Knowing Where the Learning Is a Shift from Summative to Formative Assessment

Eric Ho

Abstract—Pedagogical approaches in Asia nowadays are imported from the West. In Confucian Heritage Culture (CHC), however, there is a dichotomy between the perceived benefits of Western pedagogies and the real classroom practices in Chinese societies. The success of Hong Kong students in large-scale international assessments has proved that both the strengths of both Western pedagogies and CHC educational approaches should be integrated for the sake of the students.

University students aim to equip themselves with employability skills upon graduation. Formative assessments allow students to receive detailed, positive, and timely feedback and they can identify their strengths and weaknesses before they start working. However, there remains a question of whether university year 1 students who come from an examination-driven secondary education background are ready to respond to more formative assessments.

The findings show that year 1 students are less concerned about competition in the university and more open to new teaching approaches that will allow them to improve as professionals in their major study areas.

Keywords—Formative assessment, higher education, learning styles, Confucian heritage culture.

I. INTRODUCTION

THE Confucian Heritage Culture (hereafter, CHC) has caused students in some Asian countries, for example, Singapore, Taiwan, China and Hong Kong, “very used to examinations and have culturally accepted high-stakes examinations as a means of determining their future prospects” [1, p.200]. In Hong Kong’s secondary education, teachers, parents, and students focus on the results of the public examinations instead of improving the learning capacity during the learning process [2].

Due to the pyramid education system in Hong Kong, students having a place in a university are considered elites. In other words, these students obtain competitive results in the public examinations. As commented by some employers, these students, however, are less competitive at workplace. They have good discipline knowledge but lack employability skills that graduate professionals are expected to master for real working environment, in where there is no summative assessment to reflect how well they have performed. Tertiary education, therefore, should also help students to develop techniques that they can apply at workplace after graduation [3]. Skills development is a personal gradual process and it is unable to be assessed in a summative way.

Summative assessment has been a traditional assessment method in CHC; formative assessment also plays an important role in student learning processes due to the significance of continuous feedback. The continuous feedback can help students to learn better since the feedback received is personalized. Different individual students are able to know their strengths and weaknesses. While mastering subject knowledge, undergraduate students can also develop or further improve their soft skills before they graduate.

Due to the examination-oriented education system in Hong Kong, formative assessment is a relatively new concept to university year 1 students. They may not understand the purpose of having continuous feedback or they may feel uncomfortable towards formative assessment. Students’ learning preferences and concerns, therefore, should be understood first in order to smoothly integrate formative assessment in the curriculum.

II. LITERATURE REVIEW

A. Examination Culture in Hong Kong

Hong Kong’s education system and curriculum are westernized [4], [5] since Hong Kong was once a British colony from 1840-1997. The laissez-faire policy introduced by the British government, however, allowed CHC to be immersed in such English education model. Consequently, an examination-oriented culture and teacher-centred classroom have been resulted [6]. Due to the competitive nature and selection purpose of the public examination, success in examination is the top priority [4]. Furthermore, in Chinese society, education achievement is positively related to students’ future career and social statuses [7], [8]. Teachers, in the classrooms, tend to focus on examination content by practising past examination papers and offering model answers to students, who need to try their best to memorize and survive in such pyramid assessment system [1], [2].

The influence of CHC on education has stressed the educational equality [9], resulting in an over reliance on summative assessment, which is considered to be fair and objective to assess students’ learning outcomes. Principals, teachers and parents believe that the grades students obtain in scheduled tests and examinations can reflect their effort in learning [10]. In CHC, grading and certification have been the purposes of education [1]. While acknowledging the value of CHC and the importance of summative assessment, students’ learning process, and the improvement they make while learning should also receive attention from different stakeholders [4].
B. Issues in Hong Kong Education

Different scholars have criticized students’ learning by memorization. A higher grade in a summative assessment may not relate to improved student learning [11]. In response to the global development, students should understand knowledge holistically and education should develop students’ skills to learn better or improve in their future learning process [12]. Although Hong Kong education has been considered successful internationally [13] and Hong Kong students have received high levels of achievements in international tests [14], [15], some companies in Hong Kong argue that students are “not equipped with appropriate skills and attitudes for the emerging knowledge economy” [5, p.5]. This situation happens is likely a consequence of the emphasis of examination. Students believe that examination success is more important than learning process. The focus on the syllabus outweighs the importance of skills and techniques [16]. Students, therefore, are more concerned about the learning outcomes. Researchers have suggested that students have to learn more skills and abilities than knowledge before becoming a part of the work force in the society [3]. With skills and knowledge, graduating professionals are more competitive in job hunting process [17].

C. Introduction of Formative Assessment

Black and William [18, p.6] defined formative assessment as:

An assessment functions formatively when evidence about student achievement elicted by the assessment is interpreted and used to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions that would have been made in the absence of that evidence.

Since summative assessment is recognized as a more formal way to evaluate students’ learning performances [19], [20] in order to counter the dominance of scheduled assessments and teacher-centred classroom, formative assessment has been introduced [2], [21]. The aim is to help students learn better instead of emphasizing teaching and results.

“Assessment means grading seems to be unique in education” [22, p. 1]. All stakeholders in education should understand that there are some assessments with no grading in the real world, for example, job interviews and workplace presentations. People should more focus on feedback, self-evaluation and producing better performance in the future. Students, as a result, should understand the importance of receiving feedback.

Despite the fact that students may have different learning needs, the highly centralized and identical curriculum and examinations in Hong Kong undermine the needs of different individuals. Instead, students have to fit themselves into the system [5], [23]. Promotion the use of feedback to inform and support individual learners will be an ongoing challenge in this examination-oriented culture.

D. The Role of Higher Education

Besides mastering discipline-specific knowledge in tertiary education, graduates should also equip with wide range of skills to meet the expectations of employers [24], [25]. Graduates with aptitude, a positive attitude, willingness to learn “on the job”, collaborative skills and critical judgments are considered more competitive in the labour market [26], [27]. Developing students’ employability skills in tertiary education should be a compulsory part in the curriculum [28].

Placing emphasis on the development of employability skills in tertiary education seems to violate the mission of education, which is knowledge transfer. Employability, however, is related to “students’ intellectual and personal development” [25, p. 3]. Furthermore, employability skills and academic knowledge are complimentary to each other [29]. Employees are expected to have abilities to learn in unfamiliar environment and apply knowledge. Continuous feedback could develop a person’s effectiveness in the workplace [28].

III. THE STUDY

Implementation of formative assessment in tertiary education allows students to understand more about their abilities through awareness of their learning [30]. This would also help students to facilitate self-evaluation and motivation in learning and improvement [31]. Besides what needs to be improved, the introduction of formative feedback is able to let the learners know how they can improve. There is still a question of whether university year 1 students, who are used to having summative assessment since secondary education, welcome formative feedback or focus on the summative assessment scores. Research questions are as follow:

1. Do the university year 1 students have different learning styles after secondary education which focuses summative assessment?
2. What skills do the university year 1 students want to develop during tertiary education?
3. What are the students’ major concerns towards formative assessment?

IV. METHODOLOGY

Omorogiuwa’s [32] 5-point Likert questionnaire, in which 5 means strongly agree whereas 1 means strongly disagree, was adopted for this study in order to understand how students learn in secondary and tertiary education. The population of this study was 260 undergraduate year 1 students in a university in Hong Kong. The questionnaire had 31 items. Question 1 to 13 were to see if students got any changes in their learning styles after secondary education; Questions 14 to 26 investigated what skills that students wanted to develop in tertiary education; Question 27 to 31 were used to find out the concerns of students while implementing formative assessment.

Data were collected with the help of other teachers and analyzed using mean and standard deviation. The aim of the questionnaire was to give students voices about how learning and teaching should be conducted in tertiary education.
V. FINDINGS

A. Research Question 1

Table I shows how students learnt in secondary education and how they want to learn in tertiary education. “Interactions with peers” is what they want the most in tertiary education, followed by “Making learning interesting”, “Understanding learning process”, “Knowing how to take constructive criticism”, “Guidance to improve performance”, “Opportunities to discuss difficult concepts”, “Opportunities to ask why a question was marked wrong” and “Knowing how content is to be learnt”. There are 5 items that year 1 undergraduates do not demand in tertiary education. “Interactions with teachers” comes first, followed by “Knowing assessment criteria”, “Knowing what content is to be learnt”, “Transparency of assessment” and “Encouragement to learn”.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Secondary experience Mean</th>
<th>S.D.</th>
<th>Tertiary expectation Mean</th>
<th>S.D.</th>
<th>T-test Mean Difference</th>
<th>T value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interactions with peers</td>
<td>2.08</td>
<td>0.64</td>
<td>4.23</td>
<td>0.60</td>
<td>2.15</td>
<td>0.60</td>
</tr>
<tr>
<td>2. Interactions with teachers</td>
<td>3.54</td>
<td>0.78</td>
<td>2.69</td>
<td>0.63</td>
<td>-0.85</td>
<td>0.63</td>
</tr>
<tr>
<td>3. Opportunities to discuss difficult concepts</td>
<td>1.54</td>
<td>0.66</td>
<td>2.92</td>
<td>0.69</td>
<td>1.38</td>
<td>0.69</td>
</tr>
<tr>
<td>4. Opportunities to ask why a question was marked wrong</td>
<td>2.92</td>
<td>0.64</td>
<td>4.08</td>
<td>0.76</td>
<td>1.16</td>
<td>0.76</td>
</tr>
<tr>
<td>5. Guidance to improve performance</td>
<td>2.62</td>
<td>0.51</td>
<td>4.38</td>
<td>0.65</td>
<td>1.76</td>
<td>0.65</td>
</tr>
<tr>
<td>6. Encouragement to learn</td>
<td>3.92</td>
<td>0.64</td>
<td>3.85</td>
<td>0.80</td>
<td>-0.07</td>
<td>0.80</td>
</tr>
<tr>
<td>7. Knowing what content is to be learnt</td>
<td>4.38</td>
<td>0.51</td>
<td>4.08</td>
<td>0.49</td>
<td>-0.30</td>
<td>0.49</td>
</tr>
<tr>
<td>8. Knowing how content is to be learnt</td>
<td>3.23</td>
<td>0.60</td>
<td>3.85</td>
<td>0.55</td>
<td>0.62</td>
<td>0.55</td>
</tr>
<tr>
<td>9. Knowing assessment criteria</td>
<td>4.77</td>
<td>0.44</td>
<td>4.00</td>
<td>0.41</td>
<td>-0.77</td>
<td>0.41</td>
</tr>
<tr>
<td>10. Knowing how to take constructive criticism</td>
<td>2.31</td>
<td>0.63</td>
<td>4.15</td>
<td>0.69</td>
<td>1.84</td>
<td>0.69</td>
</tr>
<tr>
<td>11. Transparency of assessment</td>
<td>4.38</td>
<td>0.51</td>
<td>4.31</td>
<td>0.63</td>
<td>-0.07</td>
<td>0.63</td>
</tr>
<tr>
<td>12. Making learning interesting</td>
<td>2.15</td>
<td>0.69</td>
<td>4.23</td>
<td>0.73</td>
<td>2.08</td>
<td>0.73</td>
</tr>
<tr>
<td>13. Understanding of learning process</td>
<td>2.00</td>
<td>0.71</td>
<td>3.92</td>
<td>0.76</td>
<td>1.92</td>
<td>0.76</td>
</tr>
</tbody>
</table>

B. Research Question 2

Table II shows skills that tertiary students want to develop in their university life. “Oral communication skills” is ranked the top in all 13 skills, followed by “Team work”, “Organization skills”, “Problem-solving skills”, “Independent working”, “life-long learning”, “Professional knowledge”, “Thoroughness”, “Knowledge application”, “Analytical skills”, “Creativity”, “Technical skills”, “Written communication skills” and “Ethics” comes last.

C. Research Question 3

If students are given opportunities to receive formative assessment during their learning processes, the major concern is time issue (Table III). Besides, students feel anxious about open scrutiny. They also have considerable concern about giving explanation to their peers. “Difficulty assessing own self” and “Difficulty interpreting feedback” come last. I.

<table>
<thead>
<tr>
<th>TABLE II</th>
<th>SKILLS WANTED TO BE DEVELOPED IN TERTIARY EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employability skills</td>
<td>Mean</td>
</tr>
<tr>
<td>Oral communication skills</td>
<td>4.69</td>
</tr>
<tr>
<td>Team work</td>
<td>4.54</td>
</tr>
<tr>
<td>Organization skills</td>
<td>4.38</td>
</tr>
<tr>
<td>Problem-solving skills</td>
<td>4.31</td>
</tr>
<tr>
<td>Independent working</td>
<td>4.15</td>
</tr>
<tr>
<td>Life-long learning</td>
<td>4.00</td>
</tr>
<tr>
<td>Professional knowledge</td>
<td>3.85</td>
</tr>
<tr>
<td>Thoroughness</td>
<td>3.08</td>
</tr>
<tr>
<td>Knowledge application</td>
<td>2.92</td>
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<tr>
<td>Analytical skills</td>
<td>2.85</td>
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<td>Creativity</td>
<td>2.77</td>
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<td>Technical skills</td>
<td>2.69</td>
</tr>
<tr>
<td>Written communication skills</td>
<td>2.62</td>
</tr>
<tr>
<td>Ethics</td>
<td>2.31</td>
</tr>
</tbody>
</table>

VI. DISCUSSION OF FINDINGS

A. From Competition to Cooperation

The study shows that students want a different learning approach in tertiary education. In secondary education, students may see each other as competitors due to the pyramid assessment system [2]. When they have questions, they seem hesitant to get help from their classmates since they do not want to let classmates know what they do not understand. Likewise, students may not want to share knowledge with their friends since they want to get relatively more points in the public examinations. Instead of relying on teachers, tertiary students, however, tend to learn with their peers in university. One of the reasons to explain this phenomenon is students may find conversations with peers are more understandable and helpful [33]. Group learning is also “the most popular [learning] method in Chinese regions” [9, p.554]. This learning style is also echoed by Zhang and Perris’s [34] study in which Hong Kong students ranked collaborative learning style high. Students may also realize that each university teacher needs to teach more than 100 students in a lecture. This teacher-student ratio makes the accessibility of teachers more difficult.
B. “Learning How” Instead of “Learning What”

One of the major findings in this study is that students seem to take up a responsible role in the learning process in tertiary education. They may consider university education is a continuous process since different courses are inter-related to each other. In secondary education, if students get a wrong answer, what they usually do is checking against the marking scheme and memorizing the answer [35]. They may not want to know the reasons because gaining points or getting a higher grade in public examination is more important [1].

In tertiary education, students need to integrate different knowledge and skills in order to be a professional in the society [1]. Knowing the answer only would not help them perform better in job interviews or real working environment. Instead of memorizing subject content, students want to discuss with their classmates if they do not understand. They may have known that there will have less and less grading and summative assessment in the future. Employers will assess their performances through daily observations. Before graduation, students, as a result, want to know how to apply knowledge at workplace and how to become a better staff member in a company through different feedback. Since Hong Kong’s economy is knowledge based, learning different knowledge and taking assessments, unavoidably, have a certification purpose in education [1]. University students, however, also want to learn skills to meet the demands of future employers. They seem to understand that learning is a continuous journey even after university graduation. Knowing how to learn on-the-job in the future is more essential than knowing what to learn.

C. Understanding Learning Process more than Results

One encouraging finding shows that students want to know why the answer is wrong. This shows that they want to know how much they have learnt in classes. Knowing the correct answers may not help students to tackle similar situations in the future. They want to confirm that they have no misconceptions and make their learning processes go more smoothly. Going through the learning process would probably help students understand and integrate different subject knowledge. This is contradicting to how they learnt in secondary education, memorizing the answers is more important than knowing the reasons behind [2].

In tertiary education, although students have to learn different knowledge and theories, there are some subjects which are more problem-based, in which there is no right or wrong answer. One single subject is unlikely enough for explanation in a case study. Involving students to investigate, assess and evaluate different cases using different subject knowledge would let students test what they have learnt and have opportunities to apply knowledge of different subjects in case studies. Since one case may involve different subject content, students may be able to check if they can apply appropriate knowledge in order to reach their own conclusions.

D. Skills Development

Learning soft skills seem more important than knowledge in tertiary education [3]. As shown in the findings, the most wanted skill that undergraduates want to develop is oral communication skills. This is in agreement with the findings of [36] and [37]. Oral communication skills play an important role in higher education. Due to the examination-driven culture in secondary education, year 1 undergraduates’ use of language is formulaic and unnatural. Other studies have also suggested that undergraduates should master more communicative language [38] and graduating professionals should be equipped with a “whole range of communication and presentation skills” [3, p.14].

Apart from professional knowledge, all other soft skills seem difficult to be measured by summative assessment. Continuous feedback, however, can strengthen students’ soft skills [25]. Constructive feedback involves students to learn through observations and have more critical self-reflection. Their metacognitive competency can be enhanced [39]. It is beneficial for students in a long term since the development of different skills is “conducive to effective professional development and lifelong learning” [25, p.2]. Even though students in the CHC enjoy face-to-face teaching and learning [40], they also understand that there will be no such teaching and learning at workplace. Life-long learning, therefore, has become a major idea in the CHC [9].

The development of “skills an attributes is intrinsic to a more holistic pedagogical approach” [25, p.3]. Since job market is fierce in Hong Kong, besides academic knowledge, students would also like to be equipped with work-relevant skills for internships or before graduation. One reason is that graduates with wide range of skills would be more competitive during recruitment [39]. While students have realized the importance of both employability skills and academic knowledge, university teachers should establish some teaching strategies which allow students to develop some soft skills while learning in their own disciplines.

E. Concerns towards Formative Assessment

Formative assessment is perhaps a new ideas to some of the university year 1 students since they used to have summative assessment in their secondary education. Students concerns should be aware of in order to maximize the benefits of formative assessment.

The major concern is time. In secondary education, assessment is summative due to the influence of the public examination system, in which students have to provide correct answers in order to gain points. Students usually learn the content continuously and know how well they have mastered knowledge through scheduled tests and exams. After receiving the score or feedback from the teachers, students, however, seem unable to modify or resubmit their work with the help of feedback. Instead, students usually have moved on to the next assignment [41]. In an education system where courses are content-based and students are spoon-fed, students may have difficulties to balance both knowledge and skills development.
The second concern is anxiety when they have to receive feedback. Summative assessment emphasizes outcomes while formative assessment stresses on learning process. In summative assessment, students could still memorize the subject knowledge or skills. This, again, is unusual to students who study in an examination-oriented environment. The unfamiliar assessment methods will cause higher anxiety to the learners. To ease the anxiety, students should play this central role in their learning. They should be engaged with outcomes, criteria and standards of the assessment because students will be clear about the criteria of a high quality performance [43]. To keep students interested and motivated in formative assessment, training plays an essential role [44]. Formative feedback may make students nervous. Summative assessment emphasizes outcomes while teachers and students are most responsive [45]. In other words, from student perspective, fairness is not applicable since different students would be treated differently. This violates the existence of tests and examinations in the CHC, which is to provide a fair way of assessment [2] and the influence of all personal and social network in the selection process would be reduced. Teachers influenced by the CHC, in contrast, may consider that “fairness requires doing everything possible to maximally support individual learner development, with the understanding that some individuals will need more time and resources than others” [45, p.103]. Each student is equal due to the belief of educability and perfectibility [46].

In Hong Kong, the influence of CHC on students’ perception towards teachers is still the “source of authority and wisdom” [2, p.69]. The contradiction of learning between students and teachers has made formative assessment difficult to be fully implemented in Hong Kong to maximize an individual’s learning potential. In this sense, educators may consider using summative assessment for subject knowledge where formative assessment for soft skills development and learning performance improvement.

VII. CONCLUSION

Following the traditional CHC, summative assessment has been adopted in Hong Kong for many years and Hong Kong’s education has been considered successful. Yet, there are complaints that university graduates are “not equipped with appropriate skills and attitudes for the emerging knowledge economy” [5, p.9]. Since the public examination system of secondary education is competitive and selective, as well as summative in nature, students aim to gain more points in order to get a place in tertiary education.

While students have realized that secondary education is spoon-fed, they want a change in tertiary education. Instead of one-way transmission of knowledge, influenced by the CHC, they want more discussions and guidelines in order to make them a better life-long learner. In addition, undergraduate students in this study also like to develop soft skills in order to become a more competitive candidate upon graduation. They believe that continuous feedback during the learning process would let them improve and perform better and better.

Even though feedback is important in the learning process, students are concerned about time, emotions, and fairness. Formative assessment is uncommon in secondary education. Students, as a result, have uncertainties about its implementation. When it comes to the assessment of subject knowledge, learners, however, still consider summative assessment is fairer.

Summative and formative assessments are not mutually exclusive [12] because they can entertain the needs of different stakeholders and collect different information, for example, learning progress, students’ performances against expectations and ranking among students. If university students are ready for a change in learning style, teachers are suggested to adopt both summative and formative assessment in different parts of the study in order to develop a well-balanced individual [9]. While subject knowledge in important for undergraduates to become professionals upon graduation, soft skills are also essential for them to be a competent employee at the workplace.

REFERENCES

Eric Ho is a language instructor in a tertiary institution in Hong Kong and currently finishing his doctoral degree focusing on the ideology in a mixed cultural context. He is particularly keen on developing assessment methods that require integration of a range of competencies and that promote reflective practice.