

# PROGRESSION OF SCIENCE LEARNING DURING TRANSITION FROM PRIMARY TO SECONDARY SCHOOL

Hidayah Mohd Fadzil & Rohaida Mohd. Saat

University of Malaya

hidayahmohdfadzil@siswa.um.edu.my, rohaida@um.edu.my

***Abstract :** School transition is a challenging process for students whereby they have to adapt with social issues to fit into new environment. Students themselves are experiencing a dramatic process of transformation from child to young adult stage. Although most of the pupils experience a smooth and successful transition and be able to adapt to their new learning environment, some of them find that transition is very difficult and problematic especially for those who are considered to be "at-risk". Previous research have shown a significance negative impact on students' attitude and attainment towards science learning, during the phase of transition from primary to secondary school. This phenomenon can be exhibited by decline in achievement and eroded interest in learning science. For Science Education, negative attitudes toward science subject are not only problematic for the students individually but it can also affect the nation's scientific and technological literacy and development of future scientist. School needs to response to these changes. To confront these issues and be effective and efficient in teaching process, school and teacher as an educational institution should provide vast opportunities for students to explore the content of science knowledge by establishing an encouraging, supportive and conducive atmosphere.*

**Keywords:** transition to secondary school, progression, science learning

## INTRODUCTION

Transition is a process of moving from the familiar to the unknown (Green, 1997) which will be experienced by every student in their educational journey. The phase of transition can be either from kindergarten to primary school (Aunola, Leskinen & Nurmi, 2006), from primary school to secondary school (Tilleczek, 2007), transition to the tertiary level institution (Kantanis, 2000) and transition to work (Biggeri, Bini & Grilli, 2002). Transition from primary to secondary school has been the most studied aspect of student transition and is the main focus of this paper. Transition is viewed as an on-going process which requires time for students' to adjust to. This process occurs during adolescence stage of students' development; the phase of changing from childhood to adulthood. At this stage students are vulnerable and easily influenced by the changes in their environment. Transition can also be conceptualized as a journey along a path across momentary gaps and shifts in schools (Tilleczek & Ferguson, 2007). Although most of the pupils experience a smooth and successful transitioning and be able to adapt to their new learning environment, minority of them find that transition is very difficult and problematic. This paper will illustrate the literatures in the aspect of research trend, transition in science learning and issues during transition in science learning.

## **TREND IN TRANSITION**

The study on transition is not new since it has been documented since 1960's (Yager, 1996). One of the earliest studies was by Nisbet and Endwistle's in the 1960s in Scotland. The study found that children who had problems in adjusting in the new school seemed to be less successful in their schoolwork and academically less motivated. In the 80s, studies mainly focused on the personal, social and emotional aspects of transition for example Measor and Woods (1984) looked at the development of pupils' self identities. Simmons and Blyth (1987) claimed that 7th graders who transitioned to a new school had lower self-esteem and had more negative attitude toward school. The interest to study the impact of transition on academic progress was initiated by Galton in 1983. Most of the recent studies concern about balancing between support program and academic rigor. Current research (for e.g., Galton, 2003; Braund et al., 2003) found that there have been changes for the better over that time period. Pupils can adjust to their new school and academic challenges better than twenty years ago. Despite evidence that transfer is less stressful for pupils, many schools are still putting their energy to smooth and enhance the transition process (Galton et al., 2003). From global perspective, it was found that substantive progress was achieved by developed countries especially in USA (Lesniak & Liu, 2005), UK (Braund, Crompton, Driver & Parvin, 2003), New Zealand (Hawk & Hill, 2004), Australia (Howard & Johnson, 2000) and Canada (Tilleczek & Ferguson, 2007) in formulating and implementing specific programmes for transition from primary to secondary level and it focuses on the importance of ensuring a smooth progression during transition period. Research in transition is relatively new issues in Malaysia. Noraini Zainal Abidin (2009) conducted a research on transition at secondary school for students with special education needs. The study involves around issues of transition particularly preparation during the transition stage in order to discover the perception and understanding of students and parents related to the transition programme. Interestingly, students and parents did not really understand what 'transition' was.

## **TRANSITION AND INTEREST IN SCIENCE LEARNING**

Students react differently toward transition. Some reports a sense of relief that things are not as difficult as they expected. For others it is very stressful and for some it gets slowly worse (Hawk & Hill, 2004). The increased of tendency to be negative about school can be noticed not in the first weeks following the transition but will be manifested in the middle of the transition to secondary school. By the time students gets to secondary school, specialization of interest and abilities has often occurred, resulting in the selection of some courses of study and avoidance of others. Some of them will prefer subject such as languages, mathematic, history or science. If students had negative science experiences during transition, they will possibly cut themselves off from many science-related careers. This phenomenon can be exhibited by the decline in achievement and lack of progress in students' learning including science subject whereby studies have shown that students' interest in studying science at school can become eroded in the middle of schooling year following school transition (Braund et al., 2003; Galton, Gray & Ruddock,

2003) and pupils' progress in and their attitudes to school science following transition are rarely maintained, let alone progressed (Braund, 2009). For science education, negative attitudes toward science subject are not only problematic for the students individually, but it can also affect the nation's scientific and technological literacy and the development of future scientists. Decline in interest at secondary school may affect the number of students' enrolment in science stream at upper secondary level and those who will take up careers in the field of science and technology. Ministry of Education have to deal with the issues of low participation rate in the science stream which is far from the targeted ratio of 60 percent students in science stream compared to 40 percent in arts (Ministry of Education, 2000). The low of interest in science may also lead to poor scientific understanding needed by every citizen. Among the known, on-going research in this topic is longitudinal study by Hidayah Mohd Fadzil (on-going) which focusing on the acquisition of students' manipulative skills during transition and Faridah Darus (on-going) on the acquisition of science process skill.

### **ISSUES DURING TRANSITION**

Transition has different effects on different individual. According to Hurd's (2000), about 20% of students have difficulty to handle the stresses and challenges during the adjustment period. Kickpatrick (2004) has reported that students look forward to fresh start but they either are able to cope up or not be able to cope up during the process of transition. Some claims a sense of relief because things are not too difficult as expected but for others transition can get very stressful. Graham and Hill (2003) found that many young people at the threshold of secondary school are hopeful about the potential of their new status, school, friends and education. They view transition as a fresh start that brings greater challenges and more opportunity. At the same time, emotional contradiction exists where students express anxiety and stress about transition (Tilleczek, 2007). They feel anxious about coping up with academic demands in the new school and making new friends. Good student will probably have a smooth and successful transition but at-risk students and low achiever will confront problems and difficulties. Vulnerable students need more personalized help before and after transition (Hawk & Hill, 2004). Rohaida Mohd Saat (2010) found that students entering secondary school were disillusioned about secondary science learning. Primary school students were enthusiastic about science because of its distinctiveness and the exciting experiment. Expectations of science in secondary school were of using specialized facilities and apparatus, and involvement of exciting experiments. However, after moving to secondary school, expectations of continuing to learn science through a predominately practical approach were not fulfilled. The teaching and learning at secondary school were similar to primary school approaches (Campbell, 2002). Galton, Gray and Ruddock (2003) have also discussed the issue of curriculum discontinuity in science during transition; a factor that cause erosion of students' interest in studying science. Continuity of curriculum suffers on transition due to the gaps in knowledge that make them loose confidence on their ability. Greater emphasis on ensuring better curriculum continuity between upper primary and lower secondary levels will improve support for implementing curriculum change. Many schools and teacher

blame the primary school for not having taught the students well. Table 1 illustrates some other factors known to affect students' progress and performance during transition.

Table 1  
*Factors that affect progress during transition*

<b>Factors</b>	<b>Description</b>
Social Adjustment	<ul style="list-style-type: none"> <li>• Developing new friendships and enhancing communication skill</li> <li>• Dealing with bullies</li> <li>• Coping with increase range of social interaction (e.g. teachers, senior students)</li> </ul>
Academic Factors	<ul style="list-style-type: none"> <li>• The complexity of new topics and concepts in science subject and increase in the volume of work</li> <li>• Adjusting to a new and wider variety of teaching approaches and styles (e.g. group discussion, direct question and answer session)</li> <li>• Valuing previous learning – teacher in secondary school often fail to make use of students previous science learning experience (e.g. the scientific term used by teacher (Braund et al., 2005))</li> </ul>

## CONCLUSION AND RECOMMENDATION

Transition is particularly stressful, often serving to lower self-esteem which in turn may possibly lowers school achievement (Hurd, 2000). If this trend is not reversed, it will give a negative impact on students' attitudes and attainment towards learning, and may affect the numbers of incidence of school drop-outs. Transition is a significant and important issue that need to be acknowledge, understand and explore by science educators in order to help facilitate a smooth and successful transition in school. In Malaysia context, the issue of transition in science subject did not receive enough attention from educational authorities in term of the preparation for the adaptation from one stage to another (Noraini Zainal Abidin, 2009). Liaison between primary and secondary school is important to bridge the gap during transition so that the introductory work in secondary school may be builds from primary school students' experiences. For example, the use of portfolio of students' work may help secondary school teacher to gain more information on students' abilities in science. Parents should engage themselves with their children during this phase of transition. Reviews have indicates that transition occurs more smoothly when schools work together with parents and students to establish the important issues that need to be addressed.

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