Influence of teachers' perceptions of teaching and learning on the implementation of assessment for learning in inquiry study

Assessment for learning is a worldwide initiative. With the aim of learning about the influence of teachers' attitudes and perceptions of assessment for learning on daily teaching practices, this study investigates the implementation of assessment for learning using rubrics as a tool for inquiry study. Nineteen secondary school teachers using rubrics were interviewed. The findings show that a narrow perspective of the rubrics as a tool for the current teaching practice limits teachers' creativity in extending the possibilities of assessment for learning to improve teaching and learning of inquiry study. The paper draws attention to the influence of teachers' prior perceptions, and provides suggestions for expanding teachers' perspectives of assessment for learning and utilizing rubrics as an integral element of teaching and learning of inquiry study.

Keywords: teacher beliefs, inquiry study, assessment for learning, rubrics

Author: So, WWM & Lee, TTH

Introduction

Assessment for learning has been a worldwide education initiative and a spotlight of discussion in the past decades (e.g. Berry 2008; Gardner 2006; Stiggins 2005). It is promoted as a way to improve learners' experience of learning (Black et al. 2003). When it is put into classroom practice, teachers' professional judgement is significant (Groundwater-Smith 1998) because classrooms are often "characterized by uncertainty, disorder and indeterminacy" (Schon 1983, p.16). Teachers' professional judgement is believed to be influenced by their beliefs and perceptions, which will then affect what they teach and why they teach it (Hermans et al. 2008; Pajares 1992). For this reason, the influence of teachers' beliefs and perceptions on the implementation assessment for learning is worth exploring in order to support teachers to implement assessment for learning. This paper draws on the data from a research and development project on applying assessment for learning in inquiry study, particularly with rubrics as a tool, and attempts to study the influence of

teachers' beliefs and perceptions on the adoption of assessment for learning in inquiry study.

Literature Review

To better understand the conceptual framework of this study, the literature review starts with a review of assessment for learning, and is then followed by a discussion of the use of rubrics in assessment and the influences of prior perceptions on their use.

Assessment for learning

Summative and formative assessments are both important to learning (Stiggins 2002), and any specific assessment format can be either summative or formative. Unlike summative assessment, formative assessment or assessment for learning refers to assessment that is used as a part of teaching and learning to inform teachers and students about their teaching and learning strategies (Harlen 2004; Stiggins 2005). The difference between these assessment modes depends largely on their purposes and how the outcomes of the assessment are used. While teachers usually emphasize the summative nature of assessment (Rea-Dickins 2004), e.g. the reliability and fairness of assessment, they tend to overlook the formative aspect of assessment, e.g. improving students' ability and the quality of their work (Harlen, 2004). This tendency significantly affects the teachers' instructional approach and design of teaching content (Cheng 1997; Harlen 2004).

Many authors advocate assessment for learning as a way to improve learning (e.g., Black and Wiliam 2006; Harlen 2006; Stiggins 2005; Stobart 2008). Assessment for learning emphasizes enhancing the process of learning. It is a process by which students expand their learning from continual assessments (Harlen 2004; Stiggins 2005). To achieve this objective, authors suggest that teachers give informative feedback (Stiggins and Conklin 1992) and make the process of teaching

and learning explicit (James and McCormick 2005). Teachers should also be concerned about adjusting their instruction in response to the outcome of assessment (Black and Wiliam 2009).

Assessment for learning adopts a student-centred instructional approach that corresponds with students' performance and progress (Stiggins 2005). Teachers need to pay careful attention to the students' thinking, and to communicate clearly with them about the criteria and standards used in the instruction and assessment (Black et al. 2003). Through continuous and non-evaluative assessment, teachers may identify the students' instructional needs (Wilson 2005). When teachers are able to identify students' learning needs, they can adapt instructional strategies to suit their needs (Black and Wiliam 1998; Wong 2007). With a student-centred instructional approach, assessment for learning is believed to improve students' performance (Black et al. 2004) and to enable students to take responsibility for their learning process (Black et al. 2006).

Assessment is usually the students' first priority of learning (Biggs 2001). This draws attention to the importance of aligning assessment to learning objectives if we want students to achieve the intended learning objectives. If this kind of alignment takes place, assessment may support teaching and learning to achieve the intended objectives. However, the process of this kind of alignment will not be a straightforward routine (Conca et al. 2004). Authors have suggested that teachers should look beyond changing the form and procedure of assessment and develop instructional strategies based on the outcomes of assessment (Conca et al. 2004; Stiggins 1999).

Rubrics in assessment
Rubrics, which are the assessment criteria and performance qualities, are growing in their popularity for assessing students' performance in authentic tasks and highly

contextualised situations, like inquiry study (Darling-Hammond et al. 1995; Ni 1997; Wiggins 1998). They can be a bridge connecting assessment and teaching and learning and are often used in performance-based assessment (e.g. Andrade 2000; 2007/2008; Rust et al. 2003; Wilson 2006). Unlike traditional assessment methods, rubrics provide a set of quality criteria and detailed descriptions of various levels of quality with reference to the intended learning objectives. Rubrics can be used to describe students' work in progress, and as a standard for accurate and fair assessment of performance (Andrade 2000). They are easy to explain and use, and can be used to provide students with timely and informative feedback so as to support self-learning (Andrade 2000; Stevens and Levi 2005). Using rubrics, teachers can communicate clearly the requirements and expectations of learning (Quinlan 2006; Stevens and Levi 2005). Rubrics also allow teachers to benchmark the students' performance, as well as to track the learning objectives so that they can adjust their teaching strategies to be more appropriate for the students' needs and learning paths (2001; Popham 1997; Wong 2007).

Apart from using rubrics for assessment purposes, educators advocate that rubrics can offer more to change teaching and learning (e.g. Andrade 2000; Rust et al. 2003; Stevens and Levi 2005). When they are used alongside assessment outcomes to give personal feedback to students, that feedback may become the students' personal motivator and orient them towards improvement (Brookhart 1997; Harlen 2004).

Influences of prior perceptions on the use of rubrics in assessment
Although rubrics are believed to promote inquiry study when they are used in assessment, their application of rubrics in assessment for learning is complex (Cheng 1999). To put rubrics into practice, teachers' knowledge of rubrics is significant. However, knowledge of rubrics may not be sufficient to ensure that the teachers act

responsively to the students' instructional needs. If teachers do not see the potential of using rubrics in changing the approach of teaching and learning, the effect of rubrics in assessment for learning will be limited (Wilson 2005). A change in teachers' beliefs and understanding of rubrics is thus essential (Kirkgoz 2008).

People's attitude is thought to have an influence on their resulting behaviour and actions (Ajzen 1991; Ajzen and Fishbein 2005). It signifies one's expectation of the outcome of actions. Ajzen (1991) argued that stated attitude is not the only predictor of behaviours and actions, and suggested that people's perceptions, such as 'subjective norm' and 'perceived behavioural control' could also have a significant effect on shaping resulting behaviours and actions. Ajzen's theory of planned behaviour is based on cognitive processing in which the participant would rationally estimate the effect of the three elements in order to make a decision to act. However, many people do not always make rational decisions (Lee 2007). For example, Harris, Irving, and Peterson (2008) found that teachers seemed to take it personal about their students' successes and failures in assessment. People also consider affective reasons to make decisions to take action. Their experience would produce emotions which could also have an influence on their decision making (Zint 2002).

A change in the approach to assessment and instruction, e.g. using rubrics in assessment for learning, is a thoughtful process (Dexter et al. 1999). Teachers will consider more than just the process of using rubrics. Personal, social, educational and contextual backgrounds may have effects on shaping their intention to act (Ajzen and Fishbein 2005; Black and Wiliam 2006). When teachers design teaching strategies, they will go through a reasoning process in which they analyse these factors to make decisions concerning their teaching strategies (Fang 1996; Webb 2002). This means that teachers also bring personal agendas and values to teaching and learning (Sato et al. 2005), and their personal beliefs and perceptions become a lens to interpret the

5

situation when they are choosing teaching strategies (Hermans et al. 2008; Lee 2007). Winzer (2008) alerted us to the complex, interactive relationship between teachers' attitudes and their practice, and its effect on reform initiatives. Correspondingly, Tsai (2002) found that teachers cannot perceive the potential insights of new teaching approaches because of the influence of their beliefs of learning and teaching and the success experiences in existing practice. Since teachers' perceptions of teaching and learning are likely to be influenced by their experiences of existing practice (Black and Wiliam 2006), newly acquired concepts, e.g. using rubrics in assessment for learning, are less likely to be retained as strongly and maturely as are their prior perceptions. Their personal beliefs and perceptions may have a great effect on their practice as they apply personal perceptions to interpret and respond to the happenings in the classroom (Ogan-Bekiroglu 2009; Zint 2002). Because of this, they often hold a narrow perspective of new teaching approach (Waeytens, Lens, & Vandenberghe 2002). They may not necessarily use rubrics in a way which transforms teaching and learning as expected (van der Schaaf et al. 2008) because their use of rubrics can be significantly regulated by their deep-rooted beliefs and perceptions of teaching and learning (Bohner and Wänke 2002; Erwin 2001). Even though teachers know the importance of and are willing to work towards using rubrics in assessment to promote learning, they do not necessarily always make rational decisions in their practice free from the effect of their prior perceptions (Eiser and Pligt 1988; Isikoglu et al. 2009; Lee 2007).

This paper draws on data from a research and development study in Hong Kong that helps secondary school teachers employ rubrics for promoting assessment for learning in inquiry projects. It is amongst the earliest attempts to study the use of rubrics in inquiry study which has been introduced into the NSS curriculum in Hong

Kong. It aims at studying the influence of the teachers' prior perceptions of teaching

and learning on the use of rubrics as a tool to achieve assessment for learning.

Contextual background of the research

Traditionally, Hong Kong has adopted high stake examinations as a major form of

assessment in schools. Although the concept of assessment for learning has been

noted in the education reform in Hong Kong since 2000 (Curriculum Development

Council 2002), it is being integrated into school practice at a slow pace. When the

new senior secondary (NSS) curriculum was implemented in 2009, assessment for

learning was included as a major element and a general practice in the new curriculum

(Curriculum Development Council and Hong Kong Examinations and Assessment

Authority 2007).

Since September 2009, the NSS curriculum, which incorporates school-based

performance assessment as a way to assess students, has been implemented. In the

new curriculum, all students are required to accomplish an individual inquiry project

– an Independent Enquiry Study (IES) – as a part of a new compulsory subject,

Liberal Studies. IES is described as a self-directed inquiry study experience in which

students have to demonstrate their ability to "connect, integrate and apply knowledge,

perspectives and skills" to accomplish an inquiry across subject disciplines

(Curriculum Development Council and Hong Kong Examinations and Assessment

Authority 2007, p. 57). The performance of students in the IES is assessed against a

set of school-based performance standards, i.e. rubrics, internally at school,

constituting twenty percent of the public assessment grade of the subject Liberal

Studies.

Since Hong Kong secondary students do not usually have much knowledge of

inquiry study, teachers' guidance is crucial for them to carry out an inquiry project

(Curriculum Development Council and Hong Kong Examinations and Assessment

Authority 2007; Kirschner et al. 2006). However, many teachers have to teach IES even though they lack experience in facilitating inquiry study and school-based assessment because the subject is designated as a compulsory subject in the new curriculum. To many teachers in Hong Kong, assessment for learning is still a new initiative.

Methodology

Referring to the literature (e.g. Andrade 2000; Lee and Wiliam 2005), rubrics are perceived as an appropriate tool for assessment for learning and for improving the teaching and learning of inquiry study in a school-based situation. With the purpose of supporting teachers to use rubrics to promote assessment for learning in inquiry study, a study which utilized rubrics as instructional and learning guides for inquiry study was conducted just before the implementation of NSS curriculum in Hong Kong. In the study, the participating teachers utilized rubrics as a means of assessment for learning to facilitate students to do inquiry study, independently or in groups in a period of 10 months.

The research team adopted a constructivist view and believed that the teachers might develop new knowledge of using rubrics from their experience of using them (Perkins 1999). Through observing and analyzing how the rubrics were used in practice and how the teachers made instructional decisions, the study attempted to recognise the influence of the teachers' perceptions of assessment for learning on their practice.

Intervention

The intervention was designed to increase teachers' competence in using rubrics in inquiry study and support them in applying rubrics in practice. Intensive support for applying rubrics in practice helped to reduce the effect of the technical difficulties that

prevented the teachers from using the rubrics. The participating teachers were offered a three-day workshop at the beginning of the study and an interim sharing session to learn about using rubrics as a tool for assessment and for facilitating teaching and learning. These programmes were designed to increase the teachers' knowledge of inquiry learning and rubrics (for example, introduction to rubrics and performance-based assessment) and support them to employ the rubrics as a means of assessment for learning in inquiry learning. As a result, it aimed at improving the teachers' strategies of facilitation and guidance for students. After the workshop, the teachers were required to develop a set of school-based rubrics of inquiry study and to use them in assessment and for instructional purposes.

Throughout the research, the research team worked closely with the participating teachers to provide professional consultation on the implementation. They also observed the teachers' lessons and provided feedback afterward. Besides, they held discussions and meetings during the period of study, in which they encouraged the teachers to continually reflect on issues about the implementation process. Despite active interventions, the teachers were given a large extent of freedom to decide the strategies to implement the rubrics according to the school context and student needs.

Participants

Thirty-six teachers and more than 400 F.3 to F.6 students from 10 secondary schools using Chinese as the medium of instruction[1] (CMI) participated in the research. The schools were selected because they incorporated inquiry study in the school curriculum, like Liberal Studies and Science and Technology. The participants offered a good representative sample of the 300 plus CMI schools in Hong Kong, as

---

[1] Secondary schools in Hong Kong are divided into English as medium of instruction schools and Chinese as medium of instruction schools.

the participating schools were from different school sponsoring bodies which were of different backgrounds situated in different areas in Hong Kong. Besides, the participating teachers had a broad range of inquiry project teaching experience, either currently teaching the subject Liberal Studies at matriculation level or potentially taking up the subject at the NSS level.

Data Collection and analysis

The dataset used for this paper includes pre and post-study individual interviews and video-taped lesson observations while teachers' handouts and students' work were also collected as triangulation (Denzin 1989). A total of 19 teachers from the 10 participating schools were interviewed individually (see Appendix 1). They were selected because they were either the subject coordinators or teachers who would most likely teach the new subject Liberal Studies when the NSS curriculum was implemented. After the teachers attended the workshops, and before the rubrics were applied in classroom practice, they were interviewed so as to understand their attitudes and perceptions of assessment for learning. At the end of the study, they were interviewed again to capture their reflections on their use of the rubrics. Semi-structured interviews were used in these two rounds of interview to obtain in-depth information on focused themes without constraining the interviewees' expression of ideas (Lindlof and Taylor 2002). The research team also observed a total of 82 lessons of the 19 teachers interviewed to collect first-hand information about how the rubrics were applied in practice. . All lessons were video-taped for later analysis.

Since the interviews were conducted in Chinese, they were transcribed and translated into English. Data were coded into incidents about how the teachers used the rubrics in practice, e.g. the teachers offered the students opportunities to mark sample reports. Video recordings were analysed to look for evidence of the application of rubrics in the classroom. The incidents were then compared with each

other to identify patterns and issues affecting the use of the rubrics. The quotations selected from the pre- and post-intervention interviews were used to better illustrate the views expressed by the teachers. For example, pre-sch8-t1 represents a quotation from a pre-intervention interview with one teacher (named t1) from a school (named sch8).

Findings and analysis

Prior to the study, the participating teachers did not usually have much experience of using rubrics. Although more 80% of the teachers stated that they had some experience of facilitating project learning, about fourth-fifth of this group of teachers did this as providing students an experience to know about project learning or supporting students to participate in inter-school competition. As a whole, more than a half of them of the teachers did not used to provide rubrics for students. About 3 quarters of those who had tried using rubrics, they usually perceived rubrics as a broad marking scheme for tasks, such as "…students' competency of inquiry, competency of critical thinking, competency of presentation" (pre-s1t3) as one teacher mentioned. The others stated that they mainly used rubrics to explain how the score was made up. In addition, the teachers usually thought that rubrics were implicitly integrated in daily teaching. Only one teacher identified the rubrics could be a way to give feedback for students. As the participating teachers recognised more potentials of rubrics in practice as the study proceeded, they were more motivated to use the rubrics. The use of rubrics in the study is reported in the next session and followed by the description of the limitations of the existing use of rubrics in the study.

The use of rubrics in assessment

The teachers produced school-based rubrics with the support of the study. They were eager to use the rubrics in their practice. The study found that rubrics were often used in the following ways.

First, more than a half of the teachers stated that they used the rubrics as a standard for marking. They used them as a scoring list and marked students' work against the list. They thought that they were a good tool to explain to the students how their work was marked. One teacher said,

> *To a certain extent, the students will know the different parts of the IES and the* requirement *of these parts. Second, they will know what constitutes 'good' and 'not good' in each part. (post-sch1-t3)*

Second, since the rubrics consisted of the essential criteria and expectations of performance, about two-third of the teachers thought they might help the students understand and keep focused on the requirements of the inquiry project. They therefore used the rubrics as a guide for students to complete their inquiry project step by step. One teacher said:

> *The rubrics provide [students] with some criteria. For example, it provides a clear direction for them to follow. They would not get lost in their project. When they have a defined scope, they may narrow down the scope when doing research. They can do this fast. (post-sch4-t1)*

Third, from our observations, the rubrics were used to enable alternative assessment activities, such as peer and self assessment. The teachers used them as a reference for the students to assess their peers' or their own work. The study found that students could have many opportunities to participate in such kinds of assessment because the teachers thought that enhancing student participation in assessment could motivate and drive them to learn intrinsically. One teacher commented:

> *Something that I am sure is that they learnt more. In the past, we interacted in a mode like apprenticeship. This means that they would listen to my opinions and they would take what I told them as their views. They were weak in thinking.... When we used the rubrics, students had more opportunities to participate and interact with each other. When it became their practice, they could learn from different people's perspectives so that they could have a clear direction [for their inquiry]. (post-sch4-t2)*

Fourth, the study team noticed that the rubrics helped the teachers to define the content of teaching. As the teachers were usually inexperienced in teaching inquiry projects, they thought the rubrics could help them understand the curriculum better.

> *[The rubrics] help me understand the progress of IES. IES is new [to me] as well as for the secondary students. I did not have experience in doing inquiry project when I was in school until at the university. That was more professional. I always think how to facilitate [them to do inquiry project]. Since it is for F.4 students, my experience in university may not suit them. (post-sch1-t1)*

With the rubrics, the teachers were clearer about what to teach and assess. They used them to identify the essential elements of instruction. For example:

> *[The rubrics] gave us at least a direction of what we had to do and how we can match the needs of students. Since we had designed the assessment requirement, teachers and students would have a more solid understanding of what a good report is. (post-sch6-t2)*

> *For teachers, we might foresee the students' responses and be clear about our expectations of the students, for example, what they should achieve in each stage. (post-sch2-t1)*

Limitations of the existing use of rubrics

At the end of the study, more than two-third of the teachers felt positive to the study as they thought it was a good experience to prepare them for the new curriculum. They described it as a "*very useful experience in using rubrics*" (post-sch7-t1) and thought that it helped them to "*become more self-aware of teaching and learning*" (post-sch10-t1). However, the study team noticed that there were some limitations to their current ways of using rubrics. Two teachers also raised their concerns about these limitations in their reflection:

> *After the activities, they did not develop a connection between the rubrics and their inquiry projects. They would see the rubrics and their inquiry project as two unrelated events. (post sch3-t2)*

> *Students of higher ability would be more able to use (the rubrics). Some students of middle and low ability would find it difficult (to apply the rubrics). Their work showed me that they did not understand the rubrics very well. (post-sch2-t1)*

As a result of the study, the following limitations to the teachers' use of rubrics were identified. First, the study noticed that some teachers still held a conservative attitude

towards rubrics. It was noticed that more than a half of the teachers usually emphasized the function of rubrics (i.e. assessment) rather than the value of using rubrics (i.e. integration of instruction and learning). One teacher said:

> *The biggest support that I give students is to score their work and then give my comments after they have completed their project. (post-sch1-t1)*

The study team noticed that the teachers often used the rubrics in a way in which they felt comfortable and safe. For example, they perceived the rubrics as ensuring that the students could complete their inquiry projects. One teacher said:

> *As a whole, students need a guide. I think the assessment can be a guideline for them. Without it, they may not be able to complete their report.... It works like a framework and tells them the boundaries and related information, detailed processes and inquiry methods. (post-sch2-t2)*

It seemed that they did not utilize the rubrics fully for the purposes of assessment for learning.

Second, the teachers often perceived the use of rubrics as a series of summative assessments. Although they usually agreed with the goal of using rubrics to create opportunities for assessment for learning, they did not often have clear strategies to achieve this goal. One teacher said:

> *I understand the purpose of [the rubrics]. They assure that students will not receive one score [for their project] only. At least, they will be assessed continuously and receive a score for each stage (post-sch4-t1).*

Since the teachers put emphasis on summative assessment, they were concerned about comparing scores among schools and teachers. They tended to seek a fair and reliable way of marking the inquiry projects. For example, one teacher said:

> *Of course, I am worried about the difference between assessment standards among teachers. We can discuss the standard among teachers in our school. I am concerned about the standard used by other teachers [in other schools]. (post-sch7-t1)*

Due to the lack of knowledge and experience in using rubrics for teaching and learning, the teachers often utilized them as a broad marking scheme for the tasks. The teacher thought that rubrics could help to reduce discrepancies in marking:

> *In practice, [using the* rubrics*] to give scores is important. Without the rubrics, there would be great variation in scores among teachers. (post-sch1-t3)*

The response from another teacher who was asked about other uses of the rubrics clearly reflects the teachers' strong perception of rubrics as an evaluative tool:

> *Apart from scoring, what can the rubrics be used for? There should be some [other uses] but I need to think a bit longer. I think there should be some, but I cannot tell right now. (post- sch1-t1)*

Third, the study did not observe on many occasions that the teachers perceived the rubrics as a tool to enhance student directed learning. Prior to the study, the teachers seemed to be worried about the students' competence of inquiry. Although many students would have already had some opportunities to do small scale group projects in their junior secondary years, the teachers were not particularly convinced about their ability to do inquiry project independently. The following quote shows their worry clearly:

> *The teachers helped the students to break down the project into small steps. The students did not understand why they had to do these steps. They just followed the questions and looked for information. Second, I think the students did not do enquiry, but merely answered questions and did 'copy and paste'. What they did was find answers to questions. (pre-sch8-t1)*

For this reason, the teachers usually thought that they had to play an active role in assisting the students to achieve good results in doing inquiry project, for example:

> *In the end, the students were forced to finish their work because the teachers had to complete their job. (pre-sch1-t1)*

> *The students could learn more if the teachers offered them direction and showed them that there was more to explore. (pre-sch2-t2)*

They thus were eager to tell students how they could complete their task. For example, many teachers often used the opportunity to correct the students' mistakes and tell them what to do when giving feedback. Teachers said:

> *If they do not understand how to do it, I will teach them... If they work in the wrong direction, I will take them back to the correct direction... This means that I will give them three suggestions and they need to choose one of them. Sometimes, they will ask me which one is the easiest way. If I say A, they will feel as happy as finding a piece of gold, and will go for that suggestion. (post-sch1-t1)*

> *In fact, feedback means giving students more to know, helping them expand their knowledge base and assuring their direction. (post-sch4-t2)*

It was thus not uncommon to find that the teachers often gave task-specific feedback to students as a way to help them complete their work.

Fourth, using rubrics in assessment for learning was still a new concept to many of the participating teachers as more than a half of the teachers did not use rubrics before. It would not be surprising to find that some of them see rubrics as an add-on tool to the current way of teaching. One teacher said:

> *There are external requirements of the subject Liberal Studies and we are working towards them. We hope that using the rubric and receiving support from you may add some new elements to improve what we are doing in the subject. (post-sch4-t1)*

For this reason, the study did not find the teachers putting a lot of effort into exploring creatively new possibilities to use rubrics in teaching and learning apart from doing assessment. One teacher stated at the end of the study:

> *I understood the meanings of the descriptors and I was able to use the rubric to assess student performance but I was not aware of how the rubric could be used to achieve 'assessment for learning'. I did not think deeply about how students could learn using the rubric. (post-sch10-t1)*

Therefore, the study found from the classroom observations that the rubrics were usually used discretely and were not often used explicitly in the teaching and learning process. The following comment from a teacher might show their perception clearly:

> *I found that some teachers did not use the rubric to raise issues for improvement when they had individual facilitation sessions with students. They often tell students directly what is good or bad. They seldom used the rubric to show students what they needed to improve or retain. I think we still have a lot to improve on at this stage. (post-sch2-t1)*

Discussion

Corresponding to the literature (e.g. Sato et al. 2005), the findings demonstrate that the teachers did not come to use the rubrics as blank sheets. The findings in the study infer some teachers' perceptions of teaching and learning (see Table 1). They perceived assessment as evaluation driven as they usually used rubrics primarily for markings. Teaching and learning was usually teacher directed as the study found that

they often took a very active role in defining the process of student learning. The approach of instruction in the process seemed to be result-oriented as the teachers often saw rubrics as a way to ensure students to complete their inquiry project. In this context, the findings reflect that the influence of the teachers' perceptions of teaching and learning on the use of rubrics for assessment for learning was apparent in the study. Although rubrics were actively used in the study, the teachers' underlying approach to teaching and learning did not seem to change greatly.

As Harwayne (2000, p.207) writes, "[Classroom] practice is… based on… concepts [teachers] themselves have examined carefully". Although the teachers stated that they were more aware of their teaching and learning because of the participation in the study, they had to understand how their prior perceptions might hinder the application of rubrics before they can utilise them to achieve the objectives of assessment for learning (Erwin 2001). The influence of teachers' perception on the use of rubrics is discussed in the following section.

(Table 1 here)

Strongly influenced by the high-stakes examination culture in Hong Kong, it was not surprising to find that the teachers in the study tended to perceive the use of rubrics in assessment as evaluative. This was clearly reflected in the study by their eagerness to use rubrics to ensure the reliability and fairness of scoring. Because of this, the teachers tended to put their emphasis on the summative aspect of assessment. They seemed to focus on the results of the assessment rather than on identifying the strengths and weaknesses of the students in the process of learning that is promoted in assessment for learning (Harlen 2005). The finding reflects that teachers are likely to operate, consciously or unconsciously, to be responsive to the competitive culture. As

a result, change does not necessarily occur as expected when new teaching initiative is implemented.

Referring to Entwistle's (2001) claim, the study indicated that the teachers tended to intervene heavily in the students'learning. The teachers seemed to use the rubrics as a way of retaining control over the process of the inquiry. This reflected that they adopted a teacher-directed approach as they "[decided] what to assess, how to assess, and how to respond to the information gained through the assessment" (Angelo and Cross 1993, 4). They were likely to overlook the opportunity to create individualized learning opportunities for students as advocated in the literature (e.g. Black and Wiliam 1998; Stiggins 2005; Wong 2007). When teachers do not use rubrics in a student-centred approach, they are less likely to realize their potential in terms of cultivating students' responsibility for their own learning, for example, as a personal motivator and orientation (Brookhart 1997; Harlen 2004).

Similar to the findings of Kahn (2000), the teachers in this study adopted rubrics in a way that was aligned to their prior perceptions. However, the findings show that using rubrics in this manner did not necessarily automatically result in assessment for learning. This suggests that the effect of using rubrics to achieve assessment for learning will be limited if teachers' perceptions of teaching and learning "remain unchanged and unchallenged, or if teachers remain unaware of their [perceptions]" (Brown 2004). Since the teachers' prior perceptions are likely to narrow and distort their perspective of rubrics, using rubrics to achieve the objectives of assessment for learning will be far more complex than was initially expected (Cheng 1999).

Assessment for learning is advocated because of its emphasis on students' responsibility for their learning process (James and McCormick 2005). However, the study found that the way the teachers used the rubrics in teaching and learning was

usually implicit to the students. When the process by which the teachers utilize the rubrics to inform their teaching practice is invisible to students, they are less likely to be aware of the association between the rubrics and the process of learning. Because of this, the study found that the student learning path was often regarded as teacher directed. The teachers led the students through a fixed learning path rather than taking them to explore a personal learning path. In this way, it is difficult to cultivate students' responsibility for their own learning.

This study illustrates that the teachers' prior perceptions of teaching and learning had some influences on the implementation of assessment for learning. The influences could be intensified as they were unaware of it. This implies that teachers have to understand and be concerned about the influence of prior perceptions on their practices if assessment for learning can be properly implemented. When they can recognize the influence of prior perceptions on the use of rubrics, they are more likely to see the use of rubrics beyond current practices and thus change their existing practice.

As the study reflects, teachers are more likely to be aware of the limitations of using rubrics in current practice when they can keep their focus on the value of using rubrics rather than on the function of the rubrics. Responding to James and McCormik's (2005) claim that 'making learning explicit' and 'promoting learning autonomy' are underlying factors to assessment for learning, this paper suggests that teachers should be encouraged to use rubrics explicitly with the aim of cultivating students' responsibility for learning and to lessen the influence of prior perceptions on the implementation of assessment for learning. For example, teachers may demonstrate and explain clearly how they connect the learning content to the rubrics (Black and Wiliam 2009). They may also use rubrics together with evidence from assessment when giving feedback on students' learning status instead of just telling

students what to do (Stiggins and Conklin 1992). As they do this, they are more likely to appraise the role of rubrics in teaching and learning and thus recognize the possibilities of using rubrics in achieving assessment for learning.

Conclusion

This paper draws attention to the influence of teachers' prior perceptions on the implementation of rubrics for inquiry study in assessment for learning. It stresses that rubrics could be implemented without a "spirit" or with "no educational impact" (James and McCormick 2005; Popham 1997) if teachers do not recognize it as a way of changing teaching practice. Although this paper understands that it is unrealistic to expect teachers to creatively use the rubrics in assessment for learning in the limited timeframe in the study, it argues that the teachers' narrow perspective of rubrics could be a reason that limits their use in teaching and learning. This implies that teachers need long term support for broadening their perspective of assessment for learning. Only when teachers can 'discover' the influences of their prior perceptions on assessment for learning, will it be possible to change their behaviour. As the study demonstrates, they would need support for recognizing the influence of their prior perceptions in order to recognise the need to change their practices. This paper does not intend to make an empirical claim on its findings as it draws on data from a research and development study in the context of Hong Kong classrooms. As assessment for learning is regarded as an important element in the curriculum reforms in Hong Kong and other parts of the world, further studies on the influence of teachers' perceptions on its implementation conducted in different contexts, i.e. different cultures, schools and subjects, would produce valuable information for teachers and teacher educators to improve the implementation of assessment for learning.

(wordcount: 6115 excluding references and table)

References

Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50, no.2: 179-211.

Ajzen, I. and M. Fishbein. 2005. The influence of attitudes on behavior. In *The handbook of attitudes*, ed. D. Albarracin, B.T. Johnson and M.P. Zanna, 173-221. Mahwah, N.J.: Lawrence Erlbaum Associates Publishers.

Andrade, H. 2001. The effects of instructional rubrics on learning to write. *Current Issues in Education [On-line]* 4, no.4.

Andrade, H.G. 2000. Using rubrics to promote thinking and learning. *Educational Leadership* 57, no.5: 13-18.

Andrade, H.G. 2007/2008. Self-assessment through rubrics. *Educational Leadership* 65, no.4: 60-63.

Angelo, T.A. and K.P. Cross. 1993. *Classroom assessment techniques: A handbook for college teachers*. 2nd ed. San Francisco: Jossey-Bass Publishers.

Berry, R. 2008. *Assessment for learning*. Hong Kong: Hong Kong University Press.

Biggs, J. 2001. Assessing for quality in learning. In *Assessment to promote deep learning*, ed. L.A. Suskie, 65-68. Washington, DC: American Association for Higher Education.

Black, P., C. Harrison, C. Lee, B. Marshall and D. Wiliam. 2003. *Assessment for learning: Putting it into practice*. Maidenhead, England: Open University Press.

Black, P., C. Harrison, C. Lee, B. Marshall and D. Wiliam. 2004. Working inside the black box: Assessment for learning in the classroom. *Phi Delta Kappan* 86, no.1: 9-21.

Black, P., R. Mccormick, M. James and D. Pedder. 2006. Learning how to learn and assessment for learning: A theoretical inquiry. *Research Papers in Education* 21, no.2: 119-32.

Black, P. and D. Wiliam. 1998. *Inside the black box: Raising standards through classroom assessment*. London: School of Education, King's College London.

Black, P. and D. Wiliam. 2006. Assessment for learning in the classroom. In *Assessment and learning*, ed. J. Gardner, 9-25. London: SAGE.

Black, P. and D. Wiliam. 2009. Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability* 21, no.1: 5-31.

Bohner, G. and M. Wänke. 2002. *Attitudes and attitude change*. New York: Psychology Press.

Brookhart, S.M. 1997. A theoretical framework for the role of classroom assessment in motivating student effort and achievement. *Applied Measurement in Education* 10, no.2: 161-80.

Brown, G.T.L. 2004. Teachers' conceptions of assessment: Implications for policy and professional development. *Assessment in Education: Principles, Policy & Practice* 11: 301-18.

Cheng, L. 1997. How Does Washback Influence Teaching? Implication for Hong Kong. *Language and Education* 11, no.1: 38-54.

Cheng, L. 1999. Changing assessment: Washback on teacher perceptions and actions. *Teaching and Teacher Education* 15, no.3: 253-71.

Conca, L.M., C.P. Schechter and S. Castle. 2004. Challenges teachers face as they work to connect assessment and instruction. *Teachers & Teaching* 10: 59-75.

Curriculum Development Council. 2002. Basic Education Curriculum Guide. http://cd1.edb.hkedcity.net/cd/EN/Content_2909/BE_Eng.pdf.

Curriculum Development Council and Hong Kong Examinations and Assessment Authority. 2007. *Liberal Studies Curriculum and Assessment Guide (Secondary 4 - 6).* Hong Kong: Govt. Logistics Dept.

Darling-Hammond, L., J. Ancess and B. Falk. 1995. *Authentic assessment in action: Studies of schools and students at work*. New York: Teachers College Press.

Denzin, N.K. 1989. *The research act: A theoretical introduction to sociological methods*. 3rd ed. Englewood Cliffs, N.J.: Prentice Hall.

Dexter, S.L., R.E. Anderson and H.J. Becker. 1999. Teachers' views of computers as catalysts for changes in their teaching practice. *Journal of Research on Computing in Education* 31: 221.

Eiser, J.R. and J.V.D. Pligt. 1988. *Attitudes and decisions New essential psychology.* London: Routledge.

Entwistle, N. 2001. Promoting deep learning through teaching and assessment. In *Assessment to promote deep learning*, ed. L.A. Suskie, 9-19. Washington, DC: American Association for Higher Education.

Erwin, P. 2001. *Attitudes and persuasion*. Hove [England]: Psychology Press.

Fang, Z. 1996. A review of research on teacher beliefs and practices. *Educational Research* 38, no.1: 47.

Gardner, J. ed. 2006. *Assessment and learning.* London: SAGE.

Groundwater-Smith, S. 1998. Putting teacher professional judgement to work. *Educational Action Research* 6, no.1: 21-37.

Harlen, W. 2004. Rethinking the teacher's role in assessment. In *British Educational Research Assessment Annual Conference*. University of Manchester. http://www.leeds.ac.uk/educol/documents/00003775.htm.

Harlen, W. 2005. Teachers' summative practices and assessment for learning - tensions and synergies. *The Curriculum Journal* 16, no.2: 207-23.

Harlen, W. 2006. The role of assessment in developing motivation for learning. In *Assessment and learning*, ed. J. Gardner, 61-80. London: SAGE.

Harris, L., Irving, S. E. and Peterson, E. 2008. Secondary teachers' conceptions of the purpose of assessment and feedback. Paper presented at the Australian Association for Research in Education (AARE) Annual Conference December, in Brisbane, Australia.

Harwayne, S. 2000. *Lifetime guarantees: Toward ambitious literacy teaching*. Portsmouth, NH: Heinemann.

Hermans, R., J. Van Braak and H. Van Keer. 2008. Development of the beliefs about primary education scale: Distinguishing a developmental and transmissive dimension. *Teaching and Teacher Education* 24, no.1: 127-39.

Isikoglu, N., R. Basturk and F. Karaca. 2009. Assessing in-service teachers' instructional beliefs about student-centered education: A Turkish perspective. *Teaching and Teacher Education* 25, no.2: 350-56.

James, M. and R. Mccormick. 2005. Teachers learning how to learn. *Teaching and Teacher Education* 25: 973-82.

Kahn, E.A. 2000. A case study of assessment in a grade 10 English course. *Journal of Educational Research* 93, no.5: 276.

Kirkgoz, Y. 2008. A case study of teachers' implementation of curriculum innovation in English language teaching in Turkish primary education. *Teaching and Teacher Education* 24, no.7: 1859-75.

Kirschner, P.A., J. Sweller and R.E. Clark. 2006. Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist* 41, no.2: 75-86.
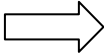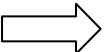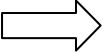
Lee, C. and D. Wiliam. 2005. Studying changes in the practice of two teachers developing assessment for learning. *Teacher Development* 9, no.2: 265 - 83.

Lee, T. 2007. Professional development of ICT integration for secondary school teachers in Hong Kong: Towards a peer support enhanced model. PhD Diss., University of Waikato.

Lindlof, T.R. and B.C. Taylor. 2002. *Qualitative communication research methods*. 2nd ed. Thousand Oaks, Calif.: Sage Publications.

Ni, Y. 1997. Performance-based assessment: Problems and design strategies. *Education Journal* 25, no.2: 137-57.

Ogan-Bekiroglu, F. 2009. Assessing assessment: Examination of pre-service physics teachers' attitudes towards assessment and factors affecting their attitudes. *International Journal of Science Education* 31, no.1: 1-39.

Pajares, M.F. 1992. Teachers' beliefs and educational research: Leaning up a messy construct. *Review of Educational Research* 62, no.3: 307-32.

Perkins, D. 1999. The many faces of constructivism. *Educational Leadership* 57, no.3: 6-11.

Popham, W.J. 1997. What's wrong--and what's right--with rubrics. *Educational Leadership* 55, no.2: 72-75.

Quinlan, A.M. 2006. *A complete guide to rubrics: Assessment made easy for teachers, K-college*. Lanham, Md.: Rowman & Littlefield Education.

Rea-Dickins, P. 2004. Understanding teachers as agents of assessment. *Language Testing* 21, no.3: 249-58.

Rust, C., M. Price and B. O'donovan. 2003. Improving students' learning by developing their understanding of assessment criteria and processes. *Assessment & Evaluation in Higher Education* 28, no.2: 147-64.

Sato, M., J. Coffey and S. Moorthy. 2005. Two teachers making assessment for learning their own. *Curriculum Journal* 16: 177-91.

Schon, D.A. 1983. *The reflective practitioner: How professionals think in action*. New York: Basic Books.

Stevens, D.D. and A. Levi. 2005. *Introduction to rubrics: An assessment tool to save grading time, convey effective feedback, and promote student learning*. Sterling, Va.: Stylus Pub.

Stiggins, R. 1999. Evaluating classroom assessment training in teacher education programs. *Educational Measurement: Issues and Practice* 18, no.1: 23-27.

Stiggins, R. 2002. Assessment crisis: The absence of assessment FOR learning. *Phi Delta Kappan* 83, no.10: 758-65.

Stiggins, R. 2005. From formative assessment to assessment FOR learning: A path to success in standards-based schools. *Phi Delta Kappan* 87, no.4: 324-28.

Stiggins, R. and N. Conklin. 1992. *In teachers' hands: Investigating the practices of classroom assessment*. Albany: State University of New York Press.

Stobart, G. 2008. *Testing times: The uses and abuses of assessment*. Abingdon: Routledge.

Tsai, C. C. 2002. Nested epistemologies: Science teachers' beliefs of teaching, learning and science. *International Journal of Science Education, 24,* no. 8: 771 -83.Van Der Schaaf, M.F., K.M. Stokking and N. Verloop. 2008. Teacher beliefs and teacher behaviour in portfolio assessment. *Teaching and Teacher Education* 24, no.7: 1691-704.

Waeytens, K., Lens, W., & Vandenberghe, R. 2002. 'Learning to learn': Teachers' conceptions of their supporting role. *Learning and Instruction, 12*, no.3, 305-22.

Webb, M.E. 2002. Pedagogical reasoning: Issues and solutions for the teaching and learning of ICT in secondary schools. *Education and Information Technologies* 7, no.3: 237-55.

Wiggins, G.P. 1998. *Educative assessment: Designing assessments to inform and improve student performance*. San Francisco, Calif.: Jossey-Bass.

Wilson, L.W. 2005. *What every teacher needs to know about assessment*. 2nd ed. Larchmont, N.Y.: Eye On Education.

Wilson, M. 2006. *Rethinking rubrics in writing assessment*. Portsmouth, N.H.: Heinemann.

Winzer, M. 2008. Muted voices in educational reform: Teacher attitudes and the inclusive movement. *Educational Practice and Theory* 30, no.1: 5-25.

Wong, M.W. 2007. Assessment for learning and teacher development: The experience of three Hong Kong teachers. *Teacher Development* 11, no.3: 295-312.

Zint, M. 2002. Comparing three attitude-behavior theories for predicting science teachers' intentions. *Journal of Research in Science Teaching* 39, no.9: 819-44.

Appendix 1   Interview framework and sample questions for pre and post-study interview

Aspects	Teacher
Develop, apply, and use assessment rubrics	• How did you use the assessment rubrics?
Student learning outcome (General)	• What do you think students can learn in the process of working on projects?
Student learning outcomes (strategies include task-based strategies)	• What are the strategies that they can apply in completing the IES task?
Teacher support (General)	• How did you support the students (planning stage at the beginning or at different stages of the project)?
Teacher support (problem)	• What do you think are the problems/areas in which students require support? With what kinds of problems/areas will you definitely help students out?
Teacher support (other strategies)	• What other strategies did you use to help your students in their IES process?

Table 1. Teachers' perceptions of teaching and learning and the use of rubrics

Teachers' perceptions of teaching and learning of inquiry learning	**Examples of their use of rubrics**
Evaluation driven assessment (i.e. marking as the major function of rubrics)	- Teachers were anxious about defining rubrics clearly - Teachers were anxious to mark accurately
Teacher-directed instruction (i.e. focused on knowledge to complete tasks)	- Teachers offered choices for students to choose from. - Teachers often told students what to do instead of guiding them to find their way to do it. - Little elaboration about the connection of rubrics and learning.
Result oriented (i.e. focused on what to do and how to do it)	- Teachers spent substantial time on teaching rubrics. - Teachers' gave task-specific feedback and comments.