Individual and collective reflection: Deepening early childhood pre-service teachers’ reflective thinking during practicum

Lydia Foong
Mariani Binti Md Nor
University of Malaya, Malaysia

Andrea Nolan
Deakin University, Australia

Abstract
This study explored individual and collective reflection as pedagogical approaches to support early childhood pre-service teachers’ reflection during practicum. Current trends in the literature show a shift from individual reflection to collective reflection, with an emphasis on social constructivist perspectives. This qualitative study focused on a Malaysian teacher education institution conducting an undergraduate early years program from the UK as the selected case. Sources of evidence came from interviews, direct observations and documents such as student teachers’ teaching portfolios, their reflection journals and assessment forms. The results show that collective reflection supported higher levels of reflective thinking during practicum at the integration, validation and appropriation levels of reflection, compared to when they reflected individually. Collective reflection provided Malaysian teachers a new platform for problem-solving, connecting theory to practice, as well as the sharing and consideration of multiple perspectives, resulting in a deeper understanding of classroom practices.
**Introduction**

It has been argued that reflection skills are crucial for teacher development, and improvement of student learning (Darling-Hammond, 2006; Korthagen, Loughran & Russell, 2006). Reflection skills help early childhood practitioners to constantly examine and evaluate classroom practices (Miller & Cable, 2011; Nolan & Sim, 2011; Raban, Nolan, Waniganayake, Ure, Brown & Deans, 2007). How well pre-service teachers are able to develop their reflection skills may determine the extent to which early childhood practices can be transformed at the workplace (Lindon, 2012; Miller & Cable, 2011).

Pre-service teachers who are novices with limited teaching and childcare experience may not be capable of critical or deep reflection without adequate support (Finlay, 2008; Korthagen et al., 2006; Larrivee, 2006). Reflection demands time and emotional engagement in examining and questioning one’s personal beliefs and values as well as stepping outside of one’s comfort zone (Etscheidt, Curran & Sawyer, 2012; Gibson & Purdy, 2012). Towards the end of practicum, pre-service teachers, who are transitioning to classroom teachers, are expected to demonstrate the ability to reflect on children’s learning and development as well as their own pedagogy; and this should be evident from the outcome of their reflections. It can be a big leap for novices, as many of them are still struggling with critical reflective writing skills and their interpretations (Toom, Husu & Patrikainen, 2014; Ward & McCotter, 2004).

This article focuses on the individual and collective reflection opportunities that Malaysian pre-service teachers experienced during their practicum, and how these influenced their levels of reflection. This is part of a larger PhD study aimed at exploring the processes involved in Group Dialogic Reflection (GDR) as a collective reflection approach. While the notion of collective reflection is not new for countries such as Australia and New Zealand, education programs employing a triadic approach during practicum are new to teacher education in Malaysia. Therefore, this study set out to explore its influence on pre-service teachers’ ability to reflect on practice.
Exploring the literature

Current trends in the literature show a shift from individual reflection to collective reflection in professional practice (Ohlsson, 2013; Rantatalo & Karp, 2016). As suggested by social constructivism theory, learning occurs within a social process influenced by context and conditions (Vygotsky, 1978, 1981). Learning is seen as deeply influenced by the life experiences of the learners, involving whole social communities (Lave & Wenger, 1991). Research has recognised for some time that the social dimension is a critical aspect for reflective practice (Brockbank & McGill, 2007; Collin & Karsenti, 2011; Toom et al., 2014). Given the appropriate support, collective reflection can be a form of semiotic mediation through reflective dialogues that turn pre-service teachers’ practicum experience to deeper reflective outcomes (Vygotsky, 1978).

In the Malaysian teacher education Programme Standards for early childhood education, reflection is stated as one of the learning outcomes for undergraduate programmes. Pre-service teachers are expected to reflect on their placement experiences; raise questions and concerns with their mentors and supervisors; and receive feedback to improve practice during practicum (Malaysian Qualifications Agency, 2014). The commonly used reflection strategy during practicum is the reflection journal that enables pre-service teachers to individually reflect on their practices. At the end of the practicum experience, the reflection journal is submitted along with the portfolio of professional experience, which documents programming and planning. The triadic reflection strategy, where reflection sessions are held collectively with college supervisors and placement mentors to support pre-service teachers’ reflection, are new in the Malaysian context.

Reflective dialogue is an alternative to the conventional reflection strategies that facilitate reflection and action, enabling group participants to think more critically, uncover taken-for-granted assumptions, and consider multiple perspectives and strategies (Brockbank & McGill, 2007). College supervisors and placement mentors, who act as facilitators, encourage pre-service teachers to think more broadly and deeply about the experience, and
intentionally encourage them to link theory to practice (Allen & Wright, 2014; Stenberg, Rajala & Hilppo, 2016).

It is argued that reflective learning is shaped by the social, historical and cultural context where the community and workplace are situated (Collin & Karsenti, 2011; Rantatalo & Karp, 2016). Participants from different settings and positions bring with them different orientations, knowledge of educational systems, expectations, priorities and their own learning interests. In the process, each other’s understandings can be validated through testing of ideas and interpretations of the problems identified (Rantatalo & Karp, 2016; Toom et al., 2014).

Very few studies have focused on collective reflection in the Asian context; although there has been some research on attempts to have more frequent dialogue in post practicum seminars (Lee & Tan, 2004; Maarof, 2007). A small number of research studies have concentrated on using collective reflection as a tool for improving practice within the community of early childhood education in the West (Noble, 2007; Nolan & Sim, 2011; Ortlipp, 2003). The gap in practice, knowledge and empirical studies warrants a re-conceptualisation of reflective practice in early childhood practicum in Malaysia, since it is a critical skill in ensuring quality early childhood programs. An exploration of collective reflection through a triadic approach will inform future practices, bringing new meanings and relevance to the education of early childhood pre-service teachers in the Asian context.

**Research methodology**

This is a qualitative case study based on an embedded single case design (Yin, 2009). A case study enables researchers to gain rich information from an in-depth study into the topic under investigation (Merriam, 2009; Patton, 2015). A teacher education institution in Selangor, Malaysia was selected as the case. Its three-year undergraduate early childhood teacher education program is conducted in collaboration with an established university in the United Kingdom. The medium of instruction was in English. Group Dialogic Reflection (GDR) was part of the practicum requirement in this program. Referred to as the ‘three-way dialogue’, it is conducted at the Kindergarten where the pre-service teacher is placed. In this
case study, the Student Teacher, Placement Mentor and the College Supervisor from the
teacher education institution met as a triadic group and engaged in reflective dialogues on
the practicum experience twice over two semesters from March to December, 2014.
Student teachers were placed for three days a week at the placement centres identified as
Kindergarten 1, Kindergarten 2 and Kindergarten 3. A Placement Mentor was assigned by
the placement centre, and was usually an experienced staff member. The College Supervisor
was a lecturer assigned by the teacher education institution as the practicum supervisor.

The rationale of the research methodology and the direction for data analysis were based
on a constructivist interpretive paradigm (Lincoln & Guba, 2013; Silverman, 2011). The
products of individual or shared sense-making efforts were the lived experiences of the
participants (student teachers, placement mentors and college supervisors) involved in
Group Dialogic Reflections that were socially constructed (Merriam, 2009; Patton, 2015).
The study was conducted according to the ethical research guidelines of University of Malaya,
with ethics approval obtained from the research committee and consent from participants.

Participants
This study involved four student teachers, four placement mentors and three college
supervisors as participants. Pre-service teachers were selected from the Year 1 cohort of the
Bachelor of Early Years Education degree in consultation with the College Program
Coordinator. The selection was based on pre-service teachers who were involved in group
dialogic meetings relating to their placement at the time when the research was conducted,
and were willing to give consent to participate.

Each Student Teacher (ST) was part of a triad that included a Placement Mentor (PM) and
College Supervisor (CS). To maintain confidentiality, pre-service teachers were given
pseudonyms: ST1, ST2, ST3 and ST4. All STs were female, aged between 19 and 21 years,
and studying in the second semester of the first year of the course. They were undertaking
their second practicum experience after successfully completing their initial practicum in the
previous semester.
The placement mentors were all females (PM1, PM2, PM3 and PM4) aged between 32 and 45 years. They had previous experience working in kindergartens ranging from seven to 14 years. Three of them held the minimum qualification—Diploma in Early Childhood Studies—and the fourth (PM4) held a Master of Education, which is an acceptable teaching qualification in Malaysia. The college supervisors were also all female, aged in their forties, having two to eight years of experience teaching in early childhood, and teacher education experience between five and 13 years.

**Data collection methods**

Data collection was carried out over 20 months from April 2014 to December 2015. Data sources to inform this paper included observations of the three-way dialogues and the pre-service teachers’ reflection journals. Observations of the three-way dialogues were conducted at the three kindergartens. These dialogue sessions were audio and video recorded and then transcribed verbatim. To ensure the pre-service teachers were relaxed being observed, the researcher built a rapport with them by attending a few college events. The researcher already had an established professional relationship with the college supervisors.

The three-way dialogues began with discussions on the observation made by the College Supervisor. The dialogue, usually of one hour duration, focused on pre-service teachers’ progress; issues and concerns; areas of improvement in practice, and discussion on the core skills for early years professionals. The Professional Standard Assessment form was used as a basis for discussions on the required core skills for early childhood professionals, such as meeting the developmental needs of young children, working with parents, inclusive practices and communication skills. The procedures and format to guide the three-way dialogue were specified in the program handbook.

The reflection journal was one of the weekly assessment requirements in this program and a key source of evidence illuminating student teachers’ reflective thoughts on teaching and learning. Pages (155) of the pre-service teachers’ reflective journals were also part of the data set.
Data analysis
A hybrid method of inductive and deductive thematic data analysis was used to analyse the data collected. The Framework for Levels of Reflective Thinking, initially developed by Boud, Keogh and Walker (1985), was used to analyse the level of reflective thinking (see Table 1).

<Insert Table 1 here>

The researcher first conducted line-by-line reading of the transcribed data for both reflection journals and three-way dialogue sessions observed. There were a total of 455 entries of the reflective levels on pre-service teachers’ reflections; 367 entries were in the reflection journal texts, and 88 entries in the three-way dialogue transcriptions. Analytic memos and codes were developed from the data in the first triad. Later, the same method was applied in analysing the remaining triads. Further analysis of the codes assigned to the dataset led to themes and categories being identified (Miles, Huberman & Saldaña, 2014). Subsequently, an Explanatory Effects Matrix (Patton, 1990) was used to compare the themes from the four triads, drawing similarities and differences among them. Data was analysed and entered into the qualitative data analysis software, NVIVO (version 11), for a more systematic data analysis.

Findings
Individual reflection: Reflection journal
All four pre-service teachers wrote individual reflection journals. The types of reflections recorded in these journals were mostly about observations of children; teaching and learning; problems at the workplace; and Kindergarten policies. Overall, the findings showed that ST1 and ST2 were the only two pre-service teachers with all six levels of reflective thinking evident. ST4 only showed the initial three levels of reflective thinking, and ST3’s responses were within the first four levels of reflective thinking, as shown in Table 2.

<Insert Table 2 here>
All pre-service teachers were reflecting more at lower levels of reflective thinking, where a higher percentage was recorded for levels 1–3 (39 per cent, 20 per cent and 21 per cent respectively). Levels 4–6 were recorded at 13 per cent, 5 per cent and 2 per cent respectively, as shown in Table 3.

<Insert Table 3 here>

The remainder of this section provides examples of each pre-service teacher’s reflections and reflective levels.

The majority of ST1’s reflection journal entries (79 per cent) were at lower levels (1–3). At times, she would link her personal experience and knowledge acquired through her academic study to particular situations in her practicum experience. There was evidence of association in her reflective thinking through patterns identified and relationships observed, and drawing a conclusion on the experiences, forming new insights.

ST1 showed progress in her reflective thinking levels over time, with 21 per cent of her later journal entries at the higher levels of 4–6. For example, in the following excerpt, she demonstrates appropriation in reflective thinking through self-awareness that led to changes in outcomes in behaviour (action outcomes), affective state (affective outcomes) as well as her perspective (perspective outcomes).

*Now I have more understanding on M’s feelings and also his family situation. Luckily, I didn’t ignore the child. It needs a long time, to help them, and due to my limitation, I couldn’t disturb their family. However, I need to show a good role model such as patience, [being] soft when talking, responsible and so on. I also have to engage [in] a good relationship with him.*

ST2’s reflection journal entries were mainly at the lower levels of 1–3 (72 per cent). There is evidence that she attempted to write beyond a descriptive level by including her own feelings, opinions and evaluation of situations. For instance, ST2 described how the principal rewarded the restless children with sweets to motivate them to practise well, and she associated the incident to conditioning theories.
I think it is a good way to encourage a child to perform well. However, I think it should only apply to certain context[s] like Sports Day or Concert Day, which only occur once a year, where the children are not used to it; therefore, it is a motivation for the children to do well ... I do not think that using this operant conditioning method for daily routines is good, such as [when] getting the child[ren] to do their work or trying to stop a child from fighting. This is because if a child gets rewards daily, their motivation is the reward and not ... the task itself.

Similarly, the majority of ST3’s reflection journal entries were at levels 1–3 (79 per cent). Over time, ST3’s reflections deepened, adding emotions and association to her reflections, as shown in the excerpt below:

B walked to me and pulled his shirt up. He said something, but I didn’t understand. Unfortunately, I was the only teacher in that class during that time. I felt so helpless that time.

ST4’s reflection journal entries were all recorded at levels 1 to 3, with 45 per cent of them at level 1. She often described her experiences with varying degrees of attention to details without evaluation. For instance, during a computer class, she mainly described the event that took place, as shown in the following excerpt:

I made sure that every single one of them had their own group, and they sat properly in front of their computer ... I was wondering if the class will be chaotic during the computer class, but they all were well-behaved. I was walking around to make sure that they [were] using the computer in turn[s].

Collective reflection: Three-way dialogues

During collective reflection, pre-service teachers were able to go beyond mere descriptions of events or expressions of feelings. As shown in Figure 1, collective reflection recorded the highest percentage for level 5 entries. The percentage of entries for collective reflection at level 1 was 18 per cent, but at level 5, it was 25 per cent (see Figure 1).

<Insert Figure 1 here>
The remainder of this section provides examples of the pre-service teachers’ reflections and reflective levels.

ST1 made the most significant improvement in reflective thinking, recording a higher percentage (68 per cent) of level 4–6 entries during collective reflection, as compared to 22 per cent during individual reflection (see Table 2). There was a sharp increase in her level 5 entries from 8 per cent for individual reflection to 53 per cent for collective reflection. For instance, ST1 reflected on one of her lessons and validated techniques used to help develop children’s understanding of the concepts being introduced.

ST1: *I changed a lot in the teaching method, but I think it can still be more creative...*  
CS1: *In what sense?*

ST1: *For example, teaching in ... math or language ... because I saw what the other teachers do, they just use whiteboard, marker pen ... for the six-year-old class. So, uh what I do [is]; I ask question, and throw back the question for them to think.*

At level 6, ST1 expressed more explicitly her self-awareness and change in her daily approach towards positive guidance strategies.

ST2 recorded higher reflective thinking levels (4–6) in collective reflection (50 per cent), compared to 27 per cent in individual reflection (Table 3). There was evidence of appropriation at level 6, where ST2 demonstrated perception and action changes. In responding to a question on promoting positive behaviour in young children, she reflected on how she managed children who displayed inappropriate behaviour. However, after she validated a few ideas on pro-social strategies, she realised that in order to promote positive behaviour, she had to be the role model for positive behaviour.

In the case of ST3, her percentage of reflective thinking levels was similar in both individual reflection and collective reflection, where lower levels of reflection were recorded at approximately 80 per cent.

Collective reflection provided an opportunity for ST4 to deepen her reflections. In the following example, she made an association with her teaching practice when she was probed for ideas to expand her teaching skills as a second year pre-service teacher:
CS3: For Year 2, you have to do something. [Do] you want to share what you have done before? How did you feel after that?

ST4: I have lack of confidence.

CS3: Why? You have to dig deeper, and say why?

ST4: I don’t have experience … I worry [that] children don’t listen to me, and the voice is very soft.

The findings in this study suggest a shift in the number of entries toward higher levels of reflective thinking when the pre-service teachers are involved in collective reflection. The mean for the level of reflective thinking recorded during collective reflection shows a reversed trend compared with the reflection journals, where it is lower, at levels 1 to 3, and higher, at levels 4 to 6, as shown in Table 3.

Discussion: Individual versus collective reflection

The findings suggest that collective reflection provides more opportunities for higher levels of reflective thinking than individual reflection for pre-service early childhood teachers. This contradicts earlier research suggesting pre-service teachers lack the ability to operate at higher levels of reflective thinking (Gibson & Purdy, 2012; Husu, Toom & Patrikainen, 2006; Nolan & Sim, 2011). It supports findings from research studies that used guided reflection and additional support to enhance pre-service teachers’ reflection (Boud, 2010; Toom et al., 2014). Collective reflection is useful in providing opportunities for pre-service teachers to express themselves; to explain why they are doing certain things, how they are doing it, and how their actions affect the children they teach (Boud et al., 1985). It gives a different platform for deeper reflection by allowing pre-service teachers to voice their rationale, thoughts and concerns, which otherwise are silenced (Allen & Wright, 2014; Ortlipp, 2003). Group Dialogic Reflection offers a form of engagement and relationships with Placement Mentors and College Supervisors that sits outside conventional practicum practices in the Malaysian context. It has been argued that reflecting together at the workplace results in collective learning (Rantatalo & Karp, 2016), and data from this study shows that collective reflection can enhance the depth of pre-service teachers’ reflective thinking in three areas:
problem solving, connecting theory and practice, and engaging with multiple perspectives. These will be discussed in turn.

1. Problem solving

Collective reflection addresses the problems faced by the pre-service teachers and identifies solutions to problems. Dialogues facilitated by college supervisors played a role in encouraging reflection, particularly open-ended questioning during the three-way dialogue, allowing pre-service teachers and placement mentors to explore solutions to problems (Hayden, Moore-Russo & Marino, 2013; Roskos, Vukelich & Risko, 2001).

The process of validating each other’s understandings through the testing of ideas and interpretations of the identified problems were evidently beneficial (Rantatalo & Karp, 2016; Toom et al., 2014). Participants could clarify any doubts related to the problems, or validate ideas being discussed. For instance, ST2 welcomed the dialogue to help enhance her practice, as she commented:

“They were talking about my performance in carrying out my lesson. And ... my mentor and my supervisor were giving their teaching ideas ... they were talking about [ways] ... to improve, and then they gave their own personal experiences. I think that one really helped because ... normally when one person discusses [her] ... experience, it’s ok, but when two persons discuss ... the same thing, ... they clarify it better and ... when both persons [have] the same opinion, then you feel like ... it’s more enhanced, I think.”

ST2 found Group Dialogic Reflection to be an efficient way of learning at the workplace. She could discuss with both the Placement Mentor and College Supervisor about the problems she faced, and reach some consensus on solutions or actions, rather than meeting with each one individually. The generation of thoughtful solutions to classroom problems enables deeper levels of reflective thoughts that are more cognitively challenging (Dewey, 1997).
2. Connecting theory and practice

Lectures and practicum are usually conducted in different physical settings that may vary in ideology, philosophy and inherent practice. Collective reflection allows the participants to connect theory to what is being practised in the workplace. An example of this was when CS2 asked a question about clarifying the technique used for children with diverse learning needs, and ST2 shared how she provided differentiated lessons, drawing from pedagogical principles to inform her practice:

CS2: Do you adjust the lesson according to their need or do you still teach using the same method, like how you teach the rest of the children?

ST2: Normally we would teach the same [way], but you just offer more guidance unless they don’t understand at all. Because the slow learners here, they actually understand it’s just the language they cannot read ... If you were to teach something new ... they would not be completely lost ... they would have a concept ... It’s just that they need more repetitions.

PM2 offered further guidance and support on this pre-service teacher’s practice by explaining how ST2 could work with these children, trying various methods so that the child would learn.

This form of active and systematic engagement between the CS, PM and ST during collective reflection is both educative and productive in connecting what is learnt during the teacher education course with classroom practice. These opportunities to engage in dialogue provide support to student teachers, helping them to link theory and practice (Allen & Wright, 2014; Darling-Hammond, 2006; Stenberg et al., 2016).

3. Engaging with multiple perspectives

Three-way dialogues include people from different settings and positions, with each participant differing in orientation, educational background, expectations, priorities and their own learning interests. During these dialogues, various perspectives are articulated and considered with the aim of achieving a commonly agreed upon interpretation. The inclusion of multiple perspectives during collective reflection adds a level of depth and complexity to the reflective thinking process (Rantatalo & Karp, 2016). As CS3 commented:
It is good (the three-way dialogues), yeah, because ... you are looking at things from multiple perspectives, not just your own or the student’s. [It] is like all three together at one time ... it is a very interesting experience!

Opportunities for perspectives and understandings to be discussed by practitioners in the field allow for the validation of ideas and practices (Boud, 2010; Scaife, 2010; Ward & McCotter, 2004). Collective reflection can challenge the status quo by creating a space where the alternative views of others are shared. This encourages deeper reflection, as other ways of working are considered. The following excerpt illustrates how this process can influence not only the practice of pre-service teachers but also mentors, as PM2 explained:

It really helps me to see; to update myself in this line. Sometimes, when you are ... in this line [for long], you tend to have the same idea[s]. So ... being a mentor and the three-way dialogue ... gives me a lot of awareness that ... new things have to come up ... things have to improve, you know. So, in that way, it is good, because things can be quite stagnant and quite comfortable. (Laughs)

Contrasting ideas result in ‘productive tension’ with the original idea, through which transcendent learning takes place (Mezirow, 1990, p. 369), where the original concept used to interpret a situation can be modified and expanded (Cressey, Boud & Docherty, 2006; Mezirow, 1990). This process may bring together divergent thinking in an unobtrusive manner, and enable participants to benefit from a deep learning cycle in this collective learning experience (DuFour & Eaker, 1998).

From the socio-cognitive perspective, collective reflection is a form of semiotic mediation through communication at both the interpersonal and intrapersonal levels. Interactions stimulated by multiple individuals with different social and cultural perspectives are capable of bringing the reflective processes to a deeper level (Collin & Karsenti, 2011; Rantatalo & Karp, 2016; Vygotsky, 1978).
Collective reflection is a form of situated learning involving co-construction and co-creation of knowledge, rather than mere reproduction of knowledge (Malthouse, Roffey-Barentsen, & Watts, 2014; Stenberg et al., 2016). Through collective reflection, the diverse needs of the children and family can be explored, and relationships among STs, CSs and PMs strengthened (Caires, Almeida, & Vieira, 2012). In the dialogic process, differences in opinions are shared in a dynamic way that creates a platform for deeper learning. This contrasts with individual reflection journals where thoughts might otherwise be lost in the written words and not opened up to discussion.

**Conclusion**

Given that individual reflection is currently the dominant discourse in encouraging reflective practice in early childhood pre-service teachers in Malaysia, this study calls for a reconceptualisation to encompass a collective approach in teacher education (Collin & Karsenti, 2011). A collective approach to reflection is capable of bringing new meanings and deeper engagement at the workplace (Cressey, Boud & Docherty, 2006; Ohlsson, 2013; Rantatalo & Karp, 2016). In this way, a pedagogy of new relationships between pre-service teacher, Placement Mentor and College Supervisor is established. As Darling-Hammond (2006) argues, attempts to connect theory and practice will not succeed without a ‘major overhaul of the relationships between universities and schools that ultimately produce changes in the content of schooling as well as teacher education’ (p. 9). This is starting to occur in Malaysia. A platform for exploring, sharing, validating or challenging one’s understandings and perspectives with each other, for deeper reflections about experiences in the authentic context is critical. Connecting the academic institution and the placement centre (Collin & Karsenti, 2011; Vygotsky, 1978) recognises that people operate in a social space, and provides a dialogic platform to deeply reflect matters concerning them (Flecha & Soler, 2013; Freire, 2005).

This study has found that the adoption of Group Dialogic Reflection as a strategy can enhance the depth of reflection of pre-service early childhood teachers in the Malaysian context. Appropriate support for all participants to extend their abilities to enrich and sustain the higher levels of reflectivity now needs consideration. However, it must be noted
that the findings have come from a small-scale study involving only four pre-service teachers. Replicating this study in the current university with a wider sample of pre-service teachers would help validate the findings. The study could also be implemented in other universities across Malaysia, adding further weight to the findings with the potential to influence the way forward in early childhood teacher education across Asia.

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**ORCID iD/s**

Lydia Foong: ORCID No: 0000-0001-8252-1157

Andrea Nolan: ORCID No: 0000-0003-3519-6317

**References**


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Table 1. Framework for levels of reflective thinking

<table>
<thead>
<tr>
<th>Level of reflective thinking</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1: Returning to experience</strong></td>
<td>Consciously going back to the event that has happened using description of the actual event, with self or others.</td>
</tr>
<tr>
<td><strong>Level 2: Returning to experience—responding to emotions</strong></td>
<td>Recognising the importance of feelings in facilitating or obstructing the learning experience, since feelings and emotions could become either a source of learning or a barrier to learning.</td>
</tr>
<tr>
<td><strong>Level 3: Re-evaluating experience—association</strong></td>
<td>Relating new information to what is already known, by connecting ideas and feelings from the experience to existing knowledge.</td>
</tr>
<tr>
<td><strong>Level 4: Re-evaluating experience—integration</strong></td>
<td>Identifying any patterns and relationships among the data, or between the data involving new experience and previous experiences, resulting in the formation of new insight through reflections.</td>
</tr>
<tr>
<td><strong>Level 5: Re-evaluating experience—validation</strong></td>
<td>Testing and verifying the proposed synthesis for (internal) consistency and to determine the authenticity of the ideas and feelings. Learners mentally rehearsing their ideas, or simply discussing them with someone whose opinion the pre-service teacher trusts.</td>
</tr>
<tr>
<td><strong>Level 6: Re-evaluating—appropriation (Action/affective/perspective outcomes)</strong></td>
<td>Applying self-awareness towards work, leading to changes in outcomes in behaviour (action outcomes) or affective state (affective outcomes) as well as in perspectives (perspective outcomes). If successful, will become part of their daily practice.</td>
</tr>
</tbody>
</table>

Source: Boud, Keogh & Walker, 1985

Table 2. Reflective thinking levels of each pre-service teacher during individual and collective reflection
<table>
<thead>
<tr>
<th>Pre-service teachers</th>
<th>Type of reflection</th>
<th>Level 1 (%)</th>
<th>Level 2 (%)</th>
<th>Level 3 (%)</th>
<th>Level 4 (%)</th>
<th>Level 5 (%)</th>
<th>Level 6 (%)</th>
</tr>
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<tbody>
<tr>
<td>ST1</td>
<td>Individual</td>
<td>41</td>
<td>20</td>
<td>18</td>
<td>8</td>
<td>8</td>
<td>6</td>
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<tr>
<td></td>
<td>Collective</td>
<td>9</td>
<td>6</td>
<td>16</td>
<td>9</td>
<td>53</td>
<td>6</td>
</tr>
<tr>
<td>ST2</td>
<td>Individual</td>
<td>32</td>
<td>10</td>
<td>30</td>
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<td>2</td>
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<tr>
<td></td>
<td>Collective</td>
<td>23</td>
<td>23</td>
<td>5</td>
<td>27</td>
<td>18</td>
<td>5</td>
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<tr>
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<tr>
<td></td>
<td>Collective</td>
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<td>25</td>
<td>32</td>
<td>14</td>
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<td>Individual</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td>Collective</td>
<td>17</td>
<td>33</td>
<td>50</td>
<td>0</td>
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</tbody>
</table>
Table 3. Combined pre-service teachers’ reflection levels—Individual reflection and collective reflection

<table>
<thead>
<tr>
<th>Reflective levels/ types of reflection</th>
<th>Individual reflection (Nos.)</th>
<th>Level entry (%)</th>
<th>Collective reflection (Nos.)</th>
<th>Level Entry (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: Returning to experience</td>
<td>4 (ST1–ST4)</td>
<td>39</td>
<td>4 (ST1–ST4)</td>
<td>18</td>
</tr>
<tr>
<td>Level 2: Returning to experience—responding to emotions</td>
<td>4 (ST1–ST4)</td>
<td>20</td>
<td>4 (ST1–ST4)</td>
<td>18</td>
</tr>
<tr>
<td>Level 3: Re-evaluating experience—association</td>
<td>4 (ST1–ST4)</td>
<td>21</td>
<td>4 (ST1–ST4)</td>
<td>20</td>
</tr>
<tr>
<td>Level 4: Re-evaluating experience—integration</td>
<td>3 (ST1–ST3)</td>
<td>13</td>
<td>3 (ST1–ST3)</td>
<td>15</td>
</tr>
<tr>
<td>Level 5: Re-evaluating experience—validation</td>
<td>3 (ST1–ST3)</td>
<td>5</td>
<td>3 (ST1–ST3)</td>
<td>25</td>
</tr>
<tr>
<td>Level 6: Re-evaluating—appropriation (Action/affective/perspective outcomes)</td>
<td>2 (ST1, ST2)</td>
<td>2</td>
<td>2 (ST1, ST2)</td>
<td>4</td>
</tr>
</tbody>
</table>
Figure 1. Combined level entry of pre-service teachers’ individual and collective reflection.