

A four-dimensional conceptual framework for student assessment literacy in holistic competency development

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Abstract

As many universities worldwide have incorporated holistic competency development into their course goals, developing assessment literacy in these competencies is placed high on the agenda. Yet, existing literatures on assessment literacy tend to focus on disciplinary knowledge, with little reference to holistic competencies. Based on 29 focus group interviews with 122 students from six universities in Hong Kong, this study first explores the extent to which previous conceptualisations of student assessment literacy also apply to assessing holistic competencies. Findings are subsequently used as a base for discussion towards a new framework of student assessment literacy in holistic competency development which constitutes four dimensions, i.e. knowledge, attitude, action and critique. The renewed framework incorporates features specific to holistic competency assessment, further highlights students' critical engagement with assessment, and understands learners as active agents who exercise discretion in holistic competency assessment.

Keywords: Assessment literacy; holistic competencies; generic skills; conceptual framework

Introduction

Holistic competency is an umbrella term for different types of generic skills (e.g. communication, teamwork, creativity), positive values and attitudes (e.g. consideration, respect) (Chan et al. 2017a; Chan 2019). These competencies can potentially be applied to a wide range of disciplines, to different workplaces and to any other contexts. Graduates are facing a less certain future, with increased political tensions, frequent updates of technology, rapidly changing demands of work and evolving responsibilities (Oliver 2015). Therefore, holistic competencies are not only important for students to prepare for jobs, but also for them to become well-rounded citizens who can stay effective and capable in the multiple roles they assume in the future. In a neoliberal context where universities are pressured to be more accountable in their use of public resources (Alexander 2000), universities are also expected to provide concrete evidence of students' holistic competency development via, for example, assessing or certifying these competencies.

To enhance the effectiveness of assessment, it is important that stakeholders such as teachers and students are

assessment literate, i.e. obtain ‘the level of knowledge, skills, and understanding of assessment principles and practice’ (Taylor 2009, p.24) in terms of holistic competency development. Student assessment literacy contributes to transforming the assessment structure in higher education which considers assessment as unidirectional and places students at the passive end (Ajjawi et al. 2018). When it comes to holistic competency development, engaging students in the assessment will help them develop these competencies in a more self-directed and genuine manner.

However, no study to date has specifically looked at assessment literacy in holistic competencies, with much research based on disciplinary knowledge, such as assessment literacy in language learning (Fulcher 2012; Scarino 2013; Vogt and Tsagari 2014) and in science (Abell and Siegel 2011; Gottheiner and Siegel 2012). Although some conceptual papers took a holistic approach to theorise assessment literacy (i.e. conceptualising assessment literacy for student learning as a whole instead of for a particular discipline) (e.g. Xu and Brown 2016; Pastore and Andrade 2019), none has explicitly shed light on the role of holistic competency assessment within student learning or the assessment domain. It is not the intention of this paper to claim a dichotomous divide between disciplinary knowledge and holistic competencies, nor does it aim to separate holistic competencies from student learning in higher education. Nonetheless, holistic competencies do have issues of their own in terms of assessment, which are still highly contestable in practice and in research as well. Do the existing conceptualisations of assessment literacy account for the characteristics of holistic competencies? Are these conceptualisations ‘sufficient’ in a context when holistic competency development is increasingly valued in higher education?

This study explores students’ assessment literacy in holistic competencies guided by Smith et al. (2013) validated multi-dimensions of student assessment literacy. The findings will be subsequently used as a base for discussion towards a new framework of student assessment literacy in holistic competencies which highlights components specific to holistic competency assessment and values students’ critical engagement.

Student assessment literacy

One of the most recognised works on student assessment literacy is Smith et al. (2013) research which conceptualised the concept in three dimensions – students need to (1) understand the purpose of assessment and how it connects with their learning trajectory; (2) be aware of the processes of assessment and how they might affect students’ capacity to submit the assessment; and (3) be able to judge their own work and how to improve. Building on these three dimensions, Smith et al. (2013) further developed and validated a student assessment literacy instrument to help them quantify a brief intervention on student learning. The above three dimensions have influenced assessment research (e.g. Carless 2015; Charteris and Thomas 2017; Deeley and Bovill 2017) and will also be used as an anchoring point for the current paper.

Studies framed exactly under student assessment literacy are scant, mostly researching how to enhance student assessment literacy via intervention (e.g. Smith et al. 2013; Deeley and Bovill 2017; Torshizi and Bahraman 2019). There are more studies investigating the student’s role in assessment that do not borrow the concept of assessment literacy, such as theoretical discussions on empowering students in assessment (Francis 2008; O’Donovan, Price, and Rust 2008), student perceptions of different types of assessment (Struyven, Dochy, and Janssens 2005; Pereira, Niklasson, and Flores 2017; Flores et al. 2020), and students’ experience in assessment (O’Donovan, Price, and Rust 2001; O’Donovan 2019). One of the most notable line of recent works is on students’ evaluative judgement, defined as the ‘capability to make decisions about the quality of work of self and others’ (Tai et al. 2018, p. 5).

However, within these studies, a ‘deficit model’ is often adopted where ‘low levels of (student) assessment literacy are assumed and the nurturing of assessment literacy is focussed upon’ (Medland 2019, p.586). Medland further criticised that such a ‘deficit model’ puts forward a simplistic dichotomy of whether assessment literacy is present and

fuels the widespread ‘assessment illiteracy’ lament (Stiggins 2010, p. 233) without achieving a sophisticated understanding of this phenomenon. In Lees and Anderson’s words (2015), although these studies do signify a shift to a student focus in assessment, they are still ‘seen through the lens of the educator’ (p. 45) because students are expected to conform to a standard designed by the ‘authorities’ (Bonnett 1978; Su 2014).

Holistic competency assessment in higher education

The nature of holistic competencies requires further elaboration before any productive discussion about their assessment can take place. Holistic competencies are known to be widely transferrable, and yet also nebulous. Apart from a plethora of similar terms used (e.g. transferrable skills; generic skills; graduate attributes), there is a lack of standardised list of what these competencies exactly include (Marginson 1994). While the list of holistic competencies is extensive, some enjoy a higher profile, such as problem-solving skills, communication and critical thinking (Kensington-Miller et al. 2018). The relationship between holistic competencies and disciplinary knowledge is also complex. As noted by Bennett, Dunne, and Carré (1999), ‘there is enormous variation across disciplines about what are considered the necessary core or disciplinary skills, and, as a consequence, in the generic skills planned for’ (p.80). For example, information technology (IT) skills are viewed as an essential part of engineering students’ disciplinary knowledge, but for students from the business or arts department, IT skills are more generic and far less technical (Chan and Fong 2018).

These features have led to complexities in holistic competency assessment. The nebulous nature of holistic competencies might have resulted in a lack of standardised guidelines or policies on how to assess these competencies (National Centre for Vocational Education Research (NCVER)), 2003). In practice, holistic competencies are rarely reported or assessed as individual learning outcomes (Badcock, Pattison, and Harris 2010), often hidden within the curriculum in higher education (Hughes and Barrie 2010), or simply implied in the performance of a study project (Clayton et al. 2003). If holistic competencies are to be assessed explicitly and individually, how can students’ achievement in these competencies be inferred (Clayton et al. 2003; Pitman and Broomhall 2009)? Valid inference requires clear standards which are currently lacking for holistic competencies (Chan et al. 2017a). For example, how might one determine that a student demonstrates a higher level of ‘leadership skills’ than others? What exactly and validly constitute a high level of ‘leadership skills’?

As it is difficult to determine the key competency levels, ‘there is considerable potential for invalid judgements to be made about the quality of learner performance’ (Clayton et al. 2003, p.61). Gibb (2014) commented that there is little evidence we have effective processes for assessing holistic competencies. Especially for competencies that are more person-related (e.g. respect, responsibility, honesty), negative assessment could be interpreted as a personal affront and lead to ethical issues.

Despite these difficulties, assessment still plays a crucial role in driving students’ holistic competency development (Hughes and Barrie 2010). Clayton and his colleagues (2003) also believed that assessing holistic competencies ‘can raise levels of awareness and result in a greater level of commitment by learners and teachers to the recognition of these skills (competencies)’(p. 9), and that these competencies should be certified or assessed. Gibb (2014) called holistic competency assessment ‘an increasingly prominent concern’ (p.468). Leggett et al. (2004) followed and surveyed natural sciences students in an Australian university for three years ($N = 153$ in year one; $N = 82$ in year three due to attrition), and found students’ perceived importance of holistic competencies has a direct relationship with the degree to which these competencies are assessed, which confirms the need for effective holistic competency assessment to promote students’ competency development.

As Chan et al. (2017a) rightly pointed out, in the face of these complexities, ‘this (assessing holistic competencies)

needs to be addressed by developing academics' understanding and expertise in assessment and involving students in the assessment process and encouraging them to take a more active role in directing and reflecting on their own learning' (p. 5). Fostering students' assessment literacy in holistic competencies will potentially help to underpin further moves in implementing assessment policies and practices in higher education.

Current study

The research questions are:

1. To what extent is Smith et al. (2013) conceptualisation of student assessment literacy applicable to assessing holistic competencies?
2. What constitutes student assessment literacy in holistic competency development?

In the first research question, we seek to understand students' assessment literacy in holistic competencies by borrowing Smith et al. (2013) conceptualisation of student assessment literacy in three dimensions. By comparing to, fine-tuning and expanding on Smith et al.'s (2013) original model, these findings will serve as a base for discussion of a new conceptualisation that embraces assessment literacy in holistic competencies (i.e. the second research question). Such discussion would also serve as a critical scrutiny of Smith et al. (2013) previous model to allow for renewed understandings.

Methodology

Considering the limited amount of research on this topic, the study is framed as an exploratory study which aims to facilitate the conceptualisation of students' assessment literacy in holistic competencies instead of providing conclusive answers or generalising results. Therefore, to provide nuanced insights into the research questions, interviews are deemed suitable as research methods.

Data collection and participants

One hundred and twenty two university students of different years of study and disciplines from six Hong Kong universities were recruited for focus group interviews. A total of 29 focus group interviews ($N = 3-7$ each group) were conducted in English, each lasting for approximately 40 min to 1.5 h. Focus group interviews were adopted because the format of a focus group stimulates interaction between participants (Morgan 1996) and 'young people are often stimulated to talk more expansively when others of their age join them' (Bogdan and Biklen 1998, p. 100). Prior to the interviews, the concept of holistic competency was clearly explained to and discussed with all participants to ensure that they have a common understanding of the term, including showing them the university graduate attributes and mission aims related to competencies that all students are expected to develop.

For the focus group interviews, the researchers designed some general guiding questions around holistic competency assessment which covered the three dimensions in Smith et al.'s framework (2013) (i.e. the purpose, process and judgement of assessment), as well as students' inclination to be assessed on these competencies. Five university students were invited randomly for piloting to ensure the interview questions address the research aims and are understandable. At least one researcher moderated each focus group interview based on this pre-designed interview protocol.

Convenience and purposive maximal sampling were adopted to select participants. In general, a convenience sample can be understood as a group of participants who are more readily accessible to the researchers (Given 2008), and

purposive maximal sampling, also known as maximum variation sampling, refers to selecting participants across a wide spectrum (e.g. people of different ages/from different disciplines) relating to the research topic to yield diversified perspectives (Miles and Huberman 1994). Through the researchers' personal network (i.e. convenience sampling), gatekeepers (e.g. directors and staff from whole person development and teaching and learning centres; professors of different disciplines) from six out of eight public universities in Hong Kong were first approached. They then recruited students who responded positively to their mass email invitations, who enrolled in their courses, or who had participated in our earlier survey research on a similar research topic. To capture a wider range of perspectives (i.e. purposive maximal sampling), we included first-year to graduating students (around age 18-24) from over 30 disciplines ranging from engineering, biology, social work and geography to English studies. Prior to formal data collection, all participants signed their informed consent and this research was approved by the ethical committee at the university. Tables 1 and 2 provide the demographic information of student participants.

Table 1. Participant disciplines.

Discipline	Participants (N)	Discipline	N	Discipline	N
Business and economics		Science		Engineering	
Accounting	5	Not specified	4	Not specified	1
Business	17	Biology	2	Civil engineering	3
Economics	2	Biotechnology	2	Information engineering	14
Finance	2	Environmental Management and Technology	1	Information technology	1
Information systems	1	Physics	1		
Marketing	5	Maths	1		
Social sciences		Arts and humanities		Others	
Not specified	11	Chinese	4	Music	1
Human development	1	English	3	Sports	2
Geography	2	Global China studies	1	Not specified	3
Government and public administration	1	Language (unspecified)	11		
Journalism and communications	5	History	2		
Physical education	1	Philosophy	4		
Psychology	2	Translation	5		
Social work	1				
Total number of student participants: 122					

Table 2. Participant year of study.

Year of Study	Participants (N)
1	17
2	23
3	33
4	45
5*	1
Not specified	3
Total	122

*Note: In Hong Kong higher education, the majority of undergraduate programmes last for 4 years, but with a few exceptions (e.g. double degrees).

Data analysis

The interview audio recordings were all first transcribed verbatim and then went through directed content analysis (Hsieh and Shannon 2005). Directed content analysis is more structured, guided by an existing theory or prior research, and serves to validate or enrich this theory/research. This aligns well with our current research goal to extend conceptually the established definitions of student assessment literacy (Smith et al. 2013) to assessing holistic competencies.

Based on the three dimensions of student assessment literacy raised by Smith et al. (2013), three predetermined coding categories were identified. The predetermined categories are (1) students’ understandings of assessment purposes, (2) students’ awareness of assessment processes and (3) students’ judgement of assessment. The interview transcripts were then coded and grouped into these three predetermined categories (See Table 3 for a coding example). Transcripts (i.e. student responses) that could not be grouped into the predetermined categories were discussed among the researchers to examine whether a new category was needed.

Table 3. Coding example.

Predetermined categories Smith et al. (2013) model	Interview coding Students’ responses to the purposes of holistic competency assessment
(1) students’ understandings of assessment purposes: (Assessment literate students) understand the purpose of assessment and how it connects with their learning trajectory	Promotes learning
	Reinforces focus on marks
	Undermines interests in developing holistic competencies
	Leads to personal affront
	Compromises student agency

The authors iteratively reviewed the transcripts, discussed the coding, and consulted with another expert colleague. To ascertain dimensions of student assessment literacy in holistic competencies, the discussion was guided by questions such as: (1) Does Smith et al.’s model sufficiently capture students’ concerns and understandings of assessing holistic competencies? (2) Are students’ responses justified or are they an indication of assessment illiteracy? (3) Is there literature to support the students’ responses and our new conceptualisation of student assessment literacy in holistic competencies? Following the discussions, four main dimensions of assessment literacy in holistic competencies (i.e. knowledge, attitude, action, critique) emerged.

Findings

Data show that, while Smith et al.’s model contributes to interpreting students’ assessment literacy in holistic competencies, it is not sufficient to capture some of the nuances and complexities involved in assessing these competencies. In what follows, we elaborate on this finding with student responses to the three dimensions in Smith et al.’s model.

Understandings of assessment purposes and their connection to development

Only a small portion of interviewed students ($N < 10$) were confident that assessing holistic competencies would effectively promote their competency development by serving as an incentive, which fulfils Smith et al.’s first standard of assessment literate students:

I think only if it’s (holistic competency) being taken as part of GPA, the students would treat it seriously. If it is not being counted, the motivation to study would be low.

Students have to deal with many other problems and aspects in life, if it (holistic competency) doesn’t (get assessed), then students won’t put in that much of attention and effort.

However, the majority of students showed different concerns when it comes to assessing holistic competencies. They also understood assessment motivates students to invest more effort, but they believed deep down students are only investing in gaining high marks instead of in developing themselves. As one student said:

Once it is assessed and marked, it will lose its value and students will focus on the course marks than the actual development of certain competencies.

With assessment in place, participation in activities may also become utilitarian:

We will use our holistic competencies in different situations, but not every one of them can be assessed. Students may join some activities just for the sake of the assessment.

In addition, other students claimed that assessing holistic competencies, on the contrary, ‘scare(s) them’ from developing and deprives of their interest in competency development. Student 108’s comments highlight such concern:

The main point is that when it comes to grading, the fear inside would scare me from learning... if you emphasize the importance of results and keep telling me the consequences of not having good ones, I would then lose interest to learn. But if you do not force me, I might be interested.

Apart from mentioning reinforcing focus on marks and killing interest, students also raised consequences in faking performance and unfair judgement in relation to competency assessment:

If it (holistic assessment) happens in lessons, everyone would feel scared. Maybe everyone will not be acting his true self.

Different students have different characters. When they are assessed, inaccuracies may exist.

Some students emphasised the ‘personal’ side attached to holistic competencies and believed that assessment may be taken as a personal affront. Students’ negative attitudes are pertinent to the assessment of holistic competencies, which they believed is unlike that of disciplinary knowledge:

It is my life and my ability which are not related to academic achievement. There should not be any assessment for these abilities. We don’t need the paper or grades to tell who we are.

I think we shouldn’t assess students’ abilities (holistic competencies) because we’re not machines or products. It’s not possible for us to totally be the same with others. We look things in different ways. We may focus on different things.

Two students asserted that the purpose of assessing holistic competencies is not justified because holistic competency development is a student’s own responsibility and the university does not need to do anything further. By inference, these students believed that assessment places some extra pressure on students (i.e. ‘force them’) that compromises their own agency to develop holistic competencies:

As an adult and a university student, it is his/her own responsibility to grow, learn and experience in his/her own way. You don’t have to force them. Students should be responsible for themselves.

Students’ diverse responses cast doubts on the first dimension of Smith et al.’s model. Apart from a few advocating ‘assessment for learning’, more students demonstrated criticality when approaching this issue (e.g. compromising one’s agency; personal affront; investing in marks). According to Smith et al.’s model, such uncertainty (failing to see the connection between assessment and development) towards assessment purposes may be interpreted as assessment illiterate. However, these concerns are particularly relevant to holistic competencies, considering a lack of standards in

assessing them and the personal nature of some competencies (e.g. consideration, respect) (Clayton et al. 2003; NCVER, 2003). Even in research, whether to formally assess these competencies is still highly contestable (Chan et al. 2017a). Therefore, it would be one-dimensional if we only expect assessment literate students to ‘understand the purposes of assessment’ without fully, critically taking into consideration the potential side effects and complexities involved in assessing holistic competencies.

Awareness of assessment approaches, processes, and their effect on student capacity

Apart from three students explicitly saying that they ‘really don’t know how these competencies could be assessed’, the rest of the participants actively commented on some assessment approaches and proposed a range of possible methods they deemed appropriate. These students fulfilled part of the second dimension in Smith et al.’s model as they showed awareness of different approaches to assess holistic competencies. In general, a large majority of students (>90%) were concerned about quantifying assessment and instead preferred more qualitative and formative evaluation (e.g. presentation; review forms; observation) of these competencies:

I think it can be something like a review form. People review and assess on your performance. You can make it as a reference. It is your own decision to accept the opinions or not. The reviews do not have to be included in the GPA or presented as a mark or a grade.

Like the CSL course, it is related to social service. There is a presentation at the end of the course. And it requires a short report with 200 words after each visit. By looking at the report and the presentation, teachers can know what the students have learnt.

By critically examining some common assessment methods (e.g. examinations and essays) while taking into consideration the nature of holistic competencies (e.g. ‘competencies are developed through practice’), students managed to come up with other possible assessment that they believed to be more reliable, such as observing students’ daily performance, requiring students to do a presentation or to submit a short report.

As most student respondents’ holistic competencies are either not assessed or are hidden in their academic tasks, responses related to students’ awareness of how processes of competency assessment affect their capability to submit assignments are scant. This raises a question about the second dimension in Smith et al.’s model where students are expected to ‘be aware of the processes of assessment’. What kind of ‘process’ are we expecting students to be aware of when in practice this assessment process is often hidden or does not exist at all? It then becomes problematic to require students to know how such process would influence students’ submission of assignments if this process itself remains unclear. A more subtle conceptualisation is needed to help students realise that the assessment process of holistic competencies is not always straightforward and transparent, but could instead be affiliated to other academic assessment tasks or treated implicitly.

Judgement on assessment and feedback

Most interviewed students had not been directly assessed as to their holistic competencies, which echoes what Hughes and Barrie (2010) argued that holistic competency assessment is often lacking or hidden in the curriculum. Among the few students ($N = 11$) who reported their assessing experience, students’ judgement on assessment varies to the types and contents of assessment they received. Student 34 said:

There was something similar in my high school. Just mostly everybody gets an A, so just imagine how discouraging it might be and affect your job hunting process if you get a B or C in either or any of those like critical thinking. Your university professor think you don’t have critical thinking, so do they still want to have an interview with you? Or should everybody just get an A, then it will lose its meaning.

Two other students had experience similar to Student 34 when their teachers or internship supervisors simply ‘ticked’ each competency box and gave a grade based on their general performance. They did not know how to act on such assessment and found it useless.

For students who reported more positive engagement with holistic competency assessment, they tended to receive very detailed feedback. For example, Student 14 received a comprehensive performance review while she was working as a hall tutor. The detailed feedback on her leadership abilities helped her ‘become more active and have more confidence’ and reminded her to improve her leadership performance in her later work.

According to the interviewees, reflective type of assessment tasks also enable students to develop self-evaluation abilities and tended to have sustainable effects. Student 37 participated in an entrepreneurship course which required him to submit written reflection and video projects. The student at first failed to acknowledge the value of these assessment tasks, but later successfully applied this experience to his daily life:

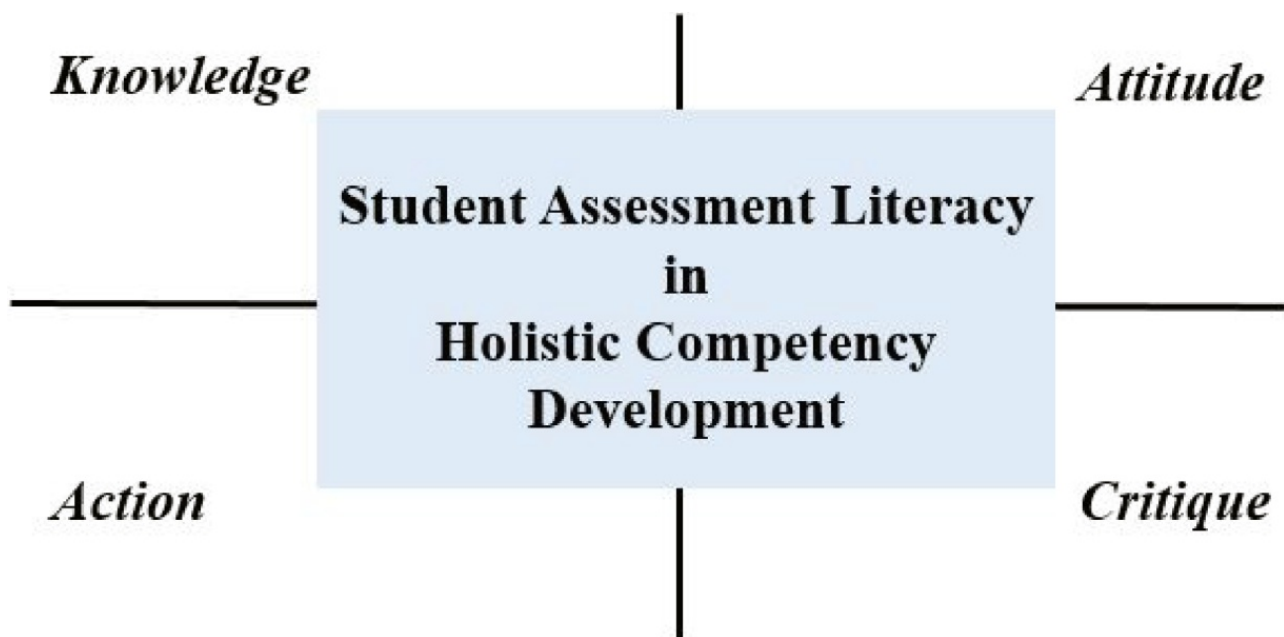
(At first) I think it's more about writings and it's so shallow. But for me, it's after a time maybe I take these learning into my daily life, or really applying what I have learnt into a start-up competition for example. Then, it's really the time for me to realize 'oh, I have learnt something' actually.

Although pertinent responses are limited in this section, available answers echo the third dimension in Smith et al.'s model, i.e. the importance for students to ‘practise judging their own responses to assessment tasks... and learn what could be improved’. Students also showed discretion and criticality when they differentiated their responses to different assessment/feedback tasks. Summative assessment exemplified by grades seems not to be taken seriously, whereas detailed feedback and reflective types of assessment better enable students to identify their strengths and weaknesses. As noted by Su (2014), students should become purposive agents ‘in the sense that their attributes (holistic competencies) are developed and realised through their own judgements and actions’ (p.1213). When dealing with assessment and feedback, students are expected to choose and act upon what are considered relevant and useful to them.

Discussion

The complexities involved in assessing holistic competencies require a more specific and nuanced conceptual framework for student assessment literacy in these competencies. Based on the findings and Smith et al. (2013) original model, we now propose four new dimensions of student assessment literacy in holistic competencies (See Figure 1).

Figure 1. Student assessment literacy in holistic competency development framework.



Knowledge

In the knowledge dimension, assessment literate students

- understand the purposes of assessment for holistic competency development, and the potential side effects assessment may cause;
- understand the processes of holistic competency assessment are not always explicit and could be embedded within academic tasks;
- understand holistic competencies can be assessed via different approaches and activities, and the connection between assessment approaches, activities and holistic competency development.

In alignment with the majority of relevant literatures, such knowledge base lies at the bottom of one's assessment literacy, serving as the threshold to achieve a deeper level of literacy (Smith et al. 2013; Xu and Brown 2016). Students are expected to know why they are being assessed (e.g. students commenting that holistic competency assessment helps them invest more effort in development and at the same time, they critique the purposes of why they are being assessed) and how they are assessed (e.g. students recommending a range of assessment approaches).

Meanwhile, however, due to the nebulous nature of holistic competencies and a lack of established guidelines on assessing these competencies (Clayton et al. 2003; Chan et al. 2017a), the assessment of holistic competencies is in itself contestable. If students fail to see the potential side effects brought by the assessment (e.g. students mentioning a compromise in agency, unfair judgement and overt emphasis on marks), they could feel confused or be further discouraged from holistic competency development. There is so far 'little evidence that we have good and effective systems for assessing soft skill' (Gibb 2014, p. 468), so students need to be literate in the potential risks involved in poor assessment. On the other hand, holistic competency assessment in practice is often hidden in the curriculum or inferred in the performance of other assignments (Clayton et al. 2003; Hughes and Barrie 2010). It would help students obtain a more sophisticated understanding of holistic competencies if they are aware that the processes of

assessing are not always clear-cut.

The lack of established guidelines may have also led to a wide range of approaches (e.g. reflective writings; presentations) and activities (e.g. community service; field trips) used in assessing holistic competencies. As implied in our data, students entertained various perceptions of assessing holistic competencies and they sometimes might not be able to recognise the connection between certain assessment approaches/activities and holistic competency development. As one informant reported, failing to recognise such relationship would render 'joining some activities just for the sake of the assessment', thereby obscuring the opportunity to truly develop. Referring to Biggs' (1996) well established theory on constructive alignment, this has also placed expectations on appropriately aligning these activities, assessment approaches and holistic competency development, instead of treating assessment as a standalone or as an after-thought.

Attitude

In the attitude dimension, assessment literate students

- appreciate holistic competency development in terms of its value and show willingness to engage in its assessment;
- constructively manage the impact of holistic competency assessment on emotions and avoid defensiveness when receiving negative feedback.

It has long been evidenced in educational research that students' attitudes influence their motivation to engage in learning (Gardner 1988). Particular to holistic competencies, scholars have been vocal about how students' perceived importance of holistic competency development could affect their motivation to enhance these competencies (Chan, Zhao, and Luk 2017b). Students with more positive attitudes (e.g. enjoyment) demonstrate higher level of engagement in activities that lead to holistic competency enhancement (Chan and Yeung 2020). And yet in the holistic competency context, students' attitudes and perceptions towards these competencies are often overlooked (Tymon 2013).

Although Smith et al. (2013) original conceptualisation does not highlight students' affection and attitude, this element is prevalent across our students' answers to the research questions. Similar to some earlier studies reporting students being negative to holistic competency development (Dunne, Bennett, and Carré 1997; Hughes and Barrie 2010), some of our interviewees mentioned feeling 'forced', 'scared' and 'meaningless' when it comes to competency assessment. This is unsurprising as some holistic competencies, compared to technical knowledge, are more 'person-oriented'. Negative assessment indicating a student's lack of creativity may be taken personally, or worse, may become a tag attached to this student threatening his/her identity (e.g. one student mentioned how a professor or an employer would perceive a student if s/he had been assessed as 'lacking critical thinking'). However, as noted by Carless and Boud (2018), critical feedback can have both positive and negative impacts depending on a range of factors, including self-efficacy and handling of emotions. Capable students are often proactive in dealing with assessment and feedback by reflecting on themselves, seeking further suggestions from peers and teachers or engaging in dialogues with them.

Action

In the action dimension, assessment literate students

- develop strategies for different assessment tasks;

- reflect intentionally;
- judge and use assessment and feedback for further holistic competency development

In recent years, as the focus on assessment turns from ‘assessment of learning’ to ‘assessment for learning’ (Boud 2010), students’ uptake of assessment and feedback to improve their own learning becomes crucial (Carless and Boud 2018). In our interviews, students who are disengaged in or who failed to respond to their holistic competency assessment (partly due to the assessment being unaligned with the activities and competencies), their holistic competencies are only assessed but not improved. For students who did make use of the holistic competency feedback and reflect on their assessment experience (e.g. a student referring to her leadership performance review in her later work), their holistic competencies tended to be enhanced. Interviewed students’ differentiated strategies to different assessment tasks (e.g. little engagement with simple grades compared to serious reflection on detailed comments/reports/reflective writings) also show how students make judgements to use assessment and feedback.

Only when students take action in response to assessment for continuous development is this assessment/feedback loop considered closed (Boud and Molloy 2013). As evidenced in Smith et al. (2013) study, students’ ability to judge their own and others’ works is most likely to impact their learning outcomes. Thus, it is the action to be taken when being assessed and the action to react to the feedback provided.

Critique

In the critique dimension, assessment literate students

- recognise they have the right to challenge and critically examine holistic competency assessment, as well as the feedback provided;
- proactively and critically engage in dialogues with peers and teachers to improve holistic competency assessment.

This ‘Critique’ dimension is found particularly prominent in our interview data when students questioned the purpose of assessing holistic competencies, criticised quantitative assessment and differentiated their responses to different assessment approaches. In a traditional conceptualisation of student assessment literacy (e.g. Smith et al. 2013), understanding the purpose of holistic competency assessment as potentially ‘killing one’s interest’ or ‘leading to unauthentic performance’ could be interpreted as assessment illiterate.

In this ‘deficit model’ of understanding student assessment literacy (Medland 2019), students are expected to ‘understand’ and ‘be aware of’ holistic competency assessment (Smith et al. 2013, p. 45) which is often institutionally constructed (Bridgstock 2009, p. 35). As pointed out by Su (2014), such a top-down approach would likely bring about a superficial level of engagement in students’ holistic competency development. Underlying these terms is an imposed unity expecting students to conform to the assessment standards, which runs against the original purpose of fostering student assessment literacy and holistic competency development – that is to encourage students to take ownership of their development.

Critique is important in holistic competency assessment because there is no agreed performance indicator for each competency and invalid judgements are highly likely to take place (Clayton et al. 2003). It is important for students to recognise they also have the right to critique the assessment used, the feedback provided and take control of their holistic competency development (e.g. some students emphasised ‘it’s their own responsibility’ to enhance holistic competencies). Considering that holistic competency assessment is still a research area in its infancy, students are also

encouraged to actively engage in dialogues and work in partnership with peers and teachers to discuss and co-design assessment that best fits their contextual needs (Deeley and Bovill 2017). Assessment literate students often do not wait until certain assessment tasks are given to them, but instead share their insights and concerns to improve the overall assessment mechanism of holistic competencies. For this to take place, opportunities must also be created for students in designing the assessment process.

In sum, holistic competency assessment literate students develop and create strategies, ask for clarification on the feedback received, reflect intentionally in order to make sense of the experience, the feedback and the judgement. Students who are assessment literate in holistic competencies possess a high level of capability to create, evaluate, analyse and critique their action, attitude and knowledge continuously during their development of holistic competencies.

Limitations and future studies

Several limitations of this research should be acknowledged. First, student samples of this study only came from Hong Kong. Students' perspectives were inevitably informed and constrained by their sociocultural context and education experience, hence reducing the richness and diversity of possible themes that emerged. Second, it should be noted that the proposed new conceptualisation of students' assessment literacy framework in holistic competencies has not been empirically tested.

Therefore, future studies are needed to validate and extend the findings via a larger sample from different countries and regions. In-depth interviews with other relevant stakeholders, such as teachers and senior management staff, can also be conducted to provide new insights into this renewed conceptualisation. Quantitative instruments can be built based on the four outlined dimensions to facilitate future understandings of students' assessment literacy in holistic competencies.

Implications

This study has a number of implications for holistic competency assessment related policy, practice and research in higher education. First, a large number of teachers and policymakers in higher education today still believe it is their responsibility to map out assessment guidelines and strategies, whereas students, to benefit their own development, must follow these established guidelines (Su 2014). However, such top-down approaches may lead students to conform to the university's assessment expectations without deeply engaging in their own holistic competency development. Therefore, by emphasising the critique dimension in our renewed assessment literacy framework, teachers and policymakers should provide more partnership opportunities for students to co-design holistic competency assessment processes (Deeley and Bovill 2017). The deficit model, i.e. the model that focuses on dichotomously judging whether students are competent in terms of assessment literacy, should be relinquished (Medland 2019) for a more liberal system that encourages students to challenge existing assessment standards and make contributions to advancing these standards.

Second, for students, although institutional guidelines about holistic competency assessment are indeed pertinent and important to them, they need to take ownership of their competency development. Our renewed framework can also be used as an operationalised model guiding students to self-evaluate their engagement in holistic competency assessment and development. To truly benefit from holistic competency assessment, students need to particularly understand the action dimension and proactively act upon assessment as a valuable way for development (Smith et al. 2013; Carless and Boud 2018). Enhanced student assessment literacy will contribute to the improvement on holistic competency assessment in practice, enabling more valid and reliable certification and assessment of these

competencies. In the long term, this will also help higher education provide concrete evidence of students' holistic competency development for quality assurance units, employers, parents and students themselves.

Third, the research can help teachers reflect on the existing holistic competency assessment approaches and the possible assessment to be implemented in the future. Our interview data showing students' concerns with assessing holistic competencies (e.g. feeling scared; unauthentic performance; fairness; compromised student agency), students' preference for qualitative types of assessment tasks (e.g. review forms; observation), and the limited benefits associated with assigning grades for holistic competencies all provide rich information for teachers to refer to. Apart from knowledge, our data and the renewed conceptualisation also highlight students' attitudes in their uptake of holistic competency assessment and feedback. The attitude dimension will raise teachers' awareness in attending to students' emotions, rationales and motivations when devising holistic competency assessment.

Concluding remarks

Since the emergence of the student assessment literacy concept, we tend to expect students to be literate in all the assessment we prepare for them, often in the name of enabling students to take control of their own development process. However, not only do such expectations overlook students' critical agency, it also cannot be applied to more complicated assessment contexts such as holistic competency development.

Yet, it is not our intention to decry past conceptualisations of student assessment literacy – these studies have made significant contributions to engaging students in assessment which used to be solely in the teachers' hands. In this study, Smith et al. (2013) research has provided powerful support for us to explore students' assessment literacy in holistic competency development, which contributes to the proposal of a renewed conceptual framework consisting of knowledge, attitude, action and critique dimensions.

Therefore, we define student assessment literacy in holistic competencies as *students' knowledge of* the rules surrounding assessment in holistic competency development, *their attitude to* appreciate and engage in holistic competency development and assessment, *their action towards* assessment tasks and feedback to monitor or further their development, and *their ability to critique* the assessment and feedback provided to enhance holistic competencies.

The new conceptualisation of student assessment literacy in holistic competencies incorporates features specific to holistic competency development. It further highlights students' critical engagement with assessment and understands learners as active agents who exercise discretion in holistic competency assessment. The study provides a number of theoretical and practical implications and we expect the renewed framework to be further corroborated and validated in the near future.

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