

# Japan's *Academic Juku* (1): Teachers, Pupils, Focus of Courses, Class Sizes, Fees and Admission Criteria

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日本の学習塾について (1) :  
講師, 学生, 授業目的, 授業人数, 費用, 入塾基準

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## Abstract

The findings of a recent survey by Ireson and Rushforth (2005) provide the first systematic and detailed picture of private tuition in the UK. The present paper is one of a series of papers that aim to contribute further to the development of theory about the role of private tuition in the UK by offering insights into Japanese university students' experiences of *academic juku* prior to entering university. With the objective forming a basis for future research, this paper comprises an observation of the teachers, students, focus of courses, teaching materials, class sizes, fees and admission criteria of seven different types of *academic juku* currently operating in Japan.

## Introduction

In recent years, the UK has experienced an unprecedented increase in the number of secondary school pupils seeking private tuition; so much so in fact that Julie Henry reported the following in the media:

Private tutoring of children has reached "epidemic proportions" as competition intensifies for entry to the best schools

(Julie Henry, Telegraph, 2nd April: 2008)

According to a survey conducted by Ireson and Rushforth (2005), 27 percent of year six, eleven and thirteen pupils in the UK received some form of private tuition in 2005. While this figure may sound relatively low compared to the 62.5 percent (Table 1) of year nine<sup>1)</sup> pupils in Japan that received between two and three hours of private tuition at *academic juku* per week in

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1) Year nine in Japan corresponds to year ten in the UK

Table 1: *Academic Juku* Attendance by Lower Secondary School Pupils in Japan (%)

| 1976               | 1985               | 1993               | 1995  | 1997 | 1999  | 2003               |
|--------------------|--------------------|--------------------|-------|------|-------|--------------------|
| 38.7(8)<br>37.4(9) | 44.5(8)<br>47.3(9) | 59.1(8)<br>67.1(9) | 77.4* | 75*  | 71.8* | 49.8(8)<br>62.5(9) |

Source: Monbusho (2001a) for 1985 and 1993; Monbusho (2001b) for 1995, 1997 and 1999; Monbusho (2004) for 2003

\* Average for state lower secondary schools  
(8) Year Eight (Junior High School 2nd Year)  
(9) Year Nine (Junior High School 3rd Year)

2003, it is certainly not a trend that should be ignored.

Based on the research I have conducted about Japan's *academic juku* which, among other things, includes lower secondary school classroom observations, a pilot student questionnaire, interviews with lower secondary school teachers in Hiroshima prefecture, and interviews with coordinators at Hiroshima City and Hiroshima Prefecture Board of Education, I have come to the conclusion that Japan's excessive levels of private tuition not only undermine the quality of education at state schools but also undermine the ability of coordinators at local boards of education to successfully implement changes proposed by policy makers at the Ministry of Education. Russell (1997: 154) likewise describes Japan's private tuition industry as *an embarrassment to the Japanese government and a threat to teacher union ideals that stress "whole person" education*. For that very reason, I find myself both surprised and troubled by Ireson and Rushforth's remarks about future research relating to private tuition in the UK:

A priority in the future must be to develop a better understanding of quality in private tuition.  
(Ireson and Rushforth, 2005: 11)

In 1991, a team from Her Majesty's Inspectorate (HMI) in the UK visited Japan for the purpose of examining the roles of local and national governments in Japanese education and governance, funding, management and responsiveness of upper secondary and higher education institutions. With regard to private tuition in Japan the team commented that:

The existence of *juku* and *yobiko* undoubtedly indicates some flaws in the Japanese education system  
(HMI, 1991: 28)

If this claim holds true, then it can also be argued that:

*The existence of private tuition in the UK undoubtedly indicates some flaws in the education system in England, Scotland and Wales.*

Therefore, before trying to better understand quality of private tuition as Ireson and Rushforth (2005) propose, I believe that a priority should be:

- To identify *flaws in the education system* that have led to the recent increase in private tuition in the UK

- To understand the potential impact that high levels of private tuition can have on educators and pupils in state school classrooms, coordinators at local boards of education and policy makers at the Ministry of Education

This is where I believe the UK can learn from the experience of Japan; a country that witnessed a twofold increase in the percentage of secondary school pupils seeking private tuition throughout the 1980s and early 90s that is yet to subside (Table 1).

This paper is the first in a series of papers about Japan's *academic juku* that aim to contribute to the development of theory about the role of private tuition in the UK by:

1. Identifying flaws in the Japanese education system that have led to the expansion of private tuition; and
2. Detailing the impact that high levels of private tuition have had on educators and pupils in Japan's state school classrooms, coordinators at local boards of education and policy makers at the Ministry of Education.

As a first step toward the above objective, the present paper contains:

- An observation of *academic juku* in Japan: teachers, pupils, focus of courses, teaching materials, class sizes, fees and admission criteria; and
- Key findings of a pilot questionnaire survey about university students experiences of private tuition prior to entering university

The implications of information presented in this paper will be discussed in detail in future papers that comprise data from the aforementioned interviews with lower secondary school teachers and coordinators from Hiroshima's local boards of education.

### **Observation of *Academic Juku* in Japan**

Seven types of *academic juku* currently operate in Japan: preparatory *juku* (*shingaku juku*); supplementary *juku* (*hoshu juku*); comprehensive *juku* (*sogo juku*); home-tutoring agencies (*kateikyo*); drill *juku* (*doriru juku*); relief *juku* (*kyusai juku*); and correspondence *juku* (*tsushin kyoku*). The following is an observation of information available about teachers, students, focus of courses, teaching materials, class sizes, prices and admission criteria at *academic juku* in Japan. Information presented in this section was compiled from:

1. Existing research (Hood, 2001; Monbusho, 1993; Roesgaard, 2006)
2. Inserts in the Japanese newspaper, Asahi-shimbun available in Hiroshima's Asaminami Ward during July 2008 (Kateikyo Group, July 2008; Kateikyoshi no Torai, July 2008; Kumon, July

2008a; Oshu Juku, July 2008; Shiraishi Gakushuin, July 2008; Sutandado Kateikyoshi Sabisu, July 2008; Tanaka Gakushuin, July 2008)

3. *Academic juku* homepages (Benesse, 2008; Kumon, 2008b)

### Teachers at *Academic Juku* in Japan

According to Hood (2001:116), *academic juku teachers* in Japan are often *part-time undergraduate students with no teaching qualifications, people who have teaching certificates but have little or no teaching experience, or former teachers*. Hood's claim finds support in data provided by Japan's Ministry of Education about the educational background of *academic juku* teachers in 1985 and 1993 (Table 2).

Table 2: Educational background of *academic juku* teachers in Japan 1985 and 1993(%)

| Year | University Education <sup>2)</sup> | School-Teachers | Previous Teaching Experience | No Teaching Experience |
|------|------------------------------------|-----------------|------------------------------|------------------------|
| 1985 | 29.2                               | 4.7             | 18.2                         | 49.9                   |
| 1993 | 37.3                               | 0.0             | 14.3                         | 48.4                   |

Source: Monbusho (1993)

Table 3: Information about *academic juku* teachers in Japan

|   |
|---|
| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Oshu Juku (July 2008) claims that the reason why their pupils do so well on lower and upper secondary school entrance exams is because all of their teachers are employed fulltime.</li> </ul>  |
| <p><b>Home Tutoring Agencies:</b></p> <ul style="list-style-type: none"> <li>● Kateikyoshi no Torai (July 2008) includes photos of 19 tutors on their newspaper insert:           <ul style="list-style-type: none"> <li>● 5 tutors are described as being professional teachers (whether or not this means <i>qualified teachers</i> is unclear; in this situation it is more likely to mean fulltime);</li> <li>● 9 tutors are students at Hiroshima University Faculty of Medicine;</li> <li>● 2 tutors are students at Hiroshima University Faculty of Dentistry;</li> <li>● 1 tutor is a student at Hiroshima University Faculty of Pharmacy;</li> <li>● 1 tutor is a student at Hiroshima University Faculty of Education; and</li> <li>● 1 tutor is a student at Hiroshima University Faculty of Science</li> </ul> </li> <li>● Sutandado Kateikyoshi Sabisu (July 2008) includes photos of 4 tutors on their newspaper insert:           <ul style="list-style-type: none"> <li>● All 4 tutors are students at Hiroshima University</li> <li>● All 4 tutors graduated from one of Hiroshima prefectures top ranking state or private schools</li> </ul> </li> </ul> |

### Pupils at *Academic Juku* in Japan

Table 4: Information about pupils at *academic Juku* in Japan

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| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>High performers</i> (Roesgaard, 2006: 34)</li> <li>● Oshu Juku (July 2008) claims that 36 percent of the 2008 intake of pupils at Motomachi Upper Secondary School—Hiroshima prefecture's top ranking state upper secondary school—studied at Oshu Juku.</li> </ul> |
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- 2) In 1993, 28.1% of students in the final year of senior high school continued on to university; this figure increased to 47.2% in 2007 (Monbusho, 2007: Available at: <http://www.mext.go.jp>)

|   |
|---|
| <p><b>Supplementary <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Average performers</i> (Roesgaard, 2006: 34)</li> </ul>  |
| <p><b>Comprehensive <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Both Shiraishi-Gakushuin (July 2008) and Tanaka-Gakushukai (July 2008) offer classes for pupils of all levels</li> <li>● Shiraishi-Gakushuin (July 2008) claims that in 2008 31% of the pupils that took their preparatory study courses passed one of Hiroshima prefectures top four state upper secondary schools—Motomachi, Funaeiri, Yasufuruichi, Kokutaiji</li> </ul> |
| <p><b>Home Tutoring Agencies:</b></p> <ul style="list-style-type: none"> <li>● Kateikyo Group (July 2008), Kateikyoshi no Torai (July 2008) and Sutandado Kateikyoshi Sabisu (July 2008) offer classes for pupils of all levels</li> </ul>  |
| <p><b>Drill <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Courses are available for pupils of <i>all levels</i> (Roesgaard, 2006: 34)</li> <li>● Kumon (July 2008a) offers classes for pupils of all levels</li> </ul>  |
| <p><b>Relief <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Poor performers</i> (Roesgaard, 2006: 34)</li> <li>● <i>Students who struggle at regular schools because of social problems</i> (Hood, 2001: 114)</li> </ul>  |
| <p><b>Correspondence <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Both Benesse (2008) and Kumon (2008b) offer correspondence courses for pupils of all levels</li> </ul>   |

### Focus of Courses at *Academic Juku* in Japan

Table 5: Information about the focus of courses at *academic juku* in Japan

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| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Entrance exams</i> (Roesgaard, 2006: 34)</li> <li>● Oshu <i>Juku</i> (July 2008) claims that their courses prepare pupils for top ranking state upper secondary school entrance examinations, and for national and private lower secondary school entrance examinations</li> </ul>  |
| <p><b>Supplementary <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Catching up and school tests</i> (Roesgaard, 2006: 34)</li> <li>● Supplementary <i>juku</i> 'shadow' the school curriculum by repeating past lessons and preparing for future lessons (Hood, 2001: 114)</li> </ul>  |
| <p><b>Comprehensive <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● According to Hood (2001: 114), <i>sogo juku</i> combine the aims of [preparatory <i>juku</i> and supplementary <i>juku</i>] but tend to concentrate on preparatory studies</li> <li>● Both Shiraishi-Gakushuin (July 2008) and Tanaka-Gakushukai (July 2008) offer courses for entrance exams, catching up and school tests</li> </ul> |
| <p><b>Home Tutoring Agencies:</b></p> <ul style="list-style-type: none"> <li>● Kateikyo Group (July 2008), Kateikyoshi no Torai (July 2008) and Sutandado Kateikyoshi Sabisu (July 2008) offer tutoring for entrance exams, catching up and school tests</li> </ul>  |
| <p><b>Drill <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Basic skills</i> (Roesgaard, 2006: 34)</li> </ul>   |
| <p><b>Relief <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Basic learning</i> (Roesgaard, 2006: 34)</li> </ul>  |
| <p><b>Correspondence <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Benesse (2008) offers correspondence courses for basic skills, catching up and school tests</li> </ul>  |

### Teaching Materials at *Academic Juku* in Japan

Table 6: Information about teaching materials used at *academic juku* in Japan

|   |
|---|
| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Own texts</i> (Roesgaard, 2006: 34)</li> </ul>   |
| <p><b>Supplementary <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Homemade, commercial or school texts</i> (Roesgaard, 2006: 34)</li> </ul>  |
| <p><b>Comprehensive <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Tanaka-Gakushukai (July 2008) uses their own handouts as teaching materials</li> </ul>                                |
| <p><b>Drill <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Own texts</i> (Roesgaard, 2006: 34)</li> <li>● Kumon (July 2008a) uses their own handouts as teaching materials</li> </ul> |
| <p><b>Relief <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Homemade, commercial or school texts</i> (Roesgaard, 2006: 34)</li> </ul>   |
| <p><b>Correspondence <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Both Benesse (2008) and Kumon (2008b) use their own texts or handouts as teaching materials</li> </ul>               |

### Class Size at *Academic Juku* in Japan

Table 7: Information about class size at *academic juku* in Japan

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| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Classes for elementary school pupils at Oshu Juku (July 2008) average between 25-28 pupils per class</li> <li>● Regular classes for lower secondary school pupils at Oshu Juku (July 2008) average 28 pupils per class with the top level class having only 10 pupils</li> </ul> |
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### Course Fees at *Academic Juku* in Japan

Table 8: Information about the course fees offered at *academic juku* in Japan

|   |
|---|
| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Oshu Juku (July 2008) fees for lower secondary school pupils:<br/> Entrance Fee: ¥2,100<br/> Monthly Fee: (Regular High School Entrance Examination Classes)<br/> ¥26,250 (English + Mathematics) (approx. ¥3,281 per lesson)<br/> ¥41,265 (English, Mathematics, Japanese, Science and Sociology)<br/> (approx. ¥2,063 per lesson)<br/> Monthly Fee: (Top Level High School Entrance Examination Class)<br/> ¥32,865 (English, Mathematics, Japanese, Science and Sociology)<br/> (approx. ¥1,643 per lesson)</li> </ul> |
| <p><b>Comprehensive <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Shiraishi-Gakushuin (July 2008) fees for lower secondary school pupils:<br/> Entrance Fee: ¥*** (A fee is mentioned on the insert but the amount is not disclosed)<br/> Monthly Fee (General Course/Higher Level General Course):<br/> ¥19,950 (English + Mathematics) (approx. ¥2,494 per lesson)<br/> ¥39,900 (English, Mathematics, Japanese, Science and Sociology)<br/> (approx. ¥2,063 per lesson)</li> </ul>   |

|   |
|---|
| <p>Monthly Fee (High School Entrance Examination Course):</p> <p>¥19,950 (English + Mathematics) (approx. ¥2,494 per lesson)</p> <p>¥51,450 (English, Mathematics, Japanese, Science and Sociology) (approx. ¥2,573 per lesson)</p> <ul style="list-style-type: none"> <li>● Tanaka-Gakushukai (July 2008) fees for lower secondary school pupils:           <p>Entrance Fee: ¥ (No Mention)</p> <p>Monthly Fee (Revision Course for Year Eight Pupils):</p> <p>¥6,000 (per subject) (approx. ¥1,750 per lesson)</p> <p>Monthly Fee (High School Entrance Examination Course):</p> <p>¥52,500 (English, Mathematics, Japanese, Science and Sociology) (approx. ¥2,625 per lesson)</p> </li> </ul> |
| <p><b>Home Tutoring Agencies:</b></p> <ul style="list-style-type: none"> <li>● Kateikyoshi no Torai (July 2008) fees for lower secondary school pupils:           <p>12 × 60-minute lessons: ¥30,000 (¥2,500 per lesson)</p> </li> <li>● Sutandado Kateikyoshi Sabisu (July 2008) fees for lower secondary school pupils:           <p>Year Seven and Eight Pupils: 4 × 60-minute lessons: ¥9,400 (¥2,350 per lesson)</p> <p>Year Nine Pupils: 4 × 60-minute lessons: ¥11,400 (¥2,850 per lesson)</p> </li> </ul>   |
| <p><b>Correspondence <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Benesse (2008) fees for lower secondary school pupils:           <p>Monthly fee for 5 subjects:</p> <p>¥6,800 (English, Mathematics, Japanese, Science and Sociology)</p> <p>(This fee includes 5 textbooks + marking of 1 monthly assignment for each subject)</p> </li> <li>● Kumon (2008b) fees for lower secondary school pupils:           <p>Monthly fee per subject:</p> <p>Monthly: ¥8,350 (This fee includes materials + marking of 1 monthly assignment)</p> </li> </ul>   |

### Admission Criteria of *Academic Juku* in Japan

Table 9: Information about the admission criteria of *academic juku* in Japan

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| <p><b>Preparatory <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Entrance exam or test</i> (Roesgaard, 2006: 34)</li> <li>● Oshu <i>Juku</i> (July 2008) sets an examination for admission to all of its courses</li> </ul>  |
| <p><b>Supplementary <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Physical limits only</i> (Roesgaard, 2006: 34)</li> </ul>   |
| <p><b>Comprehensive <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● The only criteria restricting admission at Shiraishi-Gakushuin (July 2008) and Tanaka-Gakushukai (July 2008) is the physical limits of each school</li> </ul>  |
| <p><b>Home Tutoring Agencies:</b></p> <ul style="list-style-type: none"> <li>● The only criteria restricting admission at Kateikyoshi no Torai (July 2008), Sutandado Kateikyoshi Sabisu (July 2008) and Kateikyo Group (July 2008) is the supply of tutors</li> </ul>   |
| <p><b>Drill <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>No limit</i> (Roesgaard, 2006: 34)</li> <li>● The only criteria restricting admission at Kumon is the physical limits of each school it opens. However, no mention of this is made on the newspaper insert (Kumon, July 2008a)</li> </ul> |
| <p><b>Relief <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● <i>Physical limits only</i> (Roesgaard, 2006: 34)</li> </ul>  |
| <p><b>Correspondence <i>Juku</i>:</b></p> <ul style="list-style-type: none"> <li>● Neither Benesse (2008) nor Kumon (2008b) mention any factors that may limit admission to their correspondence courses</li> </ul>  |

### Method

As previously mentioned, the pilot questionnaire survey presented in this paper is part of a larger study that aims to contribute to the development of theory about the role of private tuition in the UK by: identifying flaws in the Japanese education system that have led to the expansion of private tuition; and detailing the impact that a high level of private tuition has had on educators and pupils in Japan's state school classrooms, coordinators at its local boards of education and policy makers at the Ministry of Education. The questionnaire survey that follows was carried out in July 2006 with the objective of highlighting topics and issues about mathematics education in state schools and *academic juku* for discussion in interviews with mathematics coordinators at Hiroshima Prefecture Board of Education (June 2007) and Hiroshima City Board of Education (July 2007).

### Participants and Procedure

Data for this study was collected using a questionnaire survey (Appendix A) comprising 16 closed answer questions about mathematics instruction at lower secondary school and *academic juku*. University students were chosen for the sample in order to collect data about pedagogy in a wide variety of lower secondary schools and *academic juku* from a relatively small sample. The participants came from 9 different academic departments at two universities in Hiroshima (Appendix B) and between them graduated from a total of 143 different lower secondary schools across Japan: 111 of those schools—104 state, 5 private and 2 national—are located in Hiroshima prefecture; 12 schools—11 state and 1 national—are located in Yamaguchi prefecture; and 20 schools are located in 13 other prefectures.

### Measures

The questionnaire was divided into the following sections and subsections:

Section 1: About Yourself

Section 2: About Your Secondary Education

    Subsection 1: Lower Secondary School: General Information

    Subsection 2: Lower Secondary School: Mathematics

Section 3: About *Academic Juku*

Each question on the questionnaire can be categorised as *classification*, *behavioural* or *attitudinal*. *Classification* questions—Q1-Q4, Q7-Q9 and Q13—split the sample into smaller subgroups for comparison. *Behavioural* questions—Q11-Q13—provide information about:

- The mathematics teaching methodology and use of textbooks in participants' lower secondary



- schools; and
- The participants' attendance of *academic juku*.

Lastly, *attitudinal* questions—Q5-Q6, Q10a/b Q14-Q16—provide information about participants' opinions about mathematics instruction at their lower secondary school and at *academic juku*.

Due to the arbitrary nature of the values pertaining from the *behavioural* questions, I summarised the numeric data using frequencies. I then separated the sample into subgroups using the *classification* questions and tested for significance between two or more variables using Pearson's chi-square test. Finally, where a relationship was evident in a 95 percent confidence interval ( $p < 0.05$ ), I used the odds ratio to measure the size of that effect.

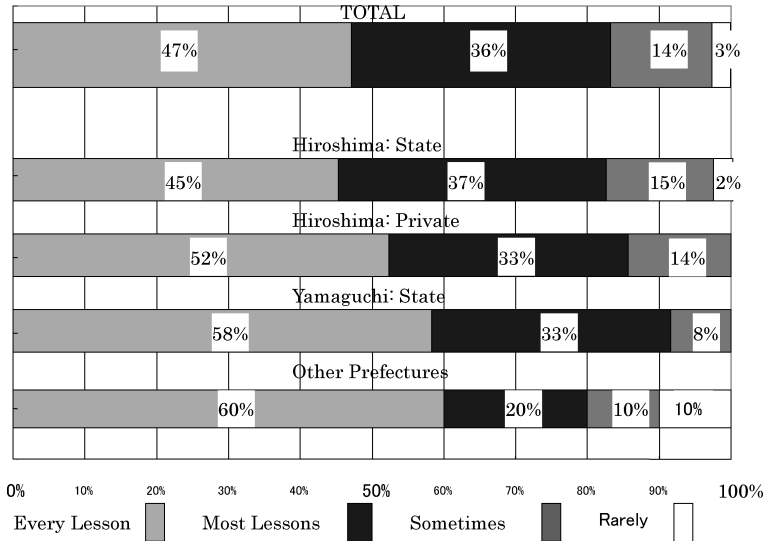
In the *behavioural* question relating to textbook use, participants were asked to categorise the frequency that textbooks were used in their lower secondary school mathematics lessons as: *Never, Rarely, Sometimes, Most Lessons or Every Lesson*. In the question relating to teaching methodology, participants were asked to tick the lesson plan—type A or B—that best resembled their typical lower secondary school mathematics lesson. Type A lesson plan is based on a classical *deductive* mathematics lesson, and type B lesson plan is based on Japanese teachers' description of their *ideal* lesson in a study conducted by Jacobs and Morita (2002: 167). A third option, C was also included for any participants that did not think that his or her typical mathematics lesson at lower secondary school could be classified as Type A or Type B.

After analysing participants' responses to the *behavioural* questions, I turned my attention to the *attitudinal* questions for information about mathematics instruction at *academic juku*. As with the *behavioural* questions, I tested for significance between two or more variables using Pearson's chi-square test and measured the size of the effect using the odds ratio.

## Results

As can be seen from Graph 1 below, the key findings about the frequency of textbook use in participants' lower secondary school mathematics lessons were as follows: 80 percent or more of the participants in each of the four main subgroups—Hiroshima State Schools, Hiroshima Private Schools, Yamaguchi Private Schools and Schools in Other Prefectures—said that textbooks were used in *most* or *every* mathematics lesson; the mode response of participants in every subcategory was that textbooks were used in *every* lesson; and the median response was that textbooks were used in *most* mathematics lessons. Furthermore, no statistically significant difference in a 95 percent confidence interval was found between the responses of participants in any of the subcategories with regard to the frequency of textbook use.

Key findings with regard to mathematics teaching methodology were as follows (see Table 10). Every participant that responded indicated that their typical lower secondary school mathematics lesson was either comparable to the *deductive* lesson plan (Type A) or the *ideal* lesson plan (Type B). Only 6 percent of the entire sample indicated that their typical lower secondary school mathematics lesson was comparable to the *ideal* lesson plan whereas 93 percent indicated



Graph 1: A horizontal bar chart showing the frequency of textbook use in participants' lower secondary school mathematics lessons

Table 10: A contingency table showing how the participants categorised their typical lower secondary school mathematics lesson

|                            |              | Lower Secondary School by Region/Type |                    |                     |                 |                     |                   |                     | Total |
|----------------------------|--------------|---------------------------------------|--------------------|---------------------|-----------------|---------------------|-------------------|---------------------|-------|
|                            |              | Hiroshima: State                      | Hiroshima: Private | Hiroshima: National | Yamaguchi State | Yamaguchi: National | Other Prefectures | Other (Unspecified) |       |
| Type of mathematics lesson | Deductive    | 187                                   | 20                 | 2                   | 11              | 1                   | 19                | 5                   | 245   |
|                            | % of A Total | 93%                                   | 95%                | 67%                 | 92%             | 100%                | 95%               | 100%                | 93%   |
|                            | Ideal        | 13                                    | 1                  | 1                   | 1               |                     | 1                 |                     | 17    |
|                            | % of A Total | 6%                                    | 5%                 | 33%                 | 8%              |                     | 5%                |                     | 6%    |
| No Entry                   | 2            |                                       |                    |                     |                 |                     |                   |                     | 2     |
| % of A Total               | 1%           |                                       |                    |                     |                 |                     |                   |                     | 1%    |
| Total Count                | 202          | 21                                    | 3                  | 12                  | 1               | 20                  | 5                 | 264                 |       |
| % of Total                 | 77%          | 8%                                    | 1%                 | 5%                  | <1%             | 8%                  | 2%                | 100%                |       |

that it was comparable to the *deductive* lesson plan. 9 percent or less of the participants in any subcategory indicated that their typical mathematics lesson was comparable to the *ideal* lesson plan. What is more, no statistically significance difference was found between the participants' responses about teaching methodology in any of the subcategories.

Other notable findings include:

- Participants that indicated that their typical lower secondary school mathematics lesson was comparable to the *ideal* lesson plan were no more statistically likely to like or dislike their lesson than participants that indicated that it was *deductive* in nature
- 67 percent of the sample studied mathematics at *academic juku* when they were lower secondary school students
- Participants that studied mathematics at *academic juku* were 2.35 times more likely to think that their lower secondary school mathematics lessons were easy compared to those that did not study mathematics at *academic juku*
- 62 percent of the participants that studied mathematics at *academic juku* said that their mathematics lessons at *academic juku* were more interesting than their mathematics lessons at lower secondary school
- 84 percent of the participants that studied mathematics at *academic juku* said that their mathematics lessons at *academic juku* were more useful in helping them to prepare for the upper secondary school entrance examination than their mathematics lessons at lower secondary school
- 81 percent of the participants that studied mathematics at *academic juku* said that their mathematics lessons at *academic juku* were easier to understand than their lower secondary school mathematics lessons
- 32 percent of the students that went on to study a major at university in which they believe that mathematical aptitude is important were able to do so without studying mathematics at *academic juku*
- Participants that studied mathematics at *academic juku* school were no more likely to go on to study a major at university in which mathematical aptitude is important than those who did not

### Future Research

If the findings of this questionnaire survey are taken at face value, one might argue that mathematics instruction in Japan's *academic juku* is more interesting, easier to understand, and better prepares students for high school entrance examinations than the mathematics instruction at lower secondary schools. However, it should be noted that mathematics instruction at *academic juku* is not a primary source of educational input. As a secondary source of educational input *academic jukus* benefit from the phenomenon that a large number of the pupils come with prior mathematical knowledge that aids in making the learning experience more interesting and easier to understand. Furthermore, while it can be argued that some *academic juku* employ *dynamic* teachers, the vast majority of teachers—more than 80 percent (Table 2; Table 3)—have never had any kind of formal teaching training.

Due to the limitations of time and space, I have only presented one aspect of a much larger

study about Japan's *academic juku* in this paper. In the following papers in this series: I present more information about teachers, pupils, focus of courses, teaching materials, class sizes, fees and admission criteria in Japan's *academic juku*; I use data from interviews with Hiroshima City Board of Education, Hiroshima Prefecture Board of Education and lower secondary school teachers to highlight the impact that high levels of private tuition have had on educators and pupils in Japan's state school classrooms, coordinators at its local boards of education and policy makers at the Ministry of Education; and I identify factors that have been significant in the expansion of *academic juku* in Japan.

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### Appendix A

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#### About Yourself

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- Q1. Sex:  Male  Female
- Q2. Academic Year:  First  Second  Third
- Q3. University:  Yasuda Women's University  Hiroshima City University
- Q4. Department:  English  Psychology  Business  Design  
 Nutrition  Primary Education  
 Japanese Literature  Intelligent Systems  
 Information Machines and Interfaces
- Q5. Do you think that mathematical aptitude is important for your major?  
 Yes  No
- Q6. Do you think that mathematical aptitude is important for your future career?  
 Yes  No

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#### About Your Lower Secondary School Education

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- Q7. What lower secondary school did you go to? \_\_\_\_\_
- Q8. What prefecture is it in?  
 Hiroshima  Other (please specify) \_\_\_\_\_
- Q9. What type of school is it?  
 State  National  Private  
 Other (please specify) \_\_\_\_\_
- Q10.a. Did you like your lower secondary school mathematics lessons?  
 Yes  No
- Q10.b. Why? (Tick as many boxes as is appropriate)
- |  |  |
|--|--|
| <input type="checkbox"/> The lesson was interesting<br><input type="checkbox"/> The lesson was easy<br><input type="checkbox"/> You liked the teacher<br><input type="checkbox"/> Other (please specify) _____ | <input type="checkbox"/> The lesson was boring<br><input type="checkbox"/> The lesson was difficult<br><input type="checkbox"/> You disliked the teacher |
|--|--|

Q11. How often was a textbook used in the lesson?

                         
 Never      Rarely      Sometimes      Most Lessons      Every Lesson

Q12. Which lesson plan best describes your lower secondary school mathematics lesson?

Type A     Type B     Other (Please Specify) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

| Type A Mathematics Lesson  | Type B Mathematics Lesson   |
|--|---|
| The teacher tells the class what mathematics they are going to study.  | The teacher poses a new mathematical problem on the board.                  |
| The teacher explains how to solve that type of mathematics problem using an example from the textbook.   | In groups: Students discuss the problem until they agree on a solution.     |
| The teacher writes a similar mathematics question on the board which students work on individually.  | Students present their solution to the problem in front of the class.       |
| A small number of students are called to the front to write their answer on the board which is then checked by the teacher and used to explain how to answer the question. | The teacher guides the students to the best solution.                       |
| Students work individually answering similar questions in the textbook.  | Students use what they have learned to solve similar problems individually. |

**About Academic Juku**

Q13. Did you study mathematics at academic juku when you were in lower secondary school?

Yes       No

If you answered *yes* to the above question: In which year of study at lower secondary school did you attend an academic juku? (Tick as many boxes as appropriate)

First       Second       Third

**If you answered yes to Q13 please answer Q14~Q16**

Q14. Which mathematics lesson did you enjoy more? (Tick one only)

Academic Juku       Lower Secondary School

Q15. Which mathematics lesson was more helpful in preparing for the upper secondary school entrance exam? (Tick one only)

Academic Juku       Lower Secondary School

Q16. Which mathematics lesson was easier to understand? (Tick one box)

Academic Juku       Lower Secondary School

### Appendix B

|   | First Year |      | Second Year |      | Third Year |      | Total      |
|---|------------|------|-------------|------|------------|------|------------|
|   | Female     | Male | Female      | Male | Female     | Male |            |
| <b>HCU Intelligent Systems</b>          |            |      | 11          | 13   |            |      | <b>24</b>  |
| <b>HCU Info Machines and Interfaces</b> |            |      | 1           | 23   |            |      | <b>24</b>  |
| <b>YWU English</b>                      | 38         |      | 13          |      | 8          |      | <b>59</b>  |
| <b>YWU Japanese Literature</b>          | 16         |      | 1           |      |            |      | <b>17</b>  |
| <b>YWU Psychology</b>                   | 22         |      | 8           |      |            |      | <b>30</b>  |
| <b>YWU Primary Education</b>            | 25         |      |             |      |            |      | <b>25</b>  |
| <b>YWU Business</b>                     |            |      | 13          |      | 6          |      | <b>19</b>  |
| <b>YWU Design</b>                       | 21         |      | 6           |      |            |      | <b>27</b>  |
| <b>YWU Nutrition</b>                    | 28         |      | 11          |      |            |      | <b>39</b>  |
| <b>Total</b>                            | 150        | 0    | 64          | 36   | 14         | 0    | <b>264</b> |
|   | <b>150</b> |      | <b>100</b>  |      | <b>14</b>  |      |            |

HCU = Hiroshima City University

YWU = Yasuda Women's University

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