

An inquiry of teachers' perception on the relationship between higher-order thinking nurturing and Liberal Studies public assessment in Hong Kong

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Abstract

Through a questionnaire survey of 41 Liberal Studies (LS) teachers from 40 secondary schools and interviews with 12 of them, the researcher compared the teaching processes and strategies for nurturing students' higher-order thinking (HOT). The study seeks to find out whether the LS implementation process is aligning with the aims of the curriculum. Result show that teachers have a strong tendency towards examination-oriented learning while acknowledging the focus on knowledge-based learning as the main difference of LS and its public assessment component from those of the traditional disciplines, the emphasis of the subject on the mastery of basic concepts and thinking skills and the need for the nurturing of HOT. There was widespread agreement with the operation of the public assessment design in the subject. The more experienced ones further agree that examination-oriented strategies are compatible with the development of HOT.

Keywords

higher-order thinking, Liberal Studies public assessment, mixed method design

1. Introduction

Liberal Studies (LS) is a new core subject for all New Senior Secondary (NSS) students in Hong Kong from 2009 onwards. Its aims are to “*broaden students' knowledge*

base and enhance their social awareness through the study of a wide range of issues”, “enable students to make connections across different fields of knowledge and to broaden their horizons” and “foster students’ capacity for life-long learning” (Curriculum Development Council & Hong Kong Examinations and Assessment Authority [CDC & HKEAA], 2007, p.1). The Education Bureau emphasizes that the curriculum, pedagogy and assessment should be well aligned (p.123-124). However, what are the views of teachers about the LS examinations in Hong Kong? What strategies do they use to help students learn effectively? Can the public assessment paper promote higher-order thinking (HOT) learning in LS? As the chairman of Creative Teachers Association and a researcher, the author conducted a study through a voluntary organization to find out teachers’ perception on the relationship between LS public assessment and the teaching and learning of HOT skills. Based on the findings, we outline the nature of LS and suggest some ideas for further research.

2. Literature review

The education assessment system is regarded as important as the invention of the computer, steam engine and wheel (Broadfoot, 2007, p.159). Its impact on human society is immense (Brown, Kennedy, Kerry, Fok, Chan & Yu, 2009; Cheng, 2010; Marginson, 2010; Kennedy, Chan, Yu & Fok, 2006) as the behaviour of teachers, pupils and policy makers can be significantly affected. It even shapes the choices for human life in future (Broadfoot, 2007, p.159). The implementation of assessment, including both formative and summative procedures, can affect students’ performance deeply and how far the purposes of the curriculum are being fulfilled. Studying teachers’ attitude towards LS public examination, guidance of students as well as the teaching and learning pedagogy involved would help us reflect the implementation of aims of the LS curriculum.

HOT is a rich concept that has attracted diverse interpretations by local and international academics (Yeung, 2012; Watkins, 2001; Wang & Wang 2011). Different scholars have different interpretations and understanding with different directions and perspectives (Fisher, 2001; Pithers & Soden, 2000; Gardner, 2006). *“A basic rule for assessment of HOT skills is to use tasks that require use of knowledge and skill in new or novel situations.”* (Nitko & Brookhart, 2011, p.223). *“Higher order thinking occurs when a person takes new information and information stored in memory and interrelates and/or rearranges and extends this information to achieve a purpose or find possible answers in perplexing situations”* (Lewis & Smith, 1993, p.136). In general, students are thinking at a higher order if they can put forward a well-reasoned view with reference to relevant concepts, discuss an issue from various perspectives, and demonstrate analytical and argumentative skills in the process.

Moreover, HOT is a disposition for a people to pursue the meanings and nature of

life. Socrates (470-399BC) claimed that, “*Wisdom begins in wonder.*” (cited Cooper, 2012). Dewey (1897) argued that education should not aim only at gaining content knowledge, but also at learning how to live. The purpose of education is the realization of one’s full potential and the ability to use those skills for the future life. Pedagogical content knowledge (PCK) of LS teachers needs to be investigated (Zhao & Fok, 2012) in this context.

For instance, active learning pedagogies play an important role in enhancing higher order cognitive skills among students (Madhuri, Kantamreddi & Prakash Goteti, 2012). While the goal of issue-enquiry in an authentic context is to promote HOT skills (Preus, 2012), learning through enquiry demands that students explain, analyse, give reasons or comment about them by “gap filling” (Bartlett, 1958). Questioning, issue-enquiry, interaction, learning communities and Independent Enquiry Study (IES) are encouraged as a result. Reflective thinking, integrative thinking and deep thinking can be encompassed into HOT too (Wang & Wang, 2011). Compared with memorization and looking for correct answers, HOT seeks to develop the potential of individuality such as critical thinking, creative thinking and problem solving skills (Zohar & Dori, 2003).

“Liberal Studies plays a unique role in the NSS curriculum by helping students to connect concepts and knowledge across different disciplines, to look at things from more than one single perspective, and to study issues not covered by any single discipline. It is more than just about developing thinking skills and positive values and attitudes. The nature of Liberal Studies is different from that of General Education or Liberal Education in universities. It is a curriculum organization that suits the curriculum contexts of Hong Kong and achieves the learning goals identified for senior secondary education.”

(Education and Manpower Bureau, 2005, p.6-7)

What does HOT mean in LS specifically? According to the CDC & HKEAA (2007), teachers can infuse HOT into the LS curriculum and help student achieve the learning goals identified for senior secondary education such as “*to develop multiple perspectives on perennial and contemporary issues in different contexts*”, to “*become an independent thinker*”, “*develop in students a range of skills for life-long learning, including critical thinking skills, creativity, problem-solving skills, communication skills and information technology skills*” (p.5).

LS assessment is claimed to adopt authentic assessment with hot issues and news are taken as the basis of questioning (Hong Kong Examinations and Assessment Authority, 2012). Unlike traditional examinations which emphasize knowledge reproduction abilities and low-level skills, complex thinking, personal opinions, ideas construction, and the elaboration of issues in contemporary contexts are demanded in the LS assessment.

The Hong Kong Diploma of Secondary Education (HKDSE) LS Seminar on Assessing Student Learning and the Assessment Framework for HKDSE LS 2014 (Hong Kong Examinations and Assessment Authority, 2013) highlighted the nature and development of LS assessment procedures and noted the value of using contemporary issues, problems or incidents in assessment questions. By drawing upon personal experiences and conducting issue-based enquiries, candidates can demonstrate their abilities in understanding and the application of knowledge. Based on the definitions of HOT from scholars, the government and the LS teachers' perceptions of LS learning and meaning in this paper, the author discusses and interprets the research topic during the process.

According to the above discussion and analyses, in order to help students meet the aims of the LS curriculum, HOT-based pedagogy is essential. The development of HOT skills is the core purpose of teaching and learning in LS. Teachers need PCK which is the unique knowledge of teachers (Zhao & Fok, 2012). How teachers understand the subject matter and internalise to create an effective mode of teaching will affect the realization of HOT skills learning. And how teachers understand the teaching content and knowledge to internalise individual teaching pedagogy and methodology to let students manage and understand HOT skills is crucial for knowing the implementation quality of the curriculum aims.

Research is a process of investigation. With the interpretive approach, this study was carried out to reveal teachers' perceptions. Data was collected through semi-structured interviews and a self-completion questionnaire survey. The implementation of HOT in LS was analysed from teachers' perspective and discussed with reference to the views of academics, curriculum developers and teachers.

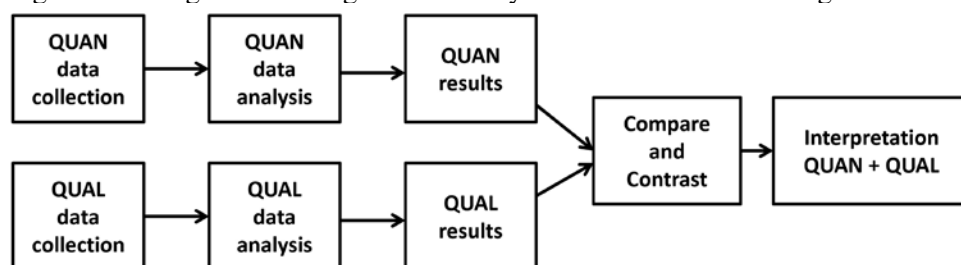
3. Research Design

This study aims at (1) identifying teachers' perception of the use of HOT pedagogy and the public assessment component in LS, (2) explicating the link between the two, and (3) examining the challenge of nurturing HOT in LS after four years of implementation. The questionnaire survey and subsequent semi-structured interviews were designed with the following research questions in mind:

1. What strategies are used by Form 6 LS teachers to help students achieve better results in the HKDSE?
2. How far do the teachers think that HKDSE LS can help in developing HOT skills?
3. What kinds of teaching pedagogy are adopted to develop students' HOT skills?

A single-phase triangulation design based on the Convergence Model of Creswell & Clark (2007, p.64) was used for collecting data (Figure 1). During a meeting¹ of markers in a simulation mock examination organised by Hok Yau Club (2012) in November, 2012, 48 copies of questionnaires (Appendix 1) without recording teachers' names were distributed to LS teacher who have attended Education Bureau LS training courses. Quantitative and qualitative methods were given the same degree of importance in seeking the answers to the research questions.

Figure 1: Triangulation Design in this study in relation to the Convergence Model



4. Research result and analysis

41 copies were returned and an 85% return rate was achieved. 44% of the participants have taught LS for four years or more, 32% have taught for three years, the other 24% have just taught for one or two years. Qualitative data collection was conducted by inviting 12 randomly selected teachers to a 10-minute semi-structured interview in December 2012 when they returned the marked scripts to the club. 11 interviews could be completed in due course and the responses were transcribed and analyzed². Information about the questionnaire respondents and interviewees is given in Tables 1 and 2.

Table 1: Information about the respondents in the questionnaire survey

Total no. of teachers	41
Gender	Male: 56% Female: 44%
Length of teaching LS	1 yr: 7% 2 yrs: 17% 3 yrs: 32% ≥ 4 yrs: 44%
Teaching LS since 2011-12	Yes: 66% No: 34%
Teaching LS since 2012-13	Yes: 63% No: 37%

¹ In order to ensure that the LS public assessment exam marking process is fair, objective and reliable, a system of marking is established, where each of the markers only marks one exam question. Every exam question will be marked by two staff.

² The full interviews recorded documents in Chinese can be accessed from www.cta.org.hk

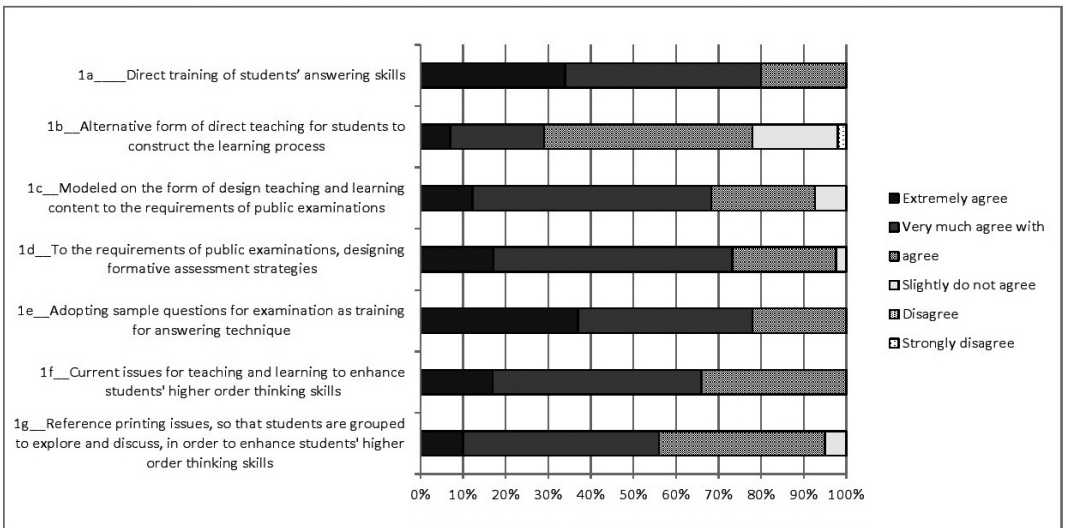
Table 2: Information about the interviewees

Interviewees	T1	T2	T3	T4	T6	T7	T8	T9	T10	T11	T12
Gender	M	M	F	F	F	M	F	M	M	M	M
NSS LS teaching experience (year)	4	2	4	2	4	4	3	4	3	4	4

Investigative issue 1 - *What strategies are used by Form 6 LS teachers to help students achieve better results in the HKDSE?*

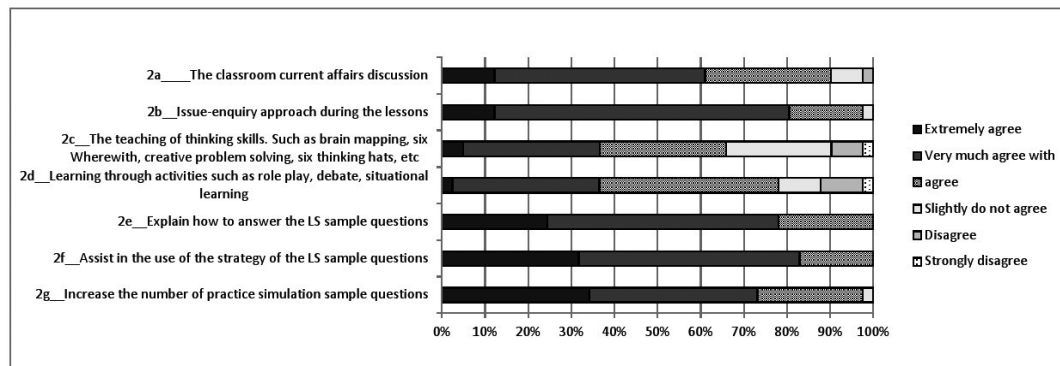
From the statistics of the questionnaires (part 1) shown in Figure 2, except item 1b, the data showed that 92% or above of the LS teachers agreed, very much or extremely agreed with using direct training of answering skills, examination-oriented practices, sample papers and current issues to help students achieve better in the HKDSE LS.

Figure 2: Teachers' views about teaching strategies



Statistics from questionnaires (part 2) in Figure 3 also showed that, except for item 2c & 2d, 90% or above of the LS teachers agreed, very much or extremely agreed that Sixth Form were more likely to use examination papers or sample questions to guide students for public assessment. Moreover, the issue-enquiry approach and current affairs discussion were preferred too. It showed that diversity teaching strategies or approaches were used for helping students obtain better results in public examinations.

Figure 3: Processes in the teaching of LS



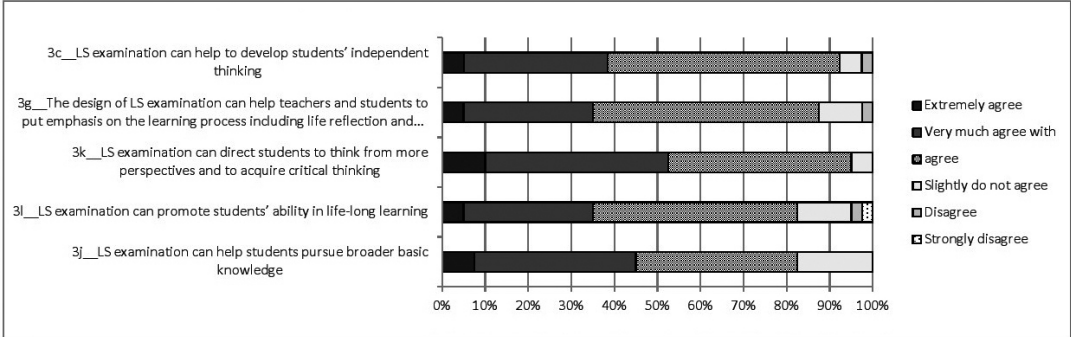
The strategies named by interviewees were well aligned with those named by the respondents in the questionnaires survey (Appendix 2). For instances, most teachers identified answering techniques as being very important for helping students perform better. Their responses focused on the training of answering techniques, use of sample questions for issue enquiry and application of constructivist concept to stimulate learning motivation and interest. For lower-ability students, one of the teachers would emphasise the memory of basic concepts and the needs for more practice.

Authentic assessment is used for LS (Or, 2012). Students are asked to perform real-world tasks that demonstrate a meaningful application of knowledge and skills. Teachers adopt different strategies to help students answer questions about current issues. They are examination-oriented on the whole and have used a wide range of strategies and processes (Appendix 3a) because of the novelty of authentic assessment procedures.

Investigative issue 2 - *How far do the teachers think that HKDSE LS can help in developing HOT skills?*

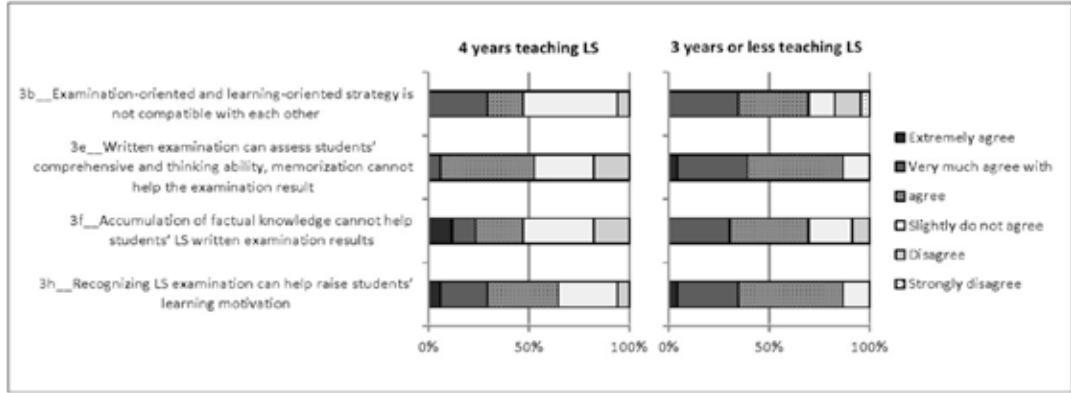
Questionnaires (part 3) in Figure 4 showed that 95% of LS teachers agreed, very much or extremely agreed “LS examination can direct students to think from more perspectives and to acquire critical thinking.” 92% of them agreed “LS examination can help to develop students’ independent thinking.” More than 82.5% of teachers agreed, very much agreed or extremely agreed with items 3g, 3j and 3l. Nevertheless, 95% agreed that “It is more important to help Sixth Form students with test-taking strategies than guiding students to explore learning.”

Figure 4: Teachers’ opinions on LS (1)



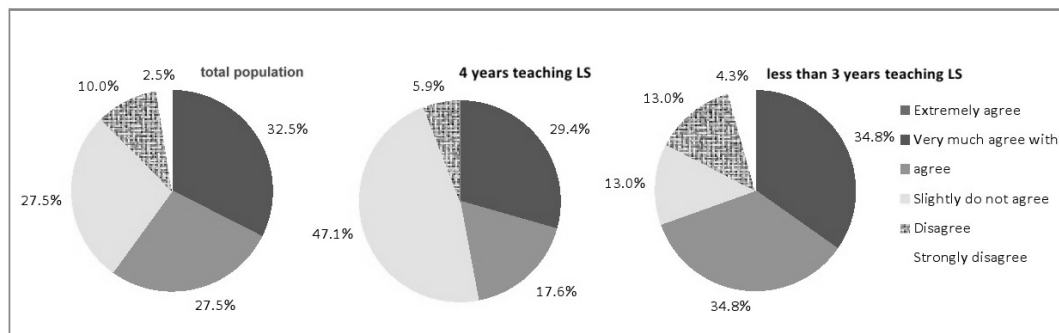
There were markedly different opinions on items 3b, 3e, 3f, 3h in part 3 between teachers with 4 years or more of LS experience and teachers with 3 years or less of LS experience as shown in Figure 5.

Figure 5: Teachers’ opinions on LS (2)



A comparison was made between these two groups of teachers. More experienced teachers tended not to agree with statements like “*Examination-oriented and learning-oriented strategy is not compatible with each other*”, “*Accumulation of factual knowledge cannot help students’ LS written examination results*”, “*Written examination can assess students’ comprehensive and thinking ability, memorization cannot help the examination result*” and “*Recognizing LS examination can help raise students’ learning motivation*”. It reflected that more experienced teachers were more likely to accept examination-oriented and learning-oriented strategy as being compatible with each other as shown in Figure 6. They were also in favour of the accumulation of factual knowledge and memorization of facts. However, almost half of the respondents held different opinions. Further research in these areas is desirable and needed.

Figure 6: Opinions on examination-oriented and learning-oriented strategy



The interviews revealed three types of opinions on whether LS public assessment teaching strategy is compatible with the nurturing of HOT skills during interviews. Feedback from the first group of teachers reflected that public examinations would hinder the development of HOT. Students were too directed towards tools for examinations and depended on memorisation for exams. Sharing opposite views, some teachers believed that the present examination model was capable of assessing the mastery of analysis, evaluation and creative thinking. Students were required to demonstrate a mastery of thinking skills and present a sound discussion based on evidence. They could not meet the criteria by only remembering facts without conceptual linkage. If examinations focus on the application of thinking skills, students also need to start learning from thinking.

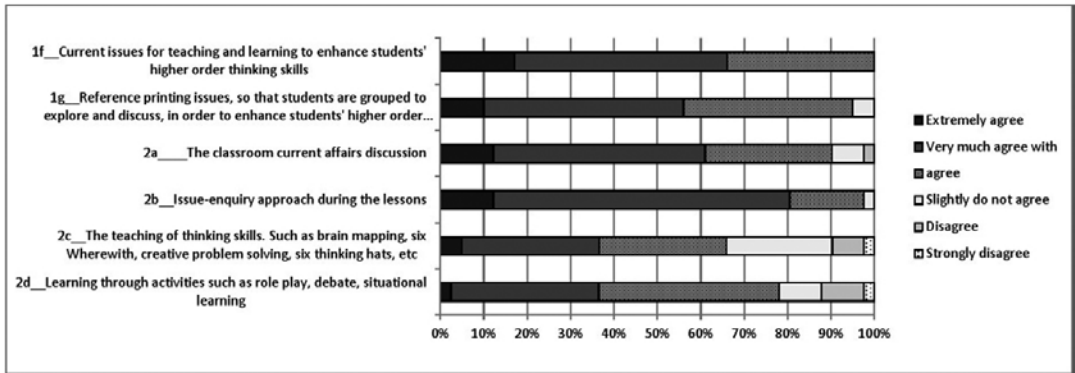
Some teachers felt that examinations could help high-ability students to develop HOT abilities but not low-ability students. Others however thought some of the thinking skills questions were too instrumental and could not help to promote independent thinking and encourage students to show their care for their living environment. Backed with confidence and strong rationales, five teachers out of eleven agreed that HKDSE LS could help students develop HOT skills during the process of teaching and learning in the lesson. Four of them considered that there were two sides to a coin. Only two of them considered it was an obstacle to the development of students' HOT (Appendix 3b).

Investigative issue 3 - What kinds of teaching pedagogy are adopted to develop students' HOT skills?

HOT nurturing in LS can be interpreted as developing multiple perspectives on current issues, to become independent thinkers, and to develop a range of skills for life-long learning (CDC & HKEAA, 2007, p.5). In order to nurture HOT skills, 90% or more of teachers agreed, very much or extremely agreed with items 1f, 1g, 2a and 2b shown in Figure 7. The discussion of current issues, issue-enquiry and group enquiry are often used. 78% of teachers agreed with the need to help students learn through activities such as role-

play, debate, situational learning. 65.9% of them would use methods for the teaching of thinking skills, such as brain mapping and six thinking hats, etc.

Figure 7: Teachers’ pedagogy for developing HOT skills



During the process of interview, teachers were asked about strategies, approaches and effective models and methods to develop independent thinking skills, diverse perspectives and life-long learning attitudes. Most of the teachers considered concept learning very important. The processes of discussion, interaction, argumentation or role-play through issues, current affairs or sample questions to promote analytical and critical ability, multiple-dimensional perspectives and individual thinking ability were followed in the lessons. IES was considered to develop independent thinking skills.

Moreover, one of the teachers implemented “LS is life”. It is a combination of school curriculum and life experiences that help students to learn. Another recognised that teacher could nurture higher levels of thinking and analytical ability as LS is an integrated subject. Another expressed that different frames of analysis could be applied in different issues for discussion. More teachers would make use of current affairs as the basis for exploring and constructing teaching and learning content. Also they would use the sample questions as the basis for discussion from different perspectives. Teachers’ responses could be roughly divided into three groups, namely the nurturing of life-long learning, development of multiple-dimensional perspectives and scaffolding for independent thinking as shown in Appendix 3c.

5. Discussion

5.1 Examination-oriented modes of teaching and learning

Most of the interviewees with more experience in LS were in favour of examination-oriented mode of teaching and learning (Appendix 1: 1c-1f). Investigative issue 1 reflected that teachers still focus on the public examination requirement and assessment-spirited

strategies to guide students for learning. This trend is compatible with the findings in many studies (Berry, 2011, p.17, cited Morgan, 1996; Preece & Skinner, 1999; Shen, 2002) that summative test requirements tend to dominate the assessment practice of many teachers. It is exactly the same as Broadfoot's worry that "the assessment tail nearly always wags the curriculum dog" (Broadfoot, 2007, p.8) as curriculum and assessment can never really be separated. The public examination is influential, high-stakes exercise because priority is often given to result (Chapman & Snyder, 2000; Fischer, Bol & Pribesh, 2011; Berry, 2011). As pinpointed in the curriculum and assessment guide, *"The most important role of assessment is in promoting learning and monitoring students' progress. However, in the senior secondary years, the functions of assessment for certification and selection come to the fore. Inevitably, these imply high-stakes uses of assessment, since the results are typically employed to make critical decisions about individuals that affect their future"* (CDC & HKEAA, 2007, p.121).

The research findings show that the examination-oriented modes of teaching and learning mode of LS are different from the traditional "pyramid assessment system" which Berry (2011) claimed would encourage students to learn factual content by rote and memorising the model answers. Investigation issue 2 found that experienced teachers such as T9 were more in agreement with the examination-oriented and learning-oriented strategy. Similar finding of Zhao & Fok's (2012), the PCK of experienced teachers (such as pedagogy for HOT teaching and learning) is significantly richer than that of novice teachers.

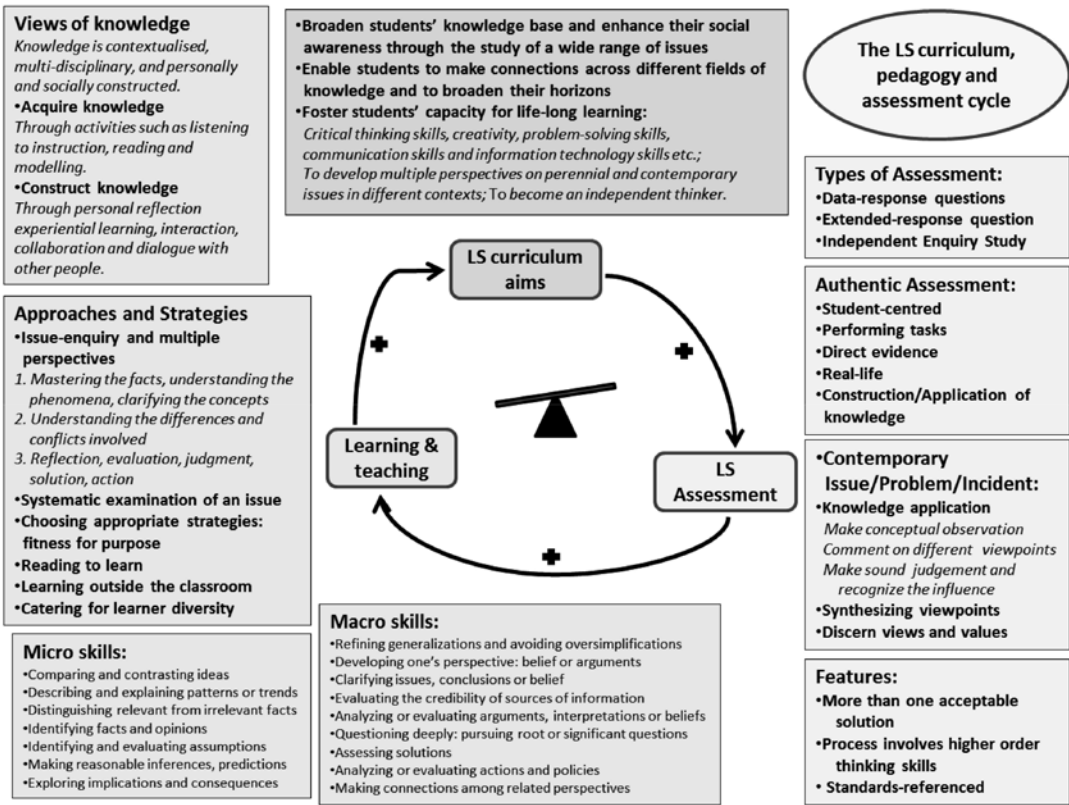
Experienced teachers have firm and rational reasons to support the nurturing of HOT. Their views are more compatible with the emphasis of the curriculum reform which recognizes assessment is highlighted as the key for learning (Education Commission, 2000; Curriculum Development Council, 2002). As highlighted in the Senior Secondary Curriculum Guide, *"assessment is an integral part of the curriculum, pedagogy and assessment cycle."* (Curriculum Development Council, 2009, 4.2.1) and assessment policies have significant impact on supporting learning process.

5.2 Nature and development of HOT in LS assessment

Over 82% of teachers in the questionnaire survey and 5 of the 11 in the interviews thought that the LS examination could help in developing HOT skills (Appendix 1: 3c, 3g, 3j, 3k, 3l and Appendix 3b: T4, T6, T8, T9, T10), and used a variety of strategies for this purpose (Appendix 3c). Most of them had a positive perception on the relationship between HOT nurturing and LS public assessment. They agreed that the LS public examination is greatly different from the traditional examination model in terms of mastery and understanding of concepts, investigation of issues, and perspectives of thinking strategies. Systematic steps on nurturing the learning process or whole school curriculum and the construction of similar thinking modes to stimulate learning were therefore encouraged (Appendix 3a: T7, T8, T9, T10 and Appendix 3c: T4, T6).

Actually, the blueprint of educational reform laid out in 2000 by Education Commission (2000) has led to the adoption of the policies of “Learning for life – learning through life” and “Learning to learn” The former emphasizes the building of life-long learning society while the latter (Curriculum Development Council, 2001) foster the development of independent learning (Kennedy, 2011). To realize these two aims, a paradigm shift and pedagogical changes by teachers are essential. However, in an examination-oriented city such as Hong Kong (Brown, et al., 2009; Marginson, 2010; Kennedy, et al., 2006), the format and nature of the high-stake public examination seem not conducive to such changes. Nevertheless, the issue-enquiry approach in LS encourages the learning of HOT skills for the 21st century (Pink, 2005). In order to improve assessment literacy, EDB, HKEAA, international and local experts should work together in changing the rules of the assessment game as shown in Figure 8. Double marking can improve the validity and reliability of assessment (Coniam, 2011). However, only by successfully infusing HOT into the learning and teaching process, can the aims of the LS curriculum be achieved in practice.

Figure 8: The LS curriculum, pedagogy and assessment cycle



The issue-enquiry approach and emphasis on authentic assessment that encourage students to express themselves logically, to assess, discuss and judge various issues (Or, 2012) are the characteristics of the examination design for LS. Students have to master the new features of the assessment framework including IES for school-based assessment, the use of standards-referenced grading (for three data-response questions and one extended-response question) in the written examination. Instilling HOT during the teaching and learning process is essential because it can help them analyse sensitive issues (such as the June 4, 1989 crackdown and the filibuster campaign in the legislature) (*South China Morning Post*, 2013, April 17) that may appear in the examination.

5.3 Challenge for the implementation of HOT in LS

Although changes to the examination can be valuable vehicles for shaping instructional practices, success is not assured (Chapman & Snyder, 2000) and its influence can be largely a perception phenomenon (p.462, cited Madaus & Kellaghan, 1993). Teachers are often unable to make the necessary changes in the classroom to improve students' performance. Most of them accept drilling with reference to past examination papers and simulated exercises in spite of believing that memorisation of facts is ineffective and realising that teacher can cause a negative impact on candidates. Others have used diverse strategies, skills and processes (Appendix 3a) to nurture HOT abilities, although they were still holding the traditional concept of viewing learning as hierarchical from lower order cognitive skills to more complex ones.

Resnick (1987) challenged the concept that “*all individuals, not just elite, can become competent thinkers*” (Zohar, Degani & Vaaknin, 2001; cited Resnick, 1987). Zohar's research finds that teachers' beliefs about low-ability (LA) students and thinking are related to their general theory of instruction. If teachers see their role as transmitting knowledge and covering the curriculum rather than guiding students in thinking and constructing knowledge, or seeing learning as hierarchical in terms of cognitive levels, they may think that HOT is not equally appropriate for LA and high-ability (HA) students. However, any students who can provide an explanation of an authentic issue or describe the key features of new data can be regarded as using HOT skills.

Although the curriculum guide has accorded priority to authentic assessment and the issue-enquiry approach to learning aligns with these aims, discrepancies among the intended, the implemented and the assessed curriculum are obvious (Cheng, 2011, p.69). As a new subject, LS has to develop and search for its disciplined knowledge and PCK. There are still lots of unknown and gaps for discovery. Research about teachers' perceptions on HOT in LS and their opinions on constraints and challenges is helpful for evaluating the implementation of the curriculum in future.

6. The limitations of the research

Studies on the relationship between public assessment and HOT are rare, especially in regard to LS. This study is a pioneer attempt for learning teachers' perceptions in these areas. In view of the limited source and number of participants (who might be supportive of the examinations), the reliability of the findings is limited. Broader and more in-depth evidence should have been collected with data about the impact of the examinations on students. The relatively short interviews lasting for 10 minutes each is also a limitation to understanding. All these concerns should be addressed in future studies in this area.

7. Conclusion

This study has adopted a triangulation design based on the Convergence Model to identify teachers' perceptions on public assessment and the use of HOT pedagogy in LS. Most of the teachers are examination-oriented although a wide range of strategies has been used to help students face the high-stake authentic assessment. The more experienced teachers thought that the examination-oriented and learning-oriented strategies were compatible with each other. And most of them had positive perception about the relationship between HOT nurturing and authentic assessment in LS.

The LS examination is different from traditional examinations. Not knowing much about its requirements, it is natural for teachers to be more examination-oriented and accord high priority to the development of knowledge and the thinking skills. They have adopted different teaching strategies or HOT skills for helping students answer issue-based questions. However, this study has found that there are different interpretations of the meaning of HOT and there may be alternative or misconceptions about it especially in terms of pedagogy. Inquiry is necessary in this regard and the limitations in research design should be addressed in follow-up studies given the fact that LS is a core subject with the aims of enhancing life-long learning, multiple-dimensional perspectives, the scaffolding of knowledge and independent thinking.

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Appendix 1

LS Questionnaires for teachers

1. 為了讓學生獲得通識教育科文憑試較佳成績，本學年，我運用以下教學策略：
In order to allow students to obtain the Liberal Studies diploma test and get better results this year, I use the following teaching strategies:

	Extremely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
a. 直接培訓學生答題技巧 Direct training of students' answering skills	34%	46%	20%	0%	0%	0%
b. 以直接教授形式替代學生建構學習過程 Alternative form of direct teaching for students to construct the learning process	7%	22%	49%	20%	0%	2%
c. 以公開考試要求為藍本，設計教學形式與學習內容 Modeled on the form of design teaching and learning content to the requirements of public examinations	12.2%	56.1%	24.4%	7.3%	0%	0%
d. 以公開考試要求為藍本，設計形成性評估策略 To the requirements of public examinations, designing formative assessment strategies	17.1%	56.1%	24.4%	2.4%	0%	0%
e. 採用模擬考卷及去年度考卷作應試答題技巧的訓練 Adopting sample questions for examination as training for answering technique	37%	41%	22%	0%	0%	0%
f. 以時事議題作教學，增強學生高階思維能力的學習 Current issues for teaching and learning to enhance students' higher order thinking skills	17%	49%	34%	0%	0%	0%
g. 參考坊間議題，讓學生分組探究討論，以增強學生高階思維能力 Reference printing issues, so that students are grouped to explore and discuss, in order to enhance students' higher order thinking skills	10%	46%	39%	5%	0%	0%

2. 為了讓學生獲得通識教育科文憑試較佳成績，我認同中六學年透過以下教學過程，以提升學生學業水平：

In order for students to get better grades in the LS Diploma assessment test, I agree with the teaching process below, in order to enhance the academic level of students:

	Extremely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
a. 課堂時事討論 The classroom current affairs discussion	12.2%	48.8%	29.3%	7.3%	2.4%	0%
b. 課堂議題探究 Issue-enquiry approach during the lessons	12.2%	68.3%	17.1%	2.4%	0%	0%
c. 教授思維技巧。例如腦圖、六何法、創意解難、六頂思考帽等 The teaching of thinking skills. Such as brain mapping, six Wherewith, creative problem solving, six thinking hats, etc.	4.9%	31.7%	29.3%	24.4%	7.3%	2.4%
d. 讓學生從活動中學習。例如角色扮演、辯論比賽、情景中學習等 Learning through activities such as role play, debate, situational learning	2.4%	34.1%	41.5%	9.8%	9.8%	2.4%
e. 講解通識模擬試題範本 Explain how to answer the LS sample questions	24%	54%	22%	0%	0%	0%
f. 協助運用通識試題示例答題策略 Assist in the use of the strategy of the LS sample questions	32%	51%	17%	0%	0%	0%
g. 增加練習模擬試題的次數 Increase the number of practice simulation sample questions	34.1%	39.0%	24.4%	2.4%	0%	0%

3. 就通識教育科，我有以下意見：

My opinion to LS:

	Extre- mely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
a. 中六時，協助學生應試策略較導引學生探究學習更重要 It is more important to help Sixth Form students with test-taking strategies than guiding students to explore learning	30%	35%	30%	5%	0%	0%
b. 應試策略與學習策略有很大分別，不能相容 Examination-oriented and learning-oriented strategy is not compatible with each other	0%	32.5%	27.5%	27.5%	10.0%	2.5%
c. 通識教育科文憑試能夠促進學生掌握獨立思考能力 LS examination can help to develop students' independent thinking	5%	33%	54%	5%	3%	0%
d. 本科在學與教中採用的探究模式有助學生在筆試考卷中獲得較佳的成績 The issue-enquiry approach of this subject in F.6 can help students in written examinations	2.5%	27.5%	50.0%	20.0%	0%	0%
e. 筆試的重點在評估學生的理解和展示思考方法的能力，記憶與背誦無助提升成績 Written examination can assess students' comprehensive and thinking ability, memorization cannot help the examination result	2.5%	22.5%	47.5%	20.0%	7.5%	0%
f. 事實性資料的累積不一定有助學生筆試成績的提升 Accumulation of factual knowledge cannot help students' LS written examination results	5.0%	22.5%	32.5%	27.5%	12.5%	0%
g. 通識科文憑試考卷設計有助促進師生重視學習過程、包括生活反思與體驗 The design of LS examination can help teachers and students to put emphasis on the learning process including life reflection and experience sharing	5.0%	30.0%	52.5%	10.0%	2.5%	0%
h. 認同通識教育科文憑考試有助促進學生學習的動機 Recognizing LS examination can help raise students' learning motivation	5.0%	27.5%	45.0%	20.0%	2.5%	0%

	Extre- mely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
i. 培訓學生答題技巧而非只著重知識的掌握，將有助提升筆試的成績 Not only emphasis on knowledge acquirement but training answering technique which can help with the examination result	10%	28%	38%	18%	3%	3%
j. 通識科文憑試筆試的要求有助學生追求廣闊的知識基礎 LS examination can help students pursue broader basic knowledge	7.5%	37.5%	37.5%	17.5%	0%	0%
k. 通識教育科文憑試能夠導引學生多角度思考及批判思考能力 LS examination can direct students to think from more perspectives and to acquire critical thinking	10.0%	42.5%	42.5%	5.0%	0%	0%
l. 通識教育科文憑試有效促進學生掌握終身學習的能力 LS examination can promote students' ability in life-long learning	5.0%	30.0%	47.5%	12.5%	2.5%	2.5%

Appendix 2

Experienced and less experienced teachers' responses comparisons

1. 為了讓學生獲得通識教育科文憑試較佳成績，本學年，我運用以下教學策略：
In order to allow students to obtain the Liberal Studies diploma test and get better results this year, I use the following teaching strategies:

	Extremely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
a. 直接培訓學生答題技巧 Direct training of students' answering skills	38.9%* 30.4%#	50.0% 43.5%	11.1% 26.1%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%
b. 以直接教授形式替代學生建構學習過程 Alternative form of direct teaching for students to construct the learning process	11.1% 4.3%	22.2% 21.7%	55.6% 43.5%	11.1% 26.1%	0.0% 0.0%	0.0% 4.3%
c. 以公開考試要求為藍本，設計教學形式與學習內容 Modeled on the form of design teaching and learning content to the requirements of public examinations	16.7% 8.7%	61.1% 52.2%	22.2% 26.1%	0.0% 13.0%	0.0% 0.0%	0.0% 0.0%
d. 以公開考試要求為藍本，設計形成性評估策略 To the requirements of public examinations, designing formative assessment strategies	22.2% 13.0%	55.6% 56.5%	16.7% 30.4%	5.6% 0.0%	0.0% 0.0%	0.0% 0.0%
e. 採用模擬考卷及去年度考卷作應試答題技巧的訓練 Adopting sample questions for examination as training for answering technique	50.0% 26.1%	33.3% 47.8%	16.7% 26.1%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%
f. 以時事議題作教學，增強學生高階思維能力的學習 Current issues for teaching and learning to enhance students' higher order thinking skills	16.7% 17.4%	33.3% 60.9%	50.0% 21.7%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%
g. 參考坊間議題，讓學生分組探究討論，以增強學生高階思維能力 Reference printing issues, so that students are grouped to explore and discuss, in order to enhance students' higher order thinking skills	11.1% 8.7%	44.4% 47.8%	38.9% 39.1%	5.6% 4.3%	0.0% 0.0%	0.0% 0.0%

Remarks: * Responses from teachers with 4 years or more of LS experience

Responses from teachers with 3 years or less of LS experience

2. 為了讓學生獲得通識教育科文憑試較佳成績，我認同中六學年透過以下教學過程，以提升學生學業水平：

In order for students to get better grades in the LS Diploma assessment test, I agree with the teaching process below, in order to enhance the academic level of students:

	Extre- mely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
a. 課堂時事討論 The classroom current affairs discussion	16.7%* 8.7%#	44.4% 52.2%	27.8% 30.4%	11.1% 4.3%	0.0% 4.3%	0.0% 0.0%
b. 課堂議題探究 issue-enquiry approach during the lessons	22.2% 4.3%	55.6% 78.3%	22.2% 13.0%	0.0% 4.3%	0.0% 0.0%	0.0% 0.0%
c. 教授思維技巧。例如腦圖、六何法、創意 解難、六頂思考帽等 The teaching of thinking skills. Such as brain mapping, six Wherewith, creative problem solving, six thinking hats, etc.	5.6% 4.3%	38.9% 26.1%	16.7% 39.1%	33.3% 17.4%	5.6% 8.7%	0.0% 4.3%
d. 讓學生從活動中學習。例如角色扮演、辯 論比賽、情景中學習等 Learning through activities such as role play, debate, situational learning	5.6% 0.0%	38.9% 30.4%	27.8% 52.2%	11.1% 8.7%	11.1% 8.7%	5.6% 0.0%
e. 講解通識模擬試題範本 Explain how to answer the LS sample questions	33.3% 17.4%	44.4% 60.9%	22.2% 21.7%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%
f. 協助運用通識試題示例答題策略 Assist in the use of the strategy of the LS sample questions	33.3% 30.4%	55.6% 47.8%	11.1% 21.7%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%
g. 增加練習模擬試題的次數 Increase the number of practice simulation sample questions	44.4% 26.1%	33.3% 43.5%	16.7% 30.4%	5.6% 0.0%	0.0% 0.0%	0.0% 0.0%

Remarks: * Responses from teachers with 4 years or more of LS experience

Responses from teachers with 3 years or less of LS experience

3. 就通識教育科，我有以下意見：

My opinion to LS:

	Extre- mely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
a. 中六時，協助學生應試策略較導引學生探究學習更重要 It is more important to help Sixth Form students with test-taking strategies than guiding students to explore learning	41.2%* 21.7%#	35.3% 34.8%	23.5% 34.8%	0.0% 8.7%	0.0% 0.0%	0.0% 0.0%
b. 應試策略與學習策略有很大分別，不能相容 Examination-oriented and learning-oriented strategy is not compatible with each other	0.0% 0.0%	29.4% 34.8%	17.6% 34.8%	47.1% 13.0%	5.9% 13.0%	0.0% 4.3%
c. 通識教育科文憑試能夠促進學生掌握獨立思考能力 LS examination can help to develop students' independent thinking	5.9% 4.5%	35.3% 31.8%	47.1% 59.1%	11.8% 0.0%	0.0% 4.5%	0.0% 0.0%
d. 本科在學與教中採用的探究模式有助學生在筆試考卷中獲得較佳的成績 The issue-enquiry approach of this subject in F.6 can help students in written examinations	0.0% 4.3%	11.8% 39.1%	70.6% 34.8%	17.6% 21.7%	0.0% 0.0%	0.0% 0.0%
e. 筆試的重點在評估學生的理解和展示思考方法的能力，記憶與背誦無助提升成績 Written examination can assess students' comprehensive and thinking ability, memorization cannot help the examination result	0.0% 4.3%	5.9% 34.8%	47.1% 47.8%	29.4% 13.0%	17.6% 0.0%	0.0% 0.0%
f. 事實性資料的累積不一定有助學生筆試成績的提升 Accumulation of factual knowledge cannot help students' LS written examination results	11.8% 0.0%	11.8% 30.4%	23.5% 39.1%	35.3% 21.7%	17.6% 8.7%	0.0% 0.0%
g. 通識科文憑試考卷設計有助促進師生重視學習過程、包括生活反思與體驗 The design of LS examination can help teachers and students to put emphasis on the learning process including life reflection and experience sharing	11.8% 0.0%	23.5% 34.8%	47.1% 56.5%	11.8% 8.7%	5.9% 0.0%	0.0% 0.0%
h. 認同通識教育科文憑考試有助促進學生學習的動機 Recognizing LS examination can help raise students' learning motivation	5.9% 4.3%	23.5% 30.4%	35.3% 52.2%	29.4% 13.0%	5.9% 0.0%	0.0% 0.0%

*An inquiry of teachers' perception on the relationship
between higher-order thinking nurturing and Liberal Studies public assessment in Hong Kong*

	Extre- mely agree	Very much agree with	Agree	Slightly do not agree	Disagree	Strongly disagree
i. 培訓學生答題技巧而非只著重知識的掌握，將有助提升筆試的成績 Not only emphasis on knowledge acquirement but training answering technique which can help with the examination result	18.8% 4.3%	25.0% 30.4%	31.3% 43.5%	25.0% 13.0%	0.0% 4.3%	0.0% 4.3%
j. 通識科文憑試筆試的要求有助學生追求廣闊的知識基礎 LS examination can help students pursue broader basic knowledge	5.9% 8.7%	47.1% 30.4%	29.4% 43.5%	17.6% 17.4%	0.0% 0.0%	0.0% 0.0%
k. 通識教育科文憑試能夠導引學生多角度思考及批判思考能力 LS examination can direct students to think from more perspectives and to acquire critical thinking	11.8% 8.7%	41.2% 43.5%	35.3% 47.8%	11.8% 0.0%	0.0% 0.0%	0.0% 0.0%
l. 通識教育科文憑試有效促進學生掌握終身學習的能力 LS examination can promote students' ability in life-long learning	5.9% 4.3%	35.3% 26.1%	41.2% 52.2%	11.8% 13.0%	5.9% 0.0%	0.0% 4.3%

Remarks: * Responses from teachers with 4 years or more of LS experience

Responses from teachers with 3 years or less of LS experience

Appendix 3

(a) The responders' teaching strategies and teaching process

Teaching strategies of the LS teachers: to guide students to know how to master the skills of answering issue-based questions, more sample paper questions practices, recitation of basic and crucial concepts, demonstration and reconstruction issue-enquiry approach of hot issues and so on. The following are some of the teachers' responses.

- T1. "It is the focus of answering techniques because it is very important in LS."
- T4. "It is true to write one time in the white block, to teach them how to write ideas or opinion. To try one time, two times, three times, to teach them how to write arguments. This is two kinds of training. To enhance their knowledge and answering technique need to be done at the same time."
- T6. "In teaching, teachers should make use of current affairs to stimulate students' interest not just teaching knowledge from textbook. To a certain extent, teachers should teach students' test-taking skills, e.g. compared this year's questions to previous year's to find out the difference. Therefore, teaching knowledge is important, teaching answering technique is also important. After the completion of the sixth form's curriculum, to enable students to do a variety of different kinds of questions to practice is necessary."
- T8. "Students need to revise this subject, but students may not apply what they have learnt... In fact, the volume of opportunities students do is not too much. That kind of practice for an exam was not enough. Students should take further steps to quote some materials and to explain based on their understanding ... If you want to be effective in a short period of time, it is necessary for exam-based repetitive exercises and to know more of the criteria of the marking system, to know how to score and how to get higher marks. Or even to memorise some key words which will help in getting higher marks."
- T9. "Students expect teachers to give information a little faster, or have digested a good idea to give them. The questions will be more drills in class, even if not practicing the test questions, but also will give students test mode on certain issues due to some of the framework opinions. ... Students' learning culture is to look up to authority, or look up a credible answer they think. If they believe, they will go back, will repeatedly learn. ... A lot when the concept is difficult to construct, for example, you want the students to grasp M-type society, or inter-generational poverty, such as the concept of the discipline, and I think the teachers explaining to students would be more effective."

Teachers often use the teaching process:

- T7. "To establish the foundation of skills will start from Form Four such as what perspective thinking skills are. What the concept of 'to what extent' is. More in depth issues, and focus on how to analyze, more discussion of the questions will be on Fifth Form. More examination-oriented training of exercises and practice across different units are in the sixth."
- T8. "When I teach in Form Four and Form Five, I will focus on course content and subject matter first. Then I will associate different units together. I have not started to catch all the key words of the exam questions at the beginning. However, I will start to drill students on how to answer the exam questions at the end of Form Five. Both training exam techniques and to grasp the concept advocated by the LS are necessary."
- T9. "More time can be spent on the process of constructing knowledge in Form Four and Five. There may be a variety of activities to help them to master the issues. Significantly in Form six, more drilling in answering techniques is in class..." On certain issues due to test mode, teachers will give students some framework views for examination."
- T10. "In fact, we have slowly infiltrated some skills from Form Four. And then constantly increase and strengthen. We do not deliberately teach skills to test when the exam is coming. Usually we have to teach skills."
- T11. "Class seems to do an examination question together with students, but the class content or material is a very informative process. The case constructs the entire scene as in the examination. Students face and deal with all the materials or subject matter in the classroom. They need to think and make decisions during the thinking process. The whole lesson is to repeat or duplicate the exam process, but a higher degree of complexity."
- T12. "Using one LS question to associate key concepts is the strategy. Start from the beginning to say the question, (teacher) writes the topic on the blackboard. Throughout the entire class it is around this topic. Even with the introduction of some information, tell the students to talk about some concept, or explain some of the examples it is all around this topic. Usually students can learn LS exam contents and strategies in lessons. Different topics with the most appropriate analytical framework to teach ..."

(b) The responders' opinions on whether LS subject's examination-oriented teaching strategy and nurturing a higher level of thinking skills are both compatible

Some teachers believe that the exam will be obstacles to the development of students' higher order thinking skills, because:

- T1. "If the teacher puts too much emphasis on test taking skills, it will indeed be a bad influence. Will at least reduce the students' interest in learning."
- T2. "They do not ask how to think, just ask how the high scores will be achieved ... (teachers) made it clear that this test, students will read. "
- T3. "There are candidates who recite and memorise exercises of the HKEAA practice volume and sample papers during the simulation exam."

Three teachers to a certain extent believe that the exams will be obstacles to the development of students' higher order thinking skills because:

- T3. "I figured Liberal Studies for moderate or more students can improve their independent thinking, but moderate or less students' learning is more narrowed."
- T7. "There is a little paradox. Because I teach Band One students, they are more realistic. Without examination specifications to study and without proper fractions to promote them, their motivation will not be much. The exam really can compel the Band One students to pay attention to current events and to understand the social aspect. The exam can train students in multiple perspectives, but to truly be critical, there remain..."
- T11. "The exam needs ways of thinking...but it is a little tool in nature. If LS wants to cultivate the kind of independent thinking and hold onto the surrounding environment caring attitude, it is not necessarily encouraging. ... Conversely, exams do not help, if there is discussion of issues in depth during the lesson, it may help students to look at issues from different perspectives and in depth."
- T12. "I think it is indeed stressed on exam skills ... they rely heavily on student expression. Indeed, it is not entirely linked to nurturing multiple perspectives and life-long learning ability, but I think it is helpful ..."

Five teachers believe exams will not be obstacles to the development of students' higher order thinking skills because:

- T4. "Students more now than before may be very utilitarian, but the test will still be able to give them a motive. Examination of the LS questions can help them to think about... For example one question with both for and against, they will ask if I only write the FOR side, how many marks can I get? If there is no exam to ask them to look at both sides, they may only answer the FOR side and they will not answer the AGAINST side. In order to fight for higher marks, they will think thoroughly. Therefore, exams can motivate them to learn more and learn in depth."
- T6. "Thinking ladder of the Liberal Studies about the analysis, evaluation and creative thinking is higher-order thinking. Unlike the lower level which depends on copying or reciting to get answers. I think the standard of LS criteria is very high, but I think the students after a few years training, should do this."
- T8. "Can really train students to think. However, most of the students' language ability is weak, it needs a lot of time in this regard to improve. Sometimes students' thinking is correct, but they do not know how to express it."
- T9. "Part of the higher thinking skills is answering technique. If students can handle this well, they understand the questions and give answers clearly. Examination can test students' level of higher thinking skills. They can fully understand thoroughly and give answers carefully. Nowadays, examination is more complicated to demand students' higher level of thinking skills. It is not easy for them to take the easy route by 'Catch the Road' or recite answers. Fortunately, the exam mode is kind of complex, requiring candidates to have the skills of thinking, it is within the capacity, not in a short time you can develop. We do, the exam can reach the target of Liberal Studies."
- T10. "When higher order thinking promotes multi-diversity with several angles, exams in LS in fact can obtain this. Because I've seen most of the candidates have in many ways analysed, even to the point of different stakeholders to answer. ... Because usually we apply discussion to explore, the public exam is to let you discuss and explore results written out. Taught through a consensus process in class, or with the examination as the strategy, there is not much gap."

(c) Teachers' experiences to develop students' HOT skills

Nurturing of life-long learning	<p>T3. "First, motivate students to read newspapers. There are some lively examples of real life from newspapers. Second, LS can also reflect the attitude of life, for example, a policy is feasible for young people. What impact? If there are such questions during examination, it is to help students to reflect on their own attitude to life, think about, and writing. It is the only way to improve."</p> <p>T8. "We need to teach the basic concepts of LS. Of course, we need to direct students to discuss current affairs during the lesson to see how they give comments to the issues and associate the issues to the exam."</p> <p>T2. "It is important to master the concepts. Use concepts to associate all the discussion. Explore different concepts via issue inquiry. Teach higher level of thinking skills from lower secondary form. "The most important is to be flexible. Do not be dragged by the discussion of current affairs, but direct by the conceptual discussion."</p> <p>T4. "I feel higher level of thinking skills can be trained via discussion in depth during the lesson. We should let the students understand that issue. But how do they discuss? For example, if we know the causes of that issue, what is the impact of that issue? Detailed discussion should be the learning process during the lesson. There is a slogan at my school: LS is life. What they experience is LS. This subject matter may come from our living environment at any minute or even the current affairs from TV. We can get from anywhere and then fit into any single unit. If you can use Mind map, you can write anything which associates to the issue. This may be interesting."</p> <p>T1. "LS cannot include all the training of how to think at school. It is mainly synthesis of all the subjects' thinking methods."</p>
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<p>Development of multiple-dimensional perspectives</p>	<p>T9. “Basically, I believe the small group discussion, cooperative learning. Good organised cooperative group work will help a lot, but it depends on the effort done by the teacher. If teachers only throw to the students to think about a topic, students may not grasp this. This may be worse than directly taught. I think if the teacher organizes well cooperative learning or group discussions, teachers design the various steps, guide, appropriate materials, I believe it can lead to the construction of knowledge. Students will enjoy the learning.”</p> <p>T7. “There must be debate and discussion during the lesson, but the interactive activities are more important among students. If we want to train thinking in different perspectives, different people should explore the same subject in different perspectives. Guidelines will be given to them to discuss, to question, to criticise different viewpoints in groups. Questioning whether their suggestions or opinions are reasonable. LS curriculum is broad and time is limited in each lesson. There is no need for every subject to issue inquiry. It may depend on the importance of hot issues and time to look for or collect more materials before or after lessons.”</p> <p>T12. “We always stressed to students at different angles to see one thing. The easiest is the same anti-possible angle, and then some other aspects, such as a macro: an economic point of view, the political point of view, the social point of view, the cultural perspective; microscopic: personal basic necessities the angle, the angle of the point of view of different stakeholders, government, individuals, society, or some groups. So if he mastered these analytical frameworks or is thinking on the answer, he would have compared easily rendered to his higher-order thinking ... so that students know the different analytical framework can be used in different issues, or the contrary, the same issues to do with a different analytical framework. If he mastered these analytical frameworks or method of thinking, his ability to think critically, he sees anything that goes with these analytical frameworks.”</p>
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<p>Scaffolding for independent thinking</p>	<p>T11. “Through habits of scaffolding method used to help students or colleagues familiarize the subject, first observed facts, gradually penetrated into the push to higher-order observation. If the lesson has started from issue-based discussion of different cases, students may have interest and learn actively. In some cases students may not be interested in hearing, or on their own initiative. If it is introduced by teachers, students may have wider views and think in depth.”</p> <p>T6. “Higher-order thinking skills need to be divided into different stages to achieve. To motivate students’ interest it should start in Form Four and try to stimulate their interest of this LS subject. And then they will be interested in watching news. Independent thinking skills should be learnt and taught through Independent enquiry study in Form Five. To promote students’ analytical and critical ability should happen in Sixth Form.”</p>
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*All interview transcripts can be seen in Creative Teachers Association (CTA) Limited website: www.cta.org.hk

香港教師對通識教育科文憑試與高階思維能力培育 關係認知的探求

梁麗嬋

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摘要

筆者以一組來自約 40 所學校的通識教育科教師為研究對象，收回 41 位教師的意見調查問卷，以及透過訪問其中 12 位教師，相互引證，從而探究現職通識教育科教師在面對本科文憑試情景下，較多採用什麼教學過程與策略，以培育學生高階思維能力，而課程的實施又是否與其課程目標一致。研究結果發現受訪教師有強烈的考試導引傾向，然而，他們對通識教育科及其公開評核試本質的理解，卻有別於傳統以學科知識為本，相反，教師較多認識到新推行的通識教育科課程評估較重視學生基礎概念的掌握與及思維能力的運用。研究反映受訪教師大體認同通識教育科公開評核試運作與及高階思維能力的培育，愈資深的教師愈認同通識科應試教學策略能與高階思維能力相容。

關鍵詞

高階思維能力，通識教育科公開評核，混合方法設計