



E-ISSN: 2706-8927  
P-ISSN: 2706-8919  
[www.allstudyjournal.com](http://www.allstudyjournal.com)  
IJAAS 2024; 6(10): 52-57  
Received: 03-09-2024  
Accepted: 02-10-2024

**Dr. Gagandeep Bajaj**  
Shyama Prasad Mukherji  
College, University of Delhi,  
India

## The art and science of reflective practice

**Gagandeep Bajaj**

**DOI:** <https://doi.org/10.33545/27068919.2024.v6.i10a.1360>

### Abstract

Reflective thinking should be a way of life. Reflecting on our daily activities enables us to process what happened and develop a fresh perspective. Reflection is equally important in our personal and professional lives. The present article investigates the importance of reflection in the lives of interns who are pursuing professional teacher education courses. It tries to understand the role that reflection plays in their journey towards becoming a reflective teacher. The methodology involved a perusal of reflective journals and interviews geared towards deciphering the dynamics of the process. A document analysis enabled the emergence of meaningful themes delineating reflective practice. The study underscores the significance of reflection in bridging the gap between theory and practice, as well as, nurturing reflective practitioners.

**Keywords:** Reflective practice, praxis, reflective practitioner, reflective journal

### Introduction

“We do not learn from experience...  
We learn from reflecting on experience.”

John Dewey

These lines by the iconic educator, John Dewey compel us to ponder over the value of reflection as an integral feature of the teaching experience. The art and science of reflection is perhaps one of the key elements that enables a teacher to transcend the mundane and reach greater heights. Dewey (1933) <sup>[3]</sup> has been an influential figure in the discourse on reflection. He conceived reflection as an active process wherein beliefs and assumptions are questioned while approaching problematic situations and continual improvement is coveted. Thinking back on one's experiences allows the space for constructing new knowledge. The meaning of experience is internalized through a sustained reconstruction which enables the individual to draw upon it for future learning. Consequently, the experiencing, reflecting and learning cycle is essential for teachers to contemplate the what, why and how of the teaching learning process.

Our daily lives are a fast paced stream of actions, thoughts and feelings. The act of reflection allows us to pause and introspect on the experiences that we have had, leading us to develop self-awareness. When we analyze and self-assess, it often leads to critical insights about our behavior and patterns of thinking, enabling us to identify significant areas of improvement. Hearing our inner voice is crucial in finding a sense of balance and harmony. Whether it is in the larger context of life or in the more specific context of teaching, reflection helps us to make sense of our experience and learn from it. It can consequently inform personal, as well as, professional decisions. This dynamic process enables us to adapt to new situations by applying our learning to respond to challenges and develop a fresh perspective of visualizing life.

### The Teacher as a Reflective Practitioner

The school life of a teacher is occupied with teaching and administrative work, leaving little time and mental space for reflection. However, thinking critically about important aspects of one's practice as a professional enables a teacher to analytically assess oneself and discover new ways to engage with the teaching learning process. Hence, being a reflective practitioner gives important insights into the rationale of the teaching and assessment strategies adopted, as well as, the reasons for their success or failure. The educational field is a continuously evolving environment.

**Corresponding Author:**  
**Dr. Gagandeep Bajaj**  
Shyama Prasad Mukherji  
College, University of Delhi,  
India

Changes in curricula, administrative requirements, learner and societal expectations demand creative responses from teachers. However, reflective practice is not simply about problem solving, rather it is about enriching oneself as a professional. For instance, reviewing curricular choices, questioning teaching strategies and deliberating on student feedback are all components of reflective teaching. Reflective thinking helps educators make sense of the microcosm of classrooms, as well as, the macrocosm of the broader educational system. Leshem & Trafford (2006) <sup>[5]</sup> elucidate how teachers can augment their learning by telling their own stories. An analysis of reflective journals and narrative accounts exhibited their capacity to utilize life experiences for meaning-making. The transformative power of reflection is also highlighted by Ghaye (2011) <sup>[4]</sup>. Instead of focusing on problems, he advocates an enabling perception of teachers where they analyse their teaching learning environments from a position of strength. Another trend that is evident in praxis is the tendency of teachers to use the same activities and explanations every year. As discussed above, critical thinking helps teachers in analyzing teaching-learning experiences in order to course correct and refresh their repertoire of activities and conceptual schemas to keep them relevant and engaging for students. Teachers need to be aware of their underlying assumptions and beliefs about learners, curriculum, pedagogic strategies and assessment. This is imperative for consciously creating a classroom environment based on equity, openness, acceptance, constructivism and flexibility. A positive and democratic teaching-learning environment situated within the ambit of the larger socio-political context provides opportunities for developing humane and socially responsible citizens.

Society's understanding of the role of a teacher is often times limited to a person who delivers textbook content created by 'subject experts'. However, the teacher is a professional in her own right and is in a position to frame the curricular activities of the school day according to her unique insight about knowledge, human nature and learning. Acknowledging the teacher's sense of agency is concomitant with the idea of using reflection to facilitate professional growth and development. Suphasri & Chinokul (2021) <sup>[10]</sup> acknowledge the importance of reflective practice in teacher education for professional expertise. Although there is ambiguity in terms of the logistics of its incorporation in teacher education programs, the impact of reflective practice on the professional growth of teachers is undeniable.

Having envisioned the importance of reflection for teachers in the preceding section, it is worth mentioning Schon's influential work wherein he discusses the significance of reflection in professional practice. Schon's model of reflection has been a widely recognized way of looking within where he introduces the concepts of reflection-in-action and reflection-on-action. Machost & Stains (2023) <sup>[6]</sup> clarify the difference between Schon's (1983) conceptualization of reflection-in-action and reflection-on-action depending on the basis of the timing of the reflection. While the former is contemporaneous and comprises of reflection during the course of teaching, the latter involves a practitioner analyzing the act of teaching retrospectively. Reflection-in-action helps in analyzing a situation as it unfolds in real time and enables an individual to adapt simultaneously. A pertinent example of this can be seen

when a teacher evaluates student feedback regarding her conceptual explanations and makes modifications during the class itself. Teachers also look back on their class experience after it occurs. This constitutes reflection-on-action and is beneficial for refining a practitioner's understanding of various aspects of the teaching learning scenario. Thus, the model emphasizes continuous improvement and professional growth by reflecting both during and after praxis.

### **Techniques for Reflective Practice**

Reflective practice is an ongoing process and needs constant endeavours on the part of all stakeholders in the education system to ensure success. Video recording lessons at an institutional or individual level has been used favourably for assessing classroom interactions. It provides a bird's-eye view of the process in an authentic form, without having to rely on memory to decipher the different aspects, such as, pace of teaching, classroom management and conceptual clarity. Teachers are able to observe learner response to activities planned, peer engagement, teacher talk as a proportion of total class time etc. Evidence gleaned from video recordings offers concrete illustrations for teachers to reflect upon. The recording needs proper planning in terms of space and time variables. Reviewing the recording critically allows insights to emerge leading to alternate ways of engaging the class. Another authentic source is student feedback. Usually elicited during or after the course, it serves to inform teachers about the clarity and level of engagement according to student perceptions. It can be considered in conjunction with other sources of data to construct the big picture.

One of the most prevalent tools for self-reflection is reflective journals. Many people document the day's events and their insights about it through a personal record. Journaling is an effective device to encourage in-depth thinking about experiences and identify areas of improvement. Writing about one's thoughts and feelings serves as a form of catharsis as well facilitating emotional well-being. Similarly, maintaining a journal is a fundamental way of enhancing a teacher's self-awareness about her thoughts and actions related to teaching. It is a narrative account of the highlights of the school day. It documents the features that were successful and those which proved problematic. The journal is also an effective instrument for thinking of alternatives and possibilities for the future. Increased self-awareness and personal growth are natural corollaries. Reflecting and writing about class events on a regular basis fosters informed decision making and problem solving leading to innovation in practice. By providing a means to analyze their educational experiences in a structured manner, reflective journals facilitate the creation of an effective learning environment. Everyday classroom challenges do not seem so daunting when analyzed in the context of adjusting planning and teaching strategies to the students' learning needs in order to provide a more personalized teaching-learning experience. Journals can be written on a daily or weekly basis. Leafing through what they have recorded about their classroom successes and challenges helps teachers recalibrate their teaching in terms of student responses, learning objectives, goal setting and future experimentation and innovation. Consequently, reflective journals serve as an instrument for fostering personal, as well as, professional growth.

### Research Methodology

The study is qualitative in design and seeks to understand the role of reflective thinking in the day-to-day classroom practice of interns. The participants were students pursuing a professional teacher education course. The study was conducted with 21 students who were undergoing their school internship as a mandatory part of the curriculum. The research tools involved a study of the interns' journals over the internship period, as well as, observations of their classes. Interviews and narratives were helpful in establishing a correlation between journal writing and their pedagogy. An analysis of the reflective journals enabled substantive themes to be delineated. The commonalities and differences were identified across cases. Classroom observations and the accompanying narratives highlighted the complementary nature of theory and practice. Triangulation of data obtained through the various research tools served to develop a comprehensive understanding of the different dimensions of the art and science of reflective practice.

### Analytical Deconstruction

The data analysis revealed a treasure trove of ideas about the different ways in which the act of reflection was enmeshed with practice. The various components of the data encapsulated the interns' experience in a holistic manner and gave a ring side view of the process. The ensuing section is based on an embedded analysis of the documents, supported by classroom observations and interviews of the interns.

The document analysis encompassed an in-depth study of the reflective journal entries written by the interns on a daily basis. There was evolution in terms of the nature of entries. The entries in the initial phase of the internship were largely descriptive while the latter ones showed a greater level of critical thought and analysis. Another thread showed that the write ups focused on the practicalities of the lesson during the first few days. As the internship progressed, there was a greater comprehension of the larger educational issues and their contextualization in the class. The field work took into account the kinds of pedagogic strategies used by the interns and their relation to learner, content and contextual variables. The positioning of the class in the time table, allotted time, infrastructural considerations and initial exercises for garnering attention and rapport building were looked into. The types of teaching-learning resources available and their use in the class were also tracked along with assessment techniques. The class dynamics was explored through classroom management strategies deployed and the effort made to create a constructivist class environment.

### Introductory Considerations

'Well begun is half done.' This famous proverb underlines the importance of a good beginning. The introduction of the class sets the tone for the main transaction. Most of the participants spent time and effort on the introductory portion of their classes. From their reflections and narratives, it is clear that all of them have relied on question and answer sessions based on students' previous knowledge for introducing the lesson. With the flow of time, they seem to have become more creative and tried alternatives, such as, brain storming, hypothetical scenarios and simple activities in order to set the stage for the class. They have also

reported a greater level of student interest and enthusiasm for the latter. One of the participants narrated, "Instead of the usual questions and answers, I asked the class to think of a situation where living conditions on our planet become difficult and we have to search for another place to live! The children became so excited and came up with such creative thoughts that I felt this is so much better than a boring introduction."

### Pedagogic Strategies

The most extensively reported section is undoubtedly the one regarding pedagogic strategies. Participants have spent a greater part of their journal entries discussing the types of strategies that they have used. These include, peer learning, experimentation, inductive and deductive approaches, lecture-demonstration, problem solving and inquiry based approaches. Constructivism was posited as an overarching framework for using strategies which had a scope of active participation of the learners in building their personal representations of concepts. The interns described the approach in detail, but the rationale behind their choice and the theoretical basis were not emphasized. In the case of twelve interns, these elements started gaining visibility in later entries, showing an increase in their analytical ability and self assessment. They were able to discuss the strategy chosen in the context of the needs of the learners, their developmental stage, milieu, as well as, other variables, such as, content and theoretical contemplation. Some examples are seen in the following narratives, "I noticed that students learnt more willingly during group activities. Some of them, who were not able to understand the concept earlier, were helped by others and got it! I could see Vygotsky's 'Zone of Proximal Development' and 'Scaffolding' in action." Another intern wrote, "They did experiments to collect data about the problem. After they shared their results in the class, I had a discussion to relate it with the concept. Many children came to me and said they loved this class. Seeing their reactions, I was able to understand the importance of activity-based learning." There was significant thought devoted to classes which did not proceed according to the intern's expectations. The underlying reasons were explored. Flaws in lesson planning, inability to adapt to the classroom situation, inappropriate choice of strategy, extraneous factors, student indiscipline, negative classroom environment and infrastructural issues were some of the reasons quoted. They also devoted space in their journal entries for reflecting on a future course of action. Various titles as 'new learning' or 'suggestions for improvement', this section dealt with alternative ways of looking at the process. Choosing different teaching strategies, assessing student needs more effectively, focusing on classroom management, providing positive feedback and formative assessment techniques were highlighted. For instance, "I was quite disappointed with today's class. Hardly two or three children took part in the activity that I had planned. Others told me that they couldn't understand how to do it. Maybe I should revise the concept before doing activities." The preceding section shows a correlation between the act of reflection and refinement of professional practice. Similarly, Nduagbo & Casale (2023)<sup>[7]</sup> qualitative work looked at the connection between reflective practices of pre-service teachers and their professional growth. It found that reflective practice was significantly linked to professional growth.

### Teaching-Learning Resources

I hear and I forget  
I see and I remember  
I do and I understand.

Six participants have used this quotation to justify the inclusion of teaching-learning resources during their classes. Resources are a universal theme in journal entries and are acknowledged to enrich the discourse through a hands-on; minds-on approach. Interns found that using resources led to greater understanding and long-term retention of the concept. They also felt that the teaching-learning process became more interesting and engaging for the students. Complex ideas could be presented in a simple form with the help of concrete material.

Edgar Dale's cone of experience has been cited by eight interns to theoretically support the use of resources. Working models, games, puzzles, experimental apparatus, charts, videos and multimedia presentations were some of resources brought into the class. For a few of the resources, the inspiration came from the intern herself, while for others, multiple websites were referred to. A common constraint mentioned was that they had to do teacher demonstrations instead of allowing individual students to handle the resources because of large class size. Hence the level of engagement got compromised. An intern recalled, "All the children started asking for the equipment and it was difficult to control them. There were more than forty students in the class. How could I make each one of them do the experiment? I had to perform it myself and call them row-wise to observe."

Piaget's stages of cognitive development were discussed by all the interns to support the inclusion of concrete material. Many also used his analogy of 'little scientists' to depict students' curiosity about the world and their urge to learn actively through assimilation and accommodation. The concrete operational stage was repeatedly emphasized for teaching primary school children through direct experience. The importance of real-world applications, audio-visual resources and experiments in enabling an understanding of concepts through tangible materials was quoted by participants. "Classification of plants into herbs, shrubs and trees became much more interesting because we went for a nature walk in the school compound. The children were observing and categorizing different plants on the basis of size, shape and structure. We have read about Piaget's theory in our college and this class really taught me to value concrete learning opportunities."

### Assessment Strategies

Assessment is an essential part of the teaching-learning process. It helps teachers obtain feedback about learner comprehension and set the course for future learning goals. Learning can be supported by tailoring transaction to cater to the areas which require improvement. Teachers vary in terms of the multitude of strategies used to assess the learning gaps of students. Communicating the feedback obtained to students helps them to course correct and take ownership of their education. At the institutional level, assessment also allows policy makers to decide about curricular design. Although, the theoretical perspective on assessment offers many options, in their transaction, interns relied largely on question and answer sessions. Nine interns referred to the Bloom's taxonomy of educational objectives to theoretically support their use of questions designed to

cater to different cognitive levels and higher order thinking skills. Gardner's theory of multiple intelligences was used by four interns to offer different options to learners for showcasing their work, for instance, the same concept was assessed through presentations, poster making and debates in order to cater to the diversity of learners. Traditionally assessment has been positioned after the main teaching-learning tasks are over. However, as a counter to this, the 'assessment for learning' framework was highlighted by two interns to make a case for integrating assessment as a part of the teaching process through formative assessment practices. Both interns had made extensive use of self and peer assessment for providing feedback to students. With reference to formative assessment, Trauth & Buck (2011)<sup>[11]</sup> conducted a participatory action research study in a middle class science classroom to understand the impact of using reflective practices to support their inclusion of formative assessment practices. Reflective practice enabled them to address individual students learning needs by adapting the curriculum.

Observations of the interns' classrooms showed that assessment featured in various components of the teaching-learning process, such as, the main transaction, recapitulation, conclusion and home task. Behaviourist theories were used by a majority of the participants. They employed positive and negative reinforcement strategies in terms of rewards for good performance on tests and quizzes. However, a few interns reported more meaningful classroom interactions with a constructivist approach towards assessment. They preferred authentic assessment tasks with a focus on collaborative and self-assessment.

### Contextual Issues

As the internship proceeded, participants were more inclined towards reflecting on broader educational issues, rather than focusing only on their pedagogy. All the interns have talked about the gender conundrum at one point or another in their journals. The patriarchal system and its impact on education figures prominently. Some of the issues flagged include, segregated seating arrangement, lack of opportunities for interaction, unreal notions of the 'other', teacher bias in terms of tasks allotted to girls and boys, teacher expectations and career goals. Language variables featured in most of the narratives. A common refrain was the rudimentary spoken and written English language skills amongst the school students. "I find it very difficult to take my English period. I am supposed to speak in English but I end up explaining everything in Hindi. The children keep interrupting me and ask for the sentence to be repeated in Hindi. I am thinking of taking some extra classes for teaching the basic knowledge of English."

The hampering of spontaneity and freedom of the child and creation of a passive and submissive attitude towards the teacher as an authority figure is mentioned in relation to the insistence by students to focus on the textbook content rather than experiential knowledge. They also constantly asked the interns to mark important questions and answers from their books, as they had been doing with the regular teachers. Their entire attention was devoted to the examinations. A narrative by one of the participant exemplifies this. "My class experience today made me think that students are limited to the syllabus and specific content which will come in their exams. I have observed that the school creates a conformist and conservative mind which

accepts every order without questioning. Today I realized that students should be given more options and opportunities. In my future classes I will give them more space and time to think out of the box.”

### Theoretical Connections

Various platforms of educational discourse, such as, seminars, conferences and research articles often lament the gap between theory and practice in the educational field. One of the focal areas of reflective practice is to enable the practitioner to forge meaningful connections between what they are teaching in the class and the theoretical backdrop. The participants of the study took recourse to psychological, pedagogical, philosophical and sociological theories in order to make sense of their school experience. Moreover, policy documents were also incorporated by the interns in their journals. The prominent ones in this category were, the National Curriculum Framework (2005), Kothari Commission and the Right of Children to Free and Compulsory Education Act (2009).

The most often cited theorists included Jean Piaget, Lev Vygotsky, Rabindranath Tagore, John Dewey, M.K. Gandhi, Jean-Jacques Rousseau, Gijubhai Badheka, Michael Apple and Jiddu Krishnamurti. The interns tried to link significant aspects of their classes with ideas pertinent to these educationists. For instance, “When I saw that students were so disinterested in what they are studying, it made me think of what Michael Apple mentions in his writings. He asks about what schools teach and who selects that knowledge. The students can’t relate to what they are learning. It only remains bookish knowledge for them.” Tagore was mentioned in the context of naturalism. “We had a Shantiniketan style class! Everyone sat under the trees and we played a ‘food web’ game. The students insisted that we should come out and have a class like this every day. Naturalism speaks of learning in natural surroundings but the school does not allow it. Permission had to be taken from the Principal even to take one class ..”

The linkages with theoretical concepts were minimal in the journals of five participants while nine others exhibited superficial connections. A thorough reading of their journals showed that while the names of many educationists were mentioned, there was scant regard to giving explanations as to how their ideas were correlated with the situation in the class. The journals of seven participants showed an in depth understanding of the theory-practice connection. The entries gave due consideration to the application of theoretical concepts studied in the curriculum to teaching-learning scenarios. This was also corroborated by the observation of their classes, as well as, narrative records. They consistently displayed a high level of mindfulness about their rationale for adopting pedagogic approaches, classroom management, assessment and discipline techniques.

Discipline featured prominently in the entries and conversations of most of the participants. Perhaps this is a testament to the importance given to it by the school system. ‘Pin drop silence’ has traditionally been seen as a hallmark of a disciplined classroom. Many interns were worried about the noise generated during performance of activities in their classes. They battled with the fear of reprimand by school authorities and a disruption of the systematic progress of class work. “The students make so much noise whenever I do an activity. Sometimes I think that it will be better to give them written work. The Principal has warned me while

taking rounds that I should discipline them.” Another intern wrote, “Classroom management is still a big issue. Few students always create noise in the class while I’m teaching. Simi intimidates others and even slaps them. Today when she did not listen to me at all, I had to threaten her that I will take her to the Vice-Principal’s office. Only then she sat down.” Three of the participants reflected on the concept of internal and external discipline as expounded by Krishnamurti. During the initial phase of the internship, they tried to implement behaviouristic techniques to enforce discipline. Positive and negative reinforcement being the prominent ones in this category. However, they felt progressively disenchanted by the imposition from without. “What is the use of children being artificially quiet because of the fear of punishment? The moment I go out of the room, they start shouting.” Instead they started experimenting with student-teacher collaboration to establish rules and boundaries that are acceptable to all. These rules were based on the principles of mutual respect and trust. Since the students had participated in the formulation of the rules, they were more inclined towards their implementation through self regulation. “We had made an anti-bullying system in the class. One day, when two children were fighting, others reminded them about the system before I could. I couldn’t believe it!”

### Fundamental Insights

Majority of the interns felt that reflecting about the classes they had conducted enabled them to become aware of their strengths and weaknesses. They seem to be echoing Farrell’s sentiments about analyzing their beliefs about teaching-learning in order to proactively take decisions to enhance their praxis. There was greater clarity about key takeaways and how to proceed forward. Eighteen interns distinctly linked this to the act of writing a journal entry every day. During the process of thinking about their classes and writing about them, they reported many epiphany moments wherein they realized where they had gone wrong and how they could have done things differently. The following narrative by an intern is a case in point. “As I was sitting at night to write about a class that didn’t go very well, I suddenly came to know that if I had just changed my activity a little bit, instead of stubbornly sticking to the lesson plan, my students would have understood the topic much better.”

The interns exhibited a varying level of expertise in terms of the maturity and depth of reflection they displayed in their writing. During the interactions, it also emerged that it was relatively unrelated to the class tutoring they had in their course. In this context, a study by Belvis *et al.* (2012) <sup>[1]</sup> about a teacher education programme based on reflective practice found that while the programme showed evidence of pedagogical learning, its effectiveness in terms of implementing the learning in the classroom was less promising and had little impact on student learning. We are again drawn to the chasm between the theoretical and practical dimensions of the profession of teaching. All the interns were aware of the technical details of journal writing, yet there were significant differences in the quality of the entries, as well as, their classes. Thus, reflective practice is as much an art as it is a science. Irrespective of the caliber of the journals, the participants experienced a greater level of self-awareness, insight and critical thinking in their lives at a personal and professional level. Since the

interns perceived an enhancement in the depth of meaningful engagement by journaling on a regular basis, there is merit in advocating for reflection as an essential component of teachers' daily lives, in order to become the best version of themselves. As we conclude our exploration of the gamut of insights that this study into the interns' reflective practice provides us, there is a compelling realization that the teaching profession needs reflective practitioners.

### **Conclusion**

Reflective practice plays a pivotal role in bridging the gap between theory and practice in education. By engaging with theoretical concepts, such as those proposed by renowned educationists, interns were able to deepen their understanding of teaching practices and classroom management. The study revealed varying levels of reflection, with some interns making strong connections between theory and practice, while others displayed superficial understanding. Despite challenges in applying theoretical concepts, most interns gained valuable self-awareness, enabling them to refine their teaching approaches. This highlights the importance of continuous reflection in enhancing both personal and professional growth in education.

### **References**

1. Belvis E, Pineda P, Armengol C, Moreno V. Evaluation of reflective practice in teacher education. *Eur J Teach Educ.* 2012;36(3):279-292.
2. Brookfield S. *Becoming a critically reflective teacher.* San Francisco: Wiley & Sons; c2017.
3. Dewey J. *How We Think.* Chelmsford, MA: Courier Corporation; c1933.
4. Ghaye T. *Teaching and learning through reflective practice: A practical guide for positive action.* London: Routledge; c2011.
5. Leshem S, Trafford VN. Stories as mirrors: Reflective practice in teaching and learning. *Reflect Pract.* 2006;7(1):9-27.
6. Machost H, Stains M. Reflective practices in education: A primer for practitioners. *CBE Life Sci Educ.* 2023;22(2).
7. Nduagbo K, Casale C. Preservice teachers' reflective practices, self-efficacy, and professional growth. *Exp Learn Teach Higher Educ.* 2023;6(1):56-66.
8. Osterman KF, Kottkamp RB. *Reflective practice for educators: Professional development to improve student learning.* Thousand Oaks: Corwin Press; c2004.
9. Schon DA. *The reflective practitioner: How professionals think in action.* New York: Basic Books; c1983.
10. Suphasri P, Chinokul S. Reflective practice in teacher education: Issues, challenges and considerations. *PASAA.* 2021;62(1):236-264.
11. Trauth A, Buck G. Using reflective practice to incorporate formative assessment in a middle school science classroom: A participatory action research study. *Educ Action Res.* 2011;19(3):379-398.