

# A Conceptual Framework in Examining the Contributing Factors to Low Academic Achievement: Self-Efficacy, Cognitive Ability, Support System and Socio-Economic

Shahrina Md Nordin, Wan Fatimah Wan Ahmad, M Yunus Nayan, Noorhana Yahya, Azrai Abdullah  
Universiti Teknologi PETRONAS

Abdul Malek Abdul Rahman, Noraini Ismail, Noor Aini Ahmad  
Universiti Pendidikan Sultan Idris

Othman Mohd Yunus  
Universiti Teknologi MARA

**Abstract**-There has always been a tendency in making a direct correlation between a student's academic achievement and intelligence level. Whilst this may be true, but such assumption could be plainly too simplistic as there are other contributing factors which could significantly influence a student's academic performance. Various surrounding variables need to be carefully analyzed. The learning culture and pattern adopted by a student is cultivated through various variables and underlying factors. Literature has suggested three broad dimensions for analysis which are the personality, sociological and psychological factors. This paper will discuss the conceptual framework developed to examine the contributing factors to low academic achievement within four main domains: self-efficacy, cognitive ability, support system and socio-economic. Self-efficacy can have an impact on psychological states to behavior and to motivation. It would eventually affect how a person perceives learning and their cognitive ability. Efforts and mechanisms by the schools in monitoring and supervising low achievers, and the teachers' sense of responsibility toward the students will also be part of the consideration in framing the conceptual discussion. It is also necessary to examine the parents' perceptions towards the importance of their children's education and the extent of their involvement in their children's education process as home environment marks the beginning of learning experience that shapes their attitudes towards learning. The conceptual framework will be used for an exploratory study in the Perak state to analyze the contributing factors to low academic achievement amongst the secondary school students. The 2010 *Penilaian Menengah Rendah* (PMR) results announcement had raised a concern as the state of Perak stands amongst the last in the list in terms of achievement. The conceptual framework provides the foundation to thoroughly analyze the reasons why Perak has almost consistently, for the past years, been amongst the bottom in the list of nation-wide standard examinations performance like PMR. An empirical research will be conducted based on the conceptual framework discussed in this paper to examine the contributing factors to low academic performance in Perak which the findings could provide an insight to design an effective and impactful short-term and long-term intervention programs and initiatives for significant academic improvements in the long run.

## 1. INTRODUCTION

Academic achievement has very often been a strong determining factor of one's success, providing access to further studies to higher education and secure a stable job later in life.

Students need to pass several levels of standardized national level examinations that function as a yardstick to indicate the students' academic performance and achievement. There has always been a tendency in making a direct correlation between a student's academic achievement and intelligence level. Whilst this may be true, but such assumption could be plainly too simplistic as there are other contributing factors which could significantly influence a student's academic performance. There could be many determinants to a student's academic achievement. Hence poor academic achievement could be due to interplay between various factors emanating from the students themselves and their environmental situation. This study seeks to obtain a better understanding of the contributing factors to low academic achievement and how to manage these students in the context of secondary school children in Perak state. This paper hence discusses the theoretical and conceptual framework that underlies the execution of the research.

Factors influencing academic achievement have been a much researched area however, a thorough empirical research in Perak state can be further explored. The *Penilaian Menengah Rendah* (PMR) results announcement for the past years had raised a concern amongst the academic community in the state. In comparison to all the other states, Perak stood amongst the last in the list. A thorough empirical analysis needs to be carried out to identify the contributing factors to low achievement in such standardized, nation-wide examination as Perak has been consistently at the lower end in the country. The record shows that the percentage of students who passed PMR is 64.83% in 2010 and 68.04% in 2011.

As reported by Jabatan Pelajaran Negeri Perak, even though there is an increasing trend between 2008 to 2011, Perak is still amongst the bottom in achievement when compared to other states. Strategic plans and initiatives have been implemented by the central government and at the state level for improvements in the education sector. The Tenth Malaysian Plan proves an emphasis by Malaysian government on the education sector through its formation of six NKRA in improving the quality of the students and education. Initiatives

like North Corridor Economic Region (NCER) and Perak Amanjaya provide evidence that positive and radical improvements need to take place to increase the quality of education. There have been various commendable strategic initiatives by the state government to propel academic achievement to a greater height [1]. An empirical study to thoroughly examine the contributing factors to the low academic achievement in Perak, however, needs to be conducted to provide an empirical basis and research-based foundations for impactful recommendations for further improvement.

The learning culture and pattern adopted by a student is cultivated through various variables and underlying factors. Literature has suggested three broad dimensions for analysis which are the personality, sociological and psychological factors.

The theoretical framework is developed for an exploratory study to examine the contributing factors to low academic achievement within three main domains: self-efficacy and cognitive ability, support system and socio-economic.

## II. THE THEORETICAL FRAMEWORK

### A. Self-Efficacy and Cognitive Ability

Research findings from Education Planning and Research Division [2], suggest that negative attitudes toward learning are attributed to lack of basic skills in learning, weak mastery of language skills and poor self-efficacy that influence the success or failure of the students. Self-efficacy is the belief that one possesses the capabilities to organize, plan and carry out the courses of action required to manage situations at hand [3]. These beliefs are described as the determinants of how people think, behave and feel [4]. Hence, a handful of research findings indicate that self-efficacy influences academic achievement and motivation [5], [6].

Self-efficacy is also related to setting aims and goals in life, and the plan of actions in achieving them. Setting goals and objectives are important in carrying out everyday tasks [7]. The notion of achieving goals will be tied to the *Achievement Goal Theory* that is used as a framework to understand student motivation and related cognitive, affective and behavioural outcomes in academic [8]. According to the expectancy-value model of achievement choices [9], expectancy-value constructs are primarily comprised of expectancy beliefs and task values. Expectancy beliefs refer to the extent of the students' belief that they have the capability to perform an activity. Task values concern how much the students value an activity which relates to their perceptions of how important it is for them to perform well in the activity [10]. Under the domain of self-efficacy, the framework also includes cognitive ability in terms of grasping the basic learning capabilities which are literacy and numeracy. Examination of these basic skills is imperative as the incompetence of such skills could be a hindrance for subject matter mastery.

Self-efficacy is one of the most important domains in this study also to the fact that it can have an impact on the students' psychological state that may influence the way they learn in their everyday life. Findings from studies indicate that many students suffer from psychological problems like depression, anxiety and stress, which could have an effect on their academic achievement. Anson, Bernstein & Hobfoll [11] reveals that psychological problems could lead to difficulties to concentrate, low motivation, poor attendance, fatigue and physical health problems. On a similar ground, Williamson, Birmaher, Ryan & Dahl [12] found that stressful life could significantly lead to anxiety and depression which could result in poor academic performance. A study conducted by Md Yasin and Dzulkifli, with the objective to examine the level of psychological problems between low and high achieving

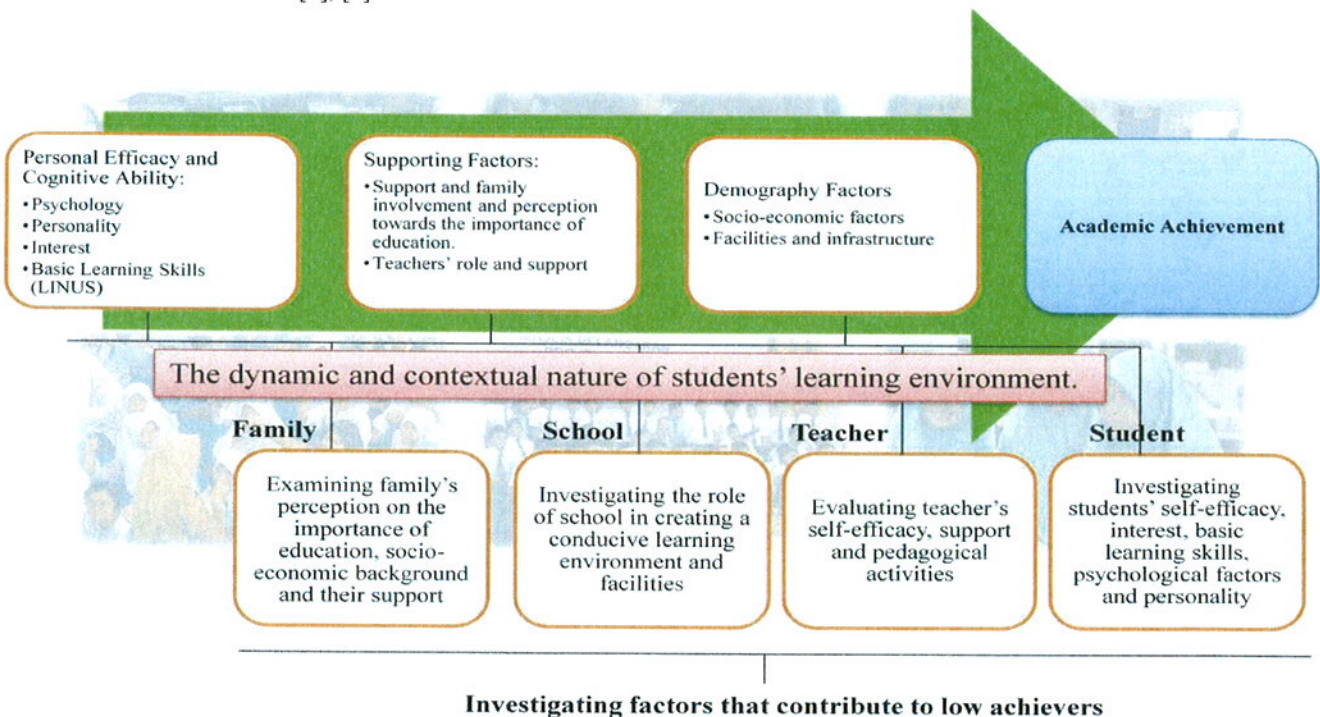


Fig. 1. Conceptual Framework for Exploratory Study on Contributing Factors to Low Academic Achievement.

students, reveals that there were indeed significant differences between the two groups. Hence, psychological conditions do have implications on the students' academic performance.

Aspects of personality may also affect the academic achievement of themselves. How students see themselves is essentially crucial as self-concept is important in shaping the students' personality [14]. Personality of the students will be classified as extrovert, introvert and neurotic or emotionally stable [15]. As self-efficacy has great bearings in academic achievement, it is one of the crucial elements to be incorporated into the conceptual framework.

#### B. Parental Participation and Family Support

Educators and counselors need to work closely with parents in matters involving children development. A student's family institution marks the beginning of a student's learning habits, pattern and culture. *"Children's home environment shapes the initial constellation of attitudes they develop toward learning. When parents nurture their children's natural curiosity about the world by welcoming their questions, encouraging exploration, and familiarizing them with resources that can enlarge their world, they are giving their children the message that learning is worthwhile and frequently fun and satisfying"* [16]. Parental guidance is thus very crucial in cultivating the right learning culture amongst the students. In order to develop the students' positive self-concept, which affects the way they see learning, parents need to create a harmonious climate, provide adequate necessities and ensure happiness at home [17]. Home environment and early experiences help to create curiosity, help build self-efficacy and shape the individual's behavior. Factors like parents' expectations, home environment, discipline and parent involvement do affect students' achievement [18]. A well-function family could create a positive climate in the family institution which the dynamic communication and effective relationship could determine the educational climate in the family, and in turn influence the academic results [19]. Parents, teachers and counsellors could help the students to enhance self competence and develop a strong sense of self-efficacy [20].

A study on *Drop-out & Low Achievement - Case Studies in Selected Primary Schools in Malaysia* [2], found that students with low achievement and drop-out come from families that are less supportive of their children's education, are not so attentive to their children's achievement, could not care less about their homework, depend on the child's older siblings and prefer the child to help with house chores than doing their homework. Schools, teachers and educationists have been urging and exhorting parents to play a more significant role and actively take part in their children's education. Tengku Abd Aziz, in his study [21], found that demographic factors that have impact on academic achievement of the rural school students include family advantage, home environment and parents' academic support. Poor rural parents generally do not take a great interest and much value in education. Due to illiteracy and low education level, they are not able to help with their children's homework. Some parents even need their children to support the family by working part-time or help out at the paddy field or oil palm plantations [22]. This requires a degree of attention as parents' academic aspirations for their

children influence their children's academic achievement [23]. This study will incorporate elements indicating family support and parental involvement by examining the extent of participation with the children's learning activities, and obtain an insight into parenting style (democratic, authoritarian or permissive) adopted by parents.

#### C. The Role of Teachers and School

Apart from family support, the framework also incorporates support from teachers and schools. Teachers and schools play pertinent role in the capabilities development and academic achievement of the students. Teachers are seen as the main source of learning in schools especially in ensuring the students' success.

This study takes into consideration not only the self-efficacy amongst students, but also the teachers' extent of belief in their influence on their students' success. This belief is fundamental as teachers' belief lie at the very heart of teaching [24]. Zainal, Haris and Ng [25] found that 62% of the drop-out students have never consulted their teachers when encountering learning obstacles. Some of the students reported that their teachers are too fierce (14%) to approach. The study concluded that teachers who are not very supportive significantly affect students' academic performance. Teachers should give more attention especially to weak students instead of emphasizing solely on discipline.

It is acknowledged that students' performance is also largely influenced by the teachers' pedagogical approach to teaching. It has been reported that the teaching methodology largely adopted in schools is the traditional teacher-fronted, non-committal teachers, lack of interaction and bond between teachers and students [26]. Learning process should be enjoyable where the teaching approach used could attract the students' attention, develop interest in learning, and ensure full participation in the classroom. Pedagogical approaches hence need to be well structured and systematic for effective learning to take place. Higher academic achievement can be attained if the students are made aware of the learning objectives with clear instructions, learning environment that is conducive and the extent of students' participation in the teaching and learning process.

As students spend most of their time in their everyday life at their schools, apart from at home, therefore school poses its own influence in shaping the students' personality as the socialization process occurs mostly in the schools [27]. Factors associated with schools like teachers, relationship between schools and parents, or the community have an impact in the cultivation of knowledge-seeking culture which could result in the overall academic performance. Research has also shown that poor facilities and infrastructure, inconvenient learning environment especially in rural schools are amongst the contributing factors, for example deteriorating condition of school structure, roof leakage, damaged walls, unsuitable stools and tables according to the students' physical built, lack of basic facilities [26] could also influence students' academic performance. Thus, schools and teachers have direct influence on the students' personalities, inspirations and attitudes that affect their academic achievement.



#### D. Socio-economic and Facilities

Socio-economic factor has also been incorporated into the framework as studies have shown that there is a correlation between poverty and cognitive development [28]. Socio-economic factors play an important role in influencing academic achievement especially in the primary school [29]. The family's socio-economic factor has an impact on the student's aspiration, motivation, self-efficacy and involvement in co-curriculum activities [30]. A line of research has examined the relationship between family income and schooling performance which the findings indicate that students from well provided for families perform better academically [31], [32]. Professor Awang Had Salleh [22] had similarly noted on the impact of poverty on low academic achievement. The large size of the family especially where the family income is limited, is also associated with lower academic achievement which could be due to the availability of resources [33].

A study on Factors Influencing the Academic Achievement of Students in Malaysian Schools [28] that included 25,632 students from 686 schools in Malaysia revealed that socio-economic was amongst the most significant factors that influence students' academic achievement especially at the primary school level. On the pursuit of similar research purpose, a study was conducted to investigate factors associated with poor academic achievement but instead of in the rural areas, this study had focused on the urban primary school children [34]. This cross-sectional study that involved 1470 children from schools in urban areas revealed that 14% of the year 2 students had poor academic achievement. The study concluded that poor academic achievement during the early school years is highly associated with cognitive ability, child health (prematurity) and social factors (socioeconomic, family size).

Learners from the economically disadvantaged families usually reside in a poor neighbourhood. Research findings very often link neighbourhood quality, children's verbal ability, and IQ scores to school achievement [35]. Malaysian education programmes today thus have been placing a priority in looking for ways to reduce the achievement gap between students from rural and urban areas.

It has been noted by the secretary general of the National Union of Teaching Profession (NUTP) that the significant disparity in academic achievement between the students from rural and urban areas is posed as one of the main weaknesses in the education system [36]. The Malaysian government has long acknowledged the relationship between socio-economic factors and student academic performance in Malaysia. The eighth Malaysian Plan (2001-2005) for instance, had allocated RM43.7 billion for education and training. A study [37] that examined the impact of parental income on students' achievement, and identified the rural-urban differences in the performance of secondary school students concluded that sufficient financial assistance is essential for students from poor families. The findings lend a degree of support that poverty invariably links to lower academic achievement. The students' socioeconomic background in this study will be based

on several items, for example the occupation of the father and mother. The respondents will be classified into two categories: High socio-economic status and Low socio-economic status.

### III. THE CONCEPTUAL FRAMEWORK

This study will employ a triangulation approach to data collection which hinges on both quantitative and qualitative methods. Primary data will be gathered through surveys and interviews. Questionnaires will be constructed for the survey and interview parameter, and protocol analysis will be developed for the qualitative data. Secondary data will be collected through document analysis.

There will be three main groups of respondents in this study which are the students, the parents and the teachers. Purposive and stratified random sampling will be adopted in this study to select the target respondents. As there are ten districts in the Perak state, the sampling will be proportionate to the number of schools in its representation for each district. The selection will include low, medium and high academic achievement performance schools. The data for the selection shall be obtained from Jabatan Pendidikan Negeri Perak. Figure 2 illustrates the conceptual framework of this research.

There will be three stages of progression for this study. The first stage shall involve students as the respondents whom will be selected through stratified random sampling from the selected schools which the criteria are as specified above.

The students will be asked to complete a survey form which will cater for three research dimensions: self-efficacy, support from teachers and family, and socio-economic as discussed in the background section above. Weak students will be guided by the teachers to attend and understand the items in the questionnaire. Findings from the first stage will provide an input to the second stage of the study. In the second stage of the study, questionnaires will be developed for teachers and in-depth interviews will be conducted to obtain a better insight of the academic achievement phenomenon in Perak. Teachers from different categories e.g. *Pengetua*, *Guru Cemerlang*, *Guru Kaunseling*, *Guru Subjek*, *Guru Pakar*, *Guru Opsyen* will be the respondents in this stage. The third stage will involve parents from different socio-economic backgrounds who will be interviewed to comprehend their perceptions on their children's education, and the kind of support provided to their children. The findings will be triangulated to provide a more holistic picture of the contributing factors to the low academic achievement phenomenon in Perak.

### IV. CONCLUSION

Education is essentially one of the primary vehicles for the development of a country's economies [38]. There has been a limited number of studies that concurrently examine the impact of multiple contexts on students' academic achievements [39], [40]. The dynamic and contextual nature of a student's learning performance may not be able to be captured when the interactions of these multiple contexts are not taken into consideration in a study. Hence this study takes into account various surrounding variables to concurrently examine the impact of multiple contexts on students' academic achievements in the Perak state.

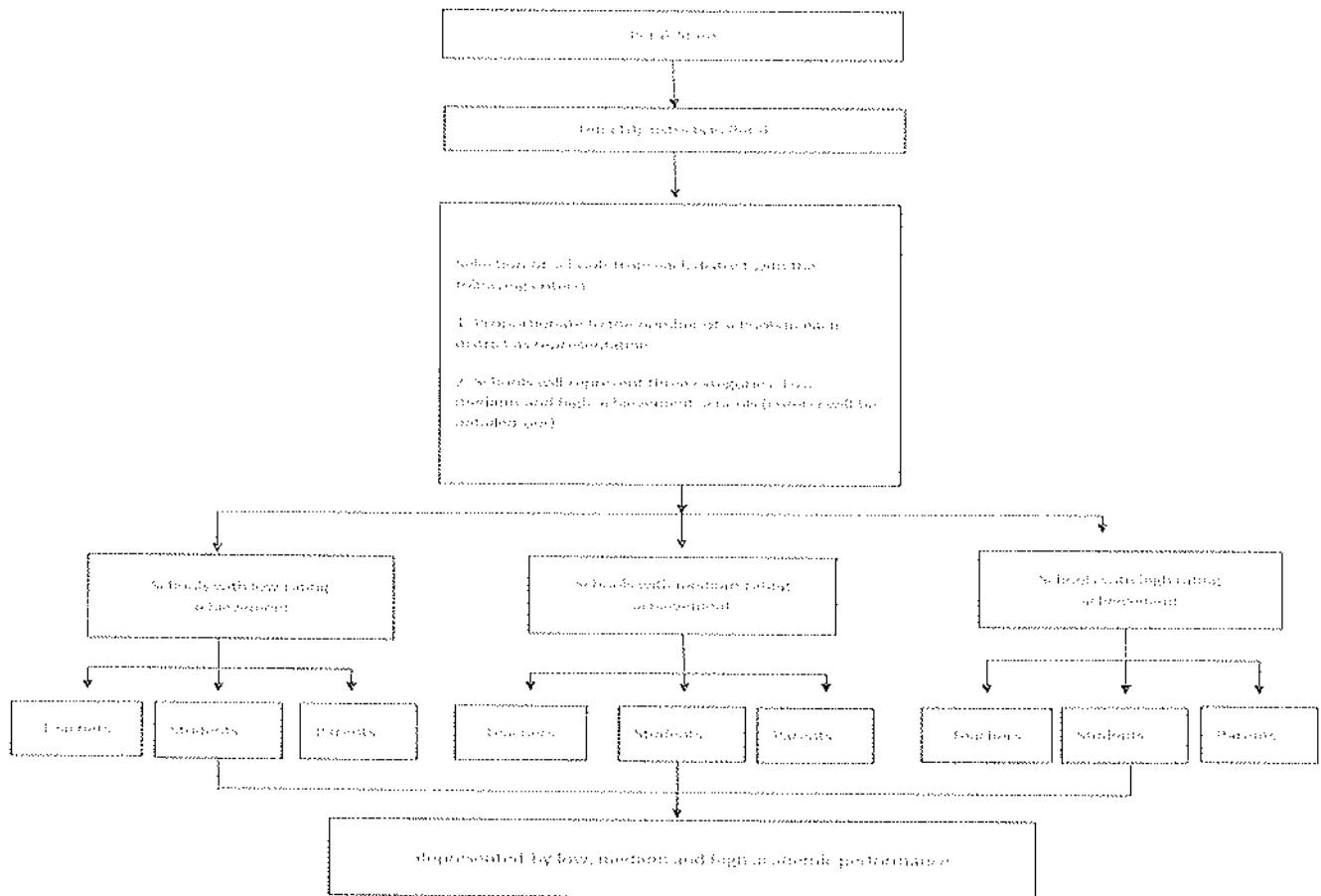


Fig. 2. Conceptual framework

#### ACKNOWLEDGMENT

The researchers would like to express our appreciation for the continuous support from Y.B. Dato' Mohammad Zahir b. Dato' Abdul Khalid, Chairman of State Education Committee, as the patron to the research. The study shall be conducted by researchers from Universiti Teknologi PETRONAS (UTP), Universiti Pendidikan Sultan Idris (UPSI), Universiti Teknologi MARA (UiTM), and Jabatan Pendidikan Negeri (JPN). We also would like to thank KPerak Inc. for the allocation of fund in pursuing the research.

#### REFERENCES

- [1] MINDA, *Merealisasikan Impian 'New Deals' Akademik*, Perak: Jabatan Pelajaran Perak, 2010.
- [2] "Drop-out and Low Achievement-Case Studies in Selected Primary Schools in Malaysia" *Education Planning and Research Division-EPRD*, 1994.
- [3] A. Bandura, *Self-efficacy in Changing Societies*, Cambridge: Cambridge University Press, 1995.
- [4] A. Bandura, "Self-efficacy" in V.S. Ramachandran (Ed.), *Encyclopaedia of Human Behavior*, New York: Academic Press, 1994.
- [5] E. Pajares, "Self-efficacy beliefs in academic settings," *Review of Educational Research*, vol. 66, no. 4, pp. 543-578, 1996.
- [6] D.H. Schunk, "Self-efficacy and education and instruction," in J.E. Maddux (Ed.), *Self efficacy: adaptation, and adjustment: Theory, research, and application*, New York: Plenum Press, 1995, pp. 281-303.
- [7] P.R. Pintrich and D.H. Schunk, *Motivation In Education: Theory, Research, And Applications*, Englewood Cliffs, NJ: Prentice Hall, 1996.
- [8] B. Agbuga and P. Xiang, "Achievement goals and their relations to self-reported persistence/effort in secondary physical education: a trichotomous achievement goal framework," *Journal of Teaching in Physical Education*, vol. 27, no. 2, pp. 179-191, 2008.
- [9] J.S. Eccles, A. Wigfield and U. Schiefele, "Motivation to succeed," in W. Damon (Series Ed.) and N. Eisenberg (Vol. Ed.), *Handbook of Child Psychology*, New York: Wiley, 5th ed., vol. 3, pp. 1017-1095, 1998.
- [10] P. Xiang, R. McBride and A. Bruene, "Fourth graders' motivation in an elementary physical education running program," *The Elementary School Journal*, vol. 104, no. 3, pp. 253-66, 2004.
- [11] A. Anson, J. Bernstein and S.E. Hobfoll, "Anxiety and performance in two ego threatening situations," *Journal of Personality Assessment*, vol. 48, no. 2, pp. 168-172, 1984.
- [12] D. E. Williamson, B. Birmaher, N.D. Ryan and R.E. Dahl, "Stressful life events in anxious and depressed children," *Journal of Child and Adolescent Psychopharmacology*, vol. 15, no. 4, pp. 571-580, 2005.
- [13] Md Yasin, Md Aris Saffree and Dzulkifli, Mariam Adawiah, "Differences in psychological problems between low and high achieving students," *Journal of Behavioural Science*, vol. 4, no. 1, pp. 49-58, 2009.
- [14] Azizi Yahaya and Jaafar Sidek Latif, *Development of Self-concept*, Pahang: PTS Publishing Sdn Bhd, 2005.
- [15] Yahya Othman, "Effect of holistic approach on ability of text comprehension in low and medium achiever students. Kesan pendekatan holistik ke atas penguasaan pemahaman teks dalam kalangan murid berprestasi rendah dan sederhana," *Journal of Applied Research in Education*, vol. 13, pp. 84-98, 2009.
- [16] L.S. Lumsden, "Student Motivation to Learn," *ERIC Digest 92*, <http://eric.uoregon.edu/publications/digest/digest092.html>, 1994.
- [17] E. Gadeyne, P. Ghesquiere and P. Onghena, "Longitudinal relations between parenting and child adjustment in young children," *Journal of Clinical Child and Adolescent*, vol. 22, pp. 347-358, 2004.
- [18] Sumari, M. Zaharah Hussin and Saedah Siraj, "Factors contributing academic achievement and moral development: A qualitative study," *The International Journal of Research and Review*, vol. 5, no. 2, pp. 18-23, 2010.
- [19] A.I. Diaz, "Personal, family and academic factors affecting low achievement in secondary school," *Journal of Research in Educational and Psychopedagogy*, vol. 1, pp. 43-66, 2003.
- [20] R. Mahyuddin, H. Elias, I. S. Cheong, M.F. Muhamas, N. Noordin, and M.C. Abdullah, "The relationship between students' self-efficacy and their English language achievement," *Jurnal Pendidik dan Pendidikan*, vol. 21, pp. 61-71, 2006.

- [21] Tengku Abd Aziz Zamil, "Student Background and the Academic Achievement of Primary School Children in Rural Peninsular Malaysia," *Doctoral Dissertation*, University of California, Los Angeles, 1989.
- [22] Awang Had Salleh, "Education of Thinking," Pendidikan dalam Pemikiran, Kuala Lumpur: Fajar Bakti, 1983.
- [23] A. Bandura, C. Barbaranelli, G.V. Caprara, and C. Pastorelli, "Multifaceted impact of self-efficacy beliefs on academic functioning," *Child Development*, vol. 67, pp. 1206-1222, 1996.
- [24] D.M. Kagan, "Implications of Research on Teachers' Beliefs," *Educational Psychologist*, vol. 21, pp. 65-90, 1992.
- [25] Zamil Ghani, Haris Md Jadi and Ng Khar Thoe, *The Malaysian Dropout Study Revisited*, Science University of Malaysia, 1991.
- [26] Ministry of Education Malaysia, Kementerian Pelajaran Malaysia, *Education Report*, 2002, pp. 3-22.
- [27] K. Leong, S. Lau and W. Lam, "Parenting styles and academic achievement: a cross-cultural study," *Merrill-Palmer Quarterly*, vol. 44, pp. 157-167, 1998.
- [28] Leong Yin Ching, Cheong Siew Yoong, Chew Sing Buan, Suradi Salim, T. Marimuthu, Abdul Aziz Abdul Talib, Abdul Rahman Abdul Rashid and Lily Chew Suk-Men, "Factors Influencing the Academic Achievement of Students in Malaysian schools," *Executive summary presented to the Educational Planning and Research Division, Ministry of Education*, 1990.
- [29] Leong Yin Ching, Cheong Siew Yoong, Chew Sing Buan, Suradi Salim, T. Marimuthu, Abdul Aziz Abdul Talib, Abdul Rahman Abdul Rashid and Lily Chew Suk-Men, *Factors affecting academic achievement in Malaysian Schools*, Report of the project funded by the World Bank and the Faculty of Education, University of Malaya, 1992.
- [30] Zarinah Arshat and Rozumah Baharudin, "The Relationship between socio-economic and academic achievement of children Perkaitan di Antara Faktor Sosio ekonomi dan Pencapaian Akademik Anak," *Jurnal Kebajikan*, vol. 21, no. 2, <http://www.kemppadu.gov.my/jkm/mel/jurnal/ds99-1.htm>, Dec 1999.
- [31] S. L. Jr. Myers, H. Kim, and C. Mandala, "The Effects of School Poverty on Racial Gaps in Test Scores: The Case of Minnesota Basic Standard Test," *Journal of Negro Education*, vol. 73, no. 1, pp. 81-98, 2004.
- [32] Bernstein Basil, "Socio Class and Pedagogic Practice," Sedovnik, R. Alan, *Sociology of Education: A Critical Reader*, New York: Routledge, pp. 97-114, 2007.
- [33] D.B. Downey, "When bigger is not better: family size, parental resources and children's educational performance," *American Sociological Review*, vol. 60, pp. 746-61, 1995.
- [34] I. C. Ong, V. Chandran, Y. Y. Lim, A.H. Chen, and B.K. Poh, "Factors associated with poor academic achievement among urban primary school children in Malaysia," *Singapore Med J*, vol. 51, no. 3, pp. 247, 2010.
- [35] T. Laventhal and J. Brooks-Gunn, "The neighbourhood they live in: the effects of neighbourhood residence on child and adolescent outcomes," *Psychological Bulletin*, vol. 126, pp. 309-337, 2000.
- [36] New Sunday Times, "Make Teachers' Welfare a Priority", 10 September 2006.
- [37] Osman Rani Hassan and Rajah Rasiyah, "Poverty and student performance in Malaysia," *International Journal of Institutions and Economics*, vol. 3, no. 1, pp. 61-76, 2011.
- [38] UNESCO, "Education", Available at: [http://portal.unesco.org/education/en/ev.php-URL\\_ID=45941&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/education/en/ev.php-URL_ID=45941&URL_DO=DO_TOPIC&URL_SECTION=201.html), 27 July 2009.
- [39] D.J. Weigel, S.S. Martin and K.K. Bennett, "Ecological influences of the home and the child-care centre on pre-school age children's literacy development," *Reading Research Quarterly*, vol. 40, pp. 205-233, 2005.
- [40] NICHD Early Child Care research Network, "The relation of child care to cognitive and language development," *Child Development*, vol. 71, pp. 960-980, 2000.