

# The Effect of Previous Subject Knowledge on Student Performance in the Subject of Principles of Accounts in the Hong Kong Advanced-level Examination: A Case Study

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There is a general understanding among accounting teachers that those who have previous subject knowledge in Principles of Accounts (POA) will perform better than those who do not. This study has two aims. The first one is to test the assumption of accounting teachers that, "Students with previous subject knowledge in Principles of Accounts can attain better grades in their Hong Kong Advanced-Level (A-Level) Examination for Principles of Accounts than those who do not." The second aim is to find out if there is any correlation between the English and Mathematical ability of the students and their A-Level POA performance. Our findings indicate that students with previous subject knowledge in POA can attain better grades in their Hong Kong Advanced-Level Examination for POA than those who lack such knowledge; and that the mathematical ability of the students is highly correlated with their A-Level POA performance.

**Keywords:** previous subject knowledge, accounting, advanced level examination

There is a general understanding among accounting teachers that those who have previous subject knowledge in Principles of Accounts (POA) will perform better than those who do not. Many teachers believe that if the school can take in more students with previous subject knowledge in accounting, the Hong Kong Advanced-Level Examination (HKALE) results for university entrance on POA of the school can certainly be boosted. If this rationale proves to be correct, by the time the school selects applicants for the Form 6 (a two-year course leading to the university) POA classes, priority may have to be given to those students who have previous subject knowledge in POA. This may affect the course design, class

structure, admissions decisions, and the assignment of students to classes of the school.

The aims of this study are twofold. First, this study aims to test the assumption of accounting teachers that, "Students with previous subject knowledge in Principles of Accounts can attain better grades in their Hong Kong Advanced-Level Examination for Principles of Accounts than those who do not." The second aim is to find out if there is any correlation between the English and Mathematical ability of the students and their A-level POA performance. Students here refer to the A-Level graduates of School A who have studied POA in the three consecutive years. For simplicity and following the intake system of the

school to be studied, previous subject knowledge in POA is confined only to previous studies in the Hong Kong Certificate of Education Examination (HKCEE) level POA; without considering other studies like London Chamber of Commerce (LCC) Examination on accounting and other bookkeeping short courses.

The school (known herein after as 'School A') in this study is a non-profit co-educational institution offering a two-year full-time course at post-Form 5 level to students who intend to enter business-related degree programs in tertiary institutions and take up careers in Hong Kong's business sectors. The course leads to the Hong Kong A-Level Examination conducted by the Hong Kong Examinations Authority. All students who have completed Form 5 with passes in English (Syllabus B), and Chinese and have satisfied the minimum entrance requirements are considered by the school, no matter which stream they come from. Preference is not given to students of the commercial stream, in which the subject POA is usually offered. As a result, some of the students who study POA in School A have previous subject knowledge (HKCEE level POA) while others do not. Since A-Level POA requires a more in-depth study, which builds upon a strong foundation that has already been established in the Certificate level, extra classes (two periods of 45 minutes each per week) within the normal timetable of Form 6 have to be given to those who do not have previous subject knowledge in POA. Thus the POA students in this study are divided into two types, the positive class (those with previous subject knowledge) and the negative class (those without). The hypothesis is the population proportion of students who have not studied POA in the HKCEE level did no worse than those who have.

## BACKGROUND STUDIES

Various studies have examined the effect of previous subject knowledge in accounting on the student performance in College/Graduate-Level accounting only. Most of these studies have been confined to the United States and other Western countries. The study in Hong Kong by Gul and Fong (1996) suggested that previous subject knowledge of accounting was a significant predictor of student performance. The result was consistent with an early study by Smith (1968) who worked with a limited sample of 40 students enrolled in the first college course.

Bergin (1983) found that the students who have studied accounting previously perform better than the others at the beginning of the course, but worse than the others when the material begins to get more difficult. Bergin collected information from 140 students on the extent of their high school bookkeeping/accounting (HSB) coursework, but nearly all students with a HSB background had studied no more than one year of HSB courses. Therefore, his data were insufficient for statistical tests on the association between examination performance and the level of HSB coursework.

Schroeder (1986) grouped the students by the amount of their previous accounting coursework (none, one year or less, and over one year). Results indicated no difference in overall course performance between college students without prior accounting coursework and those with one year or less of high school accounting coursework. However, students with more than one year of high school coursework earned significantly higher scores in all exams in the college introductory financial accounting course. Moses (1987) suggested that after controlling for general academic ability, grades in graduate accounting are not predicted by prior accounting coursework.

While previous studies produced mixed results concerning the effects of previous accounting study on performance in the first college-level accounting course, they have documented the role of previous subject knowledge of accounting at lower levels of the educational process on achievement at more advanced levels. The current study was designed to test the effect of previous subject knowledge at secondary level on the examination performance of students in matriculated level in a school in Hong Kong.

Wong and Chia (1996) investigated the interaction between proficiency in both Mathematics and English on students' performance in the first-year level Financial Accounting course. The findings showed that a higher degree of proficiency in Mathematics was associated with a higher level of performance in the Financial Accounting course for students who were more competent in English.

### *Aim 1*

The hypothesis was tested by using **parametric** statistical methods. The sampling frame was the POA A-Level graduates of year 1 (297 students), year 2 (272 students) and year 3 (260 students) in School A. They represented 6-7% of the total POA A-Level candidates in Hong Kong in those years. Examination

**Table 1**  
*Summary of findings and analysis*

Graduate Year	Percentage of students who passed					
	A-Level POA		Z	No. of P <sub>1</sub>	No. of P <sub>2</sub>	Result
	P <sub>1</sub>	P <sub>2</sub>				
Year 1	79.1%	82.2%	-0.6751	134	163	Do not reject H <sub>0</sub>
Year 2	95.0%	87.0%	<b>2.3386</b>	92	180	Reject H <sub>0</sub>
Year 3	95.8%	87.9%	<b>2.3766</b>	115	145	Reject H <sub>0</sub>

grades were obtained from the student registrar. HKCEE grades and HKALE grades were used. The students were divided into two distinct groups: those who had studied POA at the HKCEE level; and those who had not studied POA at the HKCEE level. The population proportion of these two independent groups was being compared to determine whether there was any significant difference between the two. The populations of both groups were normally distributed.

P<sub>1</sub> = students who have studied POA in the HKCEE level

P<sub>2</sub> = students who have not studied POA in the HKCEE level

H<sub>0</sub> = the population proportion of students who have not studied POA in the HKCEE level did no worse than those who have.

H<sub>1</sub> = The population proportion of students who have studied POA in the HKCEE level did worse than those who have not.

$$H_0: P_1 < P_2 \text{ vs. } H_1: P_1 > P_2$$

The test statistics were given by:

$$Z = \frac{\bar{p}_1 - \bar{p}_2}{\sqrt{\bar{p}(1-\bar{p})(1/n_1 + 1/n_2)}}$$

Using  $\alpha = 0.05$  significance level. The corresponding critical values was 1.645 for one-tailed test.

The results indicated that there is no evidence against H<sub>0</sub> for the graduate year 1. This suggested that students who did not study POA at the HKCEE level did no worse than those students who studied POA at

the HKCEE level. For the graduate years 2 and 3, there was evidence against H<sub>0</sub> at the 5% significance level. Hence, this suggested that students who did not study POA at the HKCEE level did worse than those students who have studied POA at the HKCEE level.

The results suggested that graduate year 1 was inconsistent with that of years 2 and 3. It was quite surprising that the students who had no previous subject knowledge in accounting did no worse than those who did. The difference in the passing rate of the two groups was not so significant than for those of the following two years. This finding was discussed with the panel head of the Accounting Section. Upon further investigation, she pointed out that the class structure for the students of graduate year 1 was not so sharply divided into positive and negative groups as had been previously stated. Instead, twenty-nine students who failed in their HKCEE level POA had been assigned to study in the negative classes. Therefore, some of the negative classes were mixed with both types of students. Since these students had previous subject knowledge, they might help to facilitate the learning of the other students without previous subject knowledge. Though their effectiveness in facilitating others remained doubtful, they proved their abilities by passing the A-Level POA, which is much more difficult and in-depth than the HKCEE level POA. The panel head claimed that in order to avoid confusion, from that year onwards, all students who have studied HKCEE level POA have had to join the positive classes.

In addition, for students graduated in year 1, the proportion of the year 1 graduates who had no previous subject knowledge in accounting was the largest among three years. This large proportion of negative classes may in turn lower their probability of passing the A-Level POA.

Therefore, it was expected that without the previously-mentioned exceptions, the results of the students in the different year levels may be consistent. The reasons for such consistency were caused by the standardized teaching format. All classes used the same financial accounting textbook supplemented by standard handouts. Classroom lectures centered on these materials, thus reducing the differences in the lectures among the students in different sections. This procedure was used to control for possible effects of variations in teaching style. It was important to remember, however, that different teaching approaches can affect students in different ways. It was possible that another teaching approach may have led to different results. All classes shared the same assignments, tests, and supplementary exercises. A strict teaching schedule was followed and frequent meetings among the accounting teachers were conducted to share their experiences and monitor the progress. Staff turnover was quite low. Over half of the staff had taught at this school for more than six years. Therefore, the consistent result for the last two years was quite reliable.

### *Aim 2*

In order to investigate the applicability of the findings of this previous study on the school under study in this paper, further statistical testing was performed to test the factors for the high passing rate in A-Level POA for  $P_2$ . The general perception among teachers was that there exists a correlation between both mathematical ability and accounting as well as between English proficiency and accounting. This perception was tested by using the Spearman Correlation Coefficient (Table 2).

The correlation coefficients suggested that both results of HKCEE POA and HKCEE Mathematics have positive correlations with the results in A-Level POA, while no significant relationship exists between results of HKCEE English and the results in A-Level POA. The findings went in line with part of the generalization only, as the correlation with HKCEE

English was not so significant as expected. Since the overall average grade for English (Syllabus B) was consistently around grade D, the students' language ability was not so strong. They may be better with figures than in written subjects. Moreover, the medium of instruction was Cantonese. This may have helped minimize the language barrier that students encounter. These factors may account for the insignificant correlation as shown in the previous Table.

While the correlation of HKCEE POA and HKCEE Mathematics with A-Level POA is significant, it was not surprising that HKCEE POA has a greater effect on A-Level POA than HKCEE Mathematics does. Since HKCEE Mathematics and A-Level POA are numerical subjects, a higher correlation was expected. The results confirmed findings made by Gul and Fong (1996) and supported their proposition that previous subject knowledge of accounting and aptitude in mathematics have positive and significant effects on student performance in Year 1 introductory accounting courses in university. In addition, Schroeder (1986) reported that those students with more than one year of pre-university study of accounting outperformed the others.

Since the syllabus of A-Level POA is an extension of the HKCEE POA, which requires a more in-depth understanding of the subject, the students who have studied HKCEE POA would have briefly covered 60-70% of the topics in A-Level POA, even though the depth of coverage was at an elementary to intermediate stage. Since all the topics are familiar to them, it was certain that their foundation helps them a lot.

Even the examination pattern of the two public examinations is quite similar, emphasis was being put on calculation with few essay type questions. This could explain why our study is different from most of the findings from other countries, which indicated that there was no difference in overall performance between those students with previous subject knowledge in accounting and those without. These other studies centered on first year college accounting which no doubt requires more in-depth study and understanding

**Table 2**

*Spearman correlation (approximate significance) of HKCEE level subjects with A-Level POA*

	<b>HKCEE POA</b>	<b>HKCEE Mathematics</b>	<b>HKCEE English</b>
Year 1	.38553 (.00000*4)	.28901 (.00000*4)	.05920 (.30927*4)
Year 2	.50391 (.00000*4)	.24771 (.00004*4)	.07377 (.22523*4)
Year 3	.34170 (.00003*4)	.30214 (.00000*4)	.01897 (.76076*4)

of accounting theories rather than merely calculation. The students who have studied before shared fewer comparative advantages, thus providing chances for the other students without previous subject knowledge to catch up. In Hong Kong, the examination focuses 80% on calculation, which requires strong technical skills and can be sharpened throughout the two-year HKCEE POA. Since practice makes perfect, as long as enough time is given to drill the skills, it was not difficult for candidates to pass the A-Level POA. Thus, we could say that students who have previous subject knowledge in Accounting have a comparative advantage in studying A-Level POA in Hong Kong.

## CONCLUSION

Our findings indicate that students with previous subject knowledge in POA can attain better grades in their Hong Kong A-Level Examination for POA than those who lack such knowledge; and the mathematical ability of the students is highly correlated with the A-Level POA performance. This has a significant impact on the admission policy of School A. The proportion of students who have and who do not have previous subject knowledge in accounting may have to be reexamined. For example, if the target of the school is to achieve excellent results in the A-Level POA, preference will have to be given to those who have studied HKCEE-Level POA when admitting students. However, during the time of admission, the school is not without constraints. Since it may not have enough entrants who have studied accounting before, the proportion cannot be ensured. In that case, the school has to be ready to accept students with no accounting background. An important implication of this finding is that accounting educators should consider strategies for assisting students who have no previous accounting knowledge. One such possible strategy is perhaps for the school to run a "refresher" accounting course in summer (before term starts) to give such students a similar exposure to those who have accounting backgrounds.

Under the existing system, teachers of School A already offer two extra lessons every week for those Form 6 students without previous accounting knowledge. However, based on these findings, these additional lessons may not be sufficient for the students to catch up with the others. The extension of the policy of extra lessons to Form 7 may be considered. Apart

from this, the class size can be reduced especially for negative classes, so as to maintain a low student-to-teacher ratio. This can provide more opportunities for students to ask questions and for teachers to pay more attention to individual students.

### *Further research*

Gul and Fong (1996) suggested that besides previous knowledge of accounting, there were other factors affecting student's performance in POA. Take for instance, self-expectation of examination results, personality type, and intention to obtain a business degree. These predictors are worth further investigation.

### *Limitations*

Limitations of the study include the fact that the survey was specifically designed to examine the A-Level POA students of School A, and the results may not be generalized to other secondary schools in Hong Kong involved in accountancy. Other factors such as different course materials and teaching methods should also be considered when applying the results of this study to other institutions and environments.

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