A study of time use and academic achievement among secondary-school students in the state of Kelantan, Malaysia

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The preliminary report of the Malaysian Education Blueprint – 2013–2025 (Malaysia Ministry of Education, 2012. Preliminary education blueprint (2013–2025). Retrieved June 11, 2012 from http://www.moe.gov.my/userfiles/file/PPP/Preliminary-Blueprint-Eng.pdf) highlights the importance, in a globalised world, of producing future intellectual, social and human capital for Malaysia. It is paramount to note that adolescents are the future human capital of Malaysia. Literature indicates adolescents are confronted with an environment that is rapidly changing and the time spent on non-school-related activities has negatively impacted academic performance. This research investigated the contribution of time use among students to academic achievement. The sample of secondary school students was stratified to ensure balance of gender, school type and grade level. Correlation analyses were conducted to determine the associations among the variables identified in the study. Participants completed the Daily Record of How I Use My Time each day for seven consecutive days. Cooperating schools provided copies of the academic transcript of each participant. This information was used to establish the overall secondary school academic achievement of each participant. The data collected were subjected to bivariate comparison of means and \textit{t}-test comparisons of means to yield correlations among the target variables. The findings of this research support those of some previous studies and contradict those of other studies, many conducted with non-Malaysian populations. In sum, this study may help to develop a conceptual framework for guiding efforts to improve academic performance, as it relates to time use, as a contribution to accomplishing the national agenda of Malaysia.

\textbf{Keywords:} time use; academic achievement; secondary school students; school-related-activities; non-school-related-activities; youths

Introduction

Today’s youth are confronted with a media environment that is rapidly changing. The time spent on media, whether for the purpose of school-related or non-school-related learning, has influenced youths more than before. A study on Malaysian youths showed that they spend about 32.6 hours per day on media-related activities such as watching television (TV), surfing the Internet, listening to the radio and reading magazines (Raj, 2012). It is possible to exceed 24 hours per day of such activities because technology allows us to multitask. One can talk on the phone, watch TV, check the Facebook account and listen to music at the same time. However, research shows that out of the 32.6 hours, more than 30%, or approximately 11 hours, is spent on media-related activities such as surfing the Internet (3.3 hours), watching TV (2.5 hours) and using phones (1.3 hours). On the use of

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computers for social networking, Malaysians are found to have the highest number of Facebook friends, with an average of 233 in each account. Malaysians spend 9 h a week on Facebook, which is one of the highest compared with other countries, and more than 10 million Malaysians are currently Facebook users.

A study of time use among Malaysian youths as it relates to school achievement, particularly one that differentiates between school-related activities and non-school-related activities, may provide insights into how these activities impact the performance of youths in school. Such insights may be useful to educational policy-makers, school administrators, teachers, civic groups, parents and adolescents concerned with optimising the opportunities provided during the secondary school years of Malaysian children.

**Objectives of the research**

The objectives of this research are the following:

1. To investigate the contribution of time use for school-related activities to academic achievement among secondary school students in Malaysia.
2. To investigate the contribution of time use for non-school-related activities to academic achievement among secondary school students in Malaysia.

**Literature review**

Kirkorian, Wartella, and Anderson (2008) state that the content that is being portrayed in the television (TV) can act as the tool for interaction between the viewers and the media. High levels of exposure to educational TV are positively linked with students’ academic achievement especially for those who had started since their early childhood. Kirkorian et al. (2008) and Noor-Ul-Amin and Mattoo (2012) agreed that the frequency of TV watching does influence the academic performance among secondary school students. In the same study, Noor-Ul-Amin and Mattoo (2012) reveal that high TV viewers, as compared to low TV viewers, are seen to plan their study well in advance. This group of people (high TV viewers) is also found to possess higher note-taking ability by applying effective paraphrasing and summarising skills. On the other hand, low TV viewers are found to prefer quiet and calm working style, which help them to show good abilities in vocabulary, reading and memorising skills. Low TV viewers are also found to have better learning motivation than high TV viewers as they are seen to have the desire to learn quickly and retain information for a long time.

Studies done by Carvin (2006) and Ogedebe (2012) found strong correlations of Internet access with academic performance. Both studies agreed that the use of Internet has improved students’ academic performance as Internet assists them to have better preparation for exams. These respondents claim they get relevant information pertaining to their course of study while browsing the Internet. Technology-based activities are able to facilitate students’ understanding of the content and provide different ways of expressing knowledge to the students and, therefore, have a positive influence on their academic performance (Sun & Bradley, 2010).

The usage of Internet among adolescents nowadays is definitely inseparable from social networking websites such as Facebook, Twitter and MySpace. A study done by Kabre and Brown (2011) on the influence of Facebook usage on academic performance and the quality of life of college students reveals that the number of hours spent on Facebook influences both academic performance and the quality of life among the students. The Internet and social
networking websites seem to bring positive influence on adolescents as it allows them to express themselves in their own unique ways (Boyd, 2007). 

Flad (2010) also adds that high school students use these sites as tools to obtain information and resources for their academic planning as well as to enhance their artistic and musical abilities.

However, social networking sites do bring negative impact to their users especially as regards study habits and completion of homework and assignments (Flad, 2010). Media conveys both positive and negative impacts towards students’ achievement in school exams. This phenomenon depends highly on how these students utilise the convenience and advancement of various technological devices.

Previous studies have proven that extracurricular activities are beneficial in building and strengthening academic achievement even though these activities may not have any obvious relationship with academic subjects (Guest & Schneider, 2003; Kamaruzaman, Norhidayah, Syukriah, Najah, & Azni, 2009; Marsh & Kleitman, 2002; Sparkes, 2004). According to studies done by Darling, Caldwell, and Smith (2005), and Bashir and Hussain (2012), adolescents who participated in extracurricular activities are reported to achieve higher grades in their academic performance. Besides, they have more positive attitudes towards school, and have higher academic aspirations. School-related extracurricular activities, sports for leisure purpose also provide opportunities for initiative, emotional regulation, goal setting, persistence, problem solving and time management (Larson, Hansen, & Moneta, 2006).

**Problem statement**

The daily activities of an average student’s life are centred on school and home. Whether the activities of the student are school- or non-school-related, they are very much influenced by various technological devices such as computers, TV, hand phones and game consoles. As technology continues to advance, students continue to be bombarded by exposure to various technological media. Much research suggests that there may be significant correlations of media exposure with academic performance. Previous studies have explored areas such as self-esteem, violence and academic achievement when looking at adolescents and media. All of these areas continue to be revisited as technology continues to expand and change. Research has generally shown a negative relationship between activities related to media exposure and academic performance. If this is the case, in what ways are students being affected? Does it depend on the type of media or the duration of time they are being exposed? This study seeks to investigate school-related activities and activities that are non-school-related in relation to learners’ academic performance.

**Research questions**

1. To what extent does time spent watching TV correlate with academic achievement?
2. To what extent does time spent in activities associated with Internet correlate with academic achievement?
3. To what extent does time spent playing multimedia games (video, Xbox, PlayStation, etc.) correlate with academic achievement?
4. To what extent does time spent in reading correlate with academic achievement?
To what extent does time spent in studying correlate with academic achievement?

To what extent does time spent in tuition correlate with academic achievement?

To what extent does time spent in extra curricular activities correlate with academic achievement?

To what extent does time spent in homework correlate with academic achievement?

To what extent does time spent in activities associated with school-related activities combined correlate with academic achievement?

To what extent does time spent in activities associated with non-school-related activities combined correlate with academic achievement?

To what extent do gender, Form level and school type correlate with cumulative grade point average (CGPA)?

To what extent do gender, Form level and school type correlate with time spent in school-related activities?

To what extent do gender, Form level and school type correlate with time spent in non-school-related activities?

Research hypotheses

In order to assess the relationship between time use in school-related and non-school, and leisure-related activities with academic achievement among secondary school students in Malaysia, the following hypotheses are formulated:

1. There is a negative and significant correlation between time spent watching TV and academic achievement.
2. There is a negative and significant correlation between time spent in activities associated with Internet and academic achievement.
3. There is a negative and significant correlation between time spent playing multimedia games and social networks (video, Xbox, PlayStation, Facebook) and academic achievement.
4. There is a positive and significant correlation between time spent in reading and academic achievement.
5. There is a positive and significant correlation between time spent in studying and academic achievement.
6. There is a positive and significant correlation between time spent in tuition and academic achievement.
7. There is a positive and significant correlation between time spent in extra curricular activities and academic achievement.
8. There is a positive and significant correlation between time spent in homework and academic achievement.
9. There is a positive and significant correlation of time spent in activities associated with school-related activities combined and academic achievement.
10. There is a negative and significant correlation of time spent in activities associated with non-school-related activities combined and academic achievement.
11. Females achieve significantly higher CGPAs than males, Form 4 students achieve significantly higher CGPAs than Form 2 students and elite school students achieve significantly higher CGPAs than standard school students.
Females, Form 4 and elite school students will spend significantly more time in school-related activities than males, Form 2 and standard school students.

Males, Form 2 and standard school students spend significantly more time in non-school-related activities than females, Form 4 and elite school students.

Methodology

Research design

This study utilised a quantitative methodology. A stratified sample of 137 students from two Malaysian secondary schools participated in the study. The sample was stratified to ensure a balance of males and females in equal numbers from Forms 2 and 4, and type of school attended.

Instrumentation

Participants completed the Daily Record of How I Use My Time each day for 7 days. This survey was developed in Bahasa Malaysia specifically for the present study because while some students also have a good facility with English or Mandarin, Bahasa Malaysia is the common language used in the home, community and the schools. Locally, it is considered the ‘national language’ of Malaysia. The instrument includes an array of school-related and non-school-related activities designed to elicit responses regarding daily time used in activities such as watching TV, Internet browsing, social media, tuition, study and so on. Items differentiate school-related and non-school-related activities. Respondents recorded the number of minutes they estimated they engaged in each activity during the previous day.

Data collection

A team of teachers at the two participating secondary schools was recruited and oriented in the processes of completing the Daily Record of How I Use My Time. One school was considered ‘elite’, serving students who had done well academically in their pre-secondary school and on the National Examination taken in the final year of elementary school. The other was considered ‘standard’, serving students who had done less well academically or on the National Examination. This was done to ensure appropriate sampling by previous academic performance. The teachers ensured that the study participants completed the Daily Record of How I Use My Time at the beginning of each school day, Sunday through Thursday for 1 week. Study participants completed the Daily Record of How I Use My Time at home on Fridays and Saturdays to be turned in to their cooperating teacher on Sunday morning. It is felt that gathering daily samples from each day of the week for one full week would provide sufficient data to make an initial assessment of how participants spend their time without imposing an undue burden on the participants or their teachers. Subsequently, cooperating schools provided a copy of the academic transcript of each participant. This information was used to establish the overall secondary school academic achievement, to-date, of each participant.

Data analyses

Data on gender and grade level were extracted from the transcripts. Gender was treated as categorical data and grade level was treated as hierarchical interval data. CGPAs were extracted in decimal form and treated as scale data.
Means and standard deviations of accumulated time committed to each of the items and groups of items on the Daily Record of How I Use My Time were calculated. These scores were subjected to comparisons with academic achievement scores using bivariate comparison of means and \( t \)-test of comparison of means. Next, these scores were subjected to comparisons with gender, Form level and type of school attended using bivariate comparisons of means and \( t \)-test of comparisons of means.

**Limitations**

The latest census data for Malaysia and Kelantan (2011) report that Malaysia is 67.4% Bumiputera, 24.6% Chinese, 7.3% and Indian 0.7%. Malaysia is 61.3% Islam, 19.8% Buddha, 9.2 Christian and 6.3% Hindu. However, 95% of Kelantanese are Malay Muslims. The remaining 5% are spread over Siamese, Chinese and Indian of Buddha, Christian and Hindu faiths. As a political unit, Kelantan is essentially a rural, conservative Muslim State that is near the bottom of the national economic ladder. Since the study was done in Kelantan, there would not have been sufficient representation of separate ethnic or socioeconomic groups of non-Malay Muslim groups to support appropriate statistical inference. Since this was an exploratory study, it was felt that no attempt should be made to conduct a national study at this time. Since the general literature on adolescents’ time use often includes comparisons across language, ethnicity and religious affiliation, further study across a wider geographic area of Malaysia that collects such data seems warranted.

The study is further limited in that it does not consider the potential influences of family dynamics such as parents’ level of education or employment status, sibling order or parents’ aspirations for their children. Here again, it was felt that attempts to account for such issues would be unwarranted in an exploratory study. Further study across a wider geographic area of Malaysia that collects such data seems warranted.

**Findings**

Given the method of grade assignment and CGPA calculation, the maximum (best) possible CGPA would be 0.00. In this system, the minimum (poorest) possible CGPA is 9.00. Hence, the lower the CGPA reported in this system, the better the academic achievement of the individual. These data were utilised in all tests of research hypotheses related to academic achievement. Table 1 reports the CGPA descriptive statistics for all study participants.

Table 1 reports the descriptive data for the distribution of CGPAs of all participants. These data may be consulted as a baseline when considering all remaining comparisons of CGPA and other demographic characteristics studied.

Table 2 reports the correlations of non-school-related activities with CGPA. Significant negative correlations are revealed for reading, watching TV, hobbies, SMS and total time. A significant positive correlation is revealed for sports/physical activity.

| Table 1. Descriptive statistics – CGPA – all participants. |
|------------------|------------------|------------------|------------------|------------------|
| **N**            | **Max (best)**   | **Min (poorest)** | **Mean**        | **SD**          |
| 137              | 1.95             | 9.00             | 5.59            | 1.58            |
Table 3 reports the correlations of school-related activities with CGPA. Significant negative correlations are revealed for studying with family members, time spent in tuition and use of ‘other’ technology. A significant positive correlation is revealed for studying with friends.

- **Research hypothesis 1**: ‘There is a negative and significant correlation between time spent watching TV and academic achievement’ was supported. Bivariate comparisons of means reveal a significant and negative correlation of time spent watching TV with academic achievement ($r^2 = -0.393$, $p = 0.000$) (see Table 2).

- **Research hypothesis 2**: ‘There is a negative and significant correlation between time spent in activities associated with Internet and academic achievement’ was not supported. This activity was assessed in terms of school-related and non-school-related surfing of the Internet. No significant relationship was found in either case. Bivariate comparisons of means for academic achievement and Internet surfing for school-related purposes ($r^2 = 0.014$, $p = 0.871$) (see Table 3) and for non-school-related purposes ($r^2 = -0.015$, $p = 0.862$) (see Table 2).

- **Research hypothesis 3**: ‘There is a negative and significant correlation between time spent playing multimedia games (video, Xbox, PlayStation and social networks)’

### Table 2. Correlation of CGPA with non-school-related activities – $N = 137$.

| Reading          | Watching TV | Hobbies | Sports/physical activities | Arts/club activities | Phone SMS | Social activity |
|------------------|-------------|---------|---------------------------|----------------------|-----------|----------------|
| $r^2$            | $-0.199^*$  | $-0.393^{**}$ | $-0.320^{**}$ | $0.224^{**}$ | $0.132$ | $-0.191^*$ |
| $p$              | $0.020$     | $0.000$ | $0.000$                  | $0.009$             | $0.123$  | $0.025$         |
| Surfing Internet| Facebook    | Games video/Xbox | Other | Total |
| $r^2$            | $-0.015$   | $-0.020$ | $-0.012$ | $-0.166$ | $-0.201^*$ |
| $p$              | $0.862$     | $0.819$ | $0.888$ | $0.052$ | $0.018$ |

Note: Bold indicates significant negative correlation.  
*Correlation is significant at the 0.05 level (two tailed).  
**Correlation is significant at the 0.01 level (two tailed).

### Table 3. Correlation of CGPA with school-related activities for all participants – $N = 137$.

| Reading          | Study alone | Study with friends | Study with family | Homework | Tuition | School sports activity |
|------------------|-------------|--------------------|-------------------|----------|---------|-----------------------|
| $r^2$            | $0.087$     | $0.180^*$          | $0.227^{**}$      | $-0.303^{**}$ | $-0.140$ | $-0.240^*$ |
| $p$              | $0.313$     | $0.035$            | $0.008$           | $0.000$  | $0.103$ | $0.005$ |
| Arts/club activity | Phone SMS | Social activity | Surfing Internet | Other technology | Total |
| $r^2$            | $-0.129$ | $-0.163$ | $-0.034$ | $0.014$ | $-0.203^*$ |
| $p$              | $0.134$ | $0.057$ | $0.687$ | $0.871$ | $0.017$ |

Note: Bold indicates significant negative correlation.  
*Correlation is significant at the 0.05 level (two tailed).  
**Correlation is significant at the 0.01 level (two tailed).
and academic achievement’ was not supported except in the case of text messaging for non-school-related purposes. Bivariate comparison of means for academic achievement and time spent on video games revealed a positive and significant correlation between time spent in reading and academic achievement \((r^2 = 0.012, p = 0.888)\), and for time spent on Facebook \((r^2 = -0.020, p = 0.819)\).

In comparisons of means for academic achievement and text messaging for school-related purposes, no significant correlation was found \((r^2 = -0.163, p = 0.057)\) (see Table 3). In comparisons of means for academic achievement and text messaging for non-school-related purposes, significant and negative correlation \((r^2 = -0.191, p = 0.025)\) was found as hypothesised (see Table 2).

- **Research hypothesis 4**: ‘There is a positive and significant correlation between time spent in reading and academic achievement’ was not supported. Separate comparisons were made for school-related and non-school related reading. In the case of school-related reading, no significant correlation was found \((r^2 = 0.087, p = 0.313)\) (see Table 3). In the case of non-school-related reading, a significant and negative correlation was found \((r^2 = -0.199, p = 0.020)\) (see Table 2).

- **Research hypothesis 5**: ‘There is a positive and significant correlation between time spent in studying and academic achievement’ was supported except in the case of time spent studying with family members. Positive and significant correlations were found for academic achievement and studying alone \((r^2 = 0.180, p = 0.035)\) and studying with friends \((r^2 = 0.227, p = 0.008)\). However, a significant and negative correlation was found between academic achievement and studying with family members \((r^2 = -0.303, p = 0.000)\) (see Table 2).

- **Research hypothesis 6**: ‘There is a positive and significant correlation between time spent in tuition and academic achievement’ was not supported. A negative and significant correlation between time spent in tuition and CGPA of \(r^2 = -0.240, p = 0.005\) was found (see Table 3).

- **Research hypothesis 7**: ‘There is a positive and significant correlation between time spent in extra curricular activities and academic achievement’ was not supported except in the case of academic achievement and non-school-related sports activity \((r^2 = 0.224, p = 0.000)\) (see Table 6). No significant correlations were found in comparisons of academic achievement and school-related sports \((r^2 = -0.066, p = 0.422)\), school-related arts/clubs \((r^2 = -0.129, p = 0.134)\) or school-related social activities \((r^2 = -0.034, p = 0.687)\) (see Table 3). No significant correlations were found for academic achievement and non-school-related arts/clubs \((r^2 = 0.132, p = 0.123)\) or non-school related social activities \((r^2 = -0.063, p = 0.467)\). A significant and negative correlation was found between academic achievement and hobbies \((r^2 = -0.320, p = 0.000)\) (see Table 2).

- **Research hypothesis 8**: ‘There is a positive and significant correlation between time spent in homework and academic achievement’ was not supported. No significant correlation was found between academic achievement and time spent doing homework \((r^2 = -0.140, p = 0.103)\). A significant and negative correlation was found between academic achievement and time spent in tuition \((r^2 = -0.240, p = 0.005)\) (see Table 3).

- **Research hypothesis 9**: ‘There is a positive and significant correlation between time spent in activities associated with school-related activities combined and academic achievement’ was not supported. The correlation between total time reported for school-related activities and academic achievement was not significant \((r^2 = -0.091, p = 0.288)\) (see Table 3).
Research hypothesis 10: ‘There is a negative and significant correlation between time spent in activities associated with non-school-related activities combined and academic achievement’ was supported. The correlation between total time spent in non-school-related activities and academic achievement was significant and negative ($r^2 = -0.201$, $p = 0.018$) (see Table 2).

Table 4 reports the descriptive data for the comparisons of means of CGPAs for groupings by gender, Form level and type of school. Given the system used to assign CGPAs, the lower the score the better the CGPA. Therefore, females have significantly higher CGPAs than males ($p = 0.019$), Form 2 students have significantly higher CGPAs than Form 4 students ($p = 0.018$) and students at the elite school have significantly higher CGPAs than students at the standard school ($p = 0.000$).

Research hypothesis 11: ‘Females achieve significantly higher CGPAs than males, Form 4 students achieve significantly higher CGPAs than Form 2 students and elite school students achieve significantly higher CGPAs than standard school students’ was partially supported. As hypothesised, females achieve significantly higher CGPAs than males ($t = 2.383$, $p = 0.019$) and students from elite schools achieve significantly higher CGPAs than students from standard schools ($t = 10.867$, $p = 0.000$). Contrary to the hypothesis, Form 2 students have significantly higher CGPAs than Form 4 students ($t = 2.401$, $p = 0.018$) (see Table 4).

Table 5 reports the descriptive data for the comparisons of means of time used for school-related activities for groupings by gender, Form level and type of school. The data reveal there is no significant difference in time used for school-related activities when participants are grouped by gender or Form level. However, participants from the standard school report spending significantly more time in school-related activities than those from the elite school ($p = 0.000$).

Research hypothesis 12: ‘Females, Form 4 and elite school students will spend significantly more time in school-related activities than males, Form 2 and standard school students’ was not supported. No significant differences were found by gender or Form level. Contrary to the research hypothesis, students from the standard school reported significantly more time spent in school-related activities ($t = 3.783$, $p = 0.000$) (see Table 5).

Table 6 reports the descriptive data for the comparisons of means of time used for non-school-related activities for groupings by gender, Form level and type of school. The data reveal that males spend significantly more time than females ($p = 0.001$), and standard school students spend significantly more time than elite
school students \((p = 0.000)\) in non-school related activities. There is no significant difference in time used for non-school related activities when Form level is considered.

- **Research hypothesis 13**: ‘Males, Form 2 and standard school students spend significantly more time in non-school-related activities than females, Form 4 and elite school students’ was partially supported. Male students report significantly more total time spent in non-school-related activities than females \((t = 3.560, p = 0.001)\), as hypothesised. Students from the standard school reported significantly more time spent on non-school-related activities than students from the elite school \((t = 3.772, p = 0.000)\), as hypothesised. There is no significant difference in the time spent on non-school-related activities when Form levels are compared \((t = 0.408, p = 0.684)\) (see Table 6).

**Discussion**

The purpose of this study was to examine the relationships of secondary students’ involvement in selected school-related activities and non-school-related activities with their CGPA.

Studies conducted in both Eastern and Western countries have indicated a negative relationship between watching TV and educational achievement (Chen & Lu, 2009; Cooper, Valentine, Nye, & Lindsay, 1999; Jordan & Nettles, 2000; Schreiber & Chambers, 2002). Similar results were found in this study: watching TV was found to be detrimental to academic achievement. Other non-school-related activities, such as hobbies and time spent on SMS, were also found to be negatively and significantly correlated with

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| Group            | N   | Mean  | SD    | Std. error | t      | Sig. |
|------------------|-----|-------|-------|------------|--------|------|
| Male             | 70  | 2862.88 | 1760.30 | 210.40  | 0.263  | 0.793 |
| Female           | 67  | 2780.45 | 1908.88 | 233.21  | -0.607 | 0.545 |
| Form 2           | 64  | 2721.09 | 1829.67 | 228.71  | -0.046 | 0.964 |
| Form 4           | 73  | 2911.53 | 1834.81 | 214.75  | 0.408  | 0.684 |
| Elite school     | 70  | 2270.91 | 1423.30 | 170.12  | 3.783  | 0.000** |
| Standard school  | 67  | 3398.93 | 2027.06 | 247.64  | 0.931  | 0.356 |

**Correlation is significant at the 0.01 level (two tailed).**

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| Group            | N   | Mean  | SD    | Std. error | t      | Sig. |
|------------------|-----|-------|-------|------------|--------|------|
| Male             | 70  | 3909.79 | 2207.22 | 263.81  | 3.560  | 0.001** |
| Female           | 67  | 2780.45 | 1908.88 | 233.21  | -0.408 | 0.684 |
| Form 2           | 64  | 3246.32 | 2071.54 | 258.94  | -0.046 | 0.964 |
| Form 4           | 73  | 3390.37 | 2051.90 | 206.61  | 2.772  | 0.000** |
| Elite school     | 70  | 2704.65 | 2062.68 | 246.54  | 3.772  | 0.000** |
| Standard school  | 67  | 3969.19 | 1850.00 | 246.54  | 0.931  | 0.356 |

**Correlation is significant at the 0.01 level (two tailed).**

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CGPA. Likewise, time spent on non-school-related activities such as arts/club, social activities, surfing Internet, Facebook and video games were found to be negatively correlated with CGPA, but not significantly so. Although McAndrew and Jeong (2012) report that females use Facebook significantly more than males, no significant difference in the amount of time males and females spent on Facebook was found in this study. Interestingly, non-school-related sports/physical activity was significantly and positively related to CGPA even though school-related sports activity was not.

Anderson and Dill (2000), report that video game use is related to adolescents’ academic achievement. In that same vein, Strasburger and Wilson (2002) report relationships between video games and aggression video games and dependency and addiction to video games and gambling. Hence, CGPA was hypothesised to be negatively correlated with time spent playing video games in this study. However, this hypothesis was not supported by the results of this study, as a significant correlation was not found. This finding is consistent with that of Swang (2011) who also found no significant difference in the amount of time males and females spent playing video games.

This study was designed to assess the relationships of school-related and non-school-related reading with academic achievement. McKool’s (2007) research found that there is a strong relationship between the amount of out-of-school reading in which an adolescent engages and success in school (p. 111). It has also been found that adolescents’ academic levels do not remain consistent if individuals do not read outside of school, and in actuality their academic levels decrease (Hughes-Hassell & Lutz, 2006).

Interestingly, the results of this study found no significant relationship of school-related reading with CGPA (see Table 3) and that CGPA is negatively correlated with students’ involvement in reading that is non-school-related ($r^2 = -0.199$, $p = 0.020$) (see Table 2). This may mean students who read materials such comics, storybooks, pulp novels, magazines and other non-school subject-related material would not perform well academically. One possible reason for this outcome is that the school examinations test mainly on students’ knowledge of their academic subjects and thus the reading materials of the students have less impact on their academic achievement. This finding is also in line with Zahyah Hanafi (2008) who found reading did not correlate with academic achievement and she reasoned that it could be due to consumption of reading resources that are not academically inclined. Further study designed to assess the nature of non-school-related reading materials is needed.

The correlational analyses revealed that studying alone was positively correlated with CGPA, or academic achievement, of the students. The ability to study alone requires a certain extent of self-regulation and discipline. In a study conducted at the middle school level, Duckworth and Seligman (2005) found self-discipline to be a good predictor of several achievement measures, including grades and standardised test scores. Many of the indicators used to measure self-discipline in this study are applicable to volition and self-regulation of learning. Similarly, studying with friends was positively correlated with CGPA. Various studies had been done and found that peer influence does have impact on student performance (Goethals, 2001; Gonzales, Cauce, Friedman, & Mason, 1996; Hanushek, Kain, Markman, & Rivkin, 2002). These studies indicated that peer influence has more powerful effects than immediate family influence. Peer support was positively related to students’ CGPA. Giuliodori, Lujan, and DiCarlo (2006) reported that with peer interaction, students could increase their ability with qualitative problem-solving questions. Peer instruction also promotes students’ participation and improves students’ performance (Rao & DiCarlo, 2000).
However, studying with family was negatively correlated. Battle and Coates (2004) revealed an interesting finding of their study that parental control, including checking of homework, was a significant positive predictor for academic achievement in 8th grade, but by 12th grade the influence of this factor (as measured in grade 8) had substantially declined, though it was still positive and statistically significant. Two years post high school, strong parental control during 8th grade had a negative association with outcomes of achievement and attainment. However, Griffith (1996) used a school-level analysis based on parent surveys and aggregated standardised test scores. He noted a positive relationship between parent involvement in school and academic achievement. All in all, this study reflects that studying either alone or with friends has enhanced the academic achievement of the students involved. On the other hand, studying with the help of parents did not help students to perform better.

In the Malaysian context, taking tuition after school hours is a common practice. Many schools conduct tuition for their students, especially for those who are facing national examination. In addition, parents often send their children for tuition during the weekend to ensure that time is spent well on purposeful activity. In this study, the results showed a negative correlation between time spent on tuition and CGPA. That is to say, extra classes (tuition) did not enhance the academic achievement of the students involved. Noraini and Kong (2011) revealed that most of the respondents in their study who attended tuition classes after school were not doing well academically. Rather they were forced to attend by their parents. Hence, many simply followed the activities and plans arranged by their parents and attended the tuition classes without any interest in studying or willingness to learn. Consequently, the parents’ actions did not function to motivate the child and a decrease in academic achievement resulted. This study reveals outcomes that may be related to these circumstances.

Involvement in school-related sports activity, arts/club activity, cell-phone-related activities and social activity was negatively correlated with CGPA, but they were not significant. Even though not significantly correlated, it seems reasonable to conjecture that the more involved students are in these activities, the lower their CGPA will be. However, involvement in non-school-related sports activity correlates positively and significantly with CGPA. Further research may shed light on the difference in school and non-school contexts in which students engage sports activity. Finally, surfing Internet for school-related learning was positively, but not significantly, correlated with CGPA. Overall, the results failed to show significant relationships between CGPA and students involvement in school-related activities.

It was hypothesised that CGPA is positively correlated with time spent on homework. This hypothesis was not supported in this study. This result does not corroborate other researcher studies involving academic performance and time spent doing homework. Lee (1994) found that higher attendance rates, better behaviour and better grades were present when more time was spent on homework, specifically when families were involved in the homework. Cooper (1989), Cooper et al. (1999) and Cooper, Robinson, and Patall (2006) reported a generally positive relationship between homework and academic achievement, with more time spent on homework being associated with higher achievement. However, Martin (2008) found a negative correlation between the time spent doing homework and history grades. This research found no significant correlation between time spent doing homework and overall CGPA.

The hypothesis that there is a positive and significant correlation of time spent in activities associated with school-related activities combined with academic achievement was not supported since values of $r^2 = -0.091$ and $p = 0.288$ were found. This finding
appears to have been driven essentially by significant negative correlations of studying with family, tuition and use of other technology with CGPA which are balanced somewhat by significant positive correlations of studying alone and studying with friends with CGPA and findings of no significant correlations for six other school-related activities with CGPA (see Table 3). Further study is required to assess the impact of the actual behaviours that led to the time use reports in these activities.

The hypothesis that there is a negative and significant correlation of time spent in activities associated with non-school-related activities combined with academic achievement was supported since values of $r^2 = -0.201$ and $p = 0.018$ were found (see Table 2). While negative and significant correlations of reading, watching TV, hobbies, and texting with CGPA contributed to this outcome, a positive and significant correlation of sports activity with CGPA and non-significant findings for six other activities assessed leads to a recommendation for further study, particularly studies that will investigate the relationship of non-school-related reading and hobbies with academic achievement as determined by school testing standards.

The hypothesis that females achieve significantly higher CGPAs than males, Form 4 students achieve significantly higher CGPAs than Form 2 students and elite school students achieve significantly higher CGPAs than standard school students was partially supported. As hypothesised, females achieve significantly higher CGPAs than males ($t = 2.383, p = 0.019$) and students from elite schools achieve significantly higher CGPAs than students from standard schools ($t = 10.867, p = 0.000$). Contrary to the hypothesis, Form 2 students have significantly higher CGPAs than Form 4 students ($t = 2.401, p = 0.018$) (see Table 4).

This finding may reflect the influences related to a change of curricular structure during the transition from Form 2 to Form 4. Students follow a general curriculum through their school careers until they take national examinations during Form 3. From that point on, they are ‘streamed’ into programme alternatives that reflect their scores on the national examination. Further study is required to assess issues that may influence academic performance once students enter their new curricular stream.

The hypothesis that females, Form 4 and elite school students will spend significantly more time in school-related activities than males, Form 2 and standard school students was not supported. No significant differences were found by gender or Form level. Contrary to the research hypothesis, students from the standard school reported significantly more time spent in school-related activities ($t = 3.783, p = 0.000$) (see Table 5). Further research into motivations and mechanisms of how students from the two types of schools actually engage in school-related activities should be conducted.

The hypothesis that males, Form 2 and standard school students spend significantly more time in non-school-related activities than females, Form 4 and elite school students was partially supported. Male students report significantly more total time spent in non-school-related activities than females ($t = 3.560, p = 0.001$), as hypothesised. Students from the standard school reported significantly more time spent on non-school-related activities than students from the elite school ($t = 3.772, p = 0.000$), as hypothesised. There is no significant difference in the time spent on non-school-related activities when Form levels are compared ($t = 0.408, p = 0.684$) (see Table 6).

The exception to the hypothesis was a finding of no significant difference in time spent on non-school-related activities for the Form level groups. This may be a mitigating issue in the finding reported above that Form 2 students achieve higher CGPAs than Form 4 students. One might ask why one group or the other is not significantly involved in non-school-related activities.
Conclusion

Analyses of data collected in this study have revealed that in some important ways, the time use activities of secondary school students in Malaysia have much in common with adolescents from around the world. Yet, some of the findings of this study point to a need for all concerned with maximising the educational opportunities of adolescents in Malaysia to examine the relationships between time use patterns and academic achievement.

Overall, non-school-related activities showed statistically significant negative relationships with CGPA. This indicates that time spent on these activities has a negative association with CGPA. Educational researchers should engage in further studies of time use in school-related and non-school-related time use in order to better understand those behaviours that enhance academic achievement and those that undermine it.

Educational planners, school administrators, teachers and parent teacher associations should be encouraged to promulgate the findings of studies dealing with the impact of time use on academic success to parents and adolescents. Parents and adolescents should be encouraged to monitor individual time use and daily progress regarding completion of study assignments and comprehension across the curricular spectrum. Such efforts may well help parents and their children identify time use decisions that are facilitating good academic progress and those that are undermining it.

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