A Project entitled

An exploration of teacher perception of assessment as learning in secondary schools of Hong Kong

Submitted by

Poon Ka Ho

Submitted to The Education University of Hong Kong

For the degree of *Bachelor of Education (Honours) (History)*

In *April 2021*

Declaration

I, *Poon Ka Ho* declare that this research report represents my own work under the supervision of the *Associate Professor, Dr Yan Zi*, and that it has not been submitted previously for examination to any tertiary institution.

Signed _____

Poon Ka Ho

15 April 2021

Abstract

Assessment as learning (AaL) is a formative assessment that aims at developing the students as proficient learners by enhancing their metacognition, learning skills and attitude. In assessment as learning (AaL), the assessment itself is the learning process (Berry, 2008). Therefore, it is an interrelation of assessment, learning and teaching (Dann, 2014). Assessment as learning (AaL) is undoubtedly beneficial for cultivating the students to be an independent learner who capable to develop life-long learning. However, present studies about AaL are insufficient and it is new for the schools, especially for the secondary schools. Therefore, the study aims at exploring teachers' perception of assessment as learning (AaL) in secondary schools of Hong Kong. The research will collect qualitative data by semi-structured interview in a secondary school to answer the 4 research questions:

1. What is the current situation of applying assessment as learning in secondary schools?

2. How is the effectiveness of Assessment as learning in secondary schools?

3. What are the difficulties in applying assessment as learning in secondary schools?

4. How to improve the application of assessment as learning in secondary schools?

Table of Contents

1. Introduction

The study explores teacher perception of assessment as learning (AaL) in the secondary schools of Hong Kong. AaL is a kind of formative assessment that considered as an alternative to assessment of learning (AoL). Nowadays the education is largely exam-oriented because our society focuses on the credential. Assessment of learning (AoL) as a summative assessment is predominant in our education. Learning and teaching are affected by the public exam, especially for the senior school. Hence, learning only aims for better performance in exam or test by using rote and mechanical exercises (cited in Lee, Mak, & Yuan, 2019). Lam (2018) mentioned formative assessment, including assessment for learning (AfL) and assessment as learning (AaL) were promoted to reduce the negative effects of AoL. They aimed at assisting the students to regulate their learning independently.

AaL facilitates learners' long-term regulation of learning by transferring the skills of self-regulated study to other learning circumstance (cited in Lam, 2018). AaL was developing the learners to be motivated and self-regulated in life-long learning (Ng, 2018). According to Education Bureau (2001), the aim of education reform in 2000 was to cultivate capable learners' ability in learning to learn, also developing their ability of independent learning for life-long learning and whole-person development. Therefore,

5

AaL is crucial for our education because it achieves the objectives of the education reform.

AaL is valuable to further investigate, especially for how to advance its application in Hong Kong schools. Besides, AaL had become the mainstream in Hong Kong schools because of the situation COVID-19 in 2020. That means Hong Kong schools have become more focusing on applying AaL and more discovery of applying AaL is crucial. However, the current situation seems facing a big obstacle as it is new for the schools. AaL itself also needs further development. Moreover, present research about AaL is insufficient, especially for secondary schools. Therefore, this study seeks to further discover the application of AaL in the perspective of the secondary school teachers, also aims at exploring the ways to enhance the application of AaL in secondary school.

2. Research Questions and Literature Review

The study explores the perception of the secondary school teachers on AaL, and the possible ways to enhance the application of AaL in the secondary schools of Hong Kong. Therefore, the study discovers 4 research questions:

1. What is the current situation of applying assessment as learning in secondary schools?

2. How is the effectiveness of Assessment as learning in secondary schools?

3. What are the difficulties in applying assessment as learning in secondary schools?

4. How to improve the application of assessment as learning in secondary schools?

2.1 The Theoretical Background of AaL

AaL has a broad and vague definition as different scholars had distinct perceptions. In AaL, the assessment itself is the process of learning, it is a process that enhances metacognition by learners assessing and reflecting on their learning (Berry, 2008). AaL is a compound interrelation of learning, teaching, and assessment (Dann, 2014). Lee and Mak (2014) mentioned it contributes to the process of learning and assessment,

while the learners are connecting both processes. In AaL, assessment is part of the learning that engage the students in learning rather than an annex of teaching and learning (cited in Dann, 2014). It develops learners' response and engagement in their self-assessment by concentrating on the process of exploration, such as self-regulation, self-efficacy, metacognition, and feedback as the aspects of learning and assessment (Dann, 2014). Therefore, AaL could be defined as:

1. An assessment for collecting the data that reflecting students' learning progress.

2. A learning process that aims at facilitating students learning.

3. An assessment that empowers the students to dominate their own learning.

The essential of AaL is facilitating learner's metacognition. Lam (2018) stated that it enhances self-regulated learning which applies students' cogitation, actions, emotions, and motivation as the resources. The learning process in AaL can be conceptualized regarding three stages (cited in Lee & Mak, 2014):

1. The learning objectives

2. Current performance of the learners

3. The methods of improving learning (p.75)

Lam (2018) mentioned AaL correlated to two theories. First, it was the theory of formative assessment. Below are the four principles of this theory (Black & William, 2009):

1. Learners, teachers, and the subject discipline

2. The teacher's role and the regulation of learning

3. Feedback and the student-teacher interaction discussed in terms of levels of feedback, the fine-grain of feedback and differentiation.

4. The student's role in learning (p.9)

Principle 2 and 3 are the central concepts of formative assessment (Lam, 2018). Principle 2 demonstrates providing external feedback (formative feedback) is teachers' responsibility to assist students in handling learning gaps. Principle 3 is learners' dynamic in applying of external (from peers, teachers, or other resources) and internal (generated through a range of metacognitive processes) feedback, also emphasize the 'formative interactions' that involved regulation of learning process through feedback. These are the most relevant principles of the theory in relating to AaL (Lam, 2018).

Second, the theory of self-regulation requires learners' self-management. Self-regulated learning motivates the learners in using AaL to monitor, adjust, and adapt their learning

(Ng, 2018). Self-regulated learning is proceeded based on the external and internal feedback (Lam, 2018). But Lam (2018) emphasized the empowerment of learners' independent self-regulation was necessary for converting feedback into AfL or AaL practice automatically.

AaL may be defined as a subset of assessment for learning (AfL), but it seems interrelated with AfL. AfL is mainly teacher-led, but AaL is mostly depending on learner's competency and characteristic (cited in Lam, 2018). AaL emphasizes the empowerment of the students which means they have an active role in self-management, including developing personal goals of learning, monitoring the learning progress, and conducting self-assessment (cited in Ng, 2018).

Sadeghi and Rahmati (2017) mentioned AfL and AaL were different concept because of their characteristics. The principles of AaL are based on several theoretical perspectives, including the theories of metacognition, motivation, autonomy, and self-regulation (cited in Sadeghi & Rahamati, 2017). They also mentioned AaL related to systematic self-assessment with the teacher sharing quality criteria with the students, while the self-assessment of AfL was fragmented and informal. AaL is totally depended on the learners themselves, and the learning was personal. Lee and Mak (2014) made a

similar argument, AaL went beyond AfL and it focused more on the learners' role. Therefore, in AaL, the learners have a significant role in the assessment process which combines self and assessment-related concepts like self-assessment, self-evaluation, and self-reflection.

Example of AaL

A typical strategy of AaL is Self- and peer-assessment. It allows students to reflect on their learning and improve themselves (Berry, 2008). Adachi, Tai and Dawson (2018) had defined self- and peer-assessment in the simplest terms:

1. **Self-assessment:** students making judgement and decisions on their own work by using specific criteria.

2. **Peer-assessment:** students making judgement and decisions on peers' work by using specific criteria.

They seem distinct because of different subject of judgement, but they are potentially interrelated (Adachi, Tai and Dawson, 2018). Hence, they should not be discussed separately (as cited in Berry, 2008).

2.2 Teacher Perception of AaL

Lee, Mak and Yuan (2019) had conducted a study of applying assessment as learning (AaL) in two Hong Kong L2 primary writing classrooms. There were two voluntary teachers in their research. Both were the panel head of the English department from different schools. For assessment as learning, they claimed that before the AaL project, they were not familiar with AaL. It reveals that not all teachers are proficient in applying AaL as an alternative assessment form of AoL and AfL. After the project, Lee, Mak and Yuan (2019) mentioned the teacher commented AaL was significant for planning their teaching of writing, and a comprehensive assessment planning contributes to aligning assessment and teaching that facilitate student learning. The teachers also recognized the importance of providing success criteria for the students to establish goals and evaluate their work. They thought that the importance of AaL was the empowerment of students, which allowed students to play an active role in learning instead of passively receiving instruction.

2.3 The Benefits of AaL in learning and teaching

One crucial effect of AaL is to enhance metacognition, which means the knowledge of learners' cogitation and thinking processes. It involves both conscious awareness and the ability to express one's rationale (Fox & Riconscente, 2008). It is the ability to

12

reflect on the learners' thought (Gibbons & Kankkonen, 2011). The process of metacognition includes students being an active role in their learning, such as applying self-assessment, self-monitoring, and self-reflection to advance their learning (Lee & Mak, 2014).

AaL is beneficial in reforming and improving learning, teaching, and assessment. As the first stage of AaL is providing learning objectives and success criteria for the students. It develops student's competency in self-regulated learning and subject proficiency in the long run (cited in Lee, Mak & Yuen, 2019).

Besides, AaL is the empowerment of students' self-regulation in learning. It enhances learners' involvement and motivation in learning, also leads to independence growth of the learners in managing their learning, and a strengthened sense of ownership of learning (Lee, Mak & Yuen, 2019).

AaL also benefits for the teachers. AaL develops teachers' assessment literacy and provides a better comprehension of using assessment to enhance learning, especially when the teachers are receiving support from external experts (Lee, Mak and Yuen, 2019).

Example: self- and peer-assessment

Harris and Brown (2013) found that self- and peer- assessment was enhancing social interaction and accountability among students as it forced the learners to be more realistic and accurate. It facilitates the pace of teaching and allows the students to track their progress. It also enhances peer-learning by working together and allow the teachers to adjust teaching according to students' actual performance.

Self- and peer-assessment is enhancing the process of metacognition (as cited in Berry, 2008). Hence, it contributes to self-regulated learning because it develops students as active learners who competent in self-assessing. It also allows students to recognize the success criteria to assess their own and peers' performance by making evaluative judgements. This process enhances students' understanding of learning and clarifies any uncertainty in learning, also contribute to future learning (as cited in Adachi, Tai and Dawson, 2018).

2.4 The Challenges in the Application of AaL

Lee, Mak and Yuen (2019) had categorized the challenges of applying AaL in four aspects. Including time limitation, insufficient expertise of teachers, students' lacking readiness, and inadequate colleague support. They found that applying AaL for a

14

teaching unit cost a lot of time because AaL practice was additional to the regular unit plan. In the research of Adachi, Tai and Dawson (2018), applying self- and peer-assessment was also challenged by the time constraint. Especially when it was used as a summative task, it was necessary to have a detail assessment planning for troubleshooting. Besides, it was also necessary to provide additional support for those who were the novices in practicing self- and peer-assessment. Therefore, applying AaL strategies could be time-consuming.

Lee, Mak and Yuen (2019) revealed the lacking knowledge of teacher in applying AaL. They found that the teachers were uncertain of designing the success criteria because different tasks had their own criteria. They were also not proficient in designing AaL activities for the students. The same issue could also see in self-assessment. Wong and Mak, (2019) mentioned many teachers did not practice self-assessment in the classroom as they were unaware of implementing the strategy.

Moreover, lacking support from the colleagues was another challenge of applying AaL (Lee, Mak and Yuen, 2019). Teachers' lacking expertise and interest in AaL leads to insufficient support and ideas among the teaching team. In is necessary to enhance the

involvement of colleagues in applying AaL because developing a school-based assessment practice required efforts from the whole teaching team.

Example: self- and peer-assessment

Harris and Brown (2013) found that peer-assessment could not respond to the traditional accountability purpose in the context of high school. The students might think that using peer-assessment means the teachers were not marking their work seriously. They also found that the accuracy of peer-assessment might affect by peer relationship, students' ability and the strategies that solve these problems. Therefore, students' competency may be a challenge in applying peer-assessment. Adachi, Tai and Dawson (2018) made a similar argument that the students were generally a beginner in making rational judgements.

2.5 Enhancing the Application of AaL

In AaL, the learners must know the goals and progress of their learning by a cognitive process (Dann, 2014). Hence, they should be active in learning and assessment because the central idea of AaL is self-assessment. Introducing learning goals and success criteria foster the connection between learning, teaching, and assessment (cited in Lee,

Mak and Yuen, 2019), as well as enhancing better understanding of the learning objectives.

Lam (2018) mentioned the teachers must be proficient in interpreting, responding and enacting learners' internal feedback in leading learning and teaching. Therefore, their perception is crucial in fostering learning skills. Lam, Mak & Yuan (2019) mentioned applying AaL requires teachers' continual development of knowledge and skills. Collaborative learning of the teaching team also essential for developing AaL to overcome the obstacles and leverage the assessment innovation to benefit students' learning.

Besides, motivation is crucial in developing AaL. It is proportional to the self-efficacy of an individual. Hence, motivating learners to take charge of their learning can gain more benefit from AaL (cited in Ng, 2018).

3. Research Design

3.1 Research Method

The literature section has proved the necessity of applying AaL in schools. It is beneficial for both students and the teachers. Hence, the study will discover the possible ways in enhancing the application of AaL in the secondary schools of Hong Kong. The study will collect qualitative data by interviews to answer 4 research questions:

1. What is the current situation of applying assessment as learning in secondary schools?

2. How is the effectiveness of Assessment as learning in secondary schools?

3. What are the difficulties in applying assessment as learning in secondary schools?

4. How to improve the application of assessment as learning in secondary schools?

The interview is a kind of in-depth conservation that encourage participants to provide 'thick description', which means detailed and elaborated answers (Seale, 2007). It enables a deeper understanding for the researcher about the participants.

The interview is an individual interview with semi-structured (see in appendix 1). There are 6 questions in the interview. They will mainly focus on the four research questions, such as asking the frequency of using AaL in school, teachers' comments on using AaL strategies, the present obstacles when using AaL practices and their opinions on improving AaL practices in school. Each question has different sub questions for further discussion to collect detailed and elaborated answers. To ensure the accuracy of participants' response in the interview, there will be a brief introduction to explain the basic ideas of assessment as learning (AaL). It can prevent any misunderstanding about AaL. In addition, for those interviewees who may not understand AaL or have different definitions of AaL, they may consider as another teacher perception of AaL.

3.2 Sampling Method

The data will be collected by purposive sampling because the study focus on discovering teachers' perspective on the application of assessment as learning. Hence, the study requires specific sample which are the teachers and panel heads from different subjects. Besides, data will be collected by recording. The expected number of interviewees will be 10 teachers from the secondary school of my block practice. The interviewee will be the panel heads and subject teachers because the study is focusing on discovering the perspectives from teaching to evaluate the research topic.

3.3 Data Analysis Method

Data analysis is guided by the 4 research questions and conducted as part of analyzing interview data. Interview data will be collected by recording to evaluate the research questions. The process of data analysis will divide into 3 parts: data categorization, data demonstration and data evaluation. The literature review above will also apply in the data analysis. The qualitative data of each recording will firstly categorize by coding with the corresponding empirical code, which aims to identify the key idea of the recording texts. The codes will be presented in the discussion part. Each research question will have different codes. According to Corbin and Strauss (2008), coding was the analysis of data by using different techniques like questioning and comparisons. It is also deriving concepts to represent the data and developing the concepts with their aspects and characteristics. Therefore, coding contributes to categorize and identify similar information from the data. The study will follow the process of using empirical codes that mentioned in Harding (2015):

1. Identifying initial categories based on the transcripts.

2. Generating corresponding codes of the transcripts.

3. Review of codes, revising of categories, and arranging the codes with corresponding category.

4. Searching for themes and findings in the categories.

4. Finding

This section aims at answering the 4 research questions by presenting the interview data. There were 11 interviewees for collecting the data. They were the teachers from Chinese, math, history, liberal studies, geography, and sciences (see in appendix 2). The collected interview data were teachers' opinion about the implementation and recommendation of AaL. The data will be demonstrated by the interview questions that correspond to the research questions.

4.1 Teachers' definition of AaL

Defining assessment as learning (AaL)

The interview data show that most teachers pointed out some of the features of AaL. They defined AaL as an instrument in examining students' learning progress from the perspectives of the teachers and the students.

For example, a Chinese teacher mentioned AaL was a continual assessment form that emphasizing on the learning process:

"If it focuses on the learning process, it will be continual and should not take once…For example, in Chinese, the students may have 10 assessments in a unit.

They could be diverse and continual, such as dictation and test. These assessments are progressive and continual, they should not rely on only one format."

Another teacher from geography had provided a detail explanation in defining AaL. In her perspective, AaL was the learning process, and it was diagnostic in its nature:

"Whether the learners understand the knowledge or not, they will discover new knowledge that contributes to recognize the weakness in learning. Hence, AaL is a continual learning. It is a matter of examining learning from this perspective… Assessment as learning (AaL) is a process rather than a final stop for something or conclusion for something."

She further mentioned AaL was diagnostic:

"AaL is a repeating diagnosis…I used to assess my students in class. Examining who were not concentrate in the lesson or unable to answer my questions, these are the assessment results."

Examples of AaL

The interviewees had provided 9 examples of AaL (see in appendix 3). Most of them were student-centered and developing students' self-regulated learning with the guidelines from the teachers.

The similarities and differences between AaL, AfL and AoL

Similarities

According to the interview data, the 3 assessment forms were aiming at assessing the learning progress and the competency of the students, also examining if the assessments able to reach their goals.

Differences

The differences between AaL, AfL and AoL were mainly about the assessment scale, continuity, and the students were more active in their learning. A history teacher had mentioned:

"AaL requires more time and cannot be so hurry, and it has more elements of self-regulated learning. That means the students may need to do some research [of the learning content], even set an assessment topic [by themselves]."

One of the Chinese teachers mentioned AaL was focusing more on students' active role in learning:

"AaL allowed the students to discover knowledge by themselves, while AoL and AfL were assessing the students from teachers' perspectives. There were little chance for students' self-regulated learning [in AoL and AfL]."

Another Chinese teacher mentioned the scale of AaL was different with AoL and AfL, while AaL was focusing on small parts of learning:

> "AaL assesses different small abilities that will finally accumulate into a formative assessment or summative assessment. I think the differences are time and learning content. The students will learn something small that will accumulate slowly. AaL will not assess the students in a large scale."

4.2 The current situation of applying AaL

According to the interview data, most of the subjects had applied AaL regularly, only science had little chance for applying AaL. In science, the only AaL strategy was SBA (School Based Assessment). The students designing an experiment by following teachers' guidance. The teachers pointed out that science emphasized factual knowledge. It made self-regulated learning became difficult.

Applicability of AaL in the secondary school

Considering the school background, most of the interviewees claimed that it was possible to apply AaL, but some of them mentioned it required a more favorable condition.

For example, a Chinese teacher mentioned applying AaL required require more flexibility:

> "AaL is suitable for our school, but it requires flexibility because every student has different characteristics…especially when there are no absolute correct or wrong answers in Chinese, or there are many acceptable answers. Hence, it needs more flexibility, and modify the teaching in accordance with students' ability...If the teachers intervened in students learning and adjusted their direction or mindset…No matter it was their score or sense of achievement, they would become better."

Taking history project as an example, a history teacher mentioned it was possible, but it depends on time.

> "For example, it is good to use it once a year. It encourages students to discover something outside the classroom, also enhance their interest because they can choose their preferred topic. However, due to the limitation of curriculum planning, applying in senior school will be difficult. Junior school will be easier because it has more time.

For the geography teacher, she mentioned AaL was largely possible because it divided the knowledge into small parts, and the students could learn in a slow pace:

"Very suitable. AfL is the most unsuitable one because our students cannot handle too much knowledge at once…but they could learn better in a slow pace [through AaL]."

Applying AaL in the normal practice of teaching

Considering the situation in the normal practice, most of the interviewees thought that it was possible to apply AaL. For example, a Chinese teacher mentioned AaL was useful because of its diagnostic nature:

"AaL is very useful because it is bilateral. While the students assessing their learning in AaL, the teachers have the responsibility to examine students' circumstance."

Another Chinese teacher had a different view, she thought that it was quite difficult to apply AaL in normal practice because of students' self-discipline:

"AaL is a challenge for student's self-discipline. Those who are not motivated may not perform well."

26

Besides, the geography teacher mentioned AaL allowed the teachers to discover the non-academic parts of the students, such as their learning attitude:

> "I think using AaL could see more non-academic parts because the former [AoL and AfL] were much more focusing on the exam paper. AaL could assess the students during the test. [Such as] A student gave up after writing 3 sentences. I was assessing was their attitude, not the answers on the paper."

Applying AaL beneath the situation of COVID-19

During the class suspension in the pandemic, the school had created videos and follow-up exercises for the students to study at home. This strategy could be an example of AaL.

According to a Chinese teacher, the effectiveness of this strategy seems polarizing because of students' motivation:

> "Some of the students were willing to learn by themselves and submit homework (online exercises), and their performance was good. For those who were not motivated, they did not hand-in any homework."

The history teachers mentioned the videos were possible to facilitate students' understanding of the lesson, but it depends on students' motivation:

"Those who are self-disciplined could learn better because the video summarized the main points of the lessons. It was more concise than the normal lessons."

"The effectiveness of videos and online exercises depends on students' motivation…Those who had watched the video could follow the lesson, even learn better. For the SEN students, if they have repeat watching the video, they could learn better."

4.3 Teachers' implementation of AaL

Specific AaL strategy in learning and teaching

➢ *Self- and peer- assessment*

The geography teacher applied self- and peer-assessment to cultivate students' learning skills and attitude. For example, this strategy had applied in writing an essay. The students were required to examine their own essay by using the success criteria:

"I will teach them highlight the main points…and they will ask questions, 'could I write two arguments in one paragraph?'. 'No, you will get one marks even you write two arguments.' That means I should provide guidelines and explain how to write a good essay, then they correct the essay by themselves…This is the

28

learning process [of AaL]. The assessment was assessing did they make

improvement…or requiring them to ask question, then I can realize their learning

difficulties."

> *Project*

There were different types of project in Chinese, history, liberal studies, and science. It

provides the opportunity for the students to dominate their own learning. One of the

Chinese teachers had applied project in literature class. It was about introducing an

ancient Chinese poet:

"The teacher explains the detail with an example. After that, the students need to

search the information about a poet and present the findings. The assessment

focuses on students' analysis of a poem of the chosen poet. We [the teacher and

the other students] will evaluate whether their analysis is correct or not and

provide comments."

> *Preview and classwork*

Depending on the methodology, preview and classwork could also be an AaL strategy.

Such as the videos with foundation exercises in math, it provided the opportunity for

students' self-regulated learning:

"There were foundation exercises for preview, or classwork. The students had to finish the exercises and correct the answers on their own. It is a part of self-learning, which means students learning from their mistakes and improve themselves."

A similar strategy also applied in science. According to a science teacher, the students needed to do classwork after the teaching, and they would need to correct the answers by themselves.

The effectiveness of the AaL strategies

➢ *Self- and peer- assessment*

For self- and peer-assessment, the geography teacher mentioned the students could learn more from this strategy:

"Reviewing peer's work. They [the students] would not realize their own mistakes, but they would find other's one. Or the other method, checking the answers on their own, but they were required to ask me questions. They would consider if their answers were suitable or not when they correct the answers by themselves…They could learn more. When they do the exercise again, their answers would be more professional and get a higher score."

> *Project*

According to the Chinese teacher, the project facilitated peer-learning, also enhance their sense of achievement.

"The students like that experience because they could express their thoughts, and the others could enrich their content…What I did was providing some hints. It is helping the others and improving the students themselves. I think the students really like this because they could express what they have learned, and they could feel autonomous and being appreciated."

> *Preview and classwork*

A math teacher mentioned the foundation exercises fostered the pace of the teaching schedule because the students had already learned the basic knowledge, that means there would be more time for learning deeply in the lesson:

"Reviewing the basic knowledge on the lesson may waste too much time, so we put them into the preview videos. Let them preview then finish the online quiz [foundation exercises]. As a result, the students could do consolidation work and practice some difficult questions in the lesson. It will make the lesson become much smoother."

For science, a teacher mentioned classwork allowed to learn something in a limited time, also facilitated peer-learning:

> "I had tried to correct the answers with the students or explaining with students' answers…It helps because I can examine their performance, also allow the students to learn from each other."

Improving the AaL strategies

➢ *Self- and peer- assessment*

According to the geography teacher, improving the strategy needed to establish a condition that the students had more opportunity to practice:

> "[Improving the strategy is] Not a method but to create a condition…Even you spend a lot of time on teaching, it is useless if they do not understand…they only have a brief concept, but the exam will test deeper knowledge which could only learn from practice and exercises. The students should also learn to do it by themselves, so they need to practice."

➢ *Project*

A Chinese teacher mentioned providing more preparation time and consultation for the students, it would improve the application of project:

"If the students could have more preparation time, they could cover more content…Maybe they showed me their findings or asked for my feedback before the presentation. That means intervening in the middle stage, not totally hands off to them."

➢ *Preview and classwork*

According to a science teacher, he mentioned it could be possible for the students to design a question and discuss with the others:

"It could be students designing questions after learning a topic. After that, they finish the questions together to see if the others could get the correct answer…Anther method would be students presenting their answers, especially for the boring topic. Only teachers explaining would lower the learning motivation."

4.4 The effectiveness of applying AaL

The benefit of AaL for improving learning and teaching

According to the interview data, the benefit of AaL had two aspects, they were students and teachers.

For the students, AaL contributes to consolidate the learning and increase students' proficiency with the learning content. The teacher from liberal studies had explained this argument with the example of IES:

> "For example, IES is one of the assessments that facilitates students' proficiency on their research topic. There are fewer assessments like this…It is beneficial for students' understanding of a topic because they are doing their preferred topic, and they need to modify their work with teachers' feedback and the research data."

Besides, AaL is an empowerment of the students, that means establishing an active participation in their learning. A science teacher had mentioned this argument:

> "I think their participation would be higher because most of the time were the teachers deciding how to learn, but sometimes students' feedback might be different with teachers'. If it [the learning] is dominated by the students, their participation will be bigger because they own their learning."

A Chinese teacher had a similar opinion:

"I think the learning method of AaL allows the students to think more, especially

for those who are not willing to think…They must do something to gain the

feedback from the teachers. It will enhance their thinking skills because I am

pushing them to think of the solution."

The geography teacher mentioned AaL facilitates students' attitude in learning, also

provide the opportunity for students' self-reflection:

"The point it facilitates is attitude and the empowerment of the students…What

I teach was the method to prepare for the test, not geography knowledge…They

should think about why they do not understand…They did not know how to be

proficient in learning…So you let them try… 'It is really happy to understand the

knowledge', I think everyone would prefer this mindset."

For the teachers, they could realize students' learning difficulties through AaL. The

teacher of liberal studies had mentioned this argument:

"We used to think about the reason of students' failure. There are many reasons.

Sometimes we cannot find out the problem through a test or an exam. If it is a

continual assessment…recognizing students' difficulties and modifying our

strategy, contributes to assisting their learning."

A science teacher mentioned AaL facilitates teachers' mindset:

"Sometimes we may unconsciously limit ourselves. When the students have a

special idea, it may facilitate teacher's mindset on teaching. It is beneficial for

teachers' improvement…Hence, there will be different stimulation for my own

teaching."

4.5 The perceived challenges in applying assessment as learning (AaL)

The limitations of applying AaL

➢ *Time limitation*

Most of the interviewees mentioned time limitation was a challenge in applying AaL.

A science teacher had revealed this issue:

"It is difficult for most of the teachers because we have insufficient time. We

always consider the exam whatsoever. Hence, sticking with the curriculum plan

is our priority."

A Chinese teacher mentioned applying AaL required much time:

"Applying AaL needs follow-up in the next lesson, but sometimes the curriculum

plan is too rush. As a result, there is a tension between lesson time and curriculum.

You should complete the curriculum as soon as possible, so there may not be

much time for the students to discover knowledge (through AaL).

➢ *Motivation*

Instead of time, motivation is another challenge of applying AaL. A Chinese teacher

had mentioned this issue:

"For those who are not motivated, AaL seems not effective because it requires

the students to think on their own. Students with low motivation need guidance

and encouragement. They have less motivation in exploring the knowledge by

themselves. Therefore, the challenge is students with low motivation will be

lagged. It will enlarge the learning differences."

➢ *Teacher's expertise in AaL*

The geography teacher mentioned teacher's mindset could be a challenge of applying

AaL:

"Just like you diagnose the students in teaching, the teachers should keep trying. You may find something that has not mastered…The biggest limitation is yourself, not experience. It is a matter of what kind of person are you and did your team develop a growth mindset."

A history teacher had mentioned teacher's proficiency of AaL was another challenge of applying AaL:

"Maybe the teachers were not familiar with this strategy (AaL). The teachers should approve and learn how to apply this strategy. After that, observe students' respond and modify the strategy when needed."

The teacher of liberal studies had mentioned the perception of AaL of the teaching team was also a challenge of applying AaL:

"The third challenge is the perception of AaL of our team. Are we having the same idea in AaL? I do not mean they are not willing to use AaL because every teacher prefer different learning method."

The reasons of the limitations in applying AaL

➢ ***Motivation***

According to the interview data, there were different factors affecting motivation. First, students' learning habit is a factor. According to a Chinese teacher, she mentioned the learning method may affect students' motivation:

> "Such as in primary school or junior school, they may use to wait for the answers that given by the teachers. Hence, when they came to high school, they were unable to think."

The teacher of liberal studies mentioned the negative learning habit above may cause by the problem of relying:

> "Our teacher thought that the students are unable to learn on their own. Hence, they take care of the students by providing more support or doing the exercises together. The teachers always guide the students, and the later trust the former. Hence, it becomes a vicious circle. This is the struggling of the school [Band 2 schools] like us."

Another factor affects students' motivation is the goal for studying. A history teacher mentioned some students did not have any goal for their study:

> "They do not realize the goal for studying. They may think of 'What are the reasons of being so tough?'. That means they are unwilling to pay effort…Maybe

they have no goals for studying or having no idea of what they want to be in the future."

A math teacher mentioned the curriculum plan would also affect students' motivation:

"The bigger issue is a limitation of the curriculum plan, there is no choice or too little…This is a fundamental issue because the curriculum become a limitation and they are not interested in the lessons."

4.6 Possible solution of the perceived challenges in applying AaL

➢ *Motivation*

Enhancing students' motivation requires cultivating goals and practice AaL on a whole-school scale. According to a Chinese teacher, she mentioned it was important to assist the students with finding their goals for learning:

"If the students established clear goals through the learning environment, it would improve the issue of motivation…When they have clear goals, they will learn actively…If all subjects practice AaL, of course not contradict with each other. It is cultivating an atmosphere. The students try to learn by themselves instead of waiting for answers, and responsible for some goals or exercises. I

think it is better to practice in all subjects, then they can get used to it [AaL] because learning is a matter of establishing habit."

Besides, a history teacher mentioned enhancing students' sense of achievement could solve the problem of motivation:

"…If they can build up their sense of achievement, it will establish the sense of achievement and the motivation of learning."

Similar argument also mentioned by a math teacher. She added enhancing motivation required the coordination with assessment planning:

"It could be making the students feel that they could reach the goal, and it was not as difficult as they thought. For the low achievers, they refuse to learn because they think that it is too difficult. Therefore, we need to coordinate in the assessments."

➢ *Teacher's expertise in AaL*

Improving teacher's expertise required to develop teachers' growth mindset, that means a teacher should accept new idea or not. The geography had emphasized this argument:

"Teaching with your preference or using AaL, that means while assessing your

own teaching, you are also learning to be more effective. You should be open

minded, that is a growth mindset…The reason for students unable to understand

your teaching is you did not improve yourself. It does not mean solving the

problem even you repeat teaching the same content because it is not what the

students need. You should consider the suitable pedagogy for the students…It is

a matter of growth mindset."

Apart from developing a growth mindset, the teacher of liberal studies mentioned

teamworking was another possible solution:

"It [teamwork] means is everybody approve this direction…Just like what I said,

what is the exact goal and what are the expected learning outcome. These are the

questions that should be considered. Also, provide opportunities for our

colleagues to try."

Teachers' comment and recommendation for improving the application of AaL

A history teacher emphasized the importance of teamwork in applying AaL:

"I think you cannot go it alone. Assuming the whole teaching team agree with AaL

and apply it into all subjects, it must apply in the whole grade…We are not

proficient in this aspect. If we can share the experience with each other…it could

be an academic exchange among the teachers. Therefore, it needs the approval of

the whole teaching team to apply AaL in all subjects. It is a school-based

development."

A math teacher mentioned it was necessary to apply AaL:

"I think it has it is necessary for our school because it can establish a habit of

self-regulated learning. Improving the application of AaL requires good planning

and students' willingness to learn by themselves, but I have not found out the

solutions yet. It is important to try any method that facilitates students to learn by

themselves because it is meaningless if the students are not motivated."

5. Discussion

This section aims at concluding the findings with corresponding codes (see in appendix

4). The codes will be applied in answering the 4 research questions.

5.1 The current situation of applying AaL

➢ *AaL is diagnostic, continual and focusing on the learning process*

The findings show that teachers' perception of AaL had corresponded to the definition of AaL in the literature section. Most teachers mentioned AaL was diagnostic that aimed at examining students' learning progress and difficulties. On the other hand, it enhances students learning by self-regulated learning. AaL related to students' comprehension of internal and external feedback (Lam, 2018). AaL assesses and improve learning at the same time. Therefore, the findings correspond to the argument of Dann (2014) that AaL is a compound interrelation of assessment, learning and teaching.

Most of the interviewees also precepted that AaL emphasized the learning process and aiming at facilitating students' learning. In the learning process of AaL, the students review previous knowledge, examine the learning progress, and discover new knowledge by following the guidance of the teachers. This finding has corresponded to the thesis of Berry (2008) that in AaL, the assessment itself was the learning process that enhanced students' metacognition by self-assessment and self-reflection.

In the learning process of AaL, student's engagement in learning is part of the learning (cited in Dann, 2014). That means students active participation in learning is a crucial element of AaL. The findings had corresponded to this argument. The interview data revealed AaL was providing an active role for the students to dominate their own

learning. The obvious examples would be the travel literature in Chinese and the history projects.

> ### *The differences between AaL and AfL*

The differences between AaL and AoL was clear and obvious. For AfL and AaL, they seem have more similarity, but the findings show AaL should be an independent concept that different with AfL. For AaL, it is a continual assessment that requires more time, that means the learning process of AaL is not only occur in the lesson but also after the lesson because it engages the students into self-assessment and self-reflection.

Moreover, students' engagement in AaL seems larger than AfL because AaL requires an active participation of the learners. The findings had revealed this argument. For example, AfL and AoL were assessing the students from teachers' perspectives, and AaL was an assessment for the students to learn by themselves under the guidance of the teachers. It also corresponds to Lee and Mak (2014) that AaL was focusing more on the learners.

AaL was progressive as it is the learning process, it means AaL should develop students' ability chronologically. The interview data revealed that AaL assesses different small

abilities within the learning progress. Therefore, the nature of AaL is repeated and continual. As Sadeghi and Rahmati (2017) had mentioned AaL included a systematic self-assessment with the success criteria that shared by the teachers. They mentioned self-assessment of AfL was fragmented and informal. In other words, although both AaL and AfL allow the students to reflect on their own learning, AaL provides a more solid and holistic self-learning within the learning process.

➢ *Examples of AaL*

The obvious examples are project, self-and peer-assessment, travel literature, additional exercises for self-learning, and the videos with exercises. These examples are assessing students' ability while providing the opportunity for self-regulated learning.

The other examples are preview, classwork, in-class group activities and questioning. Depending on the pedagogy, they could be examples of AaL. In the preview of math, there would be foundation exercises after watching the preview videos. The classwork in Chinese and science had similar procedures. The students should complete the in-class exercises by notes and prior knowledge. In other words, these examples provide the opportunity for the students to learn by themselves, including reviewing prior knowledge and complete the exercises, and the learning process is dominated by the

students. Therefore, these examples are compound interrelation of assessment, learning and teaching (Dann, 2014).

> ➢ *Diverse applicability of AaL*

The findings show that AaL has a different level of applicability in different subjects. The applicability of AaL seems to depend on several factors, such as teachers' pedagogy and proficiency as well as subject matter. For example, AaL was frequently applied to geography because the teacher was experienced in applying AaL. Hence, she mentioned AaL was suitable for the school. For science, as the subject emphasized factual knowledge and experimental skills, it was too difficult for applying to AaL. However, the science teachers thought that AaL was suitable for the students, but it required further development of AaL in the subject. Therefore, most of the interviewees agreed that AaL was suitable for the school because it contributes to developing continual learning.

5.2 The effectiveness in applying AaL

> ➢ *Empowerment of the students*

The findings show that AaL empowers the students to dominate their own learning. That means the students can be more active in learning instead of passively receive

knowledge from the teachers. For example, a science teacher mentioned students dominating their own learning would enhance their sense of ownership in learning. As a result, it enhances students' motivation. The findings have corresponded to the thesis of Lee, Mak and Yuen (2019). They mentioned in AaL, the students could be more involved and motivated in learning. The students would be more independent in self-regulated learning.

➢ *Learning skills and attitude*

AaL also enhance students' proficiency in learning content and skills, as well as cultivating a positive attitude in learning. For example, the teacher of liberal studies mentioned IES as a project could enhance students' proficiency with their research topic. The findings show that AaL develops learning skills and attitude, which are not only for subject knowledge but also for being a proficient learner. However, this process requires the guidance from the teachers. Providing clear guidance in AaL contribute to develop students' self-regulation abilities and subject competency in the long run (cited in Lee, Mak & Yuen, 2019).

➢ *Diagnosis of learning and teaching*

As AaL is diagnostic in its nature, it functions as a diagnostic instrument for both teachers and the students. For the students, AaL enables their self-reflection in reviewing their learning. For the teachers, AaL contributes to examine students' circumstance and teachers' teaching. It is difficult for the teachers to examine students' circumstance through a test or exam. AaL as a continual assessment, the teachers could be easier to recognize students' difficulties and modify the teaching with flexibility. Besides, the teachers could reflect on their own teaching by AaL, that is 'teacher as the learner' perspective.

5.3 The difficulties of applying AaL

➢ *Time constraint*

The findings show that time constraint was the main difficulty of applying AaL. Applying AaL requires much time because it is a continual assessment. The interview data reveal that beneath the exam-oriented curriculum, most of the teachers preferred sticking with the curriculum plan because it was too rush, especially in the senior curriculum. For example, self-and peer-assessment can be time-consuming because it is designed for the students to review their learning in daily lessons. Adachi, Tai and Dawson (2018) added when it was applied in a summative task, it required detailed assessment planning. Besides, self-and peer assessment requires teachers' guidance and

49

assistance, such as the example of the geography teacher. Therefore, applying AaL may be limited by time constraint.

➢ *Motivation*

Motivation is another main difficulty of applying AaL. Although AaL facilitates learning motivation, it requires student's willingness to learn. There will be less effective learning if the students are not motivated. There are different reasons for low motivation, and they are correlated. Learning habit is one of the crucial factors. The findings show that unmotivated students were not confident and proficient in learning. As a result, they relied on teachers' assistance and not willing to learn on their own. Another factor is students' lacking studying goals. According to the interview data, some students did not have any goal for their learning. As a result, when learning becomes difficult, they will give up easily.

➢ *Teachers' expertise*

Teacher's proficiency will affect teachers' expertise. Some of the teachers were not familiar with AaL, also lack experience in applying AaL. Also, the teachers may have different ideas and perception in AaL. It may affect the effectiveness of applying AaL. The findings have corresponded to the thesis of Lee, Mak and Yuen (2019) that some

teachers were not proficient in designing AaL assessments for the students. Wong and

Mak (2019) mentioned a similar argument that many teachers did not apply AaL

strategy like self-assessment because they were not proficient in AaL.

Besides, the interviewees mentioned teachers' mindset would affect teachers' expertise.

Lee, Mak and Yuen (2019) mentioned lacking interest in the colleagues in AaL was

another challenge of applying AaL. The findings have revealed one of the reasons, that

is the teaching team did not develop a growth mindset in learning and teaching. If a

teacher unwilling to change or try new things, they will be unable to facilitate students'

through AaL.

5.4 Improving the application of AaL

The findings have revealed that improving the application of AaL requires teachers'

effort in guiding the students and developing the assessment in a whole-school

approach.

➢ *Enhancing learning motivation in a whole-school approach*

According to the interview data, cultivating the learning goals of the students will

enhance learning motivation. As the interviewees had mentioned, the cultivation of

learning goals would enhance students' motivation in learning. It contributes to establishing a positive learning habit, which encourages the students to learn actively. Enhancing motivation requires coordination with assessment planning because it is necessary to increase students' sense of achievement through a suitable assessment. In this sense, the assessment planning should consider students' ability.

➤ *Enhancing teachers' expertise in AaL*

Developing teachers' growth mindset will be a possible way to improve the application of AaL. The findings show that the teachers should be open-minded in teaching, which means accepting the new idea and improving their proficiency in teaching. But more importantly, the teachers should view their teaching from a 'teachers as the learners' perspectives. Therefore, the teachers are encouraged to apply AaL in developing their profession. That is to assess, reflect and improve their own teaching. Applying AaL requires flexibility and a suitable pedagogy for the students as Lam (2018) mentioned the teachers must learn the methods in processing the internal feedback from the learner in leading learning and teaching. Although AaL is student-centered, the teachers are crucial in fostering students' learning skills.

6. Conclusion

This study has presented teacher perception of Assessment as learning (AaL) in secondary schools of Hong Kong. The findings of shown that AaL was applied in learning and teaching regularly. Most of the teachers could point out the features of AaL. That means they have a clear understanding of defining AaL. AaL as a learning process encourages the students to dominate their own learning. AaL is continual and diagnostic. It cultivates students as a proficient learner because it develops their learning skills and attitude that can apply to all subjects. Besides, the diagnostic nature of AaL contributes to the reflection of both teachers and students. Beneath the exam-oriented curriculum, it is difficult for the teachers to develop AaL in secondary school. Students' motivation in learning and teachers' proficiency challenge the application of AaL. Therefore, improving the application of AaL requires continual development of teachers' expertise in AaL, including developing a growth mindset of the whole teaching team. As a result, it develops a positive learning atmosphere that encourages the students to learn actively. This study has shown that AaL was crucial because it was beneficial for learning and teaching. As education aims to develop students as proficient learners who learn to learn, it is necessary to enhance the development of AaL in secondary schools.

7. References

1. Adachi, Chie, Tai, Joanna Hong-Meng, & Dawson, Phillip. (2018). Academics' perceptions of the benefits and challenges of self and peer assessment in higher education. *Assessment & Evaluation in Higher Education, 43*(2), 294-306.

2. Berry, R. (2008). *Assessment for learning* (Hong Kong teacher education). Hong Kong: Hong Kong Univ. Pr.

3. Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability (formerly: Journal of Personnel Evaluation in Education), 21*(1), 5-31.

4. Corbin, J& Strauss, A. (2008). Strategies for Qualitative Data Analysis. In *Basics of Qualitative Research (3rd ed.): Techniques and Procedures for Developing Grounded Theory* (p. 65). Thousand Oaks: SAGE Publications.

5. Dann, R. (2014). Assessment as learning: Blurring the boundaries of assessment and learning for theory, policy and practice. *Assessment in Education: Principles, Policy & Practice, 21*(2), 149-166.

6. Education Bureau. (2001). *Learning to Learn - The Way Forward in Curriculum Development.* Retrieved from https://www.edb.gov.hk/en/curriculum-development/cs-curriculum-doc-report/wf-in-cur/index.html (Date of access 10/4/2020)

7. Fox, E., & Riconscente, M. (2008). Metacognition and self-regulation in James, Piaget, and Vygotsky. *Educational Psychology Review*, 20, 373–389.

8. Gibbons, S., & Kankkonen, B. (2011). Assessment as learning in physical education: Making assessment meaningful for secondary school students. *Physical & Health Education Journal, 76*(4), 6-12.

9. Harris, Lois R, & Brown, Gavin T.L. (2013). Opportunities and obstacles to consider when using peer- and self-assessment to improve student learning: Case studies into teachers' implementation. *Teaching and Teacher Education, 36*, 101-111.

10. Harding, J. (2015). *Identifying themes and coding interview data : reflective practice in higher education*.

11. Lam, R. (2016). Assessment as learning: Examining a cycle of teaching, learning, and assessment of writing in the portfolio-based classroom. *Studies in Higher Education, 41*(11), 1900-1917.

12. Lam, R. (2018). Understanding Assessment as Learning in Writing Classrooms: The Case of Portfolio Assessment. *Iranian Journal of Language Teaching Research, 6*(3), 19-36.

13. Lee, I., & Mak, P. (2014). Assessment as learning in the language classroom. *Assessment and Learning*, 2014(3), 66-78. Retrieved from https://wlts.edb.hkedcity.net/a&l3.html (Date of access 10/4/2020)

14. Lee, I., Mak, P., & Yuan, R. (2019). Assessment as learning in primary writing classrooms: An exploratory study. *Studies in Educational Evaluation, 62*, 72-81.

15. McLeod, Julie K, & Vasinda, Sheri. (2009). Electronic portfolios: Perspectives of students, teachers and parents. *Education and Information Technologies, 14*(1), 29-38.

16. Ng, C. W. (2018). Assessment for/as Learning in Hong Kong English Language Classroom: A Review. *International Journal of Research in English Education, 3,* 1-12.

17. Sadeghi, K., & Rahmati, T. (2017). Integrating assessment as, for, and of learning in a large-scale exam preparation course. *Assessing Writing, 34*, 50-61.

18. Seale, C. (2007). *Qualitative research practice* (Concise pbk. ed.). London: SAGE.

19. Wong, Kevin M, & Mak, Pauline. (2019). Self-Assessment in the Primary L2 Writing Classroom. *Canadian Modern Language Review, 75*(2), 183-196.

8. Appendix

Appendix 1: Interview Questions

Part I: Contextual Information

Date:

Duration:

Location:

Part II: Information of the Interviewee

Sex:

Year(s) of teaching:

Occupation in the school:

Part III: Brief Introduction of Assessment as Learning (AaL)

AaL could define as a form of assessment that places the learner at the centre of learning by students playing an active role to facilitate their self-regulated learning. It provides an opportunity for the students to improve themselves by using evaluative judgment that contributes to ongoing learning (or lifelong learning). In AaL, the assessment itself is the process of learning, it is a process that enhances metacognition by learners assessing and reflecting on their learning (Berry, 2008). The common examples of assessment as learning are self- and peer-assessment, portfolio and individual/group project.

Part IV: Interview questions:

1. **[Perception] What is your understanding about assessment as learning?**

   (*This question can also investigate whether the teachers recognize the definition and crucial features of AaL.)

   A. How would you define assessment as learning (AaL)?

   B. What are the examples of AaL strategy?

   C. What are the similarities and differences between AaL and the other form of assessments (AoL, AfL)?

2. **[Perception] What is your opinion about applying assessment as learning in your school?**

   A. What is the current situation of applying assessment as learning in your school?

   B. Considering school background (e.g. students' ability, Junior/Senior levels, school-based curriculum design), do you think it is suitable to apply AaL in

your school?

    C.   Considering the situation in normal practice, do you think it is possible to apply AaL?

    D.   Considering the current situation of COVID-19, do you think AaL contribute to facilitate students' ongoing learning?

3. **[Practice] What kinds of AaL strategies have you ever used in your teaching?**
(E.G. Portfolio, Self-assessment/peer-assessment, Project, Guidelines for cultivating learning habits, etc)

    A.   Why would you think it is an AaL strategy?

    B.   How is the effectiveness of this strategy? Why?

    C.   How would you improve this strategy?

        i.   In what expects? Any examples?

4. **[Practice] What do you think about the effectiveness of assessment as learning?**

    A.   To what extent AaL contribute to facilitate learning and teaching?

        i.   How do AaL contribute to facilitate students' learning?

        ii.   How do AaL contribute to your teaching?

    B.   If AaL is not an effective strategy, what are the reasons?

5. **[Perceived challenges] What are the possible difficulties of applying assessment as learning in your school?**

    A.   What are the limitations of AaL in facilitating learning and teaching? Any examples?

        i.   Limitations of AaL for learning: Unable to ensure students' self-learning?

        ii.   Limitations of AaL for teaching: Too much workload?

    B.   In your opinion, why there are such obstacles/limitations?

        i.   Time limitation? Learning motivation? Lack of expertise? School policies?

    C.   How do these difficulties obstruct the application of AaL?

6. **[Possible Solutions] Hence, how would you overcome these obstacles?**

    A.   What are the possible solutions for these obstacles?

        I.   In what expects? Any examples?

            i.   School: school-based policies/teacher professional development

            ii.   Classroom: Methods for facilitating students' motivation/More

guidelines

        iii.   Parent: school-parent cooperation

B. What's your comment or recommendation for improving the application of AaL?

    I.   In what expects? Any examples?

        i.   School-based policies/classroom techniques/Curriculum policies?

Appendix 2: The interviewees

Subject	Number of interviewees	Remarks
Chinese	3	1 teacher is the vice principal
History	2	/
Math	2	/
Science	2	/
Liberal Studies	1	The teacher is also the panel head of curriculum development
Geography	1	The teacher was the panel head of geography

Appendix 3: Examples of AaL from the interviews

Examples of AaL strategy		
Self- and Peer-assessment	Additional exercises prepared by the students themselves	*Online video with exercises (For the school closures in the pandemic)
Preview (video, foundation exercises, and textbook)	Classwork	In-class group activities
Project	Teachers ask questions	Chinese writing exercise (Travel literature)

Appendix 4: Research questions and corresponding codes

Research questions	Examples of interview script	Corresponding codes
What is **the current situation** of applying assessment as learning in secondary schools?	"Whether the learners understand the knowledge or not, they will discover new knowledge that contributes to recognize the weakness in learning. Hence, AaL is a continual learning. It is a matter of examining learning from this perspective… Assessment as learning (AaL) is a process rather than a final stop for something or conclusion for something."	Learning process
	"If it focuses on the learning process, it will be continual and should not take once…For example, in Chinese, the students may have 10 assessments in a unit. They could be diverse and continual, such as dictation and test. These assessments are progressive and continual, they should not rely on only one format."	Continual learning
How is **the effectiveness** of Assessment as learning in secondary schools?	"I think their participation would be higher because most of the time were the teachers deciding how to learn, but sometimes students' feedback might be different with teachers'. If it [the learning] is dominated by the students, their participation will be bigger because they own their learning."	Empowerment
	"The point it facilitates is attitude and the empowerment of the students…What I teach was the method to prepare for the test, not geography knowledge…They should think about why they do not understand…They did not know how to be proficient in learning…So you let them try… 'It is really happy to understand the knowledge', I think everyone would prefer this mindset."	Learning attitude

	"We used to think about the reason students fail to reach the target. There may be different reasons and difficulties. Sometimes we cannot find out the problem through a test or an exam. If it is a continual assessment…recognizing students' difficulties and modifying our strategy, contributes to assisting their learning."	Diagnosis of learning and teaching
What are **the difficulties** in applying assessment as learning in secondary schools?	"For those who are not motivated, AaL seems not effective because it requires the students to think on their own. Students with low motivation need the guidance and encouragement of the others, so they have less motivation in exploring the knowledge by themselves. Therefore, the challenge is students with low motivation will be lagged when the others are trying their best to learn in AaL. It will enlarge the learning differences."	Motivation
	"It is difficult for most of the teachers because we have insufficient time. We always consider the exam whatsoever. Hence, sticking with the curriculum plan is our priority."	Time constraint
	"Maybe the teachers were not familiar with this strategy (AaL). The teachers should approve and learn how to apply this strategy. After that, observe students' respond and modify the strategy when needed."	Teachers' expertise
How to improve the application of assessment as learning in secondary schools?	"Teaching with your preference or using AaL, that means while assessing your own teaching, you are also learning how to be more effective. Sometimes you can be more open minded, that is a growth mindset…The reason for students unable to understand your teaching is you did not improve yourself. It does not mean solving the problem even you repeat teaching the same content because it is not what the students need. You should consider the suitable pedagogy for the students…It is a matter of growth mindset."	Teacher expertise

	"I think you cannot go it alone. Assuming the whole teaching team agree with AaL and apply it into all subjects, it must apply in the whole grade…We are not proficient in this aspect. If we can share the experience with each other…it could be an academic exchange among the teachers. Therefore, it needs the approval of the whole teaching team to apply AaL in all subjects. It is a school-based development."	Whole school approach