an individual's determination or willingness to exert effort or commitment in order to execute a behaviour. The researchers identified a conceptual overlap between goal (Lent et al., 1994) and intention (Ajzen, 1991), in which the two terms symbolise the

same concept. Therefore, it is proposed that these overlapping constructs in the TPB and SCCT can be integrated as well.

3.3 Media Exposure on Digital Natives' Career Choice Intention in STEM

Another contribution of this paper is the proposed inclusion of media exposure as an important factor in predicting students' career choice intention. In many cases, the influence of media was often overlooked in the literature. This is surprising because studies have reported connections between media effects and occupational aspirations since 1980s (Gehrau et al., 2016).

As a result, students' career choices in STEM remains unclear in this digital era despite the rising impact of media among the adolescences. This is supported by recent studies which have reported that career choice has become more complicated in the twenty-first century (Saleem, Hanan, Saleem, & Shamshad, 2014; Sharma, 2015). Individuals have become more technology-oriented, in which mass media has become the main source that impart information to the users and has the capability in influencing personal choices (Saleem et al., 2014; Sharma, 2015).

Sharma (2015) explained that media is powerful in influencing an individual's career choice. Similarly, Hoag, Grant, and Carpenter (2017) also suggested that media exposure can change the adolescents' perceptions towards the careers that are portrayed through the media. According to Saleem, Ahmad, Irfan, & Shamshad, (2014), television, the internet and social media websites, are some common technologies that adolescents use to seek information about career-related matters. Hence, media is regarded to be the main source in adolescents' occupational learning, and subsequently influences their career choices and aspirations (Gehrau et al., 2015; Saleem et al., 2014; Sharma, 2015).

Hoag et al.(2017) reported that communication technologies and the media have taken over modern lives. In this digital era, the media is used extensively for communications and exchange of information through technology devices. The young generation, in particular, is more media prone because they grow up with high frequency of media exposure, hence shaping how they perceive the surrounding world (Sharma, 2015). However, existing literature has not fully explored the influence of media exposure on students' choices of careers (Hoag et al., 2017). It is reasonable to inquire whether the existing models are effective in explaining students' STEM career choice intentions in this technology-enhanced world. This paper therefore proposed the inclusion of media exposure in discussion of students' career choices to better fit the current phenomenon (Figure 1).

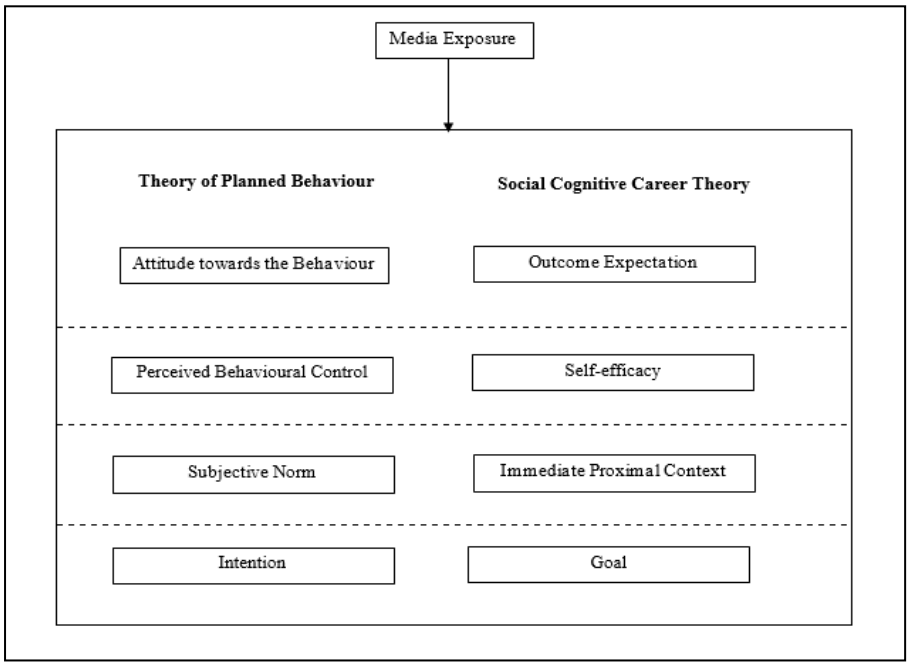

Figure 1. Integration Model of the TPB and SCCT: Digital Natives' Career Choice Intention in STEM

Figure 1 is a visual representation of the conceptual model in this study. It entails the comparison of the TPB and SCCT based on the overlapped constructs in explaining students' career choices in STEM. This study proposed to assimilate the TPB and SCCT based on the overlapped constructs and literature review of past studies. The proposed integrated constructs are attitude towards the behaviour and outcome expectation, perceived behavioural control and self-efficacy, subjective norm and immediate proximal context, and intention and goal. Besides, Figure 1 shows that media exposure is a potential factor that influences the digital natives' career choices in STEM. This study also proposed the inclusion of media exposure in discussing students' career choices as they are highly influenced by media in their daily lives.

4. Conclusion

This conceptual paper has reviewed the current STEM phenomenon in Malaysia and revealed the urgent need to produce more skilled STEM workers for the current and future technology driven workforce. In view of the scenario, it emphasised today's students as the future workforce members who grow up as native digital users.

A review of literature on the TPB and SCCT indicated that the two theoretical models have been widely used in examining students' career choices in the context of STEM. It was found that the TPB and SCCT shared identical core constructs, thus can be integrated collectively. Besides, media exposure should be incorporated when discussing students' STEM career choices as digital natives' interaction with media largely influence their perceptions and choices of career.

The proposed integrated model with inclusion of media exposure would help to develop a more convergent model that is tailored to study digital natives' career choices in STEM. Reconsidering the fitness and adaptability of the existing theoretical models also offers new insights to improve the tools to measure the students' career choices in STEM in this technology-oriented world. This study would provide the education policy makers and education stakeholders at all levels to understand the digital natives' career choices in a well-tailored context. Overall, the ultimate aim of this research is to identify the factors that would inspire more students to join the STEM careers and to overcome the challenges of continuous depletion of STEM talents in Malaysia. This paper conceptualised the integration the TPB and SCCT, and introduced media exposure as a potential factor that influence career choices in STEM. Further research on this proposed integrated model will be tested empirically in the future.

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References

Academy of Sciences Malaysia. (2015). *Science outlook action towards vision: Executive summary*. Kuala Lumpur: Government of Malaysia. Retrieved from https://www.akademisains.gov.my/index.php/science-outlook-2015

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665-683.

Akmaliah, L. P. Z., & Hisyamuddin, H. (2009). Choice of self-employment intentions among secondary school students. *Journal of International Social Research, 2*(9), 539-549.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice—Hall.

Bandura, A., Adams, N. E., & Beyer, J. (1977). Cognitive processes mediating behavioral change. *Journal of Personality and Social Psychology, 35*(3), 125.

Bonitz, V. S., Larson, L. M., & Armstrong, P. I. (2010). Interests, self-efficacy, and choice goals: An experimental manipulation. *Journal of Vocational Behavior, 76*(2), 223-233.

Boyd, N. G., & Vozikis, G. S. (1994). The influence of self-efficacy on the development of entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice, 18*(4), 63-77.

Chachashvili-Bolotin, S., Milner-Bolotin, M., & Lissitsa, S. (2016). Examination of factors predicting secondary students' interest in tertiary STEM education. *International Journal of Science Education, 38*(3), 366-390.

Curriculum Development Division. (2016*). Implementation guide for science, technology, engineering, and mathematics (STEM) in teaching and learning*. Putrajaya, Malaysia: Ministry of Education.

Dutta, A., Kang, H. J., Kaya, C., Benton, S. F., Sharp, S. E., Chan, F., ... & Kundu, M. (2015). Social-cognitive career theory predictors of stem career interests and goal persistence in minority college students with disabilities: A path analysis. *Journal of Vocational Rehabilitation, 43*(2), 159-167.

Fryer, J. W., & Elliot, A. J. (2008). Self-regulation of achievement goal pursuit. *Motivation and Self-regulated Learning: Theory, Research, and Applications*, 53-75.

Gehrau, V., Brüggemann, T., & Handrup, J. (2016). Media and occupational aspirations: The effect of television on career aspirations of adolescents. *Journal of Broadcasting & Electronic Media, 60*(3), 465-483.

Hamid, A. J. (2017, August 20). Why do kids avoid the STEM route? *New Straits Times*. Retrieved from https://www.nst.com.my/

Hoag, A., Grant, A. E., & Carpenter, S. (2017). Impact of media on major choice: Survey of communication undergraduates. *NACADA Journal, 37*(1), 5-14.

Kier, M. W., Blanchard, M. R., Osborne, J. W., & Albert, J. L. (2014). The development of the STEM career interest survey (STEM-CIS). *Research in Science Education, 44*(3), 461–481. https://doi.org/10.1007/ s11165-013-9389-3

Krupat, E., Camargo, C. A., Strewler, G. J., Espinola, J. A., Fleenor, T. J., & Dienstag, J. L. (2017). Factors associated with physicians' choice of a career in research: A retrospective report 15 years after medical school graduation. *Advances in Health Sciences Education, 22*(1), 5-15.

Kyle, V. A., White, K. M., Hyde, M. K., & Occhipinti, S. (2014). The role of goal importance in predicting university students' high academic performance. *Australian Journal of Educational & Developmental Psychology, 14*, 17–28. Retrieved from www.newcastle.edu.au/journal/ajedp/

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45*(1), 79–122.

Lent, R., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology, 47*(1), 36–49.

Lent, R. W., Brown, S. D., & Hackett, G. (2002). Social cognitive career theory. In D. Brown (Ed.), *Career choice and development* (4th ed., pp. 255-311). San Francisco: Wiley.

Lent, R. W., Brown, S. D., & Larkin, K. C. (1986). Self-Efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology, 33*(3), 265–269. https://doi.org/10.1037/ 0022-0167.33.3.265

Lent, R. W., Miller, M. J., Smith, P. E., Bryan, N. A., Hui, K., Jezzi, M. M., ... & Martin, H. M. (2011). A semi-qualitative analysis of women's adjustment to STEM majors. *Women in Engineering ProActive Network*, 1-6.

Lin, K. Y., & Williams, P. J. (2016). Taiwanese preservice teachers' science, technology, engineering, and mathematics teaching intention. *International Journal of Science and Mathematics Education, 14*(6), 1021-1036.

Ministry of Education. (2013). *Malaysia education blueprint 2013-2025*. Putrajaya, Government of Malaysia. Retrieved from http://www.moe.gov.my/en/pelan-pembangunan-pendidikan-malaysia-2013-2025

Mishkin, H., Wangrowicz, N., Dori, D., & Dori, Y. J. (2016). Career choice of undergraduate engineering students. *Procedia - Social and Behavioral Sciences, 228*, 222–228. https://doi.org/10.1016/ j.sbspro.2016.07.033

Sahin, A., Gulacar, O., & Stuessy, C. (2015). High school students' perceptions of the effects of international science Olympiad on their STEM career aspirations and twenty-first century skill development. *Research in Science Education, 45*(6), 785-805.

Saleem, N., Ahmad, M., Irfan, H., & Shamshad, R. M. (2014). Career selection : Role of parent's profession, mass media and personal choice. *Bulletin of Education and Research, 36*(2), 25–37.

Shahali, E. H. M., Ismail, I., & Halim, L. (2016). STEM education in Malaysia: Policy, trajectories and initiatives. *Asian Research Policy, 8*(2), 122–133.

Sharma, K. (2015). Influence of media exposure on Vocational Interest among adolescents. *International Journal of Applied Research, 1*(10), 30–33.

Shevlin, M., & Millar, R. (2006). Career education: An application of latent growth curve modelling to career information-seeking behaviour of school pupils. *British Journal of Educational Psychology, 76*(1), 141–153. https://doi.org/10.1348/000709904x22386

Solesvik, M. (2011). Attitudes towards future career choice. Proceedings from *ICSB World conference Proceedings. International Council for Small Business* (ICSB).

Stone, T. H., Jawahar, I. M., & Kisamore, J. L. (2009). Using the theory of planned behavior and cheating justifications to predict academic misconduct. *Career Development International, 14*(3), 221–241. https://doi.org/10.1108/13620430910966415

Teo, T. & Lee, C. B. (2010). Examining the efficacy of the theory of planned behavior (TPB) to understand pre-service teachers' intention to use technology. *Curriculum, Technology & Transformation for an Unknown Future. Proceedings from Ascilite 2010,* 968-972.

World Economic Forum. (2016). *The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution.* World Economic Forum. Retrieved from http://reports.weforum.org/future-of-jobs-2016/