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The roles of parents in cultivating children's interest towards science learning and careers

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ABSTRACT

This research investigated the opportunities provided by parents to their children with the aim of facilitating science learning and promoting careers related to science. This exploratory qualitative research used the semi-structured interview method with seven parents who were purposively sampled for the study. Their children (16 years old) had just enrolled to study pure science subjects (science stream) such as Physics at the upper secondary level of a rural school. The interview data were transcribed, coded, and categorized based on identified themes. An overall finding was that the parents had positive values toward science. Six themes were identified and were further categorized into two major factors a) parental support and b) parental academic expectations. The parental support factor included being supportive in i) their children choosing the science stream at the upper secondary level, ii) providing assistance in increasing the children's achievement in science subjects, iii) involvement in increasing interest in science iv) involvement in science-related activities, and v) supportive in science-related career choices. The parental academic expectation factor identified the sixth theme, namely the parents' continuous profound interest in their children's achievements in science. These identified factors can help the stakeholders to plan effective educational intervention involving parents' collaboration in increasing the interest of children toward science learning and careers.

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Introduction

The current problem faced by the country and in most parts of the world (Kennedy, Lyons, & Quin, 2014) is the critically decreasing number of students opting for the science stream in secondary schools and higher education institutes, regardless of high academic performance in science. The decrease in the number of students in science

streams (that is students are channeled to do science at high school) provoked a new polemic in the field of education in Malaysia. Like any other developing country, Malaysia aims to become a developed country and has targeted to produce 50,000 scientists by 2020 to achieve the status of a developed, high-income nation. This target will be difficult to achieve if the students' interest in the field of science declines.

It was found that students refused to opt for the science stream due to factors such as lack of budget and technology, lack of guidance from adults who are knowledgeable and involved in the field of science-related careers, psychological restraints whereby students believe that the field of science is difficult (Kier, Blanchard, Osborne, & Albert, 2014; White & Harrison, 2012), lack of role models in the field of

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science (Kier et al., 2014), and the assumption that science is an uncreative endeavor (White & Harrison, 2012).

To revive student interest toward science and to address the negative perception toward science, respective stakeholders need to take necessary actions and play their roles within their authority. Thus, the roles of parents are also deemed crucial to complement the formal efforts of educational institutions. The support of parents in the academic field has the ability to increase the self-efficacy, attitude, and a strong expected outcome toward the science subject and careers in the future (Buday, Stake, & Peterson, 2012; Lent, Brown, & Hackett, 2000; Nugent et al., 2015; Rice, Barth, Guadagno, Smith, & McCallum, 2013). Therefore, this research explored the roles of parents in promoting students' interest toward science learning and science-related careers.

Literature Review

Parental and family attitudes towards science in everyday life are known to play an important role in shaping children's science aspirations (Buday et al., 2012; Maltese & Tai, 2011; Nugent et al., 2015; Rice et al., 2013; White & Harrison, 2012). Thus, parents should provide broader and wholesome support in order for their children be able to compete in this era of globalization. Parents' support influences their children's education development because parents not only have influence in allowing their children to choose science courses in school but also the family history will influence the tendency of the students in choosing certain field or courses (Yahya & Ismail, 2011). Tenenbaum and Leaper (2003) additionally inferred that parental beliefs about science can significantly influence children's interest and motivation in science. The inspirational attitudes towards science among children thus result in expanded enrollment in the science stream and likewise impact science achievement and interest in science careers (George & Kaplan, 1998; Maltese & Tai, 2011).

However, there are parents who put high hopes on and aim for their children to grow up into individuals who are popular, thus forcing them to study in a field that is neither of their children's choice nor interest. This in turn decreases their thinking ability and their motivation to study (Yahya & Ismail, 2011). Thus, it is important for parents to understand the interests of their children and to keep up with their development, so that effective actions can be planned and taken to improve the ability of their children in their future career.

Similarly, parental advice was also sought frequently and was useful when making job, career, and course decisions compared to advice sought from teachers and friends (Cridge & Cridge, 2015; Millward et al., 2006; Nugent et al., 2015; Sahin, Gulacar, & Stuessy, 2015; White & Harrison, 2012). Parents who are successful in influencing their children's career choices are those who have sufficient information, share that information with their children, and help their children in the process of making proper career and courses decisions (Lukas, 2015).

Previous research showed that during early child age, parents serve as the most important motivation factor in their children's lives and this includes career decisions.

Previous findings also showed that the parents' level of education has a significant correlation with students' ambition. During early child age, parents provide guidance to their children by developing their skills and observing their academic improvements. Parents provide support by sending their children to tuition classes in order to improve their achievement in science and mathematics during the early education stage (Cridge & Cridge, 2015).

Sawitri, Creed, and Zimmer-Gembeck (2014) examined the longitudinal relationships among social intellectual career variables during high school years which is known as a dynamic phase of career decision-making. They examined two important factors that have been found to influence individual career advance. The first was parental career expectations, which can have an effect upon choices identified regarding educational and occupational goals, occupational choice, level of commitment, and exertion (Fouad et al., 2008). The second parental contextual variable was parental support, which incorporates encouragement, modeling desired behaviors, and enthusiastic backing. Both cross-sectional and longitudinal studies with participants from collectivist societies have shown that parental support influences children's career selection (Garcia, Restubog, Toledano, Tolentino, & Rafferty, 2012; Sawitri et al., 2014).

When children begin their secondary education, parents influence their career decision making by providing financial support to the students. During the university period, parents who are not aware of the higher education needs and financial burden will only provide negative enforcement, especially if the student has enrolled in a tough and competitive course. Therefore, attention should be given to educating the parents about the importance of their roles in empowering their children with career decision making by providing them with adequate knowledge on career choices. This shows that the attitude of parents also plays a vital role in the career decisions of their children, including the aspects of career exploration, gender typing, and future career planning (Hall, Dickerson, Batts, Kauffmann, & Bosse, 2011).

Research Methodology

Study Context

This research aimed to explore the roles played by the parents in cultivating interest toward science subjects and careers. Thus, this study aimed to answer one general question namely: How do parents play their role in promoting and facilitating their children's interest in science learning and career choices? In order to achieve the aims of the research, the parent were interviewed on the following questions: a) Do you spend time on helping with your children's homework and monitor their achievement? b) Do you bring your children to science fairs, and involve them in science-related activities inside and outside of school and at home? c) Do you think science education is important? and d) Do you want your child to enter a science-related career?

This descriptive case study utilized the semi-structured interview method to obtain data from the parents of Form 4 (16 years old) science stream students. These students had

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