Comparing reflective practices of pre-service teachers in Malaysia and Australia: A mixed-methods approach

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The Malaysian and Australian education systems have centrally driven initiatives that promote teachers' reflection on their educational practice. While focused on improving student learning outcomes, the role of teachers' reflective thinking is contextualised differently in each country. This study investigates how pre-service teachers understand reflective thinking, and the degree to which the policies and procedures in the different educational jurisdictions influence this. Using a mixed methods approach, this study examines the contributions of lifelong learning skills, self-assessment ability, self-belief, teaching awareness and reflective thinking skills in explaining the similarities and differences in reflective thinking practices among pre-service teachers in Malaysia and Australia. We found that while the policy and procedures of the different jurisdictions had some influence, the underpinning educational philosophies and cultural values were more strongly implicated.

Introduction

Malaysia has a highly centralised education system compared to other countries in the OECD (Hanushek & Woessmann, 2015). All Malaysian schools are under the auspices of the Ministry of Education which is governed by the Education Act 1996; and teachers must possess the relevant professional qualifications and licences in order to work in schools. In Australia, the states and federal governments share responsibility for education, though an increased centralised oversight of education is evident in the establishment in the last eleven years of three statutory bodies: the Australian Curriculum, Assessment and Reporting Authority (ACARA) that introduced the Australian Curriculum; the Australian Children's Education and Care Quality Authority (ACECQA) which oversees the early childhood years through its National Quality Framework (NQF); and the Australian Institute for Teaching and School Leadership (AITSL) that oversees teacher quality (Dinham, Choy, Williams & Yim, 2020).

In both countries, there are also centrally driven initiatives to improve educational outcomes. Integral to this is the promotion of teachers' reflection on their educational practice. Hence, references to reflection can be found in the rhetoric and descriptions of teacher practices; education expectations for pre-service teachers; professional learning opportunities; and guidelines for portfolios that demonstrate teacher competency (Dinham et al., 2020). However, the perceived role and benefit of reflection differs in the

two countries. In Malaysia, the focus for teachers is on the effectiveness of their teaching, which is determined by student outcomes in their classes (Ministry of Education Malaysia, 2013). In Australia, reflection is conceptualised as a professional development process undertaken by teachers to improve their practice and grow professionally. In the classroom more specifically, reflection is a learner-led process where the teacher reflects on students' learning outcomes to identify further learning requirements. In both countries, reflection is incorporated into pre-service teachers' courses.

Defining reflective thinking practice

The scholarly literature makes it evident that reflective thinking is interpreted and understood in different ways. This is also evident in the different models of reflective thinking (Grushka, McLeod & Reynolds, 2005; Ryan & Ryan, 2013); approaches (Lloyd & Mukherjee, 2013; Santoro & Allard, 2008; Simoncini, Larsen & Rocco, 2014); and tools, such as the Teacher Self-Assessment Tool and the 360 Reflection Tool provided for Australian teachers (Australian Institute for Teaching and School Leadership, 2019).

While reflection appears to be a simple and straightforward process, in reality it is complex, imprecise, iterative and dynamic (Buehl & Fives, 2009). Rodgers (2002) postulated that there is no clear differentiation between reflective thinking and systematic thinking; that the assessment of reflective thinking as a skill or professional capability is vague; that it is difficult to determine the effects of reflective thinking on self-development and student learning; and finally, that as reflective thinking cannot be clearly observed, it has begun to lose its value.

In nominating an operational definition for this study, several other key observations were taken into consideration. Lee (2005) had observed that reflective thinking was a cyclical and recursive process which was only initiated when there was a problem that could not be resolved, or a situation that needed reconsideration. Cox (2005) had noted that reflective thinking can result in the formation of a bridge between a course of study and personal experience, in a way that was distinctly individualised and a motivating learning activity. Reflective thinking has also been understood as the mindful association of professional actions and critical assessment of behaviours (Choy et al., 2017). For this study, the researchers adopted the operational definition of reflective thinking practice as the ability to reflect on actions so as to engage in a process of continuous learning and self-development, using practical values and theories that can inform these practices.

Reflective thinking practices among teachers in Malaysia

The *Malaysian Blueprint 2013-2025* acknowledged that teacher quality is the most pertinent factor in determining successful transformation and positive student outcomes. It recommends that teacher competency evaluation tools need to be more reflective to enhance the classroom experience for students (Ministry of Education Malaysia, 2013). Hence for Malaysian pre-service teachers reflective thinking practices are emphasised during their practicum so as to bridge the gap between theory and practice. All pre-service

teachers are expected to keep a journal documenting their experiences during the practicum, to help them reflect on their actions and strategies in the classroom.

Two qualitative studies by Subramanian (2003) and Wong et al. (2016) found that Malaysian pre-service teachers did not reflect critically on their teaching experiences and were able only to analyse their teaching experiences operationally. Many of these pre-service teachers were expected to "learn by observing" and "do what I am doing" as their mentors did not effectively describe professional practices to them (Goh & Matthews, 2011). This has discouraged pre-service teachers from self-reflection practices that potentially lead to lifelong and self-directed learning. Beginning teachers have also reported poor integration of theory and practice which has contributed to their lack of preparedness for the actual classroom situation (Goh & Blake, 2015).

Reflective thinking practice among teachers in Australia

In Australia, it has been a standard practice for pre-service teachers on teaching practicum to write reflections after delivering lessons. However in recent decades, the adoption of a learning-outcomes curriculum model has necessitated teachers' utilisation of reflective thinking as part of their general pedagogy (Wyatt-Smith, 2018). The introduction in 2019 of a mandatory *Teacher Performance Assessment* (TPA) reflects this. Completed by pre-service teachers during the final teaching practicum, the TPA focuses on the demonstration of responsive pedagogical decision-making within specific classroom contexts; and seeks evidence of planning, data collection, critical analysis and interpretation that is situated within theory and research (Dinham et al, 2020). While it is expected that the TPA will play a notable role in driving explicit attention to the development of reflective thinking skills and practices among pre-service teachers, at the time of this study, it was not possible to incorporate the effects of its recent introduction. Therefore Goldman and Gimbeek's (2015) observations about the persistence of superficial reflections are still relevant.

Comparison of reflective thinking contexts

There is a clear endorsement within the Australian and Malaysian education sectors for reflective practices; however it should be noted that, beyond the general idea that it prompts the practitioner to plan and implement actions for improvement of students' learning outcomes, there is little evidence that the efficacy of these practices has been tested (Myers, Smith & Tesar, 2017, Dinham et al., 2020). Additionally there is little research evidence to show the degree of internalisation of these practices in the daily work of teachers (Goh & Matthews, 2011) or the impact of these practices on achieving high quality education (Goh & Wong, 2014). Additionally, reflective practices in Malaysia are formally required only during the final teaching practicum. It is encouraged in the teaching population, but plays no part in the continuous evaluation of practising teachers. In contrast, Australia requires teachers, from pre-service to practising, to use reflection as part of their self-evaluation and self-improvement professional practice in both informal and formal career advancement processes.

The study

This study builds on a previous study of Malaysian pre-service teachers' reflective practices (Choy et al., 2017) which concluded that more insights on reflective thinking could be gained by extending the study to pre-service teachers in other countries. The decision to examine Malaysian and Australian pre-service teachers in this study was based in part on both education sectors having centrally-driven initiatives to incorporate reflective thinking into teachers' pedagogical practices, to improve learning outcomes (Dinham et al., 2020). By comparing the reflective practices of cohorts of Malaysian and Australian pre-service teachers (Malaysian N = 387; Australian N = 379), this study aims to examine the contributions that lifelong learning skills, self-assessment ability, self-belief, teaching awareness and reflective thinking skills make to the reflective practices of pre-service teachers in different contexts. In part, it questions how much the influence of different centrally-driven policies and procedures about reflective thinking in the teaching profession can be seen in the pre-service teacher populations.

Ethics clearances were gained from the researchers' universities in Malaysia and Australia, and permission to collect data from another university was provided. Pre-service teachers' participation in the study was voluntary. Participants were informed about their rights to withdraw from the study at any time, and assured of anonymity. The participants from the two universities were at different stages in their study, and in different initial teacher education programs: BEd, MTeach; Primary, Secondary. The majority of respondents were female, which accords with the profession's demographics.

The study used a mixed method approach to build a more comprehensive understanding of reflective thinking practices in both countries from the mix of qualitative and quantitative data. Data were gathered in 2019. For Australia, this means that the impact of the mandatory *Teacher Performance Assessment* (TPA) for pre-service teachers, also introduced in 2019, could not be examined.

Methods

For this mixed-methods research, a convergent parallel design (Creswell & Plano Clark, 2011) was adopted (Figure 1). Accordingly, the qualitative and quantitative data were collected concurrently during the research process, and both strands of the research were kept independent during analysis. The two sets of results were subsequently mixed during the overall interpretation to give a more complete picture of reflective thinking practices among pre-service teachers in both countries.

This method was adopted because it allows researchers to produce knowledge that is closer to what is needed in practice (Creswell & Plano Clark, 2011). Therefore this study has the potential to provide pragmatic knowledge that can be applied to further develop reflective thinking practices in Malaysia and Australia. The pragmatic approach of this study is an acknowledgement that any knowledge produced through research is relative and not absolute, especially when there are causal relationships that are transitory and hard

to identify (Feilzer, 2010). Ultimately this research attempts to utilise the combination of quantitative and qualitative data to address what the researchers want to know.
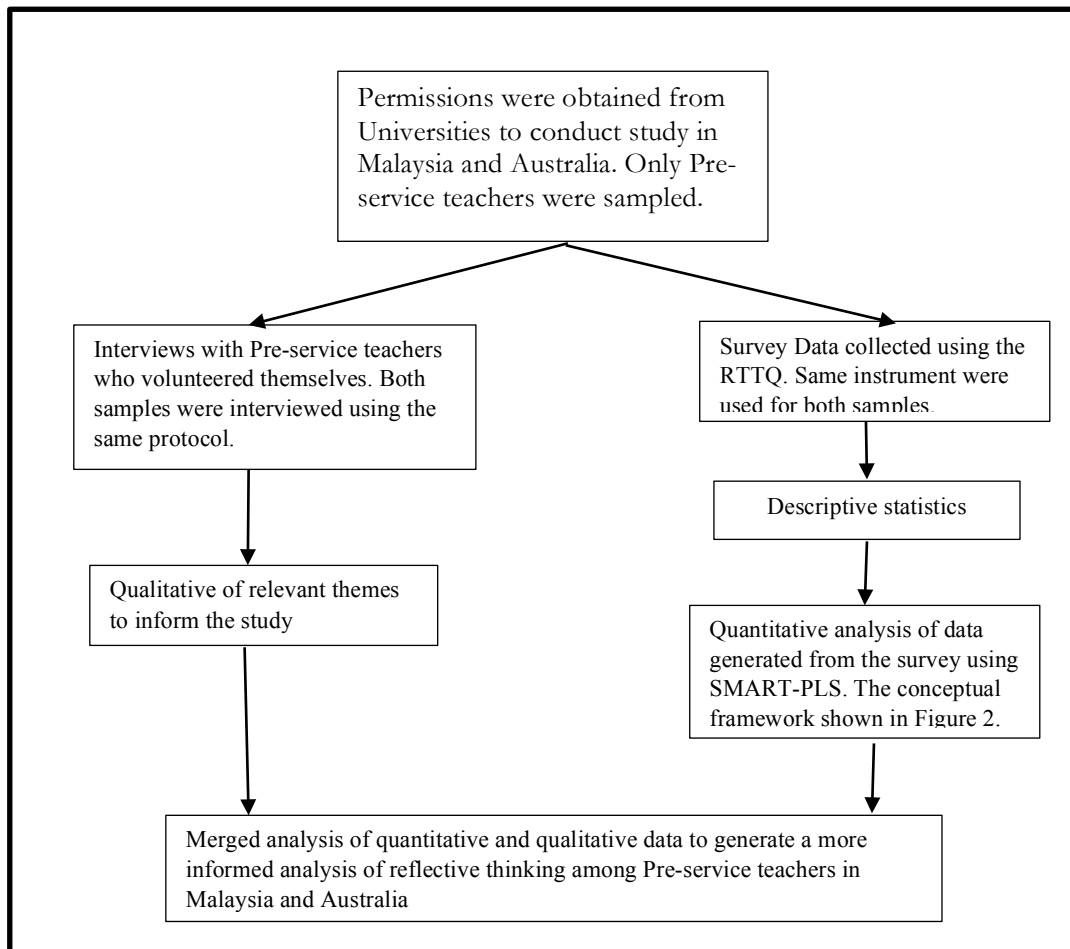

Figure1: Mixed methods convergent parallel design and analytic procedures

The quantitative phase

The quantitative phase of the study entailed the use of scale items from the *Reflective Thinking for Teachers Questionnaire* (RTTQ) (Choy, Yim & Tan, 2017) to measure the five constructs in the conceptual framework (Figure 2 and Table 1).
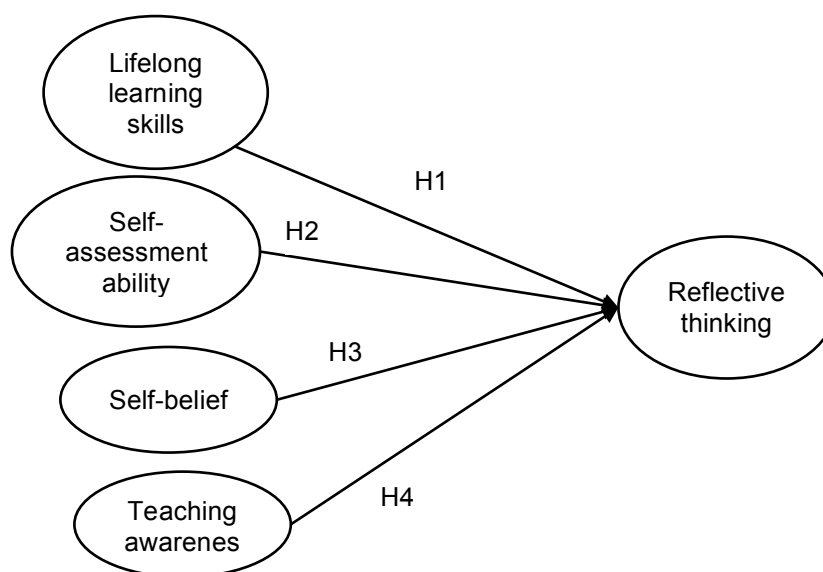
Figure 2: Conceptual framework (see Table 1 for definitions of constructs)

Table 1: Operational definitions for constructs in Figure 2

Construct	Definition	Literature
Reflective thinking	The skill to reflect on actions in order to involve in a process of continuous learning and self-development which require the consideration of the larger context, the meaning, and the implications of an experience or action.	Choy et al. (2017); Cox (2005)
Lifelong learning skills	The voluntary pursuit of knowledge that is self-motivated and continuous for professional and/or personal reasons which can result in learning from one's own mistakes resulting in the development of reflective thinking skills.	Buehl & Fives (2009); Quendler & Lamb (2016)
Self-assessment ability	The action of analysing an experience that promotes self-reflection through the identification of standards and making judgements of the experience.	Clara (2014), Rodgers (2002)
Self-belief	Perception of one's teaching and relationship with students which can motivate and drive to improve the skill.	Crosswell & Beutel (2017); Williams & Burden (1997)
Teaching awareness	The ability of pre-service teachers to influence their students which stimulate self-assessment and self-evaluation	Farrell (2016); Lee (2005)

Rationale for the hypothesis

The methodical relation of life experiences and lifelong learning skills, and the voluntary and self-motivated pursuit of knowledge, can represent the lifelong learning process (Quendler & Lamb, 2016). In a study on self-beliefs of pre-service teachers, Buehl and Fives (2009) found that continued lifelong learning contributes to the quality of reflection of an individual's learning from their own life experiences. Hence the first hypothesis:

H1: Lifelong-learning will have a significant influence on reflective thinking. Self-assessment ability, the process of analysing experiences leading to self-reflection, can result in new perceptions and strategies for doing things (Clara, 2014). Self-assessment also requires a certain amount of thought and must be based on teaching knowledge and self-awareness (Rodgers, 2002). Hence the next hypothesis:

H2: Self-assessment ability will have a significant influence on reflective thinking. The perception of teaching abilities and relationship with students - also known as self-belief - will influence the way the educator teaches in the classroom (Williams & Burden, 1997) and can predict their resilience (Crosswell & Beutel, 2017). Teachers who self-reflected to enhance their awareness were able to enhance their self-belief (Travers, 2015). From this, the next hypothesis was formulated:

H3: Self-belief ability will have a significant influence on reflective thinking. The realisation of the influence actions can have on students is also known as teaching awareness. The process of reflective thinking should not only indicate progress towards a solution but more so, the degree of awareness about a situation (Lee, 2005). Hence the following hypothesis was formulated:

H4: Teaching awareness will have a significant influence on reflective thinking.

Data collection

Data from both countries were subjected to screening whereby outliers and straight-lined responses were deleted. The final sample consisted of 387 Malaysian pre-service teachers and 379 Australian pre-service teachers who were enrolled in initial teacher education programs, satisfying the statistical power of 90% at an alpha level of 0.05 based on the *G*Power 3.1.2* software. Table 2 summarises the profile of the respondents.

Table 2. Respondents' profiles

Demographic factors		Malaysian (N=387)		Australian (N=379)	
		n	%	n	%
Gender	Female	302	78.0	325	85.8
	Male	85	22.0	54	14.2
Year of study	Year 1	125	32.3	117	30.9
	Year 2	128	33.1	116	30.6
	Year 3	30	7.7	82	21.6
	Year 4	104	26.9	64	16.9
Practicum experience	Yes	230	59.4	260	68.6
	No	157	40.6	119	31.4
Age (years)		Mean	SD	Mean	SD
		22.22	1.458	32.15	9.766

Measures

The scale items were from the *Reflective Thinking for Teachers Questionnaire* (RTTQ) (Choy et al, 2017), include here as Appendix A. The questionnaire of 28 items, was adopted to

measure the constructs of the study: life-long learning skills (8 items), self-assessment ability (7 items), self-belief (4 items), teaching awareness (4 items), and reflective thinking (5 items). As the RTTQ was designed using a Malaysian pre-service teacher sample, some of the items were rephrased with language that was more familiar for Australian pre-service teachers to allow better understanding of the items. For example, "what I believe about myself and others will ultimately control my behaviour" was rephrased for the Australian context to "what I believe about myself and others will ultimately impact my behaviour".

Assessment of measurement model

Reliability of the constructs (Table 3) was evaluated with composite reliability (CR), while convergent validity was established with average variance extracted (AVE), and discriminant validity was assessed with heterotrait-monotrait (HTMT) criterion. The items in the scales were also assessed, where indicators which did not meet the loading threshold of .70 were removed. As shown in Table 3, construct CR satisfied the criterion of > 0.70, while AVE indices were > 0.50 (Hair, Hult, Ringle & Sarstedt, 2017). Discriminant validity was established with all HTMT ratios below HTMT .90, demonstrating that the constructs were distinctively different from one another (Gold, Malhotra, & Segars, 2001).

Table 3: Internal consistency, convergent validity, and discriminant validity

Sample	No	Constructs	AVE	CR	Heterotrait-monotrait (HTMT) ratio				
					1	2	3	4	5
Malaysian	1	LLS	0.582	0.874					
	2	Reflective thinking	0.667	0.888	0.278				
	3	Self-assessment	0.535	0.873	0.881	0.246			
	4	Teaching awareness	0.712	0.831	0.119	0.282	0.134		
	5	Self-belief	0.614	0.760	0.569	0.468	0.540	0.204	
Australian	1	LLS	0.573	0.889					
	2	Reflective thinking	0.599	0.817	0.299				
	3	Self-assessment	0.621	0.891	0.825	0.288			
	4	Teaching awareness	0.778	0.875	0.436	0.506	0.566		
	5	Self-belief	0.724	0.840	0.755	0.203	0.855	0.521	

LLS = Lifelong learning skills

Assessment of structural model

To assess multicollinearity in the model, the variance inflation factor (VIF) was evaluated. The highest VIF for the Malaysian sample was 2.251, while the Australian sample recorded a value of 2.595, suggesting collinearity is not a concern as it is lower than the recommended threshold of 3.3 (Hair et al., 2017). Table 4 shows the results of the hypotheses tested on both samples. Significance of path coefficients is determined with t-values and *p*-values, and also 95% confidence intervals.

Table 4: Results for hypothesis testing

Hypothesis	Country		Std. error	t-value (*t*)	p value	95% CI 0.025	0.975	Support?
H1 LLS -> RT	Australia	-0.130	0.091	1.438	0.151	-0.284	0.096	No
	Malaysia	-0.142**	0.058	2.460	0.014	-0.254	-0.029	Yes
H2 Self-assess-ment -> RT	Australia	-0.038	0.097	0.387	0.699	-0.215	0.162	No
	Malaysia	0.009	0.064	0.147	0.883	-0.108	0.140	No
H3 Self-belief -> RT	Australia	-0.317**	0.093	3.416	0.001	-0.476	-0.124	Yes
	Malaysia	0.171**	0.048	3.521	0.000	0.070	0.257	Yes
H4 Teach. aware-ness -> RT	Australia	0.072	0.068	1.073	0.284	-0.054	0.204	No
	Malaysia	0.288**	0.055	5.189	0.000	0.173	0.389	Yes

Notes: Significant at ** *t*-value > 1.96; *p*-value < 0.05;
LLS = Lifelong learning skills; RT = Reflective thinking

As shown in Table 4, all hypotheses with the exception of H2 were supported for the Malaysian sample, whilst for the Australian sample only H3 was supported. Interestingly, self-belief significantly affects reflective thinking for both samples (H3), but in opposite directions. The positive effect of the Malaysian sample suggested that higher self-belief can bring about higher reflective thinking, while the negative effect of the Australian sample indicated that higher self-belief may give rise to lower reflective thinking.

In making these overall observations, it is important to remember that the participants have a diversity of experiences in relation to the classroom, and opportunities to exercise reflective thinking practices. This diversity can be from the difference between being in the first year or the fourth year of study; and the number of practicums completed. However it can also be related to other factors such as prior experience (e.g. as a teaching aide) and volunteer work undertaken in schools.

The qualitative phase

The semi-structured interview protocols was employed to encourage consistency across interviews at the same time allowing new thoughts and ideas to emerge from the participants (Kvale, 1996). This approach also allowed both the researcher and the participants to make meaning of their experiences with reflective thinking, which Seidman (2006) suggested could contribute to support the validity of the results. The interview protocols included questions on each of the constructs in the conceptual framework to enable a better understanding of pre-service teachers' perceptions of incorporating and using reflective teaching in their classroom practices. The interviews were pre-arranged, one-on-one sessions lasting 30 minutes. The Malaysian interviews were conducted face to face and the Australian ones were conducted as online video calls since participants were located around the country. The interviewer made notes during the interviews and the sessions were also recorded for transcription purposes. The interviews were transcribed verbatim to facilitate analysis.

Data collection

Interviews were held with 23 pre-service teachers. The 11 Malaysian interviewees were enrolled in the Bachelor of Education to qualify as secondary teachers in Teaching English as a Second Language. There were no male representatives in the Malaysian sample as none volunteered to be interviewed. The 12 Australian interviewees were enrolled in Bachelor of Education and Master of Teaching programs, and mostly were studying to be generalist primary school teachers. Table 5 summarises the profiles of the interviewees.

Table 5: Interviewees profiles

Demographic factors			Frequency	
			Malaysia	Australia
Gender	Female		11	11
	Male			1
Year of study	Bachelor	Year 1		2
		Year 2		4
		Year 3		2
		Year 4	11	2
	Masters	Year 1		1
		Year 2		1
Practicum experience?	Yes		11	9
	No			3
Age (years)			Mean 23.5	Mean 37.6

Analysis of qualitative data

Like the questionnaire, the design of the interview questions related to the five constructs in the conceptual framework: life-long learning skills, self-assessment ability, self-belief, teaching awareness, and reflective thinking. Consistent with a parallel design, the quantitative and qualitative data were analysed independently. This began with reading the interview transcripts of both countries to code the general perceptions of pre-service teachers toward reflective thinking and identify themes. The final analysis of the interview data is shown in Table 6

Table 6: Analysis of interview data

Categories	Points	Observations	Themes
Reflective thinking			
• Opportunities for use of reflective thinking	A pre-service teachers use/recognise a wider range of opportunities to think reflectively. Malaysian pre-service teachers uses reflective thinking more as a	Both cohorts were familiar with the idea of reflective thinking but their interpretation of it was varied. However, Australian pre-service teachers were observed	Pre-service teachers from both cohorts were strongly focused on assessing their teaching in terms of students' outcomes. Therefore, they consistently saw students' lack of engagement or understanding as their own

	formal requirement of their teaching practicum. Hence they appear more rigid in their practice. They also favour formal writing of journals and lesson plans.	to have a richer and more nuanced interpretations and responses.	responsibility which needs to be addressed. Success for their students is expressed in terms of educational attainment for Malaysian pre-service teachers whereas for Australian pre-service teachers it is expressed as socio-emotional wellbeing and students' development of a love of learning. Malaysian pre-service teachers tend to be more exclusively focused on educational attainment whereas Australian pre-service teachers are more inclined to attend to and value the broader dimensions of wellbeing, and fostering a love of learning.
• Reflections about students	Both cohorts were focused on students' education and their future careers - as opposed to being focused on their own performance. This sentiment appeared quite authentic.		
• Reflections on concerns about their classes	Both cohorts were concerned with their students' learning and school experience. Australian pre-service teachers were also focused on differentiation in learning to add to the richness in learning for all students.		
Lifelong learning skills			
• Intentions to continue studies after graduation	Both cohorts had intentions to continue studying with some of them needing a break before continuing and others wanted to pursue their studies in some fields other than education.	Both cohorts had similar responses for lifelong learning	Generally the pre-service teachers were focused on the immediate challenge of becoming a good teacher but were open to the idea of further education in time. While some wanted to undertake further formal qualifications in education, others were interested in exploring areas of education that may or may not be job related or in the field of education.
• Views about lifelong learning	Both cohorts were of the opinion that lifelong learning is valuable and natural and there are many ways it can occur.		
• Opportunities for lifelong learning	In comparison Australian pre-service teachers recognised more opportunities to undertake lifelong learning than Malaysian pre-service teachers.		

Self-assessment			
• Perceptions of self-assessment	There were a range of responses from both cohorts. When the pre-service teachers were given negative feedback there was an initial emotional response but then Pre-service teachers used strategies to review through the lens of constructive criticism. One of the Pre-service teachers did not take feedback at face value which is a good sign of emerging teacher identity. All the Pre-service teachers also recognised that student responses will impact the way they teach.	For the Malaysian pre-service teachers there were varied responses and self-assessment is expected to be carried out for their practicum. They also had to video themselves which is good for teacher development but it is questionable what they actually saw. Malaysian pre-service teachers did not question the value of self-assessments but carried it out accordingly. One of the pre-service teachers did not take feedback at face value which is a good sign of emerging teacher identity. For the Australian pre-service teachers there was a range of perceptions about self-assessment from "no" to absolutely". These pre-service teachers also questioned the value of carrying out such reflective assessments and the authenticity of the assessments.	Self-assessment is regarded as important by all pre-service teachers and they have developed a range of strategies to self-assess. They are capable of incorporating critical feedback into the process. It is recognised that students' core needs and natures will challenge them to think of how they meet these needs. They also recognise that students' reactions will impact how they teach and the way they respond. All the Pre-service teachers assess their success based on their capacity to meet students' needs.

Self-belief			
• Influence of life experiences on teaching • Balancing of own needs and students' needs	Australian pre-service teachers have identified more life experiences that have influenced the way they teach. Malaysian pre-service teachers responded in terms of students needs as a priority, only one mentioned about her own needs. Australian pre-service teachers	Comparatively, Australian pre-service teachers' self-beliefs are more nuanced and subtle, extending beyond the teacher persona of Malaysian pre-service teachers. Malaysian pre-service teachers have their self-beliefs more contextually based on	The expression of self-beliefs differs between Malaysian pre-service teachers and Australian pre-service teachers. The Australian pre-service teachers have more self-belief. They also position their teaching in a more socio-cultural context than observed with the Malaysian pre-service teachers whose responses are more compartmentalised and regulated. Malaysian pre-

	have identified strategies to maintain a balance between personal and performing identities with priorities on self-care.	their work situations.	service teachers were more concerned about 'doing it correctly'. The national cultural influence may be evident here. Equally, the values promoted in the teacher education courses may vary between Malaysia and Australia. The teacher education courses in the Australian University promote a socio-constructivist view of education which promotes awareness of the social environment and the role it plays in learning. The Malaysian context, directed by the National Education Philosophy, is more focused on development of the student in a holistic manner which encompasses moral values and personal well-being.
• Beliefs about own teaching			
Teacher awareness			
• Perceptions of effective teaching practices	Both cohorts demonstrated an understanding there is more than one model of learning and were able to share their views about teaching philosophies. They also identified teaching strategies used to help student learn.	Both cohorts used contemporary and traditional teaching strategies. They recognised engagement and differentiated learning as valuable.	Pre-service teachers in both cohorts demonstrated an understanding that there is more than one model of learning. They expressed teaching philosophies and beliefs they held about teaching and recognised the importance of adopting different teaching strategies to promote engagement and facilitate differentiated learning. Comparatively Australian pre-service teachers had a clearer perception of teaching practices that are considered poor quality compared to Malaysian pre-service teachers.

Discussion

The purpose of this mixed-methods convergent parallel design was to identify factors contributing to reflective teaching practices of pre-service teachers from Malaysia and Australia. The two strands of data are now merged after separate analysis to gain a more complete understanding of reflective teaching practices. The quantitative strand of the study shows that lifelong learning, self-assessment, self-belief and teaching awareness

have, to different degrees, influenced reflective thinking practices of Malaysian and Australian pre-service teachers; with interesting differences between Malaysian and Australian cohorts. Three of the four hypotheses were significant for Malaysian pre-service teachers while only one of the four hypotheses was significant for Australian pre-service teachers. The analysis of the qualitative data stream found similarities to the quantitative analysis. The cohorts shared similar perceptions of the categories with differences coming from the different contexts of the pre-service teachers. An important difference was found in the national cultures of the two cohorts which contributed to differences in perceptions and approaches to teaching in the classroom. National culture here refers to the set of beliefs, behaviours and shared values of a country (Hofstede & Hofstede, 2005).

From the quantitative data analysis, lifelong learning skills - the self-motivated pursuit of knowledge for either personal or professional reasons - had a significant relationship with reflective thinking for Malaysian pre-service teachers, but not for Australian pre-service teachers. The highest factor loading for Malaysian pre-service teachers in the lifelong learning scale was for their reflections on lessons taught to determine the effectiveness of the teacher. Although the Australian data showed no significant relationship between lifelong learning and reflective thinking, the highest factor loading in the lifelong learning scale for Australian pre-service teachers was the item on reflecting on lessons by talking to colleagues from other fields. From the qualitative data analysis, pre-service teachers from both cohorts were generally focused on the immediate challenge of becoming good teachers and were open to further education in time.

It must be noted that not all of the pre-service teachers were interested in pursuing further studies in education, but were interested in pursuing other areas that may not be job related, which could explain the Australian pre-service teachers wanting to reflect on their lessons by talking to colleagues from other fields. The analysis seems to suggest that the pre-service teachers from both countries recognised the importance of lifelong learning in helping them grow in their chosen career. According to Quendler and Lamb (2016), the ability of an individual to become self-managing, self-monitoring and eventually self-reflecting will depend on the amount of lifelong learning undertaken. The openness of the pre-service teachers from both countries to undertake lifelong learning may be an indication that they will progressively develop the necessary skills to carry out reflective teaching as a natural process to continuously monitor and improve their teaching skills.

The quantitative analysis of self-assessment - the process of analysing an experience that promotes self-reflection - had no significant relationship with reflective thinking for Malaysian and Australian pre-service teachers. This implies that assessment may be perceived as coming from an external source like their mentor teachers or supervisors rather than from the self. This need for an external source of feedback is also reflected in the highest factor loading in the self-assessment scale for both the Malaysian and Australian pre-service teachers. Malaysian pre-service teachers wanted students' feedback to indicate their strengths and weaknesses while the Australian pre-service teachers wanted students' feedback to help their understanding. The qualitative data similarly showed that pre-service teachers from both cohorts perceived that self-assessment is

important, and had developed a range of strategies to self-assess. The focus of this is on students' needs and their capacity to meet those needs. Snead and Freiberg (2017) similarly found that emphasis on self-assessment generally lies on external explanations and pre-service teachers generally value students' feedback. Davis and McDonald (2019) further noted that when teachers use self-assessment and self-directed inquiry they are more likely to sustain the learning. The results of the study suggest that pre-service teachers from both cohorts value a combination of feedback from supervisors and students. Some of them appear to question the relevance of carrying out self-assessment, which suggests that they see external feedback as having greater significance or value. This would imply that unless there is a specific prompt to reconsider and re-examine occurrences in the classroom, teachers would be less inclined to reflect on their own teaching process. This accords with Lee's (2005) assertion.

Self-belief - which is a teacher's perception of their ability to teach - can motivate and drive improvement in teaching skills. The quantitative analysis showed a significant relationship between self-belief and reflective thinking for both Malaysian and Australian pre-service teachers, but in different ways. The relationship was negative for the Australian pre-service teachers indicating that the greater the self-belief, the less reflective thinking is carried out. In contrast, Malaysian pre-service teachers showed themselves to be more compartmentalised and instrumental in their views about self-belief. The differing perceptions between the two cohorts may be influenced by the way reflective thinking is incorporated into the respective education systems – which in themselves are manifestations of educational philosophies and cultural values (Brewer & Chen, 2007). The teacher education course for the Australian cohort takes a socio-constructivist view of education which emphasises the role of the social environment. It also prepares pre-service teachers to teach a curriculum that is expressed in high-level learning outcomes and requires the teacher to interpret and plan how to achieve these outcomes for the diverse learners in their classroom.

In contrast, the Malaysian cohort follows a prescriptive curriculum, which is centrally controlled by the Ministry of Education in the form of the National Education Philosophy (NEP). It emphasises the holistic training and influencing of the youth to achieve national unity and increase economic standards of the country. Using national culture as a lens, there is evidence of the influence of the NEP among Malaysian pre-service teachers from the item with the highest factor loading for self-belief. This item relates to how the mistakes a teacher makes can influence a student's life. This means Malaysian teachers will be more likely to follow the instructions of their supervisors in order to ensure that they are teaching "correctly" and only those with a high level of self-belief will have the confidence to carry out reflective thinking independently. For the Australian pre-service teachers, the item with the highest factor loading for self-belief which refers to the way they connected, and how life experiences influenced how and what they taught. This accords with socio-constructivist views, where knowledge is constructed through interactions with others.

Teaching awareness - the realisation by pre-service teachers of the influence of their actions on students stimulating them to carry out self-assessment and self-evaluation - had

a significant relationship for Malaysian pre-service teachers, but not for Australian pre-service teachers. The highest factor loading in teaching awareness for Malaysian pre-service teachers was about the way their beliefs about students influenced the way they teach. For the Australian pre-service teachers the highest factor loading for this scale was on having an established set of teaching practices they were comfortable with, that could be improved with continuous feedback from students and supervisors. However, the results of the qualitative thread showed that both cohorts were able to manage their planning, monitoring of students, and evaluation of themselves in relation to their students, which indicates metacognitive awareness. This awareness is a good indicator of well-established reflective thinking processes as suggested by Adadan and Oner (2018), however the depth of the thinking processes cannot be established. Previous research from both Malaysian and Australia has indicated that many pre-service teachers were only able to reflect on their teaching practices at a rudimentary rather than critical level (Goldman & Gimbeek, 2015; Subramanian, 2003). The results again seem to show the influence of the national culture that is partly expressed through educational priorities, with Malaysian pre-service teachers being more concerned about the influence their actions had on their students, while the Australian pre-service teachers were more aware of good and poor practices in teaching.

National cultural tendencies can have a significant influence on work values, perceptions and achievement motivation; and on how individuals work and live (Steers & Sanchez-Runde, 2017). Hence it is important that such factors are taken into account when explaining difference in findings across different cultures and nations. However this requires more in-depth study in terms of the construal of self and reflection in different contexts to determine the degree to which this contributes to the differences between the two cohorts.

Implications for practice

The findings of this study have several implications for administrators and supervisors of teacher education programs in Malaysia and Australia. The reflections of Malaysian pre-service teachers are more work-oriented, while the Australian pre-service teachers seem to relate work to their own social needs as well. Based on the analysis of the quantitative data, Malaysian pre-service teachers were carrying out some form of self-reflection independently, but the pre-service teachers from both countries used feedback from their supervisors and the reactions they got from students as a stimulus for reflecting on their teaching practices. Both cohorts reflected on students' success but from different contexts. For the Malaysian pre-service teachers the focus is on education attainment, while the Australian pre-service teachers focused on socio-emotional wellbeing and the way students were developing a love of learning. However, it must be noted that the reflections of some of the pre-service teachers from both countries were still on a superficial and technical level.

It is also evident from the analysis that the teacher education programs in both countries have different emphases, hence the conceptualisation of the reflective thinking process will be different. The influence of the national culture on both cohorts, which can be

inferred from the data, is most pronounced in the area of self-belief. This difference is also seen in the qualitative data where expression of self-belief is very different for the two cohorts. Australian pre-service teachers expressed more self-belief and oriented their teaching toward the socio-cultural context. They were more focused on the learning that takes place and the implications for children's lives. The Malaysian pre-service teachers expressed more compartmentalised and regulated views of teaching. They were more concerned about getting it done correctly, rather than focusing on the learning that take place. The reason for this could lie in the influences of work attitudes and motivation of individuals of the two cohorts, and the expression of this in each nation's educational priorities (Steers & Sanchez-Runde, 2017).

Limitations of the study

Data for the study were collected from only one university in Malaysia and one in Australia. Further to this, self-reported instruments were used and therefore the responses may vary if the context and situation of the respondents changes. It is also expected that the respondents' context and interpretation of the questions may have influenced their answers to the interview questions.

This study broadly examined pre-service teachers' teaching awareness and reflective thinking. Based on the study's conceptual model, the research sought to identify the degree to which lifelong learning, self-assessment, self-belief and teaching awareness influenced reflective thinking practices. Factors such as gender (Goldman & Gimbeek, 2015), age, length of study, type of course, and amount of practicum experience, potentially influence participants' reflective thinking as well. Similarly, other factors, including previous work experience, experience in education roles, and volunteer work in school classrooms, potentially contribute to participants' reflective thinking and teaching awareness. While the potential significance of these factors was evident in the interview sample, they were tangential to the aim, and outside the scope, of the study.

Conclusion

This study showed some interesting new findings. The model based on the five constructs in the quantitative thread of the study explained some differences between the two cohorts of pre-service teachers. The qualitative thread showed that the pre-service teachers from both countries carried out some form of reflective thinking in their work. Analysing the qualitative results together with the quantitative results offered greater insights into the reflective thinking carried out by the two groups. In this study it can be seen the limitations of one method can be offset by the strengths of the other method. The quantitative analysis provided evidence that lifelong learning skills, self-belief, and teaching awareness have a significant relationship with reflective thinking for Malaysian pre-service teachers, but that self-belief had a negative relationship with reflective thinking for Australian pre-service teachers. However, when the quantitative data were analysed together with the qualitative data, a more nuanced picture of the differences between the two cohorts emerged.

The two cohorts of pre-service teachers had very different perspectives and were governed by different philosophies when dealing with the different aspects of reflective thinking. It was found that the Australian pre-service teachers considered lifelong learning an important part of their path toward growth in their careers like the Malaysian pre-service teachers but they saw this more holistically with some wanting to explore other areas of possibility rather than just focus on education. Similarly for self-belief and teaching awareness, the reflections of the Malaysian pre-service teachers were more work-oriented, while the Australian pre-service teachers reflected more in terms of how it influenced their individual lives and not only their work. These differences likely reflect the influence of different national cultures on the way pre-service teachers think and reflect about their work. However, as suggested by Steers and Sanchez-Runde (2017), more empirical study would be needed to gain further insights. In comparing reflective thinking practices of pre-service teachers in Malaysia and Australia, where there are shared imperatives but different educational policies and procedures, this study has shown that reflective thinking practices may be less directly influenced by the educational policies and procedures themselves, and more by the underpinning philosophies and cultural values.

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Appendix A: Reflective thinking of teachers questionnaire

Construct		Item
Lifelong learning skill (LLS)	LLS1	Students learn very differently from when I was in school, I need to look into new strategies to better deliver my lessons.
	LLS2	Whenever I made a mistake, I try to make corrections and learn from my experience.
	LLS3	I try to reflect on what I do during my lessons by talking to my colleagues from other fields.
	LLS4	I know how I present my classes will influence how students will behave towards the subject. I am aware that I need to reflect on how I have taught and make changes if necessary.
	LLS5	I think that what and how I did during my lesson is an important indicator of my effectiveness.
	LLS6	I like to take into consideration my past performance and integrate it with what I am doing in the present to help me better prepare for the future.
	LLS7	I am learning to be a better teacher and the feedback I get from students, supervisors and lecturers are helpful in improving my future performance.
	LLS8	I need to constantly look at my practices in order to be more effective with my lessons.
Self-assess-ment ability (SA)	SA1	I always think of what I had done during my lessons so that I can further improve on it.
	SA2	I am always interested in self-discovery so that I can apply the knowledge on how I do things and improve myself to be a better teacher.
	SA3	I know in a lesson there are many areas, like content and context that can improve a lesson.
	SA4	I generally get good comments from students and lecturers so I think I am doing quite well overall as a teacher.
	SA5	Students' feedback is important as this would give me an indicator of my strengths and weaknesses.
	SA6	I think students' feedback is important to help me understand them better.
	SA7	When others give me their opinions about how I am teaching I will accept and consider their opinion.
Self-belief (SB)	SB1	I believe that I need to take care of my own needs first before I can take care of other people's needs
	SB2	I always try to connect what and how I teach with my life experiences.
	SB3	As a teacher, the mistakes I make can have an influence on the lives of my students.
	SB4	I feel very anxious about the feedback given to me by students, it is as though they are evaluating and judging me as a person.
Teaching awareness (TA)	TA1	I always think about the subject I teach so as to improve my lesson.
	TA2	I am learning about my profession all the time and I have already a set of practices which I am comfortable with, although the feedback I get from students and my supervisor will help me improve those practices even more.
	TA3	The beliefs I have about teaching will influence my behaviour toward myself and others.

	TA4	I know that what I believe about myself and others will ultimately control my behaviour.
Reflective thinking (RT)	RT1	I have a certain way of delivering my lessons that I am comfortable with, I do not know why I do it the way I do it.
	RT2	I know what I am doing as a teacher and I do not often reflect on my practices.
	RT3	I will not worry about students' feedback as long as I feel I am doing my job.
	RT4	Sometimes the feedback I get from my lecturer and classmates are so confusing, I do not think it is actually going to help me learn anything about the way I conduct my lessons.
	RT5	I will make mistakes as a teacher, but sometimes I cannot do anything about it.

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