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# Teachers' Beliefs and Practices of Classroom Assessment in Republic Polytechnic, Singapore

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## Abstract

In the 21<sup>st</sup> century, learners will need a different set of life skills and competencies in order to be successful in life, and at the same time contribute positively to society at large. In equipping learners with the necessary skills and attitudes, teachers play a pivotal role. They are the gatekeepers of the curriculum (Eisner, 2002) and inevitably they transmit values in the course of their practices (Swaffield, 2008). In particular, teachers' beliefs and practices of assessment can impact the way curriculum is enacted in the classroom. In this exploratory study, facilitators' beliefs and practices of classroom assessment in Republic Polytechnic, Singapore, are investigated. A survey measuring facilitators' beliefs and practices of classroom assessment across three assessment dimensions - making learning explicit, promoting learning autonomy and performance orientation - was administered to 148 facilitators from this institution (James, Black, McCormick, Pedder, & Wiliam, 2006). Subsequently, quantitative analysis (i.e., paired t-test, ANOVA, factor analysis and stepwise regression analysis) was used to gather information on the effects of facilitator-related characteristics and school contextual factors on classroom assessment practices. This study showed no significant gaps between facilitators' beliefs and practices in two of the dimensions (i.e., making learning explicit and promoting learning autonomy). However, a significant gap exists for the dimension on performance orientation (i.e., preparing students for examinations). This study also revealed that support from school leadership, availability of assessment-related training and resources, and accountability to industry partners are important factors that impact facilitators' classroom assessment practices. These findings highlight areas the institution can further explore to enhance student-centred assessment practices in the classroom and prepare students adequately for the challenges of the 21<sup>st</sup> century.

## Keywords

Assessment for learning, assessment of learning, belief-practice gap, classroom assessment, problem-based learning

## Introduction

21<sup>st</sup> century education has leaned towards equipping students with expert thinking, helping students to handle dynamic, complex communication (Levy & Murnane, 2007) and collaborative work (Karoly & Panis, 2004). Indeed, living in the 21<sup>st</sup> century requires a vastly different set of knowledge and skills from what is required in the 20<sup>th</sup> century. While the understanding of 21<sup>st</sup> century skills has grown over the past decade, there is still much inertia in effecting changes in the classroom to facilitate students' learning in the 21<sup>st</sup> century. One of the reasons for this inertia is the beliefs or perspectives of learning that teachers have and these differential beliefs give rise to varying classroom assessment practices (Swaffield, 2008). In fact, behaviouristic views to learning still dominate the classroom curriculum and assessment practices today (Shepard, 2000; Stiggins, 2002, 2004) and teachers are still using summative assessments as one of the only methods to assess students' learning. However, 21<sup>st</sup> century skills, such as, collaboration, expert thinking and communication skills are not effectively assessed using the traditional pen-and-paper examinations. For example, in a pen-and-paper examination, communication and collaborative skills are not assessed because students do not attempt the examination in teams. Examinations are individualistic attempts in demonstrating understanding of the learning outcomes tested. Conversely, communication and collaborative skills can be assessed when students are expected to work in teams and achieve learning collectively as a

team in a classroom setting. Therefore, the key in assessing students for these 21<sup>st</sup> century skills is through classroom assessment, where small group work is made possible. Indeed, classroom assessment practices must change in tandem with the changing needs of the 21<sup>st</sup> century education. Specifically, assessment for learning can play a larger role in this aspect (Black & Wiliam, 1998; Stiggins, 2002, 2004). Through formative assessment, students can be assessed for their process of learning rather than just for their product of learning. Coupled with the usual summative assessment that students are subjected to, acquisition and application of knowledge acquired can be effectively determined. In summary, if we want to implement 21<sup>st</sup> century education, it is paramount that we understand teachers' beliefs towards students' learning and how that belief impacts assessment practices in schools.

On this note, Republic Polytechnic (RP) has adopted a constructivist view towards learning, specifically, the Problem-based Learning (PBL) pedagogy to anchor its teaching and learning principles. The institution believes that students bring different levels of prior knowledge into the classroom and hence, teaching and learning practices in the institution allow students to co-construct knowledge by building upon each other's prior knowledge. At the same time, through group discussions, socio-negotiation and knowledge construction that took place allows students to learn collaboratively. To achieve these, RP uses problems to trigger learning in its classes. At the end of the learning process, students are also given a chance to reflect on their learning process, knowledge acquired and process of working effectively with others to derive solutions and think critically. Such teaching practices has also made classroom assessment possible since the class size is relatively small for teachers to facilitate group work and the teacher gets to be more involved in scaffolding the learning process for the students throughout the day. As such, students' learning process and products of their learning (e.g. solutions to problem given, reflection journal, peer- and self-evaluations) can be observed, and formative feedback can be given promptly to help students improve their learning, thus making learning very explicit for the students as they work on the problem trigger. With such classroom assessment practices, 21<sup>st</sup> century skills such as collaborative and communication skills can be honed and learning autonomy is being emphasised through the self-directed learning that takes place in solving the problem trigger. The role of the teacher in a RP classroom is, therefore, a facilitator of student learning and also at the same time ensuring that learning outcomes are achieved by the end of the learning day.

In this study, RP facilitators' classroom assessment practices are discussed together with their beliefs about classroom assessment practices. Teachers, being gatekeepers of the curriculum and assessment enacted in the classroom (Eisner, 2002; Thornton, 2001), are the key personnel involved in implementing classroom assessment to assess for 21<sup>st</sup> century skills. However, studies have also shown that teachers' practices of classroom assessment hinge on their beliefs about the need for such assessment practices (Ajzen, 1985). In previous studies by James and Pedder (2006) and Yue (2012) in the United Kingdom (UK) and Singapore primary school contexts respectively, misalignment between beliefs and practices of classroom assessment is prevalent. Currently, this misalignment between teachers' beliefs and practices is not well-researched and understood in the Singaporean context, though there are a few emerging reports on this topic (Chew, Ng, Lee, & D'Rozario, 1997; Hogan & Gopinathan, 2008; Koh et al., 2005; Mortimore et al., 2000) and a local study involving primary school teachers on this topic (Yue, 2012). In addition, another challenge in understanding teachers' beliefs and practices of classroom assessment is that these are further influenced and confounded by teacher-related factors, namely, years of teaching experience, length of assessment training received, academic qualifications, pre-service teacher training experience and gender, and as well as contextual factors e.g. support from leadership, workload, accountability to stakeholders and assessment training received (Davison, 2004; Neesom, 2000).

Hence, this research seeks to contribute to the body of research on this topic by uncovering how facilitators' beliefs affect their daily classroom assessment practices, particularly in the context of a Singaporean institute of higher education which adopts the PBL pedagogy. Through understanding facilitators' classroom assessment beliefs and practices across three assessment dimensions – making learning explicit, promoting learning autonomy and performance orientation, RP leadership can

identify possible belief-practice gaps which inhibit or support assessment for 21<sup>st</sup> century skills. With that, suitable interventions can be implemented to correct current assessment practices or enhance facilitators' assessment literacy if the need arises. A description of each of these three assessment dimensions is as shown below.

Making learning explicit:	Eliciting, clarifying and responding to evidence of learning as well as working with students to develop a positive learning orientation.
Promoting learning autonomy:	Widening the scope for students to take on greater independence over their learning objectives and the assessment of their own work as well as each other's work.
Performance orientation:	Helping students comply with performance goals prescribed by the curriculum through closed questioning and measured by marks and grades.

With that, this study aims to answer three research questions:

1. Are there significant differences between facilitators' beliefs and practices of classroom assessment for each assessment dimension for the overall sample?
2. Are there significant differences between facilitators' beliefs and practices of classroom assessment for each assessment dimension across academic schools?
3. What are the key factors that impact facilitators' classroom assessment practices?

## **Method**

### ***Subjects***

Participants for this study were facilitators from a polytechnic in Singapore. All participants completed an online survey voluntarily. A total of 148 facilitators responded to the questionnaire.

### ***Educational Context***

In Singapore, polytechnic education is a post-secondary education option and its mission is to train middle-level professionals to support Singapore's knowledge-based economy (Gopinathan, 2007). Polytechnic graduates are expected to be industry-ready, that is, to be technically and cognitively competent to serve in the industries (Ministry of Education, 2012). Polytechnic graduates may also choose to further their studies at local universities to gain a stronger theoretical understanding of their specialisations, in addition to their technical expertise honed through a polytechnic education.

To support the mission of training middle-level professionals who are industry-ready, this institution adopts the Problem-based Learning (PBL) as the main pedagogy for all diploma programmes offered. Through the PBL approach, students work on problems in small group setting, under the supervision of a facilitator. A problem, given to students at the beginning of the learning day in this case refers to a description of a set of phenomena or events which can be perceived in reality (Schmidt, 1993). Students are then expected to work in teams to analyse or explain the phenomena at hand and articulate the underlying principles or processes they adopted in order to understand the phenomena (Dillenbourg, 1999; VonGlaserfeld, 1989). Over the course of the day, the facilitator uses a variety of scaffolding tools to support students' learning, for example using questions and small team discussions at various checkpoints. Also, students are also given opportunities to negotiate learning using their prior knowledge and build upon the knowledge contributed by others in the team (Boud & Feletti, 1998; VonGlaserfeld, 1989). At the end of the learning process, students are required to demonstrate their understanding by presenting their recommended plans to resolve the issues in the given phenomena and also to complete a reflection journal to sum up their day's learning, which helps

students make sense of their learning processes and content acquired. Hence, that in turns helps construct knowledge for practical use (Butler, 1987; Butler & Nisan, 1986; Mezirow, 2009).

In terms of assessment practices, RP emphasises heavily on assessment of and for learning, so as to assess students for 21<sup>st</sup> century skills. As students engage in learning activities throughout the day, their ability to formulate effective problem-solving approaches, communicate and collaborate with team members, articulate their point of view and reflect upon their learning process, is observed and assessed formatively through verbal and written feedback from the facilitator. At the same time, based on the learning evidence collected – that is, quality of questions posed and solutions to problems, collaboration with team members - students are awarded a summative grade for their day's learning. These daily grades, in addition to the three summative tests which are administered to students throughout the semester, will form students' module grade.

### ***Instrument***

A validated questionnaire by James and Pedder (2006) was used to gather information on facilitators' beliefs and practices of classroom assessment. Some survey items were modified and adapted from a similar study done by Yue (2012) in the Singapore context earlier, so as to make it more applicable to the institution's context. The adapted questionnaire consists of three sections, namely, (a) belief-practice scales; (b) external contextual factors, and; (c) demographic data.

In Section A of the questionnaire (21 belief-practice pairs of items), facilitators were asked to give two types of responses for each survey items – one for beliefs and the other for practices. Section B (13 items) was newly constructed and it seeks to find out the external contextual factors that influenced facilitators' classroom assessment practices (Refer to Table 1). Survey participants were required to indicate how likely each of these contextual factors influences their assessment practices on a scale of 1 to 10 (1 being very unlikely and 10 being very likely). Items in Section C were newly constructed and facilitators were asked to provide information on their gender, academic school that they belong to, total number of years in teaching, number of years teaching in this polytechnic, length of assessment-related training attended in the last two years, highest academic qualifications attained and if they had pre-service training as a mainstream school teacher.

Table 1  
*Contextual Factors affecting Classroom Assessment Practices*

Item number	Specific Factors	Factor label
F2	Support from Polytechnic leadership	FSupport
F3	Support from Heads of Department of your academic school that you belong to	
F4	Industry's expectations	FAccount
F5	Parental expectations	
F6	Accountability to industry	
F7	Training on assessments	FTraining
F8	Professional development communities on assessment	
F9	Networking/sharing platforms on assessment	
F10	Assessment resources	
F11	Assessment consultancy from CED	
F12	Time for planning	FWorkload
F13	Facilitation workload	

Note: Item F1 (Understanding Tests throughout the semester) was removed from the structure as it did not fall under any factor.

### ***Procedure***

This exploratory study adopted a quantitative research method. Quantitative data were first collected through a validated questionnaire administered to a group of facilitators from eight academic schools in the polytechnic (A to H). Through this data set, facilitators' assessment beliefs and practices of classroom assessment were collected.

## ***Analysis***

Data from the questionnaire was extracted and imported into the SPSS version 16 software for analysis. A significance level of .05 was used for each of the tests. Descriptive statistics were derived and analyses such as paired t-tests, ANOVA, factor analysis and step-wise regression were carried out.

## **Results**

For assessment dimensions pertaining to making learning explicit (D1) and promoting learning autonomy (D2), there are no significant differences between facilitators' beliefs and practices in classroom assessment. However, for the assessment dimension pertaining to performance orientation (D3), there are significant differences between facilitators' beliefs and practices of classroom assessment. From these results, it is imperative to verify further if there are any significant differences between facilitators' beliefs and practices of classroom assessment for each assessment dimension across academic schools instead.

Using the One-Way ANOVA test, no significant differences in the belief-practice gaps for each dimension across academic schools for all three assessment dimensions were detected. This suggests that gaps in belief and practices of classroom assessment are similar across academic schools. If there are belief-practice gaps, this difference is negligible. Next, further analysis showed that there were no significant differences between the means and standard deviations of facilitators' belief and practice scores for each of the academic schools across all three assessment dimension except for School C, E, F and G in the performance orientation dimension. Table 2 highlights the results pertaining to the dimension on performance orientation (D3) which are statistically significant. In addition, the mean difference between the belief and practice mean scores for this dimension, that is, the belief-practice gap, was calculated.

From the paired t-test analyses, it was observed that there are no significant differences between belief and practice mean scores for two of the assessment dimensions, that is, making learning explicit (D1) and promoting learning autonomy (D2) in academic schools (non-significant data not included in Table 2). However, as shown in Table 2, there exist significant differences between belief and practice mean scores for the assessment dimension on performance orientation (D3) within four academic schools – C, E, F and G. The corresponding effect sizes for each of these differences observed are large, that is, .66 (C), .58 (E), .72 (F) and .98 (G).

In order to help facilitators align their beliefs and practices of classroom assessment for assessment dimensions that reflect significant differences between belief-practice scores, intervention measures can be implemented. Before recommending targeted measures for implementation, possible factors that impact facilitators' classroom assessment practices were determined using factor analysis. A principal-components analysis on the factors affecting assessment practices resulted in a four-factor structure accounting for 70.4% of the total variance. Table 3 shows the factor loadings of these variables. From these results, the four factors derived from the principal-components analysis are Endorsement from Leadership (FSupport), Accountability to Stakeholders (FAccount), Training and Resource Support (FTraining) and Facilitation Workload (FWorkload). Respectively, they account for 10.65%, 11.45%, 8.86% and 39.52% of the total variance. To evaluate the internal consistency of the variables loaded onto each factor, Cronbach's coefficient alpha and corrected item-to-total correlations using unit-level data were computed. Cronbach's alpha values for FSupport, FAccount, FTraining and FWorkload were .907, .749, .846 and .748 respectively. These values suggest that internal consistency for each of the four factors were high since value of more than .700 is considered as high (Nunnally, 1978).

Table 2  
Means and Standard Deviations of Belief and Practice Scores for Assessment Dimension on Performance Orientation

	School C			School E			School F			School G		
	$\chi$ (S.D.)	$\chi_d$ (S.D.)	$\eta$	$\chi$ (S.D.)	$\chi_d$ (S.D.)	$\eta$	$\chi$ (S.D.)	$\chi_d$ (S.D.)	$\eta$	$\chi$ (S.D.)	$\chi_d$ (S.D.)	$\eta$
BD3	2.67 (.36)	-.23	.66	2.79 (.56)	-.22	.58	2.82 (.42)	-.23	.72	2.57 (.57)	-.39	.98
PD3	2.94 (.40)	(.35**)		3.01 (.57)	(.38*)		3.05 (.45)	(.32**)		2.96 (.42)	(.40**)	

\*\*p < .01, \*p < .05 for paired sample t-tests. S.D. refers to standard deviation. Mean, mean difference and effect size are denoted by  $\chi$ ,  $\chi_d$  and  $\eta$  respectively.

Table 3  
Factor Loadings for Contextual Factors

Contextual Factors			Component			
			1	2	3	4
FSupport	F1	Understanding Tests throughout the semester	Removed from structure			
	F2	Support from Polytechnic leadership			.883	
	F3	Support from Heads of Department of your academic school that you belong to			.899	
FAccount	F4	Industry's expectations		.749		
	F5	Parental expectations		.687		
	F6	Accountability to industry		.821		
FTraining	F7	Training on assessments	.400			
	F8	Professional development communities on assessment	.547	.567		
	F9	Networking/sharing platforms on assessment	.814			
	F10	Assessment resources	.886			
	F11	Assessment consultancy from CED	.743		.428	
FWorkload	F12	Time for planning				.840
	F13	Facilitation workload				.889

Note: Factor loadings < .4 were ignored.

## Discussion

In terms of belief-practice gaps, there is a significant gap of -.23,  $p < .01$ , in the performance orientation assessment dimension (D3) and this means that although facilitators do not believe in enacting classroom assessment practices that gear students towards performing well in examinations, they are in fact practicing this in class, thus suggesting a dissonance between what facilitators believe to be of value for student learning and what they are actually practicing. There are also belief gaps of -.04 and -.03 in the making learning explicit (D1) and promoting learning autonomy (D2) assessment dimensions respectively. This means that although facilitators may not strongly adopt assessment for learning beliefs - that is, making learning explicit and promoting learning autonomy - they are practising assessment for learning in their classrooms, which is in line with institutional assessment policies. This observation is actually novel, not observed in Yue's (2012) or Pedder's (2006) study. Again, this could be a result of the type of assessment policies implemented in this institution, which is a combination of daily classroom assessment and multiple summative examinations interspersed throughout the semester. However, these gaps were not statistically significant, which could again be due to the small sample size of  $N = 148$ . With a larger sample size, this observation can possibly be better magnified (Cohen, 1988).

Overall, for all three dimensions, facilitators' classroom assessment practice scores are higher than the corresponding belief scores (Refer to Figure 1 below). Particularly, for the dimension on performance orientation, practice scores are significantly higher than the corresponding belief scores. This finding again supports the postulation that since classroom assessments are graded exercises that contribute to

students' semester grades, facilitators will therefore be very concerned about assessment practices that help students perform better.

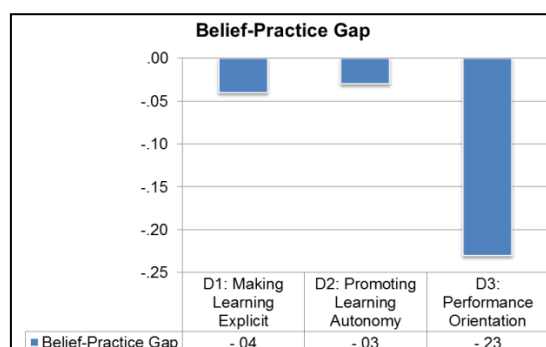


Figure 1. Belief-Practice Gap for Assessment Dimensions

This study reveals that there are no significant differences in the belief-practice gaps for each dimension) across academic schools for all three assessment dimensions. This implies that generally, facilitators across academic schools share similar beliefs about assessment practices and similarly, they enact assessment practices in a comparable way in each of their classes. However, significant differences exist between belief-practice scores with four academic schools, namely, C, E, F and G, for one of the assessment dimensions, which is performance orientation, D3. In all of these schools, the belief-practice was negative, demonstrating that in actual practice, facilitators are preparing students towards summative assessment in class though they may not believe as much as they do in terms of preparing students for that purpose. Large effect sizes, ranging from .58 to .98, are observed for this significant difference and may hence suggest that although facilitators do not believe strongly in orientating students towards better performance in assessment, they are actually practicing it.

The presence of belief-practice gaps in facilitators' classroom assessment across all three assessment dimensions is not novel. Hamp-Lyons (2007) attributes the reason for the gap to the presence of two conflicting assessment cultures – a learning culture versus an examination culture. In a learning culture, the focus is on individuals' learning progress. In comparison, the learners' content and skill mastery is the main focus in an examination culture. Applying this understanding to the context of this study, where the institution adopts a constructivist approach to learning, the learning culture should be practised. However, as shown in this study, accountability to external stakeholders, for example, industry partners and parents, plays an important role in accounting for facilitators' classroom assessment practices. In accounting to external stakeholders, the key area to be addressed is always whether students are learning enough content, and usually, the way to test this acquisition is through summative assessment. With that, facilitators seem to be focusing on preparing students for summative assessment rather than focusing on building a learning culture in the classroom. While formative assessment and feedback are enforced as part of the daily assessment policy in this institution, there still exists a climate of content acquisition in preparation for examinations.

On a heartening note, belief-practice gaps for assessment dimensions D1 (making learning explicit) and D2 (promoting learning autonomy) are insignificantly small. This implies that facilitators in this polytechnic are generally attuned in their beliefs in adopting a constructivist approach to teaching. At the same time, facilitators' assessment practices closely reflect that belief as seen from the small belief-practice gaps in these two dimensions.

It is interesting to observe that while there are no significant differences in belief-practice scores across academic schools, there is a significant difference between these scores within four academic schools in this institution, that is, Schools C, E, F and G. In addition, this difference shows large effect sizes of .66 (C), .58 (E), .72 (F) and .98 (G), suggesting great impact of the dissonance between facilitators' assessment beliefs and practices in performance orientation dimension. This serves to heighten the awareness of the tension between establishing a learning culture versus an examination culture in the classroom (Hamp-Lyons, 2007). Somehow, only four out of eight academic schools as



previously mentioned show this significant difference, despite all academic schools practising the same institutional assessment policies they were trained in. Earlier analyses presented in the profile of facilitators also showed that there are no significant differences between facilitators surveyed. Combining these observations, more detailed studies in the assessment practices of facilitators from these four academic schools should be carried out in order to determine other confounding reasons that account for these differences. There could be other reasons accounting for this difference, but are not investigated in this study.

The above results differ from the studies done by James, Black, McCormick, Pedder and Wiliam (2006) and Yue (2012). In these two earlier studies, there were significantly greater belief-practice gaps in the assessment dimensions of making learning explicit (D1) and promoting learning autonomy (D2). It is also noteworthy that in these two earlier studies, the contexts differ from the current study, in that the educational institutions have long history of traditional assessment practices. With that in mind, legacy issues and facilitators' inertia of implementing effective classroom assessment practices or low assessment literacy may have directly or indirectly caused the larger belief-practice gaps observed (DeLuca, Luu, Sun, & Klinger, 2012).

In comparison, the institution under study is a relatively young educational institution with only ten years of history. Since its inception in 2002, this institution has deliberately instituted assessment for learning practices as one of its key principles for teaching and learning practices. Also, assessment infrastructure, such as learning management systems and information technology systems, as well as assessment policies, were implemented based on effective classroom assessment practices highlighted by assessment scholars in their seminal work. Key ideas on effective classroom assessment practices were adopted and adapted from Black and Wiliam (1998), Krampen (1987) and Wiggins (1998). As such, recruitment and training of facilitators emphasised heavily on aligning assessment beliefs and practices to what this institution has set out to achieve. The end result of this can perhaps be the small belief-practice gap observed in this study for assessment dimensions pertaining to making learning explicit (D1) and promoting learning autonomy (D2). This possible causal relationship has yet to be investigated and it warrants further studies in order to be ascertained.

Moving on, this study reveals that the factor, FAccount (accountability to industry partners, meeting industry and parents' expectations) accounts for 11.45% of the total variance in regression analysis of predictors of facilitators' assessment practices. At the same time, all three factors in this component have high regression coefficients. These results imply that facilitators are very aware of meeting the needs of stakeholders and are constantly adjusting their assessment practices to do so (as shown in the large belief-practice gap in performance orientation dimension). This is an important point to note because in essence, the primary educational role of this institution is to train industry-ready professionals. Facilitators' assessment practices, as shown in this study, imply that they are aligned to this vision. By being more performance orientated in their assessment practices, facilitators may be trying to ensure that learning outcomes are achieved and help students to do better in tests. With that, meeting stakeholders' expectations of having competent graduates become possible. However, being performance oriented conflicts with the socio-constructivist paradigm of educating students. As reviewed earlier, in the constructivist paradigm of educating students, the emphasis is to allow students to work together collaboratively to construct knowledge and apply the knowledge acquired to varying contexts. This is something that summative examinations do not provide for because formative feedback from the facilitator and refinement of students' work through facilitators' or peers' feedback are not possible (Sternberg, 2009). Also, industry needs are usually based on current economic and social contexts and do not necessarily represent the needs of the future industry in which students are going to be employed for. Hence, it becomes clear that while facilitators prepare students towards excellence in assessment now, these knowledge and skills taught may not even be useful in the future. As Darling-Hammond (2010, p. 2) aptly puts it, the new mission for education should be "to prepare students to work at jobs that do not yet exist, creating ideas and solutions for products and problems that have not yet been identified, using technologies that have not yet been invented". Facilitators will find it hard to enact assessment practices that fulfil this tall order of education for the 21<sup>st</sup> century because the needs of the future have yet to be determined.

## Significance of Findings

This study reveals conflicting results in the belief-practice gaps of facilitators' classroom assessment practices between two Singaporean school contexts (primary school context and institute of higher education). Given the different emphasis in assessment foci – that is, primary school context adopts mainly assessment of learning practices whereas the institute adopts both assessment of and for learning practices – this study suggests that if assessment for learning practices are adopted early, facilitators are better able to enact such practices in their classroom since they have been trained to do so after being recruited. In this case, facilitators need not adapt to any changes in assessment practices or issues that arise from switching from traditional assessment of learning to assessment for learning practices. Hence, for other institutions who wish to implement assessment for learning practices to assess students for 21<sup>st</sup> century skills, they may wish to take into account such issues which can cause inertia in changing facilitators' classroom assessment practices.

Also, this study reveals that, within the same institute of higher education, there exist belief-practice gaps where facilitators are practicing classroom assessment even though their beliefs in it may not be strong yet. This is with the exception of assessment dimension on performance orientation. This means that RP facilitators are indeed practising assessment for learning in their classroom, whether or not their beliefs on assessment resonate with it. This suggests that the current institutional assessment policies have been carried out well by the facilitators. However, facilitators are also performance oriented in their assessment practices and this forms a tension between assessing of and for their learning in the classroom. The cause of this tension can be further inferred from the factor analysis which shows that facilitators' classroom assessment practices are significantly influenced by four key factors (as shown in the previous section). Accountability to stakeholders is one of the most important factors and this implies that while facilitators in this institution practice assessment for learning, they are very much constrained and pressured to be performance oriented in their assessment practices because at the end of the course, polytechnic graduates are expected to have good content knowledge and be industry-ready.

Last but not least, this study shows that support given by the institution in improving facilitators' assessment literacy needs to be reviewed and improved. In providing training support, the institution has since embarked on an extensive review of the assessment policies and practices in the school. An outcome of this review has resulted in the implementation of an assessment training framework as part of the facilitators' professional development programme. Under this new framework, new training workshops have been designed to support and enhance assessment literacy of RP facilitators. In terms of providing leadership support, the new framework has also looked into forming professional learning communities which will consist of academic school leaders and assessment specialists who are RP facilitators. In that way, communication between academic school leadership and facilitators can be strengthened and facilitators' perceived support from leadership can be improved. Also, assessment capabilities within each academic school can be built as school leaders and facilitators work towards improving assessment practices which may be unique to their school's context, for instance, practical laboratory assessment practices for the school with applied sciences diploma programmes. Moving forward, RP will be reviewing these new initiatives to evaluate the effectiveness and suitability of this new assessment training framework to improve facilitators' assessment literacy.

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