

# Students' After School Activities: TIMSS Data Analysis

王 智 新

本研究は、オーストラリア、チリ、台湾、香港、イスラエル、日本、ニュージーランド、ロシア、南アフリカ、エジプト、アメリカ合衆国、イギリス、スペイン、およびカナダの9ヵ国と地域の中学生の放課後の時間の使い方についての比較と分析である。さらに、生徒の性別に居住する都市のレベルとこれらの活動との関係について調査し、各国の学生の学力達成度で放課後の活動の影響についての相互関係の解明を試みる。調査結果は学校外の学習環境の研究と異文化間の教育の比較のための有意義な情報提供となることを期待する。

**Key words :** after-school    compare    analyze

**Outline :** Background

Methods

Results and Discussions

Comparison of Frequency of After School Activity by Country

Comparison of Activity between Male and Female Students

Relationships between After School Activities and Residential Location

After School Activity and Achievement

Conclusions

---

## Abstract

This study compares and analyzes the time secondary school students in Australia, Chile, Taiwan, Hong Kong, Israel, Japan, New Zealand, Russia, South Africa, Egypt, the United States, England, Spain and Canada spend on nine after school activities. It also explores relationships between students' genders, residential urban levels and these activities, and discusses the impacts of the after school activities on students' academic achievement in each nation. The findings provide meaningful information for research of out-school learning environment and comparisons of cross-cultural education.

## Background

Educators and policy makers had showed increasing interests in student's after-school activities. U.S. Department of Education estimated that more than ten million young people and 35% of 12-year-olds come home to an empty house in an empty neighborhood. They were usually not allowed out of the house, were afraid to answer the door, and had limited phone access but often unlimited television access (Kugler, 2001a). Five million students spend their after school hours unsupervised and unchallenged, even falling under harmful influences. The dangers included using alcohol, drugs, tobacco and committing crime, having failing grades, and even dropping out of school entirely (Riley, 1999). Research also revealed that high rates of violent crimes were committed against juveniles between 3 and 4 p.m. on school days (Kolbe & Berkin, 2000).

There were number of studies on after school programs in recent research. A surplus of after-school programs were found nationwide, with enrollments averaging 59 percent (Pardini, 2001). The reports pointed out that the programs enriched students' learning, helped students value their own ideas and experiences, promoted students to become mindful of their own thoughts, and followed students' interests when planning activities (Heckman & Sanger, 2001). Engaging students and parents in after-school programs benefit not only the participants but also the entire community (Castillo & Winchester, 2001). After-school activities provided supervision for many children's anti-social and destructive behaviors, enriched experiences that broaden children's perspective and improve their socialization, and helped to improve academic achievement of students not accomplishing as much as they need to in regular school hours (Fashola, 1999). Middle and high school students could benefit from quality after-school programming; young children were more likely to participate in or be victims, but old children were more likely to engage in other dangerous behavior such as experimentation with drugs and sexual activities (McElvain & Caplan, 2001). The academic achievement of students who begin regularly attending after-school activities improved dramatically (Durkin & Jarney, 2001). In Japan, after school club activities established senior and junior relationships and seniors were responsible to teach and cared of juniors (Johnson & Johnson, 1996). After school team's activities showed more benefits, such as teenagers were considered to be important contributors, encourage to excel, be honored, get team's cooperation and reputation, deal with unexpected matters, conduct emotion and human contacts, choose own roles, and teach each other skills (Childress, 1998). However,

researchers also reported that after school programs had little effects on academic performance (Perkins-Gough, 2003).

Culture plays important roles in students' growth of understanding and appreciations. Lindsey (2004) emphasized cultural backgrounds for identity, needs and development in students' lives. Students' special needs from different ethnic and national cultures and traditions affected their efforts and abilities to master academic subjects and school activities and attitudes (Schreiber & Chambers, 2002). Collaborated and appropriate after school activities might reduce the achievement gaps between races and socioeconomic groups (Bell, 2003).

What students do during non-school hours – whether they do homework, play sports, read books, watches televisions, do jobs at home, use the internet or hang out with friends - will affect their long term achievement and social adjustment. After school activities are important in our society for academic, social, emotional, physical, and safety reasons (Kugler, 2001b), but few studies have focused on what students do after school (Hofferth & Jankuniene, 2001; Noam, 2003) cross the different nations. Based on recommendations from previous research, this study is a first attempt to analyze time eighth grade students on after school activities, the difference of activity time between males and females, urban and rural students, and the relationships of these after school activities and student academic achievement in fourteen nations.

## Methods

### Subjects

Considered geographically representative and data available in the TIMSS, we chose a total of 73,875 eighth grade students in fourteen nations from Trends in International Mathematics and Science Study (TIMSS) 2003 as the sample. It included 4,791 Australians, 6,377 Chileans, 5,379 Taiwanese, 4,972 Hong Kong, 4,318 Israeli, 4,856 Japanese, 3,801 New Zealanders, 4,667 Russians, 8,952 South Africans, 7,095 Egyptians, 8,912 Americans, 2,830 English, 2,514 Spanish, and 4,411 Canadians. The sampling weights and design effects were used in data analysis, so the sample represented the same grade students in the fourteen nations more accurately.

### Data Sources

TIMSS began in 1995, and was continued in 1999 and 2003. This study used the items of student questionnaire in 2003. The variables mainly included the amount of

time students spent at nine after school activities: watching television and videos (TV), playing computer games (Game), playing or talking with friends outside of school (Friend), doing jobs at home (Home Job), working at a paid job (Paid job), playing sports (Sport), reading a book for enjoyment (Read), using the internet (Internet), and doing homework (Homework). Students' genders, population of residential areas, and academic achievement scores from TIMSS 2003 international standard tests were also analyzed.

### Data Analysis

An ANOVA was used to compare amount of time students spent at after school activities between fourteen nations. A t-test was used to compare after school activity time between male and female students in each country. A Pearson correlation was used to reveal the relationships between students' activities and residential urban level (population of area). A multiple linear regression was used to reveal the influences of these activities on students' academic achievements (the means of math and science standard test scores).

## Results and Discussions

### Comparison of Frequency of After School Activity by Country

In general, after school activities of eighth grade students' had some similar frequency orders between the nations. They spent a great deal of time watching TV or videos, and playing or talking with friends. Playing sports and doing homework also had high frequencies. In most nations, students spent little time working at paid jobs, doing jobs at home, and reading a book for enjoyment. Students' after school time spent on using the internet and playing computer games was very different between the nations.

--- Insert Figure 1 about here ---

The results of ANOVA also revealed that there were many significant differences of after school activity frequencies among the nations.

Watching TV and videos: seven nations had the highest frequency in this activity, and the other five nations also had very high frequencies in it. Japanese students had the highest score (frequency mean) at it in this study. Only Egyptian and South African students' time on it was not so much.

Playing computer games: Hong Kong and Israeli students spent a large amount

time at this activity, as did Canadian and Taiwanese students, but students in other nations did not spend as much time.

Playing or talking with friends: students in Russia, the United States, England, Spain and Chile spent much time on it, and other nations also had high frequencies at this activity, but Egyptian students did it less.

Doing jobs at home: in most nations, secondary students did not spend much time on it, but South African, Russian, Chilean and Israeli students spent more time on it than others.

Working at a paid job: it had the lowest rates in almost all nations except in South Africa and Canada.

Playing sports: eight grade students spent certain percent after school time on it. Taiwanese, Hong Kong, and Egyptian students spent time at this activity less than those in other nations.

Read a book for enjoyment: students' after school reading time was low in most nations. But, South African and Egyptian students spent a lot of time at it, even more than TV watching time.

Using the internet: it was very different among nations. Students in Hong Kong, the United States, Israel, Canada, England and Taiwan spent large amount of time on it, but Russian, Japanese, Egyptian, Chilean and South African students spent less time at it.

Doing homework: in most nations, students spent considerable time at it. However, in Russia, South Africa and Egypt, students spent more time on it than other activities.

#### **Comparison of Activity between Male and Female Students**

There were significant differences between male and female students' after school activities, and these activity differences had similar trends among the nations.

--- Insert Table 1 about here ---

There were no significant differences of the amount of time spent watching TV and videos between male and female students in nine nations. Females watch TV and videos more than males in Japan, Israel and Chile, but less than males in the United States and Taiwan.

Male students played computer games after school significantly more than female students did in all nations. The same situations exist in the activity of playing sports.

The amount of time students spent playing or talking with friends was also different among the nations. In the United States, New Zealand, Australia, Israel, Hong

Kong, and Japan, female students spent more time hanging out with friends, while in Egypt and Russia, male students spent more time with friends.

Almost in all nations, females did jobs more often than males, but these differences were only significant in Chile, Israel, Japan, Russia, Spain, Hong Kong and Egypt.

Although the amount of time students' spent working at paid jobs was very low, males spent much more time on it than females in all nations, and it was insignificant in Canada.

Females seemed to read a book for enjoyment more than males did in ten nations. However, in Egypt, Japan, South Africa and England, the differences of reading time between student's genders were insignificant.

There were no significant differences between male and female students' internet usage amount in seven nations. In Taiwan, Russia, Egypt, Chile and Israel, males spent more time on it, but in Hong Kong and the United States, females used the internet more often than males did.

Females had more time to do homework than males did in all nations, but in South Africa and Egypt, these differences did not reach statistically significant level.

#### **Relationships between After School Activities and Residential Location**

The correlation results revealed that relationships of after school activity frequency and students residential urban level (the population of areas) were not as significant as the differences between student genders.

--- Insert Table 2 about here ---

In Israel, South Africa, Chile and the United States, students in cities tended to watch more TV and videos, but the situation was opposite in Taiwan and Canada. There were no significant differences between urban and rural students at playing computer games in ten nations. Students in cities played computer games more often in Russia, Chile and Israel, but not in Taiwan. Students in cities tended to spend more time using the internet than rural students did in Russia, Chile, Japan, Israel, Australia and Canada.

In Russia, Australia, Chile and Taiwan, urban students did jobs at home less than rural students. Rural students worked at paid jobs more than urban students in almost all nations, except in Spain, Russia and Japan.

It was only in Israel, Japan and South Africa that students in cities seemed to play and talk with friends more often than their rural counterparts did. Very little correlation exist between the amount of time students spent playing sports and their

residential urban levels, except Russian students in urban areas spent a little more time playing sports than rural students did.

Urban students spent more time doing homework in most nations, but it was insignificant in Chile, Israel, Russia, the United States and England. In Japan, rural students spent more time on doing homework than urban students did. In Spain, urban students read more, but rural students seemed to read for enjoyment more often in Chile and Israel.

### **After School Activity and Achievement**

The results of multiple linear regression revealed that some relationships between eighth grade students' after school activities and academic achievement had similar trends in the fourteen nations. The frequencies of Taiwanese, English, and Chilean students' after school activities may predict achievement better, but Russian, Canadian, and Spanish predicting rates were low.

--- Insert Table 3 about here ---

The most significant relationships were that the amount of time student work at paid jobs and doing jobs at home had negative relations with the achievement in all nations, except in Egyptian. Students' reading frequency had positive relations with their achievements in twelve nations, and only the results from South Africa and Egypt were opposite. Students' who spend more time on homework seemed to have better achievement in seven nations, but in Israel, the results were negative. The frequency of talking or playing with friends had negative relations with achievement in nine nations. Students' after school time spent on sports activities had almost no significant correlation with achievement, but it was positively correlated with achievement in South Africa and the United States. The influences of students' TV watching, computer game playing and internet using time on achievement showed disorderly and complicated results, and these relationships presented significantly positive, negative or non-statistical meanings in different nations (see Table 3).

## **Conclusions**

This study presents eighth grade students' after school activity frequencies, their relationships with students' genders and residential urban levels, and the relevant influences on students' academic achievement from a worldwide scope. Some important findings in this study can be summarized.

Differences of students' after school activity time between fourteen nations are significant. The results from Egypt and South Africa have extreme data in watching TV and videos, doing homework, reading a book for enjoyment, doing jobs at home, and some relationships between the activities and the achievement.

Male students spend more time on playing sports, working at paid jobs, using the internet and playing computer games, but their after school time spent on doing homework, reading a book for enjoyment and doing jobs at home is less than that of female students in most nations.

There are no many significant time differences of students' after school activities between urban and rural students. Only trends are that urban students do homework more, but work at paid jobs less than their rural counterparts do.

The results also indicate that the amount of time students spent working at paid jobs, doing jobs at home, and playing or talking with friends have negative correlation with academic achievement. The frequencies of reading a book for enjoyment and doing homework have positive correlation with students' achievement. Further studies should combine cultural and educational traditions, and students' learning methods and attitudes in each country, to find the internal factors in the relationships.

Some findings are meaningful for American, Taiwanese and Japanese educators. Secondary school students in these nations spent too much time watching TV and videos, and talking or playing with friends, which were negatively related with academic achievement. There are high correlation between reading and achievement, but American students spend little time on reading. The results also revealed that Taiwanese students spend too little time at sport activities. Japanese students have low frequencies in the internet usage, which is positively related with the achievement.



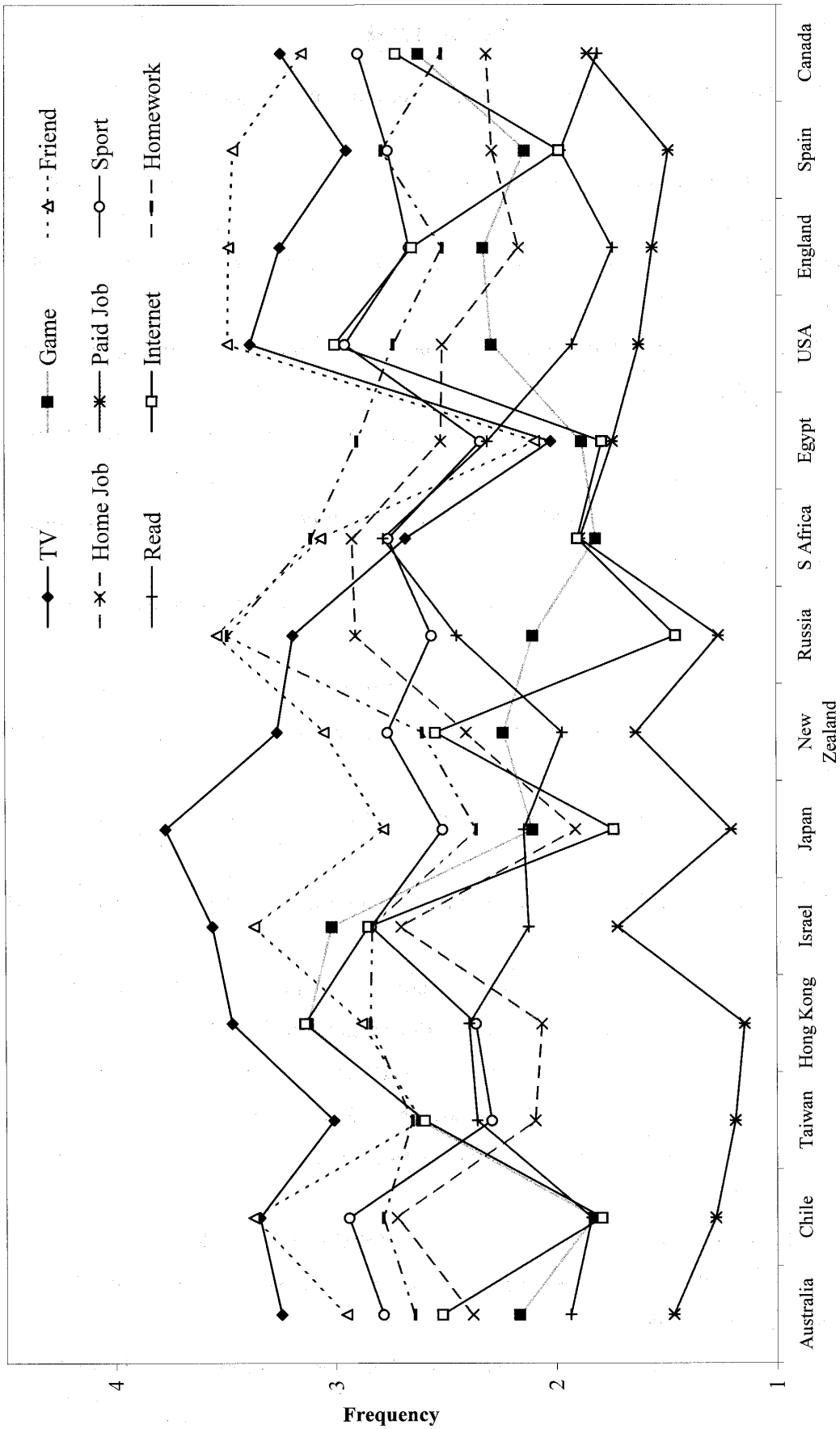


Figure 1. Comparison of after school activities by nation

## References

- Bell, M. L. (2003). Are after-school programs accountable? *Principal (Reston, Va.)*, 82(5), 30.
- Castillo, Y., & Winchester, M. (2001). After school in a Colonial. *Educational Leadership*, 58(7), 67-70.
- Childress, H. (1998). Seventeen reasons why football is better than high school. *Phi Delta Kappa*, 79(8), 616-619.
- Durkin, R. & Jarney, M. (2001). Staying after school - and love it. *Principal Leadership (High School Ed.)*, 2 (1), 50-53.
- Fashola, O. S. (1999). After-school programs and student misbehavior. *The Education Digest*, 65 (3), 62-66.
- Heckman, P. E., & Sanger, C. (2001). LA's BEST-beyond school as usual. *Educational Leadership*, 58 (7), 46-49.
- Hofferth, S. L., & Jankuniene, Z. (2001). Life after school. *Educational Leadership*, 58 (7), 19-23.
- Johnson, M. L. & Johnson, J. R. (1996). Daily life in Japanese high school. ED406301.
- Kolbe, G. C., & Berkin, B. (2000). Health and wellness after school. *Educational Leadership*, 57(6), 40-42.
- Kugler, M. R. (2001a). The why and how of after-school programs. *The Education Digest*, 67(3), 44-50.
- Kugler, M. R. (2001b). After-school programs are making a difference. *NASSP Bulletin*, 85(626), 3-11.
- Lindsey, J. (2004). Culture's role in teacher identity: Prompting teachers to explore their cultural background. *Action in Teacher Education*, 25(4), 9-13.
- McElvain, C.K. & Caplan, J.C. (2001). Creating effective after-school programs for middle and high school students. *NASSP Bulletin*, 85(626), 35-44.
- NorAm, G.G. (2003). After-school education: What principals should know. *Principal*, 82 (5), 18-21.
- Parlini, P. (2001). Extended school days. *School Administrators*, 58(7), 12-15.
- Perkins-Gough, D. (2003). Do after-school programs help students succeed? *Educational Leadership*, 61(1), 88.
- Riley, R. W. (1999). Learning centers provide after-school options. *Teaching PreK-8*, 29 (5), 6.

Students' After School Activities: TIMSS Data Analysis (王 智新)

Schreiber, J. B. & Chambers, E. A. (2002). After-school pursuits, ethnicity, and achievement for 8<sup>th</sup>- and 10<sup>th</sup>-grade students. *The Journal of Educational Research* (Washington, D.C.), 96(2), 90-100.

**Authors:**

Renmin Ye, Ed.D., Houston ISD, USA

Shu-ling Lai, Ed.D., Ling Tung College, Taiwan

Kathryn Sanchez, Ed.D. Houston ISD, USA

Tai-Shent Chang, Ph.D., Ling Tung College, Taiwan

Zhixin Wang, Ph.D.

Miyazaki Municipal University, Japan

**あとがき；**

本研究は1997年から1999年、それから2002年度の宮崎学術振興財団の助成金を受けて行われたものであり、記して感謝する。