CHAPTER II

THEORETICAL OVERVIEW

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Reflective teaching is perhaps best understood as an approach, which promotes autonomous learning that aims to develop learner’s understanding and critical thinking. Technique such as self and peer assessment, problem-based learning, personal development planning and group work can all be used to support a reflective approach. Reflection means thinking, it is used to mean almost any mental operation and is used in very different ways like logical, analytical, critical, creative, lateral, convergent and divergent thinking, inductive and deductive thinking and the like. Reflective teaching and teacher accountability are interrelated. The movement for teacher accountability has become a simple extension of objective, testing and evaluation. Teacher accountability means that teachers are responsible for the quality of their instruction and the progress of their learner’s.

This chapter deals with the theoretical constructs on teacher accountability, learner accountability, reflective teaching practices, reflective learning and framework for selected divergent thinking strategies like SWOT Analysis, SCAMPER Technique, Brain Based Learning and Mind Mapping. Thus the theoretical constructs are narrated under the following headings.
2.1. Teacher Accountability: A Conceptual Frame Work

As teachers, we know that accountability, when operationalized, can produce an immense variety of programmes and proposals. In the present century teacher accountability has become a battle cry. As it is popular today to assume that schools are failing because teachers aren’t ‘accountable’. As such, accountability is a very vague term. The investigator provides some theoretical constructs based on teacher accountability.

The teaching functions of the academicians, in recent times have come under close and critical review of the society. Teaching is the heart of the educational system and in fact teaching responsibility is equated to the accountability of education in many cases. The teachers must be made accountable to the students and through them to the society.

Teacher accountability is defined as “Theory that teachers and school system should take responsibility for improvement in pupil achievement and that teacher effectiveness by this criterion should be measured by external agencies”.

Moral accountability: Moral accountability is based upon a sense of responsibility, a feeling that one is responsible to one’s clients (students and parents). The moral accountability means accountability towards students and parents. The dimensions of moral accountability of teacher accountability selected as special efforts for slow learners - imparting value based education, role model to pupils, encouraging students to excel in their independent work, mentoring, individual attention, differentiation of students accountability to their overt behavior and solving both personal and learning related problem of students.

Professional accountability: Professional accountability is the responsibility to oneself and colleagues. Professional accountability implies teacher’s accountability towards professional and colleagues. The
dimensions of professional accountability of teacher is to plan academic work properly, evaluation of projects and other assignment, use of curriculum materials and teacher’s handbooks, preparation of personality assessment tools, utilization of advanced technology for teaching and training, sense of time management, conducting class test, peer tutoring, counselling students, discuss with colleagues about academic matter, contribution of the teachers to the design of curriculum, teach, tab expert, evaluation methods and preparation of resource materials.

**Legal / Contractual accountability:** Legal accountability is being responsible to one’s employer in terms of employment.

**Intellectual accountability:** Intellectual accountability is a perception by the teacher that he or she is under a discipline imposed by the intellectual criteria and structure of the subject which he or she teaches. It also means the intellectual efficiency of teachers. Intellectual accountability means intellectual caliber of teacher education to inculcate intellectual and personal efficiency of novice teacher. The various magnitudes of intellectual accountability of teacher’s is to organize quiz competition, debate and seminar, providing opportunity for the development of the students, providing opportunity to exceptionally good students to develop their talents, research activity, knowledge of information technology, extra reading, intellectual discussion with students and colleagues.
**Social accountability**: The investigator takes social accountability as, the effectiveness and responsibility of teachers to inculcate social values and virtues in students enabling them to become socially useful citizens. The dimensions of social accountability of teacher is to create awareness of human rights, fostering dignity of labour and hard work, organize study classes and seminar based on health and social issues, participation in community work, contribution in resolving social issues and institutional issues, promote secularism and social justice, fostering national integration and international understanding and guidance regarding selections of media programmes.

The new education policy demands from the teacher a high level of performance and a sense of dedication and devotion to their profession. Once the teachers are appointed and get confirmed the immunity to accountability develops. Therefore, it is necessary to devise suitable system and tools to enforce accountability to teachers. The teachers have a tendency to blame the knowledge of students at entry point, indifference of students, lack of facility, environment not being conducive for effective learning, management / system not being supportive of teachers and so on for inadequacies in accountability.

The accountability-led view sees improvement as a secondary function of the monitoring process. Such an approach argues that a process of external monitoring of quality, ostensibly for purposes of accountability,
is likely to lead to improvement as a side effect. Requiring accountability, it is assumed, will lead to a review of practices, which in turn will result in improvement.

The teachers are accountable of the people in the society. In the educational system, they are accountable to the authority, students and teaching of fraternity. Academic accountability is the responsibility and the effectiveness of teacher on the moral, legal, intellectual professional and social spheres. The professional accountability develops through adopting new strategy in classrooms teaching, the SCAMPER and SWOT analysis are the effective strategy for enhancing teacher accountability.

2.1.1. Substitute, Combine, Adapt, Modify, Put to another use, Eliminate and Rearrange /Reverse (SCAMPER) Technique.

Substitute, Combine, Adapt, Modify, Put to another use, Eliminate Rearrange /Reverse (SCAMPER) is a strategy that can be used to assist students to generate new or alters. It is a tool to support creative, divergent thinking. Teachers are decision makers who select from a variety of instructional models and strategies as they plan their lessons, their choices may be constrained, however, by a number of factors ranging from local custom and administrative regulation to characteristics of their students. The more methods with teachers are familiar, the more likely they will be able to select the best method or methods for the situation.
The SCAMPER technique uses a set of directed questions which you answer about your probortunity (Problem & Opportunity) in order to come up with new ideas. The stimulus comes from forcing yourself to answer questions which you would not normally pose. The questions direct you to thinking about a probortunity in ways which typically come up with new ideas.

SCAMPER is an acronym which stands for questions relating to the following table 2.1

**Table 2.1. The Sequence of terminology integration of SCAMPER Technique**

<table>
<thead>
<tr>
<th>S</th>
<th>Substitute</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Think about substituting part of your product / process for something else. By looking for something to substitute you can often come up with new ideas. Typical questions: What can I substitute to make an improvement? What if I swap this for that and see what happens? How can I substitute the place, time, materials / people? Think about combining two or more parts or your probortunity to achieve a different product / process or to enhance synergy. Typical questions: What materials, features, processes, people, products or components can I combine? Where can I build synergy?</td>
</tr>
</tbody>
</table>

| C | Combine |

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Think about which parts of the product / process could be adapted to remove the probortunity (Problem & Opportunity) or think how you could change the nature of the product / process.

Typical questions: What part of the product could I change? And in exchange for what? What if I were to change the characteristics of a component?

Think about changing part or all of the current situation or to distort it in an unusual way. By forcing yourself to come up with new ways of working, you are often prompted into an alternative product / process.

Think of how you might be able to put your current solution / product / process to other purposes or think of what you could re use from somewhere else in order to solve your own probortunity. You might think of another way of solving your own probortunity or finding another market for your product.

Typical questions: What other market could I use this product in? Who or what else might be able to use it?

Think of what might happen if you eliminated various parts of the product / process / probortunity and consider what you might do in that situation. This often leads you
to consider different ways of tackling the probortunity

Typical questions: - What would happen if I removed a component or part of it? How else would I achieve the solution without the normal way of doing it?

R  Rearrange / Reverse
Think of what you would do if part of your probortunity / product / process worked in reverse or done in a different order. What would you do if you had to do it in reverse?
You can use this to see your probortunity from different angles and come up with new ideas.

Typical questions: What if I did it the other way round?
What if I reverse the order it is done or the way it is used?
How would I achieve the opposite effect?

SCAMPER is a check list that helps you to think of changes you can make to an existing product to create a new one. You can use these changes either as direct suggestions or as starting points for lateral thinking. Too often we encourage learners to be more lateral in their thinking, more lateral in their creativity, without really explaining how to be lateral. SCAMPER is generating new products and services.
Using SCAMPER has helped you define possible new products, many of the ideas may be impractical or may not suit the equipment used by the manufacturer. However some of the ideas could be good starting points for new products.

SCAMPER is a strategy that can be used to assist students to generate new or alter. It is a tool to support creative, divergent thinking.

**Figure: 2.2: Bob Eberle’s acronym of SCAMPER Technique**

Using SCAMPER has helped you define possible new products, many of the ideas may be impractical or may not suit the equipment used by the manufacturer. However some of the ideas could be good starting points for new products.

SCAMPER is a strategy that can be used to assist students to generate new or alter. It is a tool to support creative, divergent thinking.
SCAMPER is an acronym for: substitute, combine, adapt, modify, put to other uses, eliminate, reverse / rearrange.

SCAMPER helps students to ask questions that require them to think “beyond the lines”. As such, it helps develop their critical thinking skills and supports them in construction own imaginative texts. It is a useful co-operative learning tool and great stimulus for students.

2.1.2. Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis.

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis is a strategic planning tool used to evaluate the Strengths, Weaknesses, Opportunities and Threats involved in a project or in a business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are “favourable and unfavourable” to achieving that objective. The technique is credited to Albert Humphrey, who led a research project at Stanford University in the 1960s and 1970s.

A SWOT analysis is a tool used in Management and strategy formulation. It can help to identify the Strengths, Weaknesses, Opportunities and Threats of a particular company or management. Strengths and weaknesses are internal factors that create value or destroy value. They can include assets, skills or resources at its disposal, compared to its competitors. They can be measured using internal assessments or
external benchmarking. Opportunities and Threats are external factors that create value or destroy value. A company can’t control them. But they emerge competitive dynamics of the industry/market or from demographic, economic political, technical, social, legal or cultural factors.

A SWOT analysis is like showing a mirror to one. It tells where the person stands strength gives power. One should analyze his weakness. Opportunities should be grabbed and one should overcome his threats.

A SWOT analysis is an instrumental framework in value based management and strategy formulation to identify the strengths, weaknesses, opportunities and threats. Strengths and weaknesses are internal value creating factors such as assets, skills or a resource a company has at its disposal relatively to its assessment.

(a) The Origins of the SWOT Analysis Model

This remarkable piece of history as to the origin of SWOT analysis was provided by Humphery (1970), one of the founding fathers of what we know today as SWOT analysis.

SWOT analysis came from the research conducted at Stanford research Institute from 1960–1970. The background to SWOT stemmed from the need to find out why corporate planning failed. The research was funded by the Fortune 500 companies to find out what could be done about this failure. By sorting the SWOT issues into the planning categories, one can obtain a system which presents a practical way of
assimilating the internal and external information about the business unit, delineating short and long term priorities, and allowing an easy way to build the management team which can achieve the objectives of profit growth.

This approach captures the collective agreement and commitment of those who will ultimately have to do the work of meeting or exceeding the objectives finally set. It permits the team leader to define and develop coordinated, goal directed actions, which underpin the overall agreed objectives between levels of the business hierarchy. Humphrey advocated the six categories for SWOT Analysis. Provide a framework by which SWOT issues can be developed into actions and managed using teams.

![SWOT Analysis Diagram]

**Figure: 2.3: Albert Humphrey’s Six Categories for SWOT Analysis**
This can be something of a ‘leap’ and so the stage warrants further explanation. Translating the SWOT issues into actions are best sorted into the six categories, because in the context of the way that business and organizations work, this makes them more quantifiable and measurable, responsible teams more accountable and therefore the activities more manageable. The other pivoted part in the process is, of course, achieving the commitment from the teams involved, which is partly explained in the item summarizing Humphrey’s Model and process.

As far as identifying actions from SWOT issues is concerned, it all very much depends on your reasons and aims for using SWOT and also authority/ability to manage others, when by implication of SWOTS breadth and depth are likely to be involved in the agreement and delivery of actions.

Depending on pre text and situation, a SWOT analysis can produce issues which very readily translate into (one of the six) category, actions, or a SWOT analysis can produce issues which overlaid a number of categories a mixture, whatever, SWOT essentially lets, what is good and bad about a business or a particular proposition. If it’s a business and the aim is to improve it then works on translating.
Figure: 2.4: Factors of SWOT Analysis

In two actions (each within one of the six categories) that can be agreed and owned by a team or number of teams if the SWOT analysis is being used to assess a proposition, then it could be that the analysis shows that the proposition is too weak (especially if compared with other SWOT’S for alternative propositions) to warrant further investment, in which case further action planning, other than exit, is not required. If the proposition is clearly strong, then proceed as far a business and translate issues into category actions with suitable ownership by team.

There are other ways of applying SWOT of course, depending on circumstances and aims for instance of concentrating on a department rather
than a whole business, then it could make sense to revise the six categories to reflect the functional part of the department or whatever will enable the issues to be translatable into manageable, accountable and owned aims. It is the summary of Humphrey’s impressive Team Action Management model, developed and used to speed up the process of initiating and controlling organizational change.

SWOT Analysis is commonly used method involves categorizing both internal and external factors as Strengths, Weaknesses, Opportunities and Threats (SWOT). Generally, though not exclusively, the strengths and weakness are internal factors relating to the organization itself, while opportunities and threats arise externally. In non-organizational situations such as proposals, the internal – external factors are not always already divided.

c). Strategy Formulation of SWOT Analysis

A Balanced perspective: Strengths – weaknesses – Opportunities – Threats. Internal-build on Strength, revolve Weakness External – exploit Opportunities, avoid Threats. A balanced perspective explained the internal strengths it included competences, corporate capabilities and resources that provide the basis for strategy. Internal weakness: Explained what critical part of your Business you must strengthen or hide from your competitors.
External opportunities: Considered the benefits that are likely to accrue from pursuing your vision and external opportunities and external threats the pitfalls and the dangers, the variations and exceptions possible.

![Situational Analysis Diagram]

**Figure: 2.5: Design of Internal and External Factors of SWOT Analysis**

SWOT techniques can be used on: Individuals – for development or career decisions. Teams – for development and performance management, organizations for business plan, strategic decision making.

To develop strategies that take into account the SWOT profile a Matrix of these factors can be constructed. The SWOT matrix (also known as a TOWS Matrix) is shown below.
Theoretical Overview

Figure: 2.6: Strengths, Opportunities, Weaknesses and Threats (SWOT) Matrix

The figure depicts the relationship between each factors of SWOT analysis.

S - O. Strategies pursue opportunities that are a good fit to the company’s strengths.

W - O. Strategies – overcome weaknesses to pursue opportunities

S - T. Strategies- identifies ways that the firm can use its strengths to reduce the vulnerability to external threats.

W - T. Strategies establish a defensive plan to prevent the firms’ weaknesses from making it highly susceptible to external threats.

SWOT analysis can be used for all sorts of decision – making and the SWOT template enables proactive thinking, rather than relying on habited or instinctive reactions.
The SWOT analysis is an extremely useful tool for understanding and decision-making for all sorts of situations in business and organizations. The SWOT analysis headings provide a good framework for reviewing strategy, position and direction of a company or business proposition or any other idea. SWOT analysis also works well in brainstorming meetings. Use SWOT analysis for business planning, strategies planning, competitor evaluation, marketing, business and product development and in search reports. A SWOT analysis is a subjective assessment of data which is organized by the SWOT format into a logical order that helps understanding, presentation, discussion and decision making.

2.2. Reflective Teaching Practices

Reflective teaching as a process of self-observation and self-evaluation and collecting information about what goes on in our classroom, and by analyzing and evaluating this information, to identify and explore one’s own practices and underlying beliefs. This may then lead to changes and improvements in our teaching. Reflective teaching is therefore a means of professional development which begins in the classroom set up it.

(a). The Reflective thinking cycle.

There are many programs available that are designed to help teachers become more reflective. They lead the leaner through the three
modes of reflective thinking: technical, contextual and dialectical.
Dewey (1900) and Johnson (1990), Schan (1983), Sudharma and Asha (2012) feel that the reflective thinking process follows a definite cycle.

![Cyclical Process of Reflective Thinking](image_url)

**Figure: 2.7: Cyclical Process of Reflective Thinking**

The reflective thinking cyclical process begins with the Focus stage. During this stage, teachers identify the problems that occurred during their teaching, as well as the high points the parts of the lesson that went exceptionally well; The teachers decide which problems or high points their reflective thinking will focus on. If the problem consumed the majority of the lesson time for the entire class or particular students, then that is what
should be focused on. If over all the lesson went exceptionally high levels of critical thinking skills, then that is where the immediate focus should be once the focus point for the reflection has been identified the reflective cycle advance to the Inquiry Stage. The best way to begin the inquiry stage is with powerful and thought provoking questions. The questions should be based on the initial analysis and the focus for reflection. These questions are powerful enough to demand that teachers take the time to “step back” and examine their thinking.

The reflective teacher moves on to the Referencing stage. It is at this point that teachers are compelled to go deeper and examine their own belief systems, value structures and repertoires of past teaching experiences. At this stage, teachers try to make sense of the identified problems by searching for similar problems in their past teaching experiences. At the same time, they should also think about how solutions that worked in similar situations can be adopted to these new problem. Likewise, teachers will strive to reference the high point if that is the focus of their reflections to see whether the high point aligns with past experiences or is a unique experience that they want to reflect on future so it can become part of their teaching repertoires.

The reflective thinking cycle involves developing a plan. This is the strategy stage. At this point the teacher develops strategies to solve the problems or duplicate the high point. Teachers will find that these strategies
involve modifying their lesson design, implementation strategies or analysis.

The teacher indicates these strategies to test their effectiveness during the Implementation stage. If the strategies are successful they become part of the teacher’s reflective teaching repertoire. If the strategies do not result in the intended outcome, the teacher must reflect on them further and begin the cycle all over again.

**Table 2.2. Format of Nature and Stages of Reflective Thinking**

<table>
<thead>
<tr>
<th>Stages</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus stage</td>
<td>Problems and or high points of the lesson</td>
</tr>
<tr>
<td>Inquiry stage</td>
<td>Begin with thought provoking questions that help clarify the problem or high point has chosen to reflect.</td>
</tr>
<tr>
<td>Reference stage</td>
<td>Search for similar problems and solution or high points in past teaching experiences.</td>
</tr>
<tr>
<td>Strategy stage</td>
<td>Document possible ways to solve the problem or duplicate the high point</td>
</tr>
<tr>
<td>Implementation stage</td>
<td>To be completed after implementing the above strategy. Document success or plans for future reflection and adjustments</td>
</tr>
</tbody>
</table>

Reflection helps teachers refine their philosophies and values about teaching and learning. It leads teachers to explore and refine their theoretical base and to align their practices with it daily by using reflection
to understand and adjust their practices; teachers build a base of reflective teaching strategies that supports their entire teaching practice.

In order to become self evaluating learners, students must firstly become self aware then they must ‘own’ their own learning profiles and take responsibility for their learning journey. These are the ingredients of self assessment of leaning power. In other words, that learners are leading participants facilitated by expert learners their teachers. In all classrooms where we have developing learning power, student self assessment is a key then. In the secondary classrooms these strategies are often very similar to assessment for learning, although the purpose of self assessment of learning power is for learning itself, rather than for subject performance.

(b). Reflective Thinking as a total-Dimensional Approach to Teacher Education

Reflective thinking is a series of logical rational steps based on the scientific method of defining, analyzing, and solving a problem. Reflection can lead to greater self-awareness, which in turn is the first step to positive change – it is a necessary stage in identifying areas for improvement and growth in both personal and professional contexts.

Modern society is becoming more complex, information is becoming available and changing more rapidly prompting users to constantly rethink, switch directions, and change problem-solving strategies. Thus, it is increasingly important to prompt reflective thinking during learning to help
learners develop strategies to apply new knowledge to the complex situations in their day-to-day activities. Reflective thinking helps learners develop higher-order thinking skills by prompting learners to (a) relate new knowledge to prior understanding, (b) think in both abstract and conceptual terms, (c) apply specific strategies in novel tasks, and (d) understand their own thinking and learning strategies.

(c). Role of reflection in the learning process

Students sometimes view reflective writing as an annoying interruption to the serious business of developing content knowledge in their subject area. However, there are sound reasons why reflective writing is included in student assessment.

"Reflection is indicative of deep learning, and where teaching and learning activities such as reflection are missing… only surface learning can result." (Bigge, 2002).

Reflective writing tasks are given to students to help students learn through reflection, precisely because of the established link between reflection and deeper learning. As well as facilitating learning and monitoring learning, the intention is to produce graduates who have acquired the habit of reflection as a means of continuing to learn and grow in their professions. Reflection can lead to personal growth, professional growth, meaningful change etc.
"Reflection leads to growth of the individual – morally, personally, psychologically, and emotionally, as well as cognitively”. Branch & Paranjape, (2002,) Critical thinking involves a wide range of thinking skills leading toward desirable outcomes and reflective thinking focuses on the process of making judgments about what has happened. However, reflective thinking is most important in prompting learning during complex problem-solving situations because it provides students with an opportunity to step back and think about how they actually solve problems and how a particular set of problem solving strategies is appropriated for achieving their goal.

(e). Reflecting on Teaching

Reflecting on teaching provides with a method for identifying and solving problems. Teachers who reflect actively think about their actions, their relationships with students and why they do what they do. Teaching involves moral and responsible activities of a teacher .Reflective teaching are a strategy for promoting thinking about the process of teaching. It was developed as a peer teaching technique with the intent of making teachers more thoughtful practitioners

Teaching for reflection refers to the foundation of higher order thinking and learning. Individuals engage in reflection when they encounter problems which uncertain answers and when the solution cannot be obvious by formal logic. The uncertainty or the belief in uncertainty is the essential requirement in this case for reflective thinking to occur. The reflective
thinker examines and evaluates the available relevant information and an opinion to construct a plausible solution becomes the individual’s belief that is subject to change as he/she gathers more information. Reflection is a form of problem solving that chained several ideas together by linking each idea with its predecessor in order to resolve an issue.

An effective teaching strategy that needs to be used more frequently is the use of practical examples. They can help students’ link theory to practical application, which results in more productive learning. While a sound theoretical base is important, it would not be effective without the understanding of practical application. Practical examples not only help enhance the theories taught in the classroom, but are also a useful tool in illustrating and explaining new material. By using these examples, educators are able to show students that what they are learning has practical applications and also teach them how to apply basic principles to real-life problems. It is a good idea to use contemporary themes that students take an interest in.

Reflective teaching is a strategy for promoting thinking about the process of teaching. It was developed as a peer teaching technique with the intent of making teachers more thoughtful practitioners. Cruickshank, et al (2002) reflective teaching is intended to promote method and efficiency. Criteria for using the reflective teaching strategy are few. The lesson must be of high interest to the practitioner. Reflective teaching lessons focus on one of three domains, cognitive, psychomotor and affective.
Reflective Teaching is an inquiry approach that emphasizes an ethic of caring, a constructivist approach to teaching and creative problem solving. An ethic of caring respects the wonderful range of multiple talents and capacities of all individuals regardless of cultural intellectual or gender differences. A premium is placed on the dignity of all persons. Teachers using a constructivist approach place emphasis on big concepts, student questions, active learning and co-operative learning and they interweave assessment with teaching.

Reflective teachers utilize instructional activities, such as co-operative learning strategies, class interaction and role playing, micro teaching lessons and case studies. Instructors give special attention to the application of theory and practice that make connections between relevant concepts through higher order questioning strategies. Reflective thinking skills – the ability to evaluate and interpret evidence, modify views and make objective judgments are stressed in all courses.

(g). Dewey’s perspectives on and Reflective Teaching

According to Dewey, the process of reflection for teachers begins when they experience a difficulty, troublesome event, or experience that can’t be immediately resolved. Prompted by a sense of uncertainty or unease, teachers step back to analyze their experiences. This stepping back can occur either in the midst of action or after action is completed.
Dewey makes an important distinction between action that is routine and action that is reflective. Routine action is guided primarily by impulse, tradition and authority. According to Dewey, teachers who are unreflective about their teaching often uncritically accept this everyday reality in their schools and concentrate their efforts on finding the most effective and efficient means to solve problems that have largely been defined for them by this collective code.

These teachers often lose sight of the fact that their everyday reality is only one of many possible alternatives, a selection from a larger universe of possibilities. They often lose sight of the purposes and ends towards which they are working and become merely the agents of others.

Dewey defines reflective action as that which involves active, persistent and careful consideration of any belief or practice in light of the reasons that support it and the further consequences to which it leads. Reflection does not consist of a series of steps or procedures to be used by teachers. Rather it is a holistic way of meeting and responding to problems, a way of being a teacher.

Reflective action is also a process that involves more than logical and rational problem solving processes. Reflection involves intuition, emotion and passion and is not something that can be neatly packaged as a set of techniques for teachers to use. Dewey believed three attitudes are important to reflective action.
1. Open mindedness

Open mindedness is an active desire to listen to more sides than one, to give full attention to alternative possibilities and to recognize the possibility of error even in belief. Teachers who are open minded are continually examining the rationales that underline what is taken as natural and right and take pains to seek out conflicting evidence. Reflective teachers are continually asking themselves why they are doing what they are doing.

2. Responsibility

An attitude of responsibility involves careful consideration of the consequences to which an action leads. Responsible teachers ask themselves why they are doing what they are doing in a way that goes beyond questions of immediate utility to consider the ways in which it is working, why it is working and for whom is it working. Responsibility has to involve reflection about the unexpected outcomes of teaching, beyond goals and objectives, because teaching always involves unintended as well as intended out comes.

3. Whole heartedness

By whole heartedness, Dewey meant that open mindedness and responsibility must be central components in the professional life of the reflective teacher. Teachers, who are wholehearted, regularly examine their own assumptions and belief and the results of their actions and approach, to all the situations with the attitude that they can learn something new.
Reflective teachers are not superwomen / supermen. Reflective teachers are simply committed to the education of all their students and to their own education as teachers. Dewey was not suggesting that reflective teachers reflect about everything all of the time. What Dewey was talking about is a balance between reflection and routine, between thought and action.

Reflection was defined in terms of a measurable set of phenomena within the teaching learning process; the criteria for evaluating reflection were reduced to observable dimensions of the interactive teaching act. The investigator selects strategies for enhancing reflective teaching through Brain Based Learning and Mind Mapping.

2.2.1. Brain Based Learning

Brain Based Learning is a theory that as long as the brain can continue to function normal processes, learning can occur. Three important instructional strategies associated with brain –based learning are: orchestral immersion, relaxed alertness and active processing. Orchestral immersion is the idea that a student should be fully immersed in the learning experience.
This implies creating an environment where a student feels like he/she is a part of the process and is living it. Relaxed alertness is the idea of keeping a student’s fear in check while still providing a challenging environment. Active processing is the means by which a student is given the opportunity to continually and actively process information to internalize, consolidate and relate it.

Brain –based learning is leading to classrooms where:

- Constructivist models are used for learning and teaching
- Students are actively involved and engaged in the learning process
- Students are taught meaning and understanding rather than rote memorization
- Classroom environments are highly challenging, yet not threatening
- Students are involved in complex learning experiences
- Instructional practice and strategies are based on education research.

The book by winters presents his experiences and ideas about the theory of brain –based learning as it relates to special education. Some schools have completely adapted their curriculum to the neurobiological science of brain –based learning and it is a topic of high interest among educators.

Brain Based Learning is the understanding and teaching based on what we have learned directly from studying the brain. Brain based teaching is the application of principles and strategies that appears to be compatible
with what we know about the brain. Brain based teaching is the engagement of strategies based on principles of how brain works in a school context. It will change our school time, disciplines, methods of assessment, teaching strategies, use of technology etc.

With the advance of technology and knowledge, the brain, there has been development of brain based learning. Brain Based Learning research substantiates that learning is best facilitated when students are actively engaged in the creation of knowledge. The brain is responsible for the storage and processing of all experiential knowledge. It’s the only organ in the human body which sculpts itself through experience and so is directly related to education. That is why it’s so important for educators to have a strong understanding of the basic functioning components of the human brain in order to better understand student behaviour and effective teaching strategies; hence brain based learning. The Principles of Brain Based Learning and Related Educational Applications

Table 2.3
The Sequences of Principles of Brain Based Learning

<table>
<thead>
<tr>
<th>Indicators (1) “The brain is a parallel processor”</th>
<th>Teachers need to select from a wide variety of methods and approaches.</th>
<th>Offer learning activities that include Auditory, visual &amp; kinesthetic components.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) “Learning engages the entire physiology”</td>
<td>Give students choices and opportunities to make decisions for problem solving.</td>
<td>See how they like to learn best. Students engage in their own learning rather than teacher telling them.</td>
</tr>
<tr>
<td>(3) “The search for meaning is innate”</td>
<td>Teachers should provide a rich environment that is meaningful and challenges every learner.</td>
<td>BBL variables should include: lighting music, temperature, furniture design, seating, noise level &amp; people.</td>
</tr>
<tr>
<td>(4) “The search for meaning occurs through patterning”</td>
<td>For teachers to be effective, learners must create meaningful and personally relevant patterns</td>
<td>Encourage questions and use pictures, symbols, icons &amp; themes</td>
</tr>
<tr>
<td>(5) “Emotions and cognition can’t be separated”</td>
<td>Teachers should understand Student’s feelings. cooperative learning and meta cognition are utilized, positive environment</td>
<td>Interact daily with learner. Emphasize cooperative learning.</td>
</tr>
<tr>
<td>(6) “The brain processes parts and wholes simultaneously”</td>
<td>Teachers acknowledge the brain’s tendencies. Effective teaching builds understanding &amp; skills.</td>
<td>Use comparing &amp; contrasting, provide frequent feedback.</td>
</tr>
<tr>
<td>(7) “Learning involves both focused attention and peripheral perception”</td>
<td>Teachers should organize learner’s attention &amp; focus to facilitate learning</td>
<td>Use charts, mind-maps, music, art exhibits, illustrations, field trips.</td>
</tr>
<tr>
<td>(8) “Learning always involves conscious and unconscious processes”</td>
<td>Teachers should design encouraging instruction. Active rather than passive learners.</td>
<td>Provide visual aids, partner learning &amp; audio books.</td>
</tr>
<tr>
<td>(9) “Humans have two different types of memory systems: one system for rote”</td>
<td>An effective teacher will utilize the brain’s natural, spatial memory</td>
<td>Use real-life situations &amp; bring in guest speakers.</td>
</tr>
</tbody>
</table>
**Understanding**

Understanding how the brain learns naturally at different developmental stages helps educators to create effective learning strategies, instructional materials and training programmes. Knowledge of BBL allows teachers to connect to student’s emotional and personal experiences, characteristics, learning styles and student differences. Students have different learning styles, performance abilities and knowledge levels.
Children’s and adults learn differently, boys and girls develop skills at different rates. Brain based classroom are called as “Brain friendly Places”. These classrooms are learning environments where the brain’s functions and their roles in learning are regarded in terms of teaching and learning processes. It is believed that in brain based classroom, the learners are unique and serves as a baseline for new learning. Learners are encouraged to gain some skills during the BBL process. They learn not only how to use thinking in learning process but also about the thinking itself. The teaching–learning process is formed in 3 important phases: orchestrated immersion, relaxed alertness and active processing.

2.2.2. Constructing Mind Mapping

Mind Mapping is an important technique that improves the way you record information, supports and enhances creative problem solving. By using Mind Maps, can quickly identify and understand the structure of a subject. Can see the way that pieces of information fit together, as well as recording the new facts contained in normal notes. More than this, Mind Maps encourage creative problem solving, as they hold information in a format that mind finds easy to remember and quick to review.

Popularized by Buzan Mind Maps abandon the list format of conventional note taking. They do this in favour of a two-dimensional structure. A good Mind Map shows the 'shape' of the subject, the relative importance of individual points, and the way in which facts relate to one another.
Mind Maps are more compact than conventional notes, often taking up one side of paper. This helps to make associations easily. If find out more information after have drawn the main Mind Map, then can easily integrate it with little disruption.

(a). Mind Maps are also useful for:

- Summarizing information.
- Consolidating information from different research sources.
- Thinking through complex problems.
- Presenting information in a format that shows the overall structure of subject as a type of affinity diagram.
- Mind maps can be used for: problem solving, outline/framework, design structure/relationship representations.
- Individual expression of creativity

Mind maps can be drawn by hand, either as "rough notes" during a lecture or meeting, for example, quality. An example of a rough mind map is illustrated. There are also a number of software packages available for producing mind maps. Mind mapping software can be used to organize large amounts of information, combining spatial organization, dynamic hierarchical structuring and node folding. Software packages can extend the concept of mind mapping by allowing individuals to map more than thoughts and ideas with information on their computers and the internet, like spreadsheets, documents, internet sites and images.
Mind mapping was popularized by Buzan who has written extensively on mental skills, increasing memory and accelerating learning. Mind maps are a dynamic way to capture significant points of information. Mind maps are a non-linear visual outline of complex information that can aid creativity, organization, productivity and memory. Mind maps graphically show ideas in a relational context with the main topic at the centre of the map, major sub topics on branches radiating from the main topic and sub-sub topics around each subtopic.

The mind map is an expression of radiant thinking and is therefore a natural function of the human mind. It is a powerful graphic technique which provides a universal key to unlocking the potential of the brain. The mind can be applied to every aspect of life where improved learning and clear thinking will enhance human performance. A mind map is a highly effective way of getting information in and out of brain—it is a creative and logical means of note-taking and note making that literally ‘maps out ‘one’s ideas. All mind maps have some things in common. They have a natural organizational structure that radiates from the center and use lines, symbols, words, colour and images according to simple, brain-friendly concepts. A Mind map converts a long list of monotonous information into a colourful, memorable and highly organized diagram that works in line with your brain’s natural way of doing thing. Mind Map is the external mirror of one’s
Theoretical Overview

radiant or natural thinking facilitated by a powerful graphic process, which provides the universal key to unlock the dynamic potential of the brain. The main idea, subject or focus is crystallized in central image. The main themes radiate from the central image as ‘branches.’ The branches comprise a key image or key word drawn or printed on its associated line. Topics of lesson importance are represented as ‘twigs’ of the relevant branch. The branches form a connected modal structure. Mind mapping of the planning explained following figure.

Figure: 2.9: Techniques of Mind Mapping for Planning

(b). The Major Aims of Mind mapping

- To explore all the creative possibilities of a given subject
- To clear the mind of previous assumptions about the subjects, than providing space for new creative thought.
- To ideas that in specific action being taken or physical reality being created or changed.
Theoretical Overview

- To encourage more consistent creative thinking.
- To create new conceptual frameworks within which previous ideas can be recognized.
- To capture and develop ‘flashes’ of insight when they occur.

Benefits of mind maps and Use of mind Maps

The main benefits of mind maps are the following.

- Mind maps are fast to create and no effort is wasted.
- Hierarchy and categorization are visually and clearly defined.
- Rather than writing out lots of words only the key ideas are expressed.
- Symbols and diagrams can be used to illustrate ideas in mind maps.
- Mind maps can be viewed at a glance and jumping right to the part which is needed.
- They facilitate recall, because the association of ideas mirrors the way the brain works.
- Mind maps allow us to quickly get ideas from our heads and down on paper.
- Another benefit is they lend especially well to free-association by recording and reviewing freely generated ideas.
- We can find connections and new relationships between concepts.
- Notes of lectures or a book can be created using a mind map.
- Large branches can be used for chapters or key points with detail added from them.
A whole book can be summarized into one page.

Productivity – free flow of ideas improves the productivity.

Planning can be helped a great deal with mind maps. Everything required can be represented in one diagram.

Teacher should be knowledgeable and willing to apply new strategies and techniques in their classroom. Teacher also should understand different learning styles and be able to identify the learning styles of their students. Teachers need to take their role as both a resource for students and as a guide through the difficulties of life seriously and should strive to foster healthy relationships with their students.

2.3. Reflective Learning Process

Reflection is an active process with real outcomes in terms of changing your understanding of a situation and highlighting the knowledge and skills that you may need to develop. The concept of reflective learning is a significant component of many courses based in higher education, in particular those courses which offer a health care professional qualification. Learning through a reflective process will enable you to regularly question and update your practice. Learning is most effective when people become personally engaged in the learning process and engagement is most likely to take place when there is a need to learn and cognition focuses on both the process and the context of learning.
(1) Kolb's Experiential Learning Theory

Experiential learning is a well-known model in education. Kolb's Experiential Learning Theory (Kolb, 1984) defines experiential learning as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience." Kolb (1984) provides a descriptive model of the experiential learning process that shows how experience is translated through reflection into concepts. The learning process consists of four stages, which make for a circular process. The first stage, Concrete Experience, moves to the second stage, Reflective Observation, to the third stage, Abstract Conceptualization, and then to the fourth stage, Active Experimentation, leading learners back to the first stage. With Concrete Experience, the learner conceptualizes (Abstract Conceptualization) findings from reflection (Reflective Observation) and modifies or applies the concepts in other similar cases (Active Experimentation). The results of the experience lead learners to a new solution, approach, method, and knowledge which become another concrete experience. All these stages can happen over the short term or the long term and the circular process can happen at each stage. However, Kolb’s model does not articulate how a learner will engage at each stage so as to communicate with other learners and interact with technology. Thus, instructors need to customize learners’ needs by specifying learning objectives and activities of each stage based on
their prior learning experiences and styles, and learning environments. This may cause ineffective usage of the process and result in poor support for the customization process.

The cycle begins with an experience that the student has had, followed by an opportunity to reflect on that experience. Then students may conceptualize and draw conclusions about what they experienced and observed, leading to future actions in which the students experiment with different behaviors. This begins the cycle anew as students have new experiences based on their experimentation (Oxendine, Robinson and Willson, 2004). Although this continuum is presented as a cycle, the steps may occur in nearly any order. This learning cycle involves both concrete

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Figure: 2.10: Kolb’s descriptive model of the experiential learning process

The cycle begins with an experience that the student has had, followed by an opportunity to reflect on that experience. Then students may conceptualize and draw conclusions about what they experienced and observed, leading to future actions in which the students experiment with different behaviors. This begins the cycle anew as students have new experiences based on their experimentation (Oxendine, Robinson and Willson, 2004). Although this continuum is presented as a cycle, the steps may occur in nearly any order. This learning cycle involves both concrete
components and conceptual components, which require a variety of cognitive and affective behaviors.

(2). Gibbs’ Model of Reflective Cycle

It is more descriptive than Kolb’s model to the extent that each stage has been extended to include a learner’s relevant reaction to each stage. In particular, Reflective Observation and Abstract Conceptualization of Kolb’s model have been extended in Gibbs’ model so that the former is split into Feelings and Evaluation and the latter into Analysis and Conclusion. In comparison with the process of Kolb’s model, the benefit of the Gibbs’ model is that the stages can be readjusted according to the purpose of reflection.

Gibbs’ (1998) reflective cycle consists of six stages: (1) Description of the situation; (2) Analysis of feelings; (3) Evaluation of the experience; (4) Analysis to make sense of the experience; (5) Conclusion with other considerations; and (6) Action plan for a similar situation. For reflective writing, for instance, the stages 1 to 3 or to 4 can be formed as a complete circular process while the stage 4 (Analysis) can be applied to each stage (Centre for Learning and Teaching, 2005).
Reflective learning improves learners’ critical thinking and understanding of what they have taught (Park & Kastanis, 2009). Learners get benefits from reflective learning in terms of deep understanding of their strengths and weaknesses and identification of underlying values, possible insufficiencies, and areas for improvement (Henderson, Napan & Monteiro, 2004). In other words, reflective learning aims to reinforce deep learning and practice, not to focus on reflection itself. Thus, it is imperative to identify and customize each stage of the reflective learning process according to learning objectives and circumstances. It is also important for instructors and learners to adjust the reflective learning process to cater to their needs. Each stage of the process, in particular, needs to be articulated in terms of learners’ engagement and the process customized to fit into it.
Reflection is more than self-critical thinking that can be a form of mutual communication with others. Herrington and Oliver (2002) point out that “socially-mediated reflection is enhanced considerably by collaboration” and collaboration on task maximizes reflective practice and enhances its process (Herrington & Oliver, 2002). Although the above two models dovetail with different stages of the learning process, therefore, manipulation seems necessary to customize learners’ engagement and participation types at each stage. When the models are applied into SNSs, further manipulation and customization of the entire process could be inevitable to realize socially-mediated reflection and collaboration.

(b) Integrated Reflective Learning Process on Social Network Sites

Social Network Sites can be used in teaching and learning environments, particularly for reflective learning, with the view that the characteristics of Social Network Sites support the reflective learning process of individuals and collaboration. As pointed out by Hai-Jew (2008), the participatory and reflective learning via SNSs enhances learners’ engagement and helps learners balance between work and study. To integrate the reflective learning process and the writing process into SNSs for social networking, it seems clear that reflective learning has to be embedded into collaborative learning and connection activities on SNSs.
(1) Expression process on social network sites

A framework of the expression process on social network sites, which combines Kolb’s and Gibbs’ reflection process and Strauss’ public writing process to define each stage of the writing process in terms of participatory reflective learning for social networking.

![Diagram of Expression process on social network sites]

**Figure: 2.12: Expression process on social network sites**

At the Analysis and Conceptualization stage, learners conceptualize findings from their reflections and may modify them to present to the audience. After that, they seek practical ways of connecting with others. At the Connection stage, they respond to connection with others more actively than at the Expression stage by inviting and commenting on others’ content.
Through connecting and communicating with others, they may move to the Active Experimentation stage that allows them to test reflection outcomes in new situations. In doing so, their reflection aims to create a new social network and types of their participation and involvement in social network sites need to assure quality reflection.

(2) Connection process on social network sites

The connection process consists of four stages: (1) Searching; (2) Expressing; (3) Reflecting; and (4) Connecting. These four stages illustrate how learners precede their reflections for social networking according to their participation levels. There are various activities available on SNSs that can be classified according to participation levels. In the circle of different levels (from passive to active), instructors determine what levels learners are expected to participate in and how they can facilitate and encourage learners’ expression and connection while learners plan what levels they intend to participate in, with what actions for each reflection stage.
Learners’ connection activities take place from the beginning stage and can be gradually incremented along with each stage of the connection process. Through the process, reflective learning allows learners to develop creative thinking and expression skills from diverse perspectives characterized by the medium itself. If reflective learning is designed to use more than text-based communication, for instance, it would require media manipulation skills such as digital image creation and audio/video production.

Reflective learning also encourages instructors and learners to research and develop effective communication and interaction methods. In the case of digital storytelling, Barrett (2006) argues that digital storytelling “facilitates the convergence of the following four student-centered learning strategies: student engagement, reflection for deep learning, project-based learning, and the effective integration of technology into instruction” (p. 1).
The theoretical value of the use of communication technologies is that learners have the cultivation of the capacity to assess and adapt an appropriate medium for social networking. Therefore, media manipulation and production skills are authentically more than simple basic skills and each medium has its own pedagogical values in a certain learning environment. It articulates the reflective learning process on SNSs and makes links with learners’ individual reflection and collaborative connection for social networking. As a result, it re-conceptualizes and re-materializes the expression process in social network sites environments collaboratively and socially.

A theoretical framework consists of concepts, together with their definitions and existing theory/theories that are used for the particular study. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of research, which will relate to the broader fields of knowledge.

This chapter has traced the theories related to the teacher accountability and its strategies, SCAMPER and SWOT Analysis, reflective teaching and its strategy Brain Based Learning Mind mapping and reflective learning process.