

Using Lesson Reflective Questionnaires to Support Teachers' Professional Learning

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Abstract Effective teachers' professional learning requires teachers' engagement in a systematic inquiry into their practice. Reflection and action allow teachers to verify new concepts in context. The recurrent use of lesson reflective questionnaires can help teachers systematically reflect on their practices and use it to reach critical reflection and reframe learning. The study examines the effectiveness of a suggested lesson reflective questionnaire design based on a critical reflection framework. Seven teachers were given three questionnaires to reflect on three lessons they chose for six weeks. At the end of the six weeks, data were collected through one focus group discussion, a review of teachers' answers to the questionnaire, and three in-depth interviews. Results showed that the lesson reflective questionnaire design did not reach critical reflection leading to reframing learning. An adapted version of the lesson reflective questionnaire is presented that reaches critical reflection, encourages reflection-in-action, and is more likely to reframe learning.

Keywords Critical Reflection Frameworks, Professional Development, Professional Learning, Reflective Practice, Reflective Questionnaires

1. Introduction

In the past, Professional Development (PD) of teacher education primarily provided teachers with the knowledge about teaching, not considering teachers' beliefs or the context where teachers apply this knowledge [1]. This

vision of PD did not help teachers embrace new concepts they know, and researchers started incorporating an aspect of transferability of knowledge by implementing the learned knowledge in their context. Johnson [2] saw PD as "structures that allow for self-directed, collaborative, inquiry-based learning that is directly relevant to teachers' classrooms" (p. 25). Webster-Wright [3] introduced the need for 'authentic professional learning'; continuous professional learning. In this paradigm shift, the term Professional Learning (PL) started differentiating itself from PD as being; sustained, intensive, collaborative, job-embedded, data-driven, and classroom-focused [4].

Systematic critical reflection can add the component of transferability of knowledge to teachers' context and move PD knowledge into PL, encouraging teachers to implement it in their classes. Hunzicker [5] viewed reflection as an effective follow-up activity in job-embedded PD, engaging teachers in learning through daily activities when trying out new ideas and analyzing their effect on their actions. Webster-Wright [3] agreed that involving teachers in systematic critical reflection in their socio-cultural community contextualized learning by testing knowledge and turning it into transformative learning.

The roots of reflective teaching are historically evident in the works of John Dewey [6], [7], who mentioned that reflection is an essential aspect of learning from experience. He is the one who brought attention to the importance of teachers' constant review of their practices and circumstances, using what they learned to make decisions for their future. Although there are different tools for reflection, they all engage in evidence-based inquiry enabling teachers to be aware of; what they do, how they

do it, why they do it, and the impact of one’s teaching on student learning [8]. Moussa-Intaty [9] identified using questions to guide teachers’ reflection to be preferred by teachers, and increase the quality of reflection.

2. Literature Review

The process of reflection is meant to use human thoughts and feelings as a base for discovering new ideas and concepts. To reach this ultimate goal, it has to be ‘critical’ enough to reach the required depth. The depth of reflection allows teachers to identify, from repetitive reflection, reasons behind the success or failure of some practices. Consequently, making decisions for future actions [3], [8].

The following will explore how different researchers designed their reflective questions based on their reflective framework, and compare how researchers scheme their questions.

Hilsdon [10] gave a simple structure consisting of ordered questions that move the thinking process. He called it The Critical Thinking Model. The model provided a framework for questioning that guides critical reflection. First, it encourages descriptive thinking, then analytical, and finally evaluative. Types of questions are sequenced;

first, Who was there? (descriptive), What did she say? (descriptive), What did I say? (descriptive). Then, Why did I respond in that way? (analytical/reflective), How did each of us feel as a result? (analytical/reflective), What if I had chosen my words more carefully? (analytical/reflective). It then goes to, So what? Would that have made any difference to the outcome? (reflective/evaluative), Where can I go from here in my interactions with this person? (reflective/evaluative).

Ryan & Cooper [11] introduced a set of questions that reflective teachers should consider; What am I doing and why? How can I better meet my students’ needs? What options are available? How can I encourage more involvement or learning on the part of the students? Have I considered my values as a professional and my comfort level in acting on those values? What conscious choice can I make to make a difference?

Korhtagen & Vasalos [12] introduced a spiral model called ALACT; Action, Looking back on action, Awareness of essential aspects, Creating alternative methods of action, and Trial. They identified a specific set of questions to be used in every phase of the ALACT model, illustrated in Figure 1.

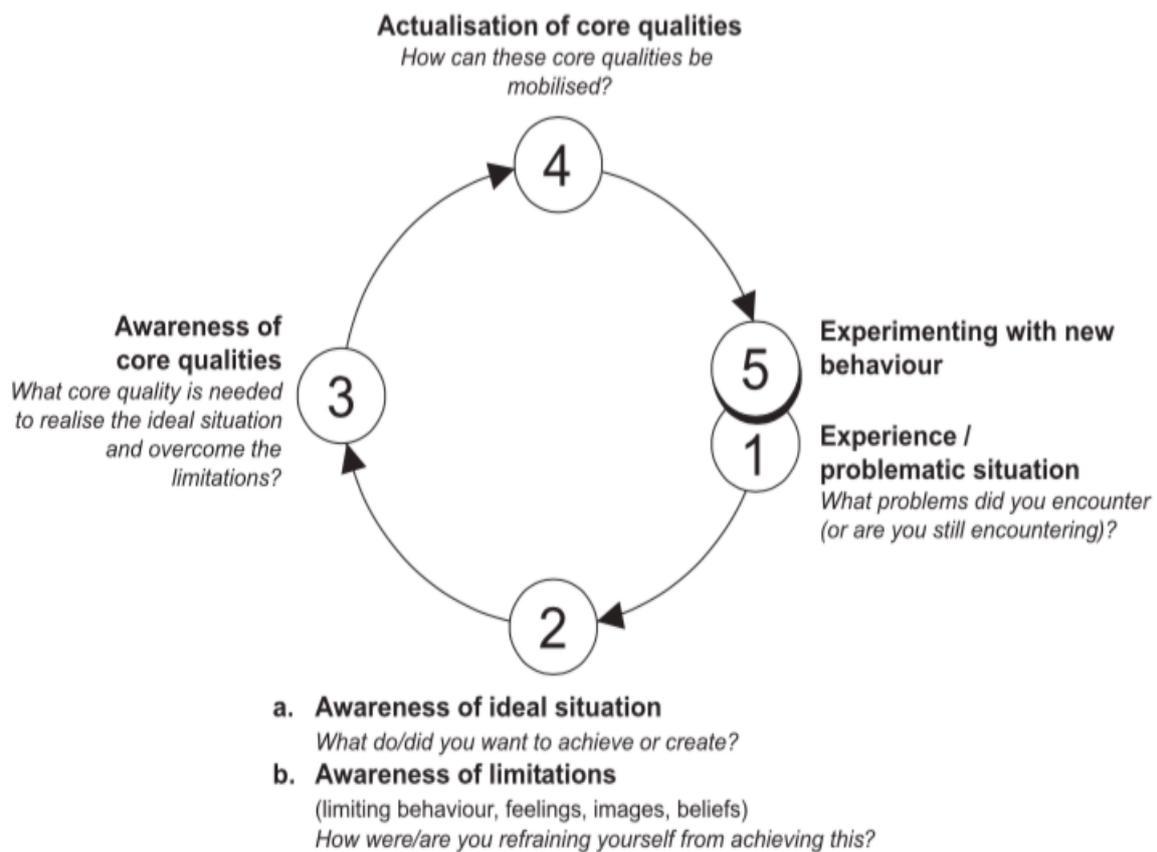


Figure 1. Korhtagen & Vasalos [11], ALACT model and reflective questions in every phase

Miller [13] defined critical reflection as related more to professional disposition (attitudes). Critical reflection, in that sense, gives a chance for teachers to look at an event from a range of perspectives that allows for rich questions and inquiry considering the broader social and political influences of the event. He argues that to think critically about reflection, teachers have to think through levels of reflection that are identified as:

- **Reacting:** Describing feelings related to an event and making a judgment without detailing reasons.
- **Elaborating:** Comparing one's reaction to other people's responses and perspectives. Analyzing the event and considering alternatives. Seeking a deeper understanding of an event by relating it to current literature and theories.
- **Reconstructing:** Drawing conclusions about one's practices and the practices of others, exploring the relationships between practice, literature and theory. Plan further learning based on your reflections.

Miller [13] suggested a set of guiding questions to approach the layers of reflection. Guiding questions were:

- Teacher's own experiences and knowledge. What do I value in terms of independence and interdependence?

How do my values influence my responses to this event? In what ways are my choices influenced by the expectations of the service and fellow educators?

- Experiences and knowledge of others. In what ways have I considered the perspectives of the parents and the child? How is this evident in my response to this event and my interactions? How are my fellow staff impacted by this event?
- Literature and theories. Does this Western view of child development apply to all children? What other literature or theories will provide me with different viewpoints about child development? What does literature on inclusivity say about responding to family preferences in the child care program?
- Broader social/political circumstances. What does this tell the teacher about what is valued in education? What does this imply about children's capacities at certain ages? Does this place an emphasis on 'readiness' (e.g., for school) rather than what is suitable for a child at any given time?

Table 1 and the description that follows compares/contrasts the key features of different researchers' view of scheming questions:

Table 1. Summary of Researchers' View of Scheming Questions

Questions features	Hilsdon (2010)	Ryan and Cooper (2006)	Korhtagen and Vasalos (2005)	Miller (2011)
Overarching questions, more specific questions				
Exploring personal desires				
Encouraging description				
Encouraging analysis				
Evaluative questions				
Focusing on students				
Exploring options				
Future actions				
Professional identity				
Personal abilities				
Exploring direct context				
Exploring political/social circumstances				
Personal identity				
Exploring literature and theories				

Hilsdon [10] and Ryan and Cooper [11] set of questions focused on the event of teaching itself. Their questions explored how teachers can first describe the event; what happened? Then, more analytical questions like; what happened, why happened? These two levels of questions guide teachers to understand the event itself intensely before going deeper. Hilsdon [10] continued his sequence of questions with analytical/reflective questions like;

What if I had chosen my words more carefully? The questions then turn to more evaluative/reflective questions like; So what? Would that have made any difference to the outcome? So what? Would that have made any difference to the outcome? Where can I go from here in my interactions with this person? (p.3)

Ryan and Cooper [11] sequence of questions took another direction. The researchers explore; students’ needs, options available, teachers’ professional identity, and personal abilities.

Korhtagen and Vasalos [12] did not focus on the event as much as on the humans, students and teachers. The researchers’ set of questions had four dimensions; wanting, feeling, thinking, and doing. Questions were designed to reach core reflection that is identified by six levels. The first questions are connected to the levels of identity and the mission. The second question deals with limitations factors in the environment, behavior, competencies, and beliefs. The third level of questions explores alternative methods of action. Questions then compare the difference between the ideal situation and limitations, highlighting the core discrepancy that is most probably the source of other problems on the levels of behavior, competencies, or beliefs.

Miller [13] set of questions focused on the context around the teacher. First, the questions explored one’s professional identity, own experiences, and knowledge. Then, the questions compared the outcome with the experiences and knowledge of others in the direct context; parents and staff. Next, the questions are developed to explore literature and theories to find alternatives and end by exploring the broader context of social/political circumstances.

3. Research Questions

The study examined a suggested LRQ (Appendix 1) based on El Souefi [14] critical reflection framework. The following research questions were set to explore the effectiveness of the LRQ to reach critical reflection and consequently lead to teachers’ development:

1. To what extent can the LRQ proposed attain each level of the Spiral Critical Reflection Framework?
2. How can the LRQ proposed be adapted to attain each level of the Spiral Critical Reflection Framework?

The Spiral Critical Reflection Framework and the proposed Lesson Reflective Questionnaire (LRQ):

El Souefi [14] critical reflection framework has five levels of reflection; reacting, recalling, realizing, reconsidering, and reflecting. Each level deals with significant aspects of reflection, considering different dimensions of reflection to reach critical reflection. Designing the questions was guided by the collection of the research described in the literature review. Table 2 illustrates and presents questions in the LRQ:

Table 2. Questions in Lesson Reflective Questionnaire

The Conceptual Framework			Questions in the reflective questionnaire that represents the level	Underpinning research for the question design
Level	Description of the level	Significant aspects of reflection		
Reacting	Attending to feelings	<ul style="list-style-type: none"> • Emotions and cognition • Cognition and consciousness 	1. How did you feel about the lesson?	Miller [12] Immordino-Yang and Damasio [13] Korhtagen and Vasalos [11]
Recalling	Describing the situation in detail	<ul style="list-style-type: none"> • Expressing ideas and consciousness • Elaborating detail 	2. What was the objective of the lesson? 3. Describe what happened in the lesson as you see it?	Hilsdon [9] Ryan and Cooper [10]
Realizing	Interpreting reasoning of personal judgments. Analyzing and promoting dialogue with oneself and others	<ul style="list-style-type: none"> • Analyzing and evaluating ideas • Considering contextual factors and power issues 	4. Did you reach your objective? How?/Why not? 5. What were you pleased with in this lesson? 6. Why? 7. What were you unhappy about in the lesson? 8. Why?	Hilsdon [9] Ryan and Cooper [10]
Recon-structing	Building insights, drawing conclusions, and planning the next steps	<ul style="list-style-type: none"> • The conceptualization of the experience • Planning action 	9. What would you do differently in the next lesson? Mention reasons.	Hilsdon [9] Ryan and Cooper [10]
Reflecting	Linking experiences to support transformation and personal growth	<ul style="list-style-type: none"> • Taking action/Reflection is spiral • Reflective thinking-in-action 	10. What did you change in this lesson as a result of your last lesson reflective questionnaire? Give specific examples.	Korhtagen and Vasalos [11]

Data Collection

Teachers were given three LRQs to reflect on three lessons they chose for six weeks. At the end of the six weeks, data were collected from the following tools:

- Oral data from a focus group discussion:

Seven teachers took part in one focus group. Semi-structured interview prompts based on the research questions were used (Appendix 2). The researcher conducted the focus group discussion by asking focused questions at the beginning to encourage discussions and expressions of different opinions. The discussion was then left to the participants, decreasing the researcher's control over the discussion, and the conversation focused on participants' voices speaking about their lives and shared experiences.

- Oral data from three in-depth interviews:

Three volunteering teachers from the seven teachers participated in the in-depth interviews. The same Semi-structured interview prompts were used (Appendix 2). The in-depth interviews were to go deeper into some aspects mentioned in the focus group discussion. These questions were asked first, followed by a series of more profound questions to extract quotes that could be used in the analysis.

- Written data was collected from annotating answers to the LRQs to provide more insights into the interpreted themes from the oral data.

Data Analysis

The following describes how data was analyzed to examine the effectiveness of the questionnaire at each level of the critical reflective framework:

1. The oral data from the focus group discussions and in-depth interviews were first coded and scripted. Pseudonyms were used with teachers' names for confidentiality reasons.
2. The first level of analysis was extracted from the oral data. Quotes of participants' reactions to each question of the questionnaire were collected.
3. The second level of analysis was reading all the oral data more than once to make sense of it and find the overall meaning. "The themes and the sub-themes are the product of a thorough reading and re-reading of the transcripts or field notes that make up the data" [19] (p. 579). General themes of different issues teachers face mentioned in the oral data were detected to be:
 - Use of technology and other resources
 - Application of PYP essential elements
 - Use of different teaching strategies
 - Differentiation
 - Use of assessment strategies
 - Students' engagement

- Self-Developmental actions

4. The third level of analysis was annotating the written data; answers of participants to the LRQs. Answers to each question for each participant were annotated in a table and were then matched to the oral data themes/issues.
5. Another level of analysis was added to detect the criticality of the level of 'Realizing'. Themes/issues mentioned in the answers of questions 4,5,6,7&8 were identified if they were mentioned as a reason for the success or failure of the practice or as a concerning issue.

5. Results

Oral and written data were interpreted with a focus on the research questions for each level of the critical framework; reacting, recalling, realizing, reconsidering, and reflecting, as follows:

Reacting

The first question starts with triggering feelings that raise attention and memory to react to the experience. It was evident from the oral data that this question helped participants remember more details about the experience.

"I am an emotional person, so going back to the experience, I remember everything; emotions, places, everything. So, it made me go back to everything and write everything deeply." Naga – in-depth interview

"the questions helped me to think how I felt about it and gave me another perspective to look at my session". Salima – in-depth interview

One participant in the in-depth interview suggested that more questions about feelings can be added to the LRQ. It helps her go deeper.

"I think more questions about feelings should be asked. This will help a lot." Naga – in-depth interview

The first question in the LRQ asked teachers about their feelings towards the lesson; "How did you feel about the lesson?". Answers to this question in the LRQ varied; some participants were very expressive, while others were a little reserved in their answers. For example:

I felt that the lesson went very well, and I felt very prepared and confident during the teaching. Also, the students seemed very interested and motivated" Nesrine – Questionnaire one

"Amazing." Dona - Questionnaire one

"I enjoyed the lesson a lot." Negma - Questionnaire one

Recalling

Questions 2 and 3; What was the objective of the lesson? And, describe what happened in the lesson as you see it? where to help participants recall the experience by describing it in detail. Answering specific questions prompted teachers' expression of ideas in writing and helped them write more details. Most teachers had complete extended answers to the questions.

"When I started describing what happened, I had more details. I started to remember every detail in the lesson." Dona – Focus Group

"for me, it was 'Did you reach your objective? How? And why?' that was a perfect question for me." Raga - focus group

After using the reflective questionnaire more than once, teachers enjoy those discoveries. They want to get more out of the experience and remember more details to help them develop. Their level of self-awareness increases every time they reconsider their actions.

"I am squeezing my mind really hard to remember everything. And I do it with pleasure, not annoyed." "Sometimes, I start rethinking the whole experience again. Lots of times, I get a different result." Raga – In-depth Interview

Participants varied in the level of details given in the answers to the question; Question 3; Describe what happened in the lesson as you see it? One of the participants; Naga, had no answer for the first questionnaire and a minimal answer for the second and third questionnaires. Her answers were concise and not detailed.

"No answer" Naga - Lesson Reflective Questionnaire 1

"Teachers and students didn't enjoy it at all." Naga -Lesson Reflective Questionnaire 2

"Students were able to identify the objective we were trying to inquire into." Naga -Lesson Reflective Questionnaire 3

Naga was one of the participants in the in-depth interview. After analyzing her reactions in the in-depth interviews about this question, some interesting observations were detected. In the in-depth interview, she highlighted that this question confused her for the first time. The second and third times she reflected; she was able to write more details.

"I felt that I was afraid at the beginning. ... and I thought, how am I going to answer these questions. How am I supposed to do that? In the beginning, this was really hard for me. But as I started answering the questions and doing more than one questionnaire, it

started being easier." Naga - in-depth interview

Realizing

Questions from 4 to 8; Did you reach your objective? How? /Why not? What were you pleased with in this lesson? Why? What were you unhappy about in the lesson? Why? were to help participants interpret reasons for personal judgments and analyze ideas and actions. From participants' perspectives, the questions that asked 'Why?' helped go deeper into discovering the reasons why they were pleased or unhappy about the lesson.

" The question asking why were you not satisfied with your session ... helps you write down what you found wrong to pick it up ... and write why it was wrong and how would you like to change it." Salima – In-depth Interview

The questions helped participants detect that the practice was not up to expectations and find solutions. It highlighted to teachers actions they have to stop doing or do differently.

"These questions make you go deeper into the teaching process." Naga – in-depth interview

"The why questions. Because you can write something, but once you actually think about the why and the reasons behind it, it gives you insight, an insight you never thought about until you held your pen and started writing." Yosra – Focus Group

" the why questions help you go deeper in your answers, not just to answer from the surface. It helps you think and go back to find why I did it and try to find solutions to what you have done wrong." Nesrine – Focus group

These were the questions that were supposed to help teachers reach critical reflection. According to Lucas [20], critical reflection is identified by two aspects. First, not accepting the situation at face value, but look 'deeper' to see the influences on the situation. Second, examining the 'broader' picture and seeing the situation more holistically by considering the context. Questions in the lesson reflective questionnaire were intended to take participants more profound into the reasons behind practices meeting or not meeting expectations. Moreover, questions were intended to take participants to a broader consideration of contextual effects. Accordingly, helping participants realize the root causes of the success or failure of the practice.

Upon examining the written data from the answers of the LRQs to assess the conceptualization of the experience, depth, and breadth, participants showed different levels of conceptualization. Table 4 illustrates the number of times categories were referred to as a reason behind the success or failure of an experience in each question.

Table 4. Number of Reference to Categories as a Reason for Success or Failure of the Practice in each Question of the LRQ

The themes addressed in the oral data	Questions										Total number of reasons	
	1	2	3	4	5	6	7	8	9	10	Number	Percentage
Use of technology and other resources						2		1			3	7%
Application of PYP essential elements						8		5			13	31%
Use of different teaching strategies							1	6	2	1	10	24%
Differentiation											0	12%
Use of assessment strategies								1			1	2%
Students' engagement						9	5				14	33%
Self-Developmental actions								1			1	2%
Social and Political Context											0	0%
Total number of answers under each category in every question						19	6	14	2	1	42	100%

When participants identified reasons behind the success or failure of the practice, they differed in the significance of the reason. Some answers to the ‘why’ questions were deep in identifying reasons, while other answers were superficial and did not identify the real reasons behind the success or failure of the practice. Table 4 highlights that the participants’ highest category of reasons in the questionnaires’ answers behind successful and unsuccessful practices was ‘Students’ engagement’ (i.e., not being distracted from the lesson, showing enthusiasm or joy). This reasoning was referred to 33% of the time. This rationale meant that participants judged the experience as successful or not based on students’ engagement. Considering students’ engagement as a reason behind the experience of meeting expectations is not informative enough. Another underlying reason to consider would be what got students engaged? And, what can the teacher repeat to get students engaged?

The second-highest category identified by participants in the answers of the questionnaires behind successful and unsuccessful practices was ‘Application of PYP elements’ (i.e., getting the objective, reaching conceptual understandings, enhancing skills or attitudes). The reason for success or failure of the practice to ‘Application of PYP essential elements’ was mentioned 31% times. Although referring to the application of PYP essential elements is a more solid reason, this does not give enough information to help the teacher develop. For reflection to help teachers develop, should it provide information about the real reason behind students’ achievements? What did the teacher do to reach these outcomes? Actions that teachers can repeat or stop doing in class. There is still an underlying reason that needs to be explored.

The third highest category identified by participants in

the questionnaires’ answers behind successful and unsuccessful practices was ‘Use of different teaching strategies (i.e., inquiry, group work, eliciting questions from the students, using centers...etc.). The use of different teaching strategies showed deeper answers as participants identified concrete actions behind the failure or success of the practice. Some examples of the answers were:

“Because I used authentic resources which were appropriate for the grade level I teach” Negma – Question 6

“They worked in groups, and I let them explain and help each other” Salima – Question 6

“I think I was supposed to be more involved and add more explanations.” Nesrine – Question 8

Answers that reached this level were only 24% of the time.

In addition, the findings mentioned earlier in Table 4 indicate that the LRQs were not able to reach the breadth required. None of the participants’ answers to the questionnaire questions considered the context, which means that the reflection was not broad considering the context. The questions asked were open questions, leaving teachers to choose what they thought. Questions should have guided teachers to consider aspects in the context and explore what they can do about it.

Reconstructing

Answering question 9; What would you do differently in the next lesson? Mention reasons, was to help participants build insights, draw conclusions and reconstruct their

understanding of the teaching and learning journey. Salima mentioned how this question helped her conceptualize her experience.

“What would you do differently next time? made me see each and every activity; if I needed differentiation here, if I needed to add something here, did this take more time, did I need to add something. It made me go through all of the lessons again.” Salima - focus group

“It gives you insight, an insight you never thought about until you held your pen and started writing.” Yosra – Focus Group

“for me, it was ‘What would you do differently next time?’ because it made me go through all the lessons again and made me see each and every activity and if I needed differentiation here. Suppose I needed to add something here. Did this take more time? Did I need to add something? It made me go through all of the lessons again.” Salima - focus group

Participants discovered different tactics to build a more profound and more enjoyable learning path. The reflective questionnaire gave them a tool to develop their style and build this kind of learning.

“ it made me go through each and every part of my session again starting from the very beginning; each activity and every student in my class and what I should do differently would make it easier for each one of them.” Salima – In-depth Interview

“The questionnaire was very deep because it targeted a specific session.” Salima – in-depth interview

“ These are the reasons for my actions, so how am I going to change these reasons. This is exactly what I think”. Negma – Focus Group

In the written answers to question number 9; ‘What would you do differently in the next lesson? Mention

reasons.’, only two answers mentioned reasons behind what they will change in their practice of repeating or avoiding specific actions. This lack of depth in the answers can be a result of participants not being able to identify the reasons behind the success or failure of the practice in the first place, as explained earlier, and consequently not being able to identify the reasons why they chose a different action for the following lesson.

McIntosh and Webb [21] see that written reflections can become “mechanistic” and “reductionist, facilitating mainly superficial” stopping at the level of description, which participants also mentioned (p.1).

“Sometimes, you just want to get it done. It will not be deep. It will just be some words scribbled on a paper to get over with. Reflection has to be something in a very different environment or context to be actually a reflection.” Yosra – focus group

“It is not to be just paperwork to be done or filled” Salima – in-depth interview

Reflecting

The last question; What did you change in this lesson as a result of your last lesson reflective questionnaire? Give specific examples, was to help participants reflect by linking experiences to support transformation and personal growth.

A comparison between teachers’ answers to questions 9 and 10 was done to examine if teachers used what they identified as the next steps in their following lessons. Question 9 was; What would you do differently in the next lesson? Mention reasons, and question 10 was; What did you do differently this lesson as a result of your last lesson reflective questionnaire? Give specific examples. The action of the first lesson reflection was to appear in the second lesson, and answers of the second lesson were to appear in the third lesson. Table 5 compares teachers’ answers to questions 9 and 10.

Table 5. A Comparison Between Teachers’ Answers to Question 9 and Question 10 of the Following LRQ

	What would you do differently in the next lesson? Mention reasons.		What did you do differently this lesson as a result of your last lesson reflective questionnaire? Give specific examples.	Relation between what was planned and what was implemented
	Yosra		Yosra	
Lesson 1	provide more materials work in a different place.	Lesson 2	No answer	
Lesson 2	show a video first. make sure to allocate more time.	Lesson 3	Not done	

Table 5. Continued

	Nesrine		Nesrine	
Lesson 1	develop my own materials give students more reflection questions ask students to do some creative projects.	Lesson 2	I had the students teach each other the information	No relation
Lesson 2	take them to the computer lab to do research by themselves	Lesson 3	prepared some individual activities to make sure that every student got the idea. I explained the instructions very clearly before doing any activity.	No relation
	Raga		Raga	
Lesson 1	bring real outfits to raise the inquiry level.	Lesson 2	I started the attention from the morning line.	No relation
Lesson 2	Nothing.	Lesson 3	Gave students more pictures to inquire about.	
	Naga		Naga	
Lesson 1	to start using centers	Lesson 2	No answer	
Lesson 2	Cancel the unit	Lesson 3	No answer	
	Dona		Dona	
Lesson 1	use pairs or small groups so they do not copy each other.	Lesson 2	Providing appropriate time and space for students' work.	No relation
Lesson 2	postpone the inquiry till the end of the unit	Lesson 3	Not done	
	Salima		Salima	
Lesson 1	start with different information about the country itself along with the art flash cards. learn about the country itself along with the arts of the country.	Lesson 2	I wrote on the board what is expected from each group and I added a small kind of rubric for them in (cooperation in groups, voice level, on task, mission accomplished)	No relation
Lesson 2	give each student his stripes of different patterns (shapes, colors, numbers) individually. explain more to the students who did not get the concept myself instead of making it group work.	Lesson 3	No answer	
	Negma		Negma	
Lesson 1	not do anything differently in this lesson	Lesson 2	Let the students express themselves through writing a script rather than let them just get more information.	No relation
Lesson 2	I will let each student write his own part individually first, then they rotate to share and discuss their ideas together before they are placed in groups.	Lesson 3	Not done	

Upon analysis of the answers, there was no clear relationship between what was identified as the next steps in question 9 and the actions taken by teachers in the following lesson mentioned in answers to question 10. This discrepancy indicates that the reflective action based on the lesson reflective questionnaires was not present.

With a closer look at the actions taken by teachers based on reflection in question 10 in Table 5, one can see that these are actual changes of practice based on reflection, but not the reflection through the reflective questionnaires.

These changes are due to another reflection going on, nurturing teachers with new ideas in practice to help them adapt their teaching to reach expected outcomes.

The decisions to change the practice teachers took were based on students' feedback in the class, which led to teachers' puzzlement, putting the practice in focus, then changing it. Salima, in the in-depth interview, stated this clearly.

"I am supposed to notice how they feel, so it would

help me with what I did wrong, and how I could change it.” Salima – in-depth interview

One participant in the in-depth interview suggested adding a question to the suggested LRQ asking about students' unexpected reactions and how the teacher dealt with them. She explained that sometimes teachers get frustrated by unexpected feedback from students in the class. She added that she would understand the students more if she wrote about this in her reflection, “get it out.”

“ I think I would like to add one or two questions related to the students and how the students felt..... as well.” Salima – in-depth interview

6. Discussion

Dewey [6],[7] highlighted the importance of teaching reflecting systematically and applying what they learned from the reflection in their everyday life. For Dewey, reflective teaching means “being constantly on the alert to circumstances of teaching and the implications of issues arising during teaching.” Burton [22] (p.298). Although there isn't an agreement between researchers about the definition of critical reflection, they all agree that it entails a higher, more complicated level that challenges the learner and the educator Lucas [20]. The suggested LRQ used in the study was to take teachers through the levels of the critical reflection framework. The following is analyzing the data to test the effectiveness of the suggested LRQ for every level of the critical reflection framework.

Reacting

The first level explores personal emotions and feelings. Study findings supported the idea that starting with exploring emotions facilitates approaching cognition and consciousness. Emotions direct aspects of cognition like; learning, attention, memory, decision making, motivation, high reason and rational thinking, and social functioning [23]. Knowles [24] suggested that more personal and immediately relevant aspects of teaching become a good starting point for reflection. Surbeck, Han, and Move [25] highlighted that reacting to the experience allows teachers to comment on their feelings, bringing to consciousness any personal concerns.

Recalling

Components of consciousness operate mainly through the linguistic medium [26]. What the teachers raise to the consciousness is activated when it is expressed, whether verbally or non-verbally. Study findings indicated that the questions used in the questionnaire for teachers to elaborate on the experience helped them see it in detail and acted as a good foundation for their analysis. The amount of details that teachers provide when expressing ideas gives a good

foundation for critical reflection [10], [11], [12]. “We rely on words and ideas as investigation tools, and if we do not have them, the investigation process is distorted” [27, p.12].

Realizing

Lucas [20] mentioned that two aspects identify critical reflection; not accepting the situation at face value, but looking ‘deeper’ to see the influences on the situation, and the ability to examine the ‘broader’ the bigger picture and see the situation more holistically by considering the context. Critical reflection should be mediated. Although the suggested LRQ mediated critical reflection by having reasoning questions, it was not able to take the teacher to conceptualize personal experience to use this conceptualization for future actions.

The study findings showed that the suggested LRQ did not reach the depth or the breadth required for critical reflection. Most justifications of why teachers thought a specific practice was a success or a failure were not able to inform teachers about actions that they should stop or repeat to reach better students' achievements. The questions were also unable to get the required breadth as none of the participant's answers to the questionnaire questions considered context. The questions asked in the questionnaire were open, leaving teachers to choose what they thought. Questions should have guided teachers to consider aspects in the context and explore what they can do about it.

Therefore, designing the questions and how teachers responded did not lead to the critical reflection as it was meant to. Upon examining the wording of questions 5,6,7and 8 that were to guide teachers to analyze and conceptualize the practice, the following was concluded:

- To reach the depth required, questions should be more specific, leading teachers to come out with

precise actions to do or stop to reach expected outcomes. The two questions; What were you pleased with in this lesson? Why? And, What were you unhappy about in the lesson? Why? Guided participants to mention reasons behind their thoughts and feelings, not reasons behind the success or failure of the practice. If these questions were to reach critical reflection, they had to be directed more to a rich analysis of the situation. Questions can be adapted as follows:

5. What were you pleased/unhappy with this lesson?
6. a. Explain why you see this as positive/negative in consideration of; achievement of teaching expectations and students' learning expectations in your context?
- b. What did you do that led to this result? / What actions do you think you did that led to these results?

Question 5 will still be the teacher's judgment of the situation as it is easy to identify. Question 6.a will be

relating this judgment to expected outcomes of teaching and learning in the teacher's context. Question 6.b will explore the reason behind this practice being successful or not, which is supposed to clarify some specific actions to help the teacher repeat or avoid these actions to reach desired results.

- To reach the breadth required, questions should ask teachers to consider specific aspects of the

context. Lucas [20] viewed context as looking at the bigger picture and holistically seeing the situation. Hatton and Smith [28] viewed consideration of context as the awareness of the multiple (historical, socio-political contexts) influences on actions and events. Moussa-Intay [9] suggested that in contexts that have strong religious (or political) ties, reflective questions should consider religious (and/or political) aspects. Miller [13] identified social and political influences as social expectations, stereotypes, or policy changes. As context has different levels, questions are to ask first about the direct context; the school, then about the community, and finally about the socio-political context of the country/culture. The following questions can be added after the ones above:

6. c. What are the most valued ethos about learning in your school, mention two? How are they related to your answers to the questions above?
- d. What are the most valued ethos about learning in your country/culture, mention two? How are they related to your answers to the questions above?

Questions put this way will reach the depth and breadth required and facilitate answering question 9, which asks about future steps. The teacher will then have a clear list of actions to repeat/avoid to reach desired outcomes. Consequently, it can help the teachers make clear decisions to take reflective actions that lead to personal growth and development.

Reconstructing

Although the questionnaire had questions leading to reflective action in every questionnaire, the study concluded that participants did not take reflective actions based on the LRQs. This discrepancy can be due to the questions not taking reflection to the depth required, as discussed above. According to Frost [29], "if practitioners are not challenged at the level of values, the practice may be adopted in tokenistic way without any real change taking place" (p. 8).

Reflecting

The repetitive cycles of reflective thinking-on-action initiated by the LRQ were supposed to help teachers follow

through with the spiral and act as a stimulus for reflective thinking-in-action. Findings of the study detected that changes in practice were not based on reflection-on-action. These changes in practice were actual changes based on reflective thinking-in-action nurturing teachers with new ideas in practice and helping them adapt their teaching to reach expected outcomes. Schon [21] viewed professional knowledge develop within an action. For Mumby [30], reflection-in-action is a non-propositional process by which new knowing-in-action is developed. Reflective thinking-on-action and reflective thinking-in-action overlap and complement each other.

One of the participants suggested adding a question about students' reactions to the questionnaire in the study findings. Students' feedback for participants was a big source of information that teachers rely on to judge their work and consequently reflect-in-action. Such a question in the LRQ can draw teachers' attention to students' reactions and encourage the beginning of a cycle of reflective thinking-in-action. A question can be added at the beginning after question 1 that asks about the teachers' feelings. Question 2 would be;

- a) How did students feel about the lesson?
- b) What makes you think so?

Table 6 compares the suggested LRQ (Appendix 1) with the adapted LRQ (Appendix 3), summarizing how the study results led to the adaptation of the questionnaire.

7. Implication/Suggestion

Although the study shed some light on aspects related to the depth of reflection, it showed that some areas of reflection need more investigation. An issue of concern here is; why don't teachers answer some questions in the questionnaire? Table 6 indicated that teachers did not answer the question about how they took reflective action based on their reflection. Mundy [31] saw that the absence of accountability measures and monitoring could discourage teachers from taking reflective action. For him, leaders need to encourage accountability of teachers by thinking about; Who teachers are reporting to? Who is offering the support and challenge needed? How does this internal/external accountability work? However, Clark [32] argued that teachers do not accept top-down means of professional development with positivity where the teacher is "presumed to be passive, resistant, deficient and one of the faceless, homogeneous herd" (p. 75). El Fiki [8] agreed by stating that top-down approaches to learning "minimizes teacher agency in the process of their own learning" (p.234).

Table 6. A comparison between the suggested LRQ and the adapted LRQ summarizing how the study results led to the adaptation

Critical Reflection Framework Levels	Original questions in the LRQ that represent the level	Findings of the Study	Adapted questions in the LRQ
Reacting	1. How did you feel about the lesson?	To ensure that teachers are aware of students' feedback about what is happening in the lesson, encouraging reflection-on-action is taking place; questions 2a&b were added.	1. How did you feel about the lesson? 2. a. How did students feel about the lesson? b. What makes you think so?
Recalling	1. What was the objective of the lesson? 2. Describe what happened in the lesson as you see it?		3. What was the objective of the lesson? 4. Describe what happened in the lesson as you see it?
Realizing	3. Did you reach your objective? How?/Why not? 4. What were you pleased with in this lesson? 5. Why? 6. What were you unhappy about in the lesson? 7. Why?	To ensure the depth and breadth required in the analysis of the practice reaching real reasons, questions 7a&b were added. To reach the breadth required, questions should ask teachers to consider specific aspects of the context; school and culture. Questions 10a&b were added.	5. Did you reach your objective? How?/Why not? 6. What were you pleased with in this lesson? 7. a. Explain why you see this as positive in consideration to; achievement of teaching expectations and students' learning expectations in your context? b. What did you do that led to this result? / What actions do you think you did that led to those results? 8. What were you unhappy about in the lesson? 9. a. Explain why you see this as negative in consideration to; achievement of teaching expectations and students' learning expectations in your context? b. What did you do that led to this result? / What actions do you think you did that led to those results? 10. a. What are the most valued ethos about learning in your school, mention two? How are they related to your answers to the questions above? b. What are the most valued ethos about learning in your country/culture, mention two? How are they related to your answers to the questions above?
Recon-structing	8. What would you do differently in the next lesson? Mention reasons.		11. What would you do differently next time? Mention reasons.
Reflecting	9. What did you do this lesson differently due to your last lesson reflective questionnaire? Give specific examples.		12. What did you do differently in this lesson as a result of your last lesson reflective questionnaire? Give specific examples.

8. Conclusions

With all advancements in educational theories, teachers’ growth competence becomes crucial. For teachers to transform what they know in PD events into PL, they have to test this knowledge in their context and reflect on their trials leading to their growth competence. LRQs can be used systematically by teachers to initiate a continuous reflective spiral. The wording of questions in the LRQ should be ‘critical’ to lead teachers’ thoughts into discovering new ideas and concepts.

The study examined the effectiveness of a suggested LRQ (Appendix 1) design based on a critical reflection framework (EL Souefi, 2021). The study findings showed that the suggested LRQ helped most of participants be “constantly on the alert to circumstances of teaching and the implications of issues arising during teaching.” Burton [22] (p.298). However, the suggested LRQ did not help most of them reach critical reflection that entails a higher, more complicated level that challenges the learner and the educator Lucas [20]. It did not reach the depth or the breadth required for critical reflection.

An adapted version of the LRQ (Appendix 3) is presented. The wording of some questions was modified, and some questions were added to reach critical reflection, encourage reflection-in-action, and are more likely to reframe learning.

Appendices

Appendix 1: Lesson Reflective Questionnaire Suggested

Teacher Name:.....

Date:

Questionnaire

Choose a lesson every week and answer the following questions about this lesson after directly after you leave the classroom:

- 1. How did you feel about the lesson?
.....
.....
- 2. What was the objective of the lesson?
.....
.....
- 3. Describe what happened in the lesson as you see it?
.....
.....

- 4. Did you reach your objective? How?/Why not?
.....
.....
- 5. What were you pleased with in this lesson?
.....
.....
- 6. Why?
.....
.....
- 7. What were you unhappy about in the lesson?
.....
.....
- 8. Why ?
.....
.....
- 9. What would you do differently next time? Mention reasons.
.....
.....
- 10. What did you do this lesson differently as a result of your last lesson reflective questionnaire? Give specific examples.
.....
.....

Appendix 2: Focused Semi-Structured Questions for the Focused Group and In-depth Interview

- 1. How did you feel when you were answering the lesson reflection questions?
- 2. What did it make you think of?
- 3. How did each question help you reflect?
- 4. Which question made you think more about what happened in the lesson? Why?
- 5. Which question was the most difficult for you to answer? Why?
- 6. How did you answer the question that asked you to specify your next steps? Give specific examples.
- 7. Do you think that your reflective skills get better if it is repetitive? If yes, give specific examples.
- 8. Do you think that a lesson reflective questionnaire is a good tool for reflection? Why?

Appendix 3: The Adapted Lesson Reflective Questionnaire

Questionnaire

Choose a lesson every week and answer the following questions about this lesson after directly after you leave the classroom:

- 1. How did you feel about the lesson?
.....
.....
- 2. a. How did students feel about the lesson?
.....
.....
b. What makes you think so?
.....
.....
- 3. What was the objective of the lesson?
.....
.....
- 4. Describe what happened in the lesson as you see it?
.....
.....
- 5. Did you reach your objective? How?/Why not?
.....
.....
- 6. What were you pleased with in this lesson?
.....
.....
- 7. a. Explain why you see this as positive in consideration of; the achievement of teaching expectations and students' learning expectations in your context?
.....
.....
b. What did you do that led to this result? / What actions do you think you did that led to those results?
.....
.....
- 8. What were you unhappy about in the lesson?
.....
.....

- 9. a. Explain why you see this as negative in consideration of; the achievement of teaching expectations and students' learning expectations in your context?
.....
.....
b. What did you do that led to this result? / What actions do you think you did that led to those results?
.....
.....
- 10. a. What are the most valued ethos about learning in your school, mention two? How are they related to your answers of the questions above?
.....
.....
b. What are the most valued ethos about learning in your country/culture, mention two? How are they related to your answers of the questions above?
.....
.....
- 11. What would you do differently next time? Mention reasons.
.....
.....
- 12. What did you do this lesson differently as a result of your last lesson reflective questionnaire? Give specific examples.
.....
.....

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