Effects of stay-back on teachers’ professional commitment

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Keywords
Teachers, Commitment, Schools, Management

Abstract
This study investigated the effects of stay-back on teachers’ professional commitment, in order to develop an effective means to measure teachers’ commitment to the teaching profession which, according to various studies, contributes to “quality education”. Other possible factors, such as age, gender, marital status, tenure, educational level and position, were also studied. Suggestions on ways to increase commitment, based on the statistical findings, were also made. The results of causal-comparative, correlation and multiple regression analyses revealed that stay-back was the one factor which was found to be the most highly and significantly related to commitment. Apart from educational stay-back, marital status, age and tenure were also proved to relate significantly to commitment. In this research, the accuracy and reliability of the stay-back data were improved through adjustment for a secondary analysis.

In Hong Kong, the study of teachers’ professional commitment is of the utmost importance. People begin to question the effectiveness of the school, especially when juvenile delinquency seems to become a serious problem and when academic performance seems to have fallen in the wake of rapid expansion of secondary and tertiary education. The situation is further aggravated by the declining teacher quality as a result of teacher wastage.

Teacher wastage is an obstacle to quality education. Since the 1980s, the teaching profession in Hong Kong has been facing the problem of teacher exodus as a result of the political uncertainty in Hong Kong after 1997. Government statistics show that wastage of school teachers has been edging up over the past few years. In secondary schools, the wastage rate among teachers has increased from 6 per cent in 1988 to more than 10 per cent annually (South China Morning Post, 1990). Research carried out by the Hong Kong Institute of Personnel Management (HKIPM) in 1994 revealed that the education sector provided the second highest number of professional people leaving the territory in the preceding two years and the number of teachers emigrating showed a big increase. School managers have difficulty in maintaining some committed teachers who have been in the profession for quite some time and this in turn makes it difficult for schools to become effective.

The problem that the education field faces is further exacerbated by the fact that fewer people are willing to join the teaching profession. From 1987-90, applications for full-time teacher training have dropped by about 40 per cent. This was attributed to the lack of promotion prospects in schools, difficult students and demanding parents, the burden of too many non-professional duties and the expansion of tertiary education which the majority of the students in Hong Kong will put as the first priority of their educational pursuit. After all, teaching is regarded as a stressful job which is becoming more unpopular and, therefore, it is less preferred by the young in Hong Kong.

On the other hand, there is the student problem. With the advances of society, juvenile problems have been escalating. There are many contributing factors, for example, material temptation, broken families, pressure from school work, the inclusion of all school-age children in compulsory education, etc. The new generation of students are more rebellious and quite a number of them are trouble-makers. They do not only do poorly in their academic work but they also have behavioural problems. Facing such students, the teaching profession demands more commitment from teachers. But unfortunately, the supply of committed teachers falls far short of demand. Wishing to teach the cream of the crop is the general mentality of the teachers. Very few are willing to spare extra time and effort to help the under- or even average-achievers.

With reference to the situation in Hong Kong, to arouse the commitment of teachers is a pressing problem befalling all school managers nowadays. It has been reported that teachers’ commitment was positively related to leader’s charisma (Bass, 1985; Cheng, 1990). The Hong Kong Education Department is trying to introduce reforms in school management. One typical example is the school management initiative (SMI) under which schools are given more flexibility and autonomy in resource management (Education and Manpower Branch and Education Department, 1991). Another example is the recent introduction of quality education fund to finance proposals which aim at improving the quality of education (Education and Manpower Branch and Education Department, 1990). The essence of these
schemes is participation and accountability. It is believed that if teachers are involved in the setting of school goals and the decision-making process, they will tend to be committed members of staff. Arousing the commitment of teachers is thus one of the objectives of these schemes.

This paper presents an effective and economical means which can truly predict commitment and yet is free from the limitations of the conventional methods of measuring commitment that meet with employees’ suspicion of the motives of the management, as this new approach can be applied without employees’ knowing it. It focuses on investigating the correlation of teachers’ stay-back to their professional commitment.

### Commitment and contributing factors

By professional commitment, we mean teachers’ commitment to their job as a teacher. It corresponds to commitment to work put forward by Fink (1992) which is related to organization, co-worker and work.

Since teaching is a profession comprising a considerable number of members, conceptually we can see the teaching profession as a large organization. Based on an analogy to organization commitment defined by Mowday and McDade (1979), we characterize professional commitment by the following factors:

- a strong belief in and acceptance of the profession’s goals and values;
- a willingness to exert considerable effort on behalf of the profession; and
- a strong desire to maintain membership in the profession.

Numerous studies have suggested that employees’ job attitudes and commitment can affect their performance (Cammann et al., 1983; Oldham and Hackman, 1981). For personal factors, they include locus of control (Cheng, 1990), age, tenure, gender and education level (Fink, 1992). Non-demographic individual difference variables include central life interest (Dubin et al., 1975), desire for greater job responsibility, expectations about goal achievement and personal needs (Steers, 1977).

For organizational characteristics, they consist of job, leadership, work group and organizational characteristics. Among these four characteristics, leadership and organizational characteristics seem to be of utmost concern to school managers who want to arouse the commitment and enhance the performance of teachers. Leadership refers to the styles of the leaders which can be supervisory (Fukami and Larson, 1984), charismatic (Conger et al., 1988), one of initiating structural and consideration (Morris and Sherman, 1981) and one of giving rewards (Bateman and Strasser, 1984). For organizational characteristics, they include things like formalization, decentralization, functional dependence on the work of others and participation in decision making (Morris and Steers, 1980; Steers and Rhodes, 1978).

Other factors such as lateness, absenteeism, tardiness and turnover are the manifestations of commitment as reflected in most literature. But there is a kind of behaviour which can be a predictor of employees’ level of commitment and which has not yet been studied thoroughly. It is “employees’ stay-back time after normal office hours”. As discussed before, leadership style is an important factor affecting commitment. By providing teachers with inspiration, encouragement and more meaning to their work, a charismatic principal can enhance a teacher’s faith in and respect for him and these lead to an increase in the teacher’s commitment to the principal and so to the school and the work. Additional studies by Cole (1979) and Sekaran (1989) have further reinforced our belief that employees’ “stay-back” is also a manifestation of commitment and can be used as a predictor of commitment level, apart from the traditional commitment-related behaviour mentioned by other researchers.

In short, it is suggested that a school manager can generate commitment from his employees by building trust, letting people develop their own ways of working, sharing accountability and ownership of a job, and negotiating help and supervision in terms that engender employee development. But above all, managers need to be role models for their subordinates by being committed and they should also empower others in their jobs and roles.

### Traditional measures of commitment

There are two approaches to measure commitment: formal and informal. The formal approach refers to administering questionnaires to employees to measure their commitment. Two commonly-used questionnaires are the “organizational commitment questionnaire” devised by Mowday and McDade (1979) and the “commitment diagnosis instrument” by Fink (1992). However, the
formal method is often met with resistance from the employees, especially in an organization where there is a lack of trust from the management. Employees may suspect the motives of the management. Instead of being viewed as a means of understanding the organization and the needs of its employees, the questionnaire can easily be considered as a form of employee evaluation that leads to judgments about the quality of the employees themselves, which can form the basis for promotion, demotion or dismissal. As a result, employees exercise extra caution, not because they understand that they must be honest but because they are more concerned about how they should respond to the questions. Even attempts to guarantee anonymity can be futile. The results generated from the formal method may not be a true picture of employee commitment.

The informal approach employs the observational techniques like commitment indicators which are actually commitment-related behaviour, for instance, absenteeism, lateness, turnover, etc. Although absenteeism is the most widely studied predictor, it is not an accurate and reliable one as most reviewers of the literature on absenteeism argue that current research abounds in problems of inadequate theory, inaccurate measurement, invalid data and faulty analytic procedures (Goodman et al., 1984).

**Stay-back**

In Hong Kong, all the aided secondary schools are full-time. Recesses and lunch time are very short, totalling less than two hours each day. Teachers have a very heavy workload. On average, a teacher has to teach six periods out of eight every day. Apart from teaching, teachers also have to perform some non-teaching duties, for example, they may have to be on duty during recess or lunch time. So, they have little contact with students and colleagues during school hours. Counselling work, extra-curricular activities, the marking of assignments, socializing, etc. will have to be carried out after school hours. Without staying back, it is quite unlikely that teachers can accomplish their tasks and perform well.

As a commitment predictor, stay-back can be defined as the time that employees stay behind in the office after the formal and scheduled office hours, regardless of what they do (Cole, 1979; Sekaran, 1989). In this study, the employees referred to the aided secondary school teachers in Hong Kong randomly selected for this research purpose and stay-back was broadly divided into two types, namely voluntary and compulsory stay-back. Voluntary stay-back happens out of the teachers’ own free will. On the other hand, compulsory stay-back, as the name suggests itself, happens because teachers are required to stay as part of the fulfilment of their official duties.

In addition, voluntary stay-back can further be divided into two sub-groups: educational stay-back and non-educational stay-back. Figures 1 and 2 give the classifications of the various stay-back activities.

**Data collection**

The present study was conducted among aided secondary school teachers in Hong Kong. In the first stage, questionnaires were distributed directly to about 5 per cent of aided secondary schools in Hong Kong randomly chosen for this research. A return rate of 45 per cent was recorded. However, among these questionnaires, one third did not include complete data, thus making analysis difficult and were then discarded. In order to improve the reliability of the study, another batch of questionnaires was given out in the second stage at the Professional Teachers’ Union where teachers used to go shopping. Teachers were randomly intercepted and teachers in government aided and subsidized secondary schools were asked to fill in the questionnaire. The response rate was quite reasonable and both stages managed to collect a total useful sample of 1,220 representing about 5 per cent of teacher population in aided secondary schools.

In the questionnaire, teachers were asked questions about their general feelings towards the teaching profession, matters pertaining to their stay-back, and personal information such as age, gender, marital status, position and teaching experience.

![Figure 1](https://example.com/figure1.png)

Classifications of activities in compulsory stay-back

- Compulsory Stay-Back
- Staff meeting
- Assigned counselling work
- Assigned extra-curricular activities
- Assigned tutorial classes
- Detention class
- On duty
Teachers’ frequency of stay-back and the total stay-back hours per month were calculated from the information that they gave in the questionnaire. The dependent variable (teachers’ professional commitment) was regressed on the independent variables (stay-back indices, age, gender, marital status, tenure and position). In addition, the characteristics of stay-back data were analysed and investigated.

**Sample design and analysis**

The sample consists of 1,220 teachers in Hong Kong who were randomly chosen from some aided secondary schools and from those who visited the Professional Teachers’ Union. In terms of gender, the subjects were quite equally distributed, 48 per cent male and 52 per cent female. The average age of those in the sample was 35, with the 21-30 age group accounting for 42 per cent, the 31-40 group 46 per cent and the 41-50 group 12 per cent. Fifty-six per cent of the subjects were single and 44 per cent were married.

As far as education is concerned, 65 per cent of the subjects held bachelor’s degrees or above while 35 per cent were non-graduates who might only have a teacher’s certificate. In Hong Kong, the non-graduates start teaching as Certificated Masters/Mistresses (CM), then they may be promoted to assistant masters/mistresses (AM). Some outstanding performers may then be further promoted to senior assistant masters/mistresses (SAM) and finally to principal assistant masters/mistresses (PAM), which, at present, is a position held by one only in every aided secondary school with an average of 50 teachers (see Figure 3).

In the stream for graduates, they start as graduate masters/mistresses (GM). Some may be promoted to senior graduate masters/mistresses (SGM). Further promotion will make them end up as principal graduate masters/mistresses (PGM) who are actually deputy principals. At present, there are two PGMs in every aided secondary school.

Among the sample in the present study, 28 per cent are CMs, 5 per cent AMs, 42 per cent GMs, 22 per cent SGMs, and 3 per cent PGMs, i.e. 31 per cent of the respondents had been promoted to senior positions. When teaching experience is concerned, 35 per cent had taught for five years or less while those who had taught between six to ten years constituted 31 per cent, 11 to 15 years 25 per cent, 16-20 years 7 per cent and only 2 per cent had taught for more than 20 years (see Figure 4).

The questionnaire documented the frequency and the duration of and the reasons for the teachers’ stay-back. All respondents were asked to put down on average how often they stayed back each month and the average
amount of time for each stay-back. Some typical stay-back activities, which can broadly be divided into two types: voluntary and compulsory, were also listed. These data can be used to cross-check the total amount of time a respondent spent on the stay-back activities in an average month, regardless of the nature of stay-back, be it voluntary or compulsory. To prevent any patterns that might lead a subject to automatically circle numbers down one side or the other of the seven-point scale used in the questionnaire, some of the items in the question set are stated positively, where a higher score reflects greater commitment; while some of the items are stated negatively, where a higher score reflects less commitment. Also the positive and negative statements were mixed randomly, not systematically, again to avoid any pattern. Items were summed and converted to a 10-100 scale to generate the commitment index for each subject.

**Stay-back indices**

The study employed six stay-back indices as follows:

1. Total stay-back index by frequency estimate (TSIFE).
2. Total compulsory stay-back index (TCSI).
3. Total educational stay-back index (TESI).
4. Total non-educational stay-back index (TNSI).
5. Total voluntary stay-back index (TVSI).
6. Total stay-back index (TSI).

The TSIFE was generated by multiplying the total number of stay-back days each month with the average amount of time for each stay-back, regardless of the reasons for stay-back, where the number of stay-back days each month was calculated from the frequency (once how many days) of stay-back, assuming 20 school days per month.

The TCSI only counted those activities which had been classified as compulsory stay-back activities in the last section. Since the respondents had specified the number of times they carried out a certain compulsory stay-back activity in an average month and the duration each time, the total amount of time spent on a certain activity in a month can be found. The TCSI is actually a summation of all the time spent on compulsory stay-back activities by a respondent in a month.

The TESI counted those activities classified as voluntary educational stay-back activities. Again the total hours spent on these activities by a respondent in an average month was a summation of the time spent on each voluntary educational stay-back each month which was calculated by multiplying the number of times with the duration each time. As discussed in the last section, some of the activities listed in the questionnaire can actually be grouped under either educational or non-educational. In the data analysis, half of the total amount of time spent on this group of activities was counted in the TESI while the other half of it was counted in the TNSI.

The TNSI counted those activities defined as voluntary non-educational stay-back activities. It is the summation of the total amount of time spent on each of these activities by a respondent in an average month which was calculated by multiplying the number of times with the duration each time. Like the TESI, the TNSI also included half of the total amount of time spent on activities which can be counted as either educational or non-educational. The TVSI is the sum of the TESI and the TNSI. The TSI is the sum of the TCSI, TESI and TNSI.

In theory, the TSIFE should equal the TSI if the respondents were absolutely consistent in answering the questionnaire. The built-in cross-checking device during data collection is a means to ensure reliability of data.

**Hypotheses testing**

Basically, the present research examined some hypotheses using statistical techniques such as differences in means and standard deviations, t-test, F-test correlations, and multiple regression model.

Before testing the hypotheses, the consistency and reliability of the stay-back data generated from frequency estimate and that obtained by an aggregation of the total compulsory stay-back hours, total educational stay-back hours and total non-educational stay-back hours were investigated. The two kinds of information were related to each other and their correlation coefficient was calculated.

Apart from the above method, the following was also employed in the data analysis. Stay-back data were analysed by each stay-
back index to examine whether or not its sample distributional characteristics approximate normality. The same has been done for variables like age, position and tenure. Specifically, Kendall and Stuart’s criteria were used to examine normality of sample distributions. Those independent variables with normal distributional patterns could then be utilized in the multiple regression analysis.

Hypothesis 1
Teachers who stayed back voluntarily were distinguished from those who did not by forming two groups. Using the total voluntary stay-back hours (both educational and non-educational), the first group was formed by subjects with total voluntary stay-back hours less than the median, while the second group was subjects with total voluntary stay-back hours more than the median. Then, the means and the standard deviations of the commitment indices of the two groups were calculated. A t-test was conducted to see the significance of the difference between the two groups and the correlation coefficients between commitment and stay-back were compared.

Hypothesis 2
Teachers who stayed back voluntarily were divided into two groups according to the nature of their stay-back. The first group consisted of those who spent 51 per cent or more of the total voluntary stay-back time on educational stay-back activities while the second group comprised those who spent 51 per cent or more of their total voluntary stay-back time on non-educational stay-back activities. Then, the means and the standard deviations of the commitment indices of the two groups were calculated. A t-test was conducted to see the significance of the difference between the two groups and the correlation coefficients between commitment and stay-back were compared.

Hypotheses 3, 4 and 5
Teachers were divided into two groups according to their educational level, gender and marital status, as required in Hypotheses 3, 4 and 5 respectively. In Hypothesis 3, the two groups of teachers were graduates and non-graduates. In Hypothesis 5, teachers who were single and those who were married made up the two groups. Under each hypothesis, the means and the standard deviations of the commitment indices of the two groups were calculated. A t-test was conducted to see the significance of the difference between the two groups. The correlation coefficients between commitment and educational level, as in Hypothesis 3, that between commitment and gender, as in Hypothesis 4 and that between commitment and marital status, as in Hypothesis 5 were compared.

Hypotheses 6-14
Teachers’ professional commitment was predicted by working out the correlation coefficient between each subject’s commitment and each of the independent variables such as TVSI, TESI, TNSI, age, gender, marital status, tenure, position and educational level. This was presented in the form of a correlation matrix. A line of best fit, \( y = bx + a \), was generated, to facilitate the necessary prediction, when and where the relationship was significant and amply correlated.

Hypothesis 15
The few most influential predictor variables were used for a 3-4 step multiple regression analysis. The resulting multiple correlation coefficients (R) were examined for their magnitudes.

### Statistical analysis

Findings of the analysis of the hypotheses include two main streams: the examination of the stay-back data and the prediction of professional commitment using various independent variables. The primary concern of the first stream was to test stability of the stay-back data along with other statistical attributes (i.e. normality) associated with the six stay-back indices. The second stream focused on validating the use of voluntary stay-back indices and other independent variables like age, gender, tenure and educational level to predict professional commitment.

### Consistency and reliability of stay-back indices

It was found that TSIFE and TSI were correlated with each other and gave a correlation of 0.48, significant at \( p = 0.01 \) level. Therefore, it can be concluded that the two indices are highly and positively correlated and the respondents were consistent in giving their stay-back data. Since the other stay-back indices such as TCSI, TESI and TNSI are complements of the TSI, like the TSI and TSIFE, they are reliable indices for statistical analysis in the present research.

### Normality of the stay-back indices

Hypotheses 1 to 5 were tested by means of causal-comparative method. The t-test is probably the most commonly used statistical tool in causal-comparative studies and it has made three assumptions about the scores
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results obtained in research. One is that the scores in the population under study are normally distributed. So, it was necessary to test the normality of the stay-back data before any statistical analysis was carried out.

The characteristics of each sample distribution were examined using measures of skew and kurtosis, as well as pictorial shapes. Statistically, distributions may be considered non-normal, indicating the presence of skew and leptokurtosis, when the skew approaches 2 and kurtosis exceeds 5. In normal distribution, both skew and kurtosis are zero. If the value of the skew is positive, distribution is skewed to the left but if its value is negative, the distribution is skewed to the right. For kurtosis, its value determines the peak of the distribution. If kurtosis is greater than zero, the distribution is more peaked than normal but if kurtosis is less than zero, the shape of the curve is flatter than the normal curve.

In this study, all six stay-back indices were found to deviate from normal distribution. According to Kendall and Stuart’s criterion for normality, the distributions of TCSI and TNSI seemed to be furthest from normal. As shown in Table I, kurtosis and skew of the former are 3.88 and 1.77 respectively while that of the latter are 3.2 and 1.83 respectively. The other four stay-back indices, namely TESI, (kurtosis = −0.04 and skew = 0.83), TSI, (kurtosis = −0.59 and skew = 0.4), TVSI, (kurtosis = −0.27 and skew = 0.74) and TSIFE, (kurtosis = −1.23 and skew = −0.2) more closely approximated normality. In all the four indices, the distribution curve is flatter than the normal one as the values of kurtosis are less than zero and the sample distribution tends to be skewed to the left in the cases of TESI, TSI and TVSI which means that the majority of the sample had stay-back hours less than the mean. Although the six stay-back indices do not have perfectly normal distribution, they are within an acceptable range of normal distribution with different magnitudes of deviations. They, therefore, are fit for a t-test analysis.

Table I
Sample distribution of various independent variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>TCSI</th>
<th>TNSI</th>
<th>TESI</th>
<th>TSI</th>
<th>TVSI</th>
<th>TSIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>10.84</td>
<td>2.89</td>
<td>27.22</td>
<td>40.95</td>
<td>30.11</td>
<td>35.06</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.90</td>
<td>0.00</td>
<td>0.91</td>
</tr>
<tr>
<td>Maximum</td>
<td>48.50</td>
<td>15.43</td>
<td>74.00</td>
<td>87.00</td>
<td>74.00</td>
<td>60.00</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>9.32</td>
<td>3.6</td>
<td>19.23</td>
<td>21.29</td>
<td>20.18</td>
<td>17.36</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>3.88</td>
<td>3.2</td>
<td>−0.04</td>
<td>−0.59</td>
<td>−0.27</td>
<td>−1.23</td>
</tr>
<tr>
<td>Skewness</td>
<td>1.77</td>
<td>1.83</td>
<td>0.83</td>
<td>0.40</td>
<td>0.74</td>
<td>0.20</td>
</tr>
<tr>
<td>N</td>
<td>1220</td>
<td>1220</td>
<td>1220</td>
<td>1220</td>
<td>1220</td>
<td>1220</td>
</tr>
</tbody>
</table>

Results

In reporting the results of the analysis, the significance level was taken at \( p \leq 0.1 \). It was proposed that teachers who stay back are more committed than those who do not. The analysis revealed that the mean commitment index of teachers who stayed back was a bit higher than that of teachers who did not (72.2 vs 72). Nevertheless, the difference was not statistically significant (see Table II).

The analysis for the hypothesis that teachers who stay back more for educational purposes are more committed than those who stay back more for non-educational purposes was found to be infeasible because there was a great difference in the number of subjects between the two groups of teachers. Out of the 1,220 subjects, only 61 (i.e. 5 per cent) stayed back more for non-educational purposes, while 1,139 (i.e. 93.4 per cent) have longer stay-back hours for educational purposes than non-educational ones. Twenty respondents (i.e. 1.6 per cent) reported no stay-back of any kind. So, a comparison could not be made.

For the non-graduates who were posited to be more committed teachers than graduates, results showed that the mean commitment index of graduate teachers was 73.34 and that for non-graduate teachers was 71.64. This finding contradicted the hypothesis but such a finding is not statistically significant (see Table III).

It was proposed that women are more committed teachers than men. When the commitment indices of the two groups were analysed, the mean commitment index of men was a bit higher than that of women (72.20 Vs 72.04). But the t-test demonstrated that the two groups were not different from each other in terms of commitment at a statistically significantly level (see Table IV).

Table II
Commitment of teachers who stay back and teachers who do not

<table>
<thead>
<tr>
<th>Variable</th>
<th>Teachers stay-back (Mean)</th>
<th>Teachers not stay-back (Mean)</th>
<th>( t )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>72.20</td>
<td>72.00</td>
<td>0.57</td>
<td>&gt;0.1</td>
</tr>
</tbody>
</table>

Table III
Commitment of graduate teachers and non-graduate teachers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Graduate teachers (Mean)</th>
<th>Non-graduate teachers (Mean)</th>
<th>( t )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>73.34</td>
<td>72.00</td>
<td>-0.3</td>
<td>&gt;0.1</td>
</tr>
</tbody>
</table>
In respect of the hypothesis that teachers who are single are more committed than those who are married, analysis revealed that the mean commitment index of those teachers who were married was 74.46 while that of teachers who were single was 70.48, which means that the married teachers were more committed than the single teachers. And the t-test showed that the two groups differed from each other at a statistically significant level, \( p < 0.1 \), \( t = 1.79 \) (see Table V).

In other words, while the fifth hypothesis was not supported per se, it was found that marital status and commitment were indeed related, albeit in the opposite direction as hypothesized, i.e. married teachers are in fact more committed than single ones.

It was proposed that stay-back is related to commitment. Here stay-back refers to voluntary stay-back which is made up of both educational and non-educational stay-back. The correlation matrix in Table VI indicated that stay-back was positively related to commitment (\( r = 0.17 \), \( \rho = 0.178 \)), meaning that those teachers who stay-back voluntarily were, comparatively speaking, more committed. However, such a correlation was weak and not statistically significant.

Further results revealed that the correlation coefficient between commitment and educational stay-back was 0.21 and the correlation was marginally significant, \( p = 0.11 \). Besides, the correlation coefficient between commitment and non-educational stay-back was -0.12 which means that teachers’ staying back for non-educational purposes implies that they were less committed. However, this correlation was found to be not statistically significant. As shown in Table VI, educational stay-back was positively related to commitment (\( r = 0.21, p = 0.11 \)). However, non-educational stay-back was negatively related to commitment (\( r = -0.12 \)) but not at a statistically significant level.

It was proposed that age is related to commitment. Analysis showed that the two were correlated at 0.23. This implies that the more senior teachers, in terms of age, were a little more committed. And the correlation was statistically significant, \( p < 0.1 \). To predict commitment, the following formula shown by the line of best fit in the analysis can be used.

\[
\text{Commitment} = 2.80 	imes \text{Age} + 67.18
\]

Similarly, tenure was positively related to commitment (\( r = 0.22 \)) which means that the more experienced a teacher was, the more committed he/she would be. In this study, tenure refers to the number of years one has stayed in the teaching profession i.e. teaching experience. The correlation was found to be significant, \( p < 0.1 \) and the line of best fit was

\[
\text{Commitment} = 0.35 \times \text{total number of years in teaching} + 69.12
\]

Teachers occupying higher positions in the school are generally thought to be more
committed to their job. Results also suggested that position and commitment were positively related ($r = 0.07$). However, the correlation was very weak and not significant.

Using the two independent variables, namely stay-back and position to predict commitment, it was found that both were not strongly related to commitment although the former was slightly more strongly related than was the latter ($r = 0.17$ vs $r = 0.07$). Besides, stay-back also correlated with commitment at a comparatively more significant level than was position ($p=0.18$ vs $p=0.57$) though both correlations with commitment were not significant.

Among the factors associated with commitment as examined in this study, namely educational stay-back, non-educational stay-back, total stay-back, position, tenure, gender, age and educational level, it was found that age was the factor most strongly related to commitment when compared with all the other independent variables in the primary analysis.

Since marital status, age and tenure were found to be significantly related with commitment, these three predictor variables were entered into the multiple regression analysis. The best predictor chosen by the statistic program was age because it was the factor most highly related with commitment among the three. But the other two predictors, marital status and tenure, were not able to enter the computer program because there was collinearity between them and age, which means that marital status and tenure measured the same underlying factor as age and they were unlikely to improve upon the prediction of commitment achieved by age.

In summary, the corresponding results are shown in Table VII.

**Discussion**

In the present study, the primary research problem involved examining the predictive validity of the various independent variables like educational stay-back, non-educational stay-back, total stay-back, age, gender, tenure, position, education level, etc. on teachers’ professional commitment and the reliability of the stay-back data generated in different ways. This was done by means of correlation techniques. In addition, normality of the sample distributions for the six stay-back indices was examined in order to justify the use of t-test and correlation techniques.

In the primary analysis, the first group of variables were the stay-back indices. No significant relationships were found between them and commitment, except for educational stay-back which was found to be slightly correlated with commitment ($r = 0.21$) at a marginally significant level ($p = 0.11$).

Apart from stay-back, there were other independent variables like educational level, marital status, age, tenure, position and gender which were studied in this research to find out their predictability of teachers’ professional commitment. Results revealed that among these variables, both age and tenure were found to be positively related with commitment ($r = 0.23$ and $r = 0.22$ respectively) at a statistically significant level, $p < 0.1$. This means that the older and the more experienced teachers were a little more committed than those who were younger and less experienced.

**Secondary analysis**

On a very lenient basis with regard to statistical significance, it may be concluded that educational stay-back correlates positively with commitment ($r = 0.21$, $p = 0.11$). In other words, in the primary analysis, support for the examined hypotheses was not at all strong. So, a secondary analysis was undertaken.

In the secondary analysis, some hypotheses were re-analysed and re-examined using the same commitment index, stay-back data and personal information. However, the stay-back data were manipulated, with a view to enhancing their accuracy.

In the initial analysis, TESI was found to be positively related to commitment at a marginally significant level ($p = 0.11$). But TVSI and TNSI did not correlate with commitment at a statistically significant level.

However, although not hypothesized, TSIFE was found to be positively and highly correlated with commitment ($r = 0.34$, $p = 0.007$). This finding implies that TSIFE is quite a good predictor of teachers’ professional commitment. In view of the strong predictability of TSIFE and the inabilities of the other stay-back indices (TVSI, TESI and TNSI) in reflecting commitment, an attempt was made to adjust the TVSI, TESI and TNSI to improve their consistency with TSIFE.

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**Table VII**

Analysis results for various hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>1</th>
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<td>S</td>
<td>X</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>P</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

**Notes:** S denotes the associated hypothesis is supported; X denotes the associated hypothesis has no conclusion; N denotes the associated hypothesis is not supported; P denotes the associated hypothesis is partially supported.
As a matter of fact, the TSIFE was obtained by multiplying the number of times a respondent stayed back at school in a month with the average duration of each stay-back. But the TESI and TNSI were generated by aggregating the total amount of time a respondent spent on the various stay-back activities in a month. The TVSI is actually a summation of the TESI and the TNSI. In the secondary analysis, the component stay-back indices (TVSI, TESI and TNSI) were manipulated.

In order to reduce the random scatter of the sample distribution of stay-back time and to correct probable errors of the TVSI, TESI and TNSI in predicting teachers’ professional commitment, the three stay-back indices were adjusted under the following assumptions:

1. The respondents had put down a more correct estimate of the total aggregate stay-back time (TSIFE) in the first part of the questionnaire.
2. As for the second part of the questionnaire, the respondents had put down a relatively inaccurate estimate of their compulsory, educational and non-educational stay-back time, which made up TSI, but
3. They had put down the correct proportion of time they spent on each educational or non-educational stay-back activity.

The first assumption was made because it seems easier for a respondent to estimate the total amount of time he or she spent after school on each day he or she stayed back than to recall how much time had been spent on each individual stay-back activity since there were so many of the latter.

In filling in the questionnaire, some respondents might have underestimated while some overestimated the amount of time they spent on each stay-back activity. In some rare cases, a respondent might have committed the mistakes of both underestimation and overestimation of the time spent on different stay-back activities. Thus, the second assumption was made.

Although a respondent might not have put down the correct amount of time he or she spent on each stay-back activity, it is quite likely that once the time spent on one stay-back activity had been overestimated, the respondent would overestimate the time spent on all the other activities at a constant proportion since he or she would have made comparisons with activities that had been reported. The same applied in cases of underestimation. The third assumption was made under this reasoning. If, however, the respondent overestimated the time spent on half of the activities while underestimating the other half, which would be rare anyway, the following adjustment would offer little help.

The TVSI, TESI and TNSI were adjusted through the following formulae respectively:

- Adjusted total voluntary stay-back index (ATVSI) = TVSI × TSIFE/TSI
- Adjusted total educational stay-back index (ATESI) = TESI × TSIFE/TSI
- Adjusted total non-educational stay-back index (ATNSI) = TNSI × TSIFE/TSI

These three formulae served the purpose of magnifying the overestimated stay-back hours and reducing the underestimated ones towards the more accurate aggregate of TSIFE (instead of TSI), while retaining the relative proportion of each type of stay-back activity of each subject.

In the secondary analysis, the t-test was employed to test some of the hypotheses. Therefore, the normality of the adjusted stay-back indices were again examined prior to any major analysis.

All the three adjusted stay-back indices were still found to deviate from normal distribution. Comparatively speaking, ATNSI was furthest from normal (kurtosis = 2.02, skew = 1.47) while ATVSI and ATESI more closely approximated normality. The kurtosis and skew of ATVSI and ATESI were −0.98, 0.39 and −0.84, 0.5 respectively. In all three indices, the sample distribution tended to be skewed to the left. This means that the majority of the sample had stay-back hours less than the mean. However, the distributions of ATVSI, ATESI and ATNSI may be considered normal as skew did not approach 2 and kurtosis was less than 5. So, the three adjusted stay-back indices were fit for statistical analysis (Table VIII).

Hypotheses 1, 2, 6, 7, 8, 9 and 14 which examined the relationship between commitment and the various kinds of stay-back were studied again after the adjustment of the stay-back indices. It is clear that, as far as the

<table>
<thead>
<tr>
<th></th>
<th>ATESI</th>
<th>ATNSI</th>
<th>ATVSI</th>
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<tbody>
<tr>
<td>Mean</td>
<td>22.66</td>
<td>1.97</td>
<td>24.63</td>
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<tr>
<td>Minimum</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>53.41</td>
<td>8.65</td>
<td>54.65</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>15.33</td>
<td>2.16</td>
<td>15.42</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>−0.84</td>
<td>2.02</td>
<td>−0.98</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.50</td>
<td>1.47</td>
<td>0.39</td>
</tr>
<tr>
<td>N</td>
<td>1220</td>
<td>1220</td>
<td>1220</td>
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</tbody>
</table>
nature of stay-back in school is concerned, there was a general education bias. This general education bias of stay-back (i.e. bias against non-educational activities) provided a new criterion for regrouping the subjects so that a similar hypothesis can be examined. Accordingly, Hypothesis 2 was modified to become Hypothesis 2A as follows:

Teachers who are more educationally biased than average in their stay-back hours are more committed than those who are less educationally biased than average.

Results for the hypothesis testing are tabulated in Table IX.

As mentioned in the analyses earlier, ATESI, marital status, tenure and age were significantly related with commitment; these four factors were therefore entered into the multiple regression analysis.

Since ATESI was the best predictor of commitment ($r = 0.289$), it was the first predictor entered by the statistic program into the multiple regression. This procedure yielded a multiple correlation coefficient ($R$) which was the same as the correlation coefficient ($r$) in the second column of Table X.

The second predictor chosen was marital status which was not selected by the statistic program on the basis of its correlation ($r$) with the criterion variable, commitment. It was chosen on the basis of how well it improved on the prediction achieved by the first variable, ATESI. As shown in Table X, ATESI and marital status combined yielded a multiple correlation coefficient ($R$) of 0.426.

The third predictor of commitment entered into the multiple regression analysis was age.

<table>
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<th>Hypothesis</th>
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<tr>
<td>Result</td>
<td>S</td>
<td>N</td>
<td>S</td>
<td>P</td>
<td>N</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

Notes: S denotes the associated hypothesis is supported; X denotes the associated hypothesis has no conclusion; N denotes the associated hypothesis is not supported; P denotes the associated hypothesis is partially supported.

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>ATESI</td>
<td>0.289</td>
<td>0.288</td>
<td>0.083</td>
<td></td>
</tr>
<tr>
<td>Martial status</td>
<td>-0.220</td>
<td>0.426</td>
<td>0.182</td>
<td>0.099</td>
</tr>
<tr>
<td>Age</td>
<td>0.233</td>
<td>0.478</td>
<td>0.227</td>
<td>0.045</td>
</tr>
</tbody>
</table>

It slightly improved the prediction made by the first two predictors to $R = 0.478$.

The multiple correlation coefficient ($R$) mentioned above is a measure of the magnitude of relationship between a criterion variable and a predictor variable or some combination of predictor variables. In Table IX, the value of $R$ gradually increased from 0.288 to 0.478 as each predictor variable was added. The value of 0.478 represented the best prediction of commitment that could be made from the influence variables listed in the table.

The coefficients of determination ($R^2$) were the square of the corresponding $R$ coefficients in the third column. They expressed the amount of variance in the criterion variable that is predictable from a predictor variable or combination of predictor variables.

The $R^2$ increments is a statistic that expresses the additional variance in the criterion variable that can be explained by adding a new predictor variable to the multiple regression analysis. In this study, the addition of marital status to the analysis explained 9.9 percent more of the variance in the criterion variable (18.2 per cent-8.3 per cent = 9.9 per cent) than could be explained by ATESI alone. Adding age to the analysis resulted in an $R^2$ increment of just 4.5 per cent, meaning that it predicted 4.5 per cent more of the variance in level of commitment than could be predicted by just ATESI and marital status combined.

Although tenure was also found to be significantly related with commitment, it could not enter the multiple regression analysis because there was collinearity i.e. overlap, between age and tenure. The two variables correlated highly with each other ($r = 0.87$) because they measured the same underlying factor. Tenure could not enter the multiple regression analysis because it was unlikely to improve on the prediction.

Therefore, Hypothesis 16 was quite well-supported in the secondary analysis after the educational stay-back index had been adjusted, resulting in one more predictor variable, ATESI, to be put into the multiple regression analysis. The three influence variables, namely ATESI, marital status and age when combined yielded a very high relationship with commitment which was $R = 0.478$.

In general, results were found to be more statistically significant after the stay-back indices had been adjusted in the second analysis to reflect more accurately the time the respondents spent on each stay-back activity. The findings showed that stay-back,
especially educational stay-back, could better reflect teachers’ professional commitment and it could therefore be used as a means for estimating commitment.

**Conclusion**

This paper was intended to investigate the effects of stay-back on Hong Kong aided secondary school teachers’ professional commitment. Apart from stay-back, the effects of other independent variables like gender, age, tenure, educational level, etc. on commitment were also studied. The following conclusions were drawn:

First, educational stay-back was found to be significantly related with commitment in the secondary analysis ($p < 0.05$) after the stay-back indices had been adjusted to reflect more accurately the teachers’ stay-back time although it was originally found, in the primary analysis, to be related with commitment only at a marginally significant level ($p = 0.11$) in the primary analysis.

Second, total voluntary stay-back, which comprised both educational and non-educational stay-back, related significantly with commitment in the secondary analysis ($p < 0.05$). This is not difficult to understand as the major component of voluntary stay-back was educational stay-back which was found to relate significantly with commitment after the adjustment of stay-back indices.

Third, teachers who stayed back were found to be more committed than those who did not when the commitment indices of the two groups were compared. Results revealed that their commitment levels differed at a statistically significant level ($p < 0.1$).

Fourth, married teachers were found to be more committed than single teachers. Statistical analysis yielded a significant result ($p < 0.1$) when the commitment levels of the two group were compared.

Fifth, analysis also showed that age was significantly related to commitment ($p < 0.1$), which means that teachers who were more senior, in terms of age, were a little more committed than those who were younger.

Sixth, tenure was found to correlate significantly with commitment ($p < 0.1$), which means that the more experienced a teacher was, the more committed he or she would be.

Finally, multiple regression analysis revealed that the predictability of educational stay-back, marital status and age on commitment was improved when the three were combined. When standing alone, the three variables’ correlations with commitment were $r = 0.29$, $r = -0.22$ and $r = 0.23$ respectively. However, the three yielded a multiple correlation coefficient ($R$) of 0.48 when combined.

**Research implication**

This research set out to provide a statistical model for analysing some data collected through a questionnaire which was distributed randomly to different teachers. This was to locate and identify some indicators that could be used for measuring teachers’ professional commitment. The empirical findings of the present study demonstrate that stay-back, especially educational stay-back, is a reliable predictor of teachers’ professional commitment. To measure a teacher’s professional commitment, the following relation can be applied:

$$\text{Commitment} = 0.16 \times \text{total educational stay-back hours per month} + 68.40$$

It is an approximation only. Final results have, however, shown that actual commitment ranged from 37.0 to 89.5 according to the scale adopted in this study.

Although commitment has been measured in terms of various employee behaviour, like lateness, absenteeism and turnover, among which absenteeism is the most widely studied, little previous effort has been directed towards the measurement of stay-back to predict commitment. As stay-back was found to relate significantly with commitment in the secondary analysis, it can be used as a cross-checking tool in measuring commitment alongside the conventional ones.

Since stay-back is an observational measure which is inexpensive and does not involve any complicated techniques in its application, it is an ideal tool in pilot studies to help in the formation of hypotheses in related research or studies. It can show if a researcher is heading in the right direction in educational research involving commitment.

Moreover, stay-back can also be a tool to assess the new educational policies being implemented in Hong Kong. In Hong Kong, people begin to question the effectiveness of the school in the wake of escalating juvenile problems and declining teacher quality due to teacher wastage. A series of educational reforms and policies, with an ultimate goal of achieving quality education, have been initiated. They include the school management initiative (SMI), the phasing in of graduate teachers in primary schools and the target oriented curriculum (TOC) which are referred to as “quality improvement measures”. These measures all reckon the fact...
that the success of individual quality improvement measures will be limited if schools are not able to draw effectively on the skills, energy and commitment of every member of the school community. Commitment is seen as an indispensable element of an effective school, so arousing the commitment of the teachers has become an important goal of these quality improvement policies. As verified in this research, stay-back is a good indicator of commitment, and can therefore be used to assess the effectiveness of the new educational policies in their ability to arouse teachers’ commitment. One must has to note and compare the hours the teachers stay back after formal workings hours before and after the implementation of those policies.

As mentioned earlier, educational stay-back was found to be positively and significantly related with commitment ($p < 0.05$) and when the casual-comparative method was employed, teachers who stayed back proved to be more committed than those who did not ($p < 0.1$). There is, therefore, no doubt that there exists a relationship between stay-back and commitment and that educational stay-back is an effective means of measuring commitment. However, according to Borg and Gall (1989), it is difficult to establish causality on the basis of the data collected. The significant result for the stay-back variable suggests that stay-back causes commitment. Other causal interpretations are possible, however: For example, it may be that teachers who are more committed stay back more. Furthermore, stay-back and commitment may be caused by a third factor, for instance, participative management which involves teachers in the decision-making of school policies and teachers are thus more committed to their job and always stay back to do something educational. If this is the case, the management style is the primary causal factor.

If stay-back causes commitment, school managers should then encourage teachers to stay back after school. The administrators themselves also have a vital role to play in encouraging teachers to stay behind. Commendation from superiors is also an effective way to encourage stay-back as it can boost staff morale. When teachers’ sense of belonging to the school has increased, they are likely be more willing to stay back.

In addition, the findings in this research also have implications for the government in devising personnel management policies. Results revealed that tenure relates with commitment at a statistically significant level ($p = 0.09$). This means that the longer a teacher stays in teaching, the more committed to the profession he or she will be. So, if the government wants to have more committed teachers in the profession, it must endeavour to retain them.

Another factor which related positively and significantly with commitment was age, i.e. the older a teacher, the more committed he or she was. This is not difficult to understand, as age and tenure were found to be highly positively and significantly related with each other ($r = 0.87$, $p < 0.05$). So, the government should retain more senior teachers, in terms of age and teaching experience, in the teaching profession.

Apart from stay-back, tenure and age, marital status was also found to be related to commitment. Causal-comparative analysis revealed that married teachers were significantly more committed than single teachers. It should be noted that when compared with the commercial field, teaching is relatively less attractive in terms of the fringe benefits and welfare it provides. Consequently, most people put teaching at the bottom of the list when choosing their career. This also explains why enrolment in teacher training colleges is declining. On the other hand, some single teachers may be engaged in part-time jobs outside school, so they are less committed to teaching. They are younger in general and were found to be less committed, as age was positively and significantly related to commitment. So, devising administrative policies, the government should take these factors into consideration.

Finally, school managers should be more careful in promoting staff. It is generally believed that those occupying higher positions and who therefore have more say in decision-making are the more committed staff. Nevertheless, in this study, no significant relationship was found between position and commitment which means that teachers occupying higher positions are not necessarily more committed than the others. On the other hand, teachers who stay back are more committed ($p < 0.1$). This implies that school managers may not have promoted the right people. There may, therefore, be a need to devise better criteria for promotion so as to ensure that the more committed people are promoted to improve the quality of education.

**Limitation**

The results of the present research must be interpreted with several limitations in mind. First, the subjects of this research are a rather restricted group among the 18,000
Effects of stay-back on commitment

Teachers' professional commitment questionnaire'' may only, and five other questions set exclusively for this study. However, analysis revealed that the questionnaire used in this research has its drawbacks. It is not discriminating enough to distinguish the more committed teachers from the less committed ones as the commitment levels reported by the subjects lie within a small range. This may be due to the fact Mowday and McDade's (1979) “Organizational commitment questionnaire” may not fit the situation in Hong Kong since the authors’ environment and culture are different from that in Hong Kong. A scrutiny of the sample distribution of commitment showed that the distribution was more peaked than normal as kurtosis was greater than zero (kurtosis = 3.22) and the majority of the sample had a higher commitment level than the mean as the distribution was skewed to the right (skew = -1.04).

On the other hand, distinction between the educational and non-educational stay-back activities was not clearly made. For example, activities like chatting with colleagues, chatting with students, assisting colleagues and playing chess, ball games, etc. with colleagues or students can be counted as either educational or non-educational activities; thus, in the process of data analysis, such data required special treatment, as mentioned in the methodology section. In order to simplify analysis and to make the results more accurate, some sort of classification strategies could be introduced to handle mutually inclusive situations between the two groups of activities.

Moreover, the various stay-back activities should be more carefully laid out in the questionnaire so that formally similar activities which can be of two different natures, namely voluntary and compulsory, can be better contrasted against each other and respondents can provide more accurate data which can improve the reliability of the results. If the two question items are too far apart, a respondent might have mistakenly taken one for another and by the time he came to realize his mistake, he might not want to correct his answers just to save the trouble. This would result in data contamination which is an obstacle to obtaining reliable research results.

Finally, the indicator, teachers’ stay-back, developed in this research is not intended to be a means for comparing the commitment level of individual teachers when an individual’s interest is at stake. It is more accurate for measuring the commitment of a group of teachers, or of a whole school, or of a whole type of school. And as discussed before, some teachers may deliberately stay back when they know they are being observed, especially if such an observation of stay-back provides a basis for promotion. So, stay-back as a means for measuring commitment should not be made too public. However, school managers must bear in mind that it is educational stay-back which is found to be significantly related to commitment rather than non-educational stay-back. So, in assessing a teacher’s commitment, the school manager should take into account the nature of stay-back rather than just looking at the total stay-back time. For example, just clocking people out is too simple to be accurate.

**Recommendations and future work**

Every limitation of the proposed methodology presents opportunities for future
Effects of stay-back on teachers' professional commitment.

In view of the significant findings in this study, the importance of stay-back as a means in measuring commitment cannot be overlooked. It is a topic which has been seldom studied. This paper has opened up a new sub-field. Stay-back is a variable worth more investigation in school education. Its relationship with school effectiveness, management style, teacher characteristics and effectiveness (Cheng and Tsui, 1996), school ethos, etc. are possible areas.

There are quite a few policy measures in Hong Kong, like SMI, the phasing in of graduates in primary schools, TOC, etc., which can have their effect on teachers' commitment measured by observing stay-back data before and after the implementation of those policies, and then compared.

Besides, it is worth putting in more effort to devise a better commitment questionnaire which can more accurately reflect teachers' professional commitment. Furthermore, how to measure teachers' stay-back time is also a possible area of study. As stated earlier, a clear distinction should be drawn between educational and non-educational stay-back activities and the questionnaire should be simplified so that more reliable data can be obtained from the respondents, and hence more reliable results can be generated. The high predictability of TSIFE on commitment has reinforced this belief.

To increase the validity and generalizability of the research result, the questionnaire should be administered to more varieties of schools and teachers who are more representative of the teaching profession.

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