CHAPTER – I

Introduction and Conceptual Framework
CHAPTER - I

INTRODUCTION AND CONCEPTUAL FRAMEWORK

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CHAPTER - I

INTRODUCTION AND CONCEPTUAL FRAMEWORK

1.1. INTRODUCTION

Education is to humanize humanity. Man is primarily distinguishable from the lower animals because of his educable ability. Education is a life long process. It is now believed that every individual is born with latent talents. The role of education consists in the development of these potentialities. Education is considered to be a process which contributes to the natural and harmonious development of man’s innate powers, brings about the complete development of his individuality, results into desirable behaviour changes and ultimately prepares him for citizenship. The chief task of education is to shape man or to guide the evolving dynamism through which man forms himself as a man.

1.2. TEACHER EDUCATION

1.2.1. Meaning of Teacher Education

In the Dictionary of Education, C.V. Good (1973) defines, ‘teacher education’ as, ‘all formal and informal activities and experiences that help to qualify a person to assume the responsibility as a member of the educational profession or to discharge his/her responsibility most effectively.

Education is the deliberate and systematic influence exerted by the mature person on the immature through instruction and discipline. Training teachers in classroom management skills, active learning, cooperative and collaborative learning, one to one counselling etc., occupies the prime position in modern teacher training. Professionalism determines the quality, range and flexibility of teachers’ classroom work.

Acquiring more knowledge is not the only goal of teaching and learning. Teachers must have the ability to identify and address complex problems and together they should use their multiple intelligences in taking responsibility for their own actions.

The quality of teachers is – or should be – a matter of deepest social concern. The nation risks its entire future if it entrusts its children to the charge of men and
women who are not intelligent, not knowledgeable, not skillful, not democratic, not devoted to young people and to their own calling. The nation needs teachers who respect personality, who are community minded, who act reasonably, and who know how to work cooperatively with others.

To improve a teacher is to improve teaching; to improve teaching is to improve schools; to improve schools is to strengthen the next generation; to strengthen the next generation is a society’s duty of the first magnitude (A Final Report by the Commission on Teacher Education, American Council of Education, Washington D.C., 1946).

In teacher preparation, the first stage is what might be called ‘an awareness stage’. A person with some basic potentialities and a sense of curiosity comes into contact with the world of information. It may be a short teacher training course, a seminar or a workshop, an orientation course, a summer programme, etc. At this stage what is gathered is only information. It may be about some theory, about some books, and about some journals, etc.

The next stage is ‘the training stage’, a stage where vocational training takes place. Here, the teacher is a trainee who is trained to do certain specific tasks so that he or she may become a skilled worker. This is what being done in B.Ed. courses, teacher-training courses, etc. One is trained to do what is expected to be done in specific situations. A soldier is trained; a carpenter is trained; a teacher is trained.

The third stage is ‘the education stage’; where the teacher is more of a participant than a trainee and there is participation in a process; at this stage options are placed before the teacher and he or she is asked to do some thinking so that new situations can be handled resourcefully, imaginatively and intelligently. Obviously, there must be more thinking and innovation at this stage of the ‘teacher making’ process. Moreover one’s perspectives are widened and there is some sort of experiential theory being built up demanding an intelligent interpretation of one’s experiences. This process, naturally takes more time than what is required for training.

The contention that teachers are born, not made, can be true only in a few rare cases. It is also not contended that training, by itself, is sure to make a good teacher. But it is generally observed that a teacher with training becomes more matured and confident
to perform his task more efficiently. Proper education of the teacher enables him to have a knowledge of how children grow, develop and learn, how they can be taught effectively and how their inner potentialities can be brought out and developed.

The Education Commission (1964 - 66) reports, "a sound programme of professional education of teachers is essential for the qualitative improvement of education. Investment in teacher education can yield very rich dividends because the financial resources required are small when measured against the resulting improvements in the education of millions" (P. 67).

According to S.B. Kakkar (1988), "the major criticisms of Indian teacher education such as its academic weakness, isolation from academic community, lack of disciplined structure and irrelevance to social conditions are universal in nature, as identical criticisms are reported in the UNESCO reports (1976-1978) and the US report" (P. 7).

1.2.2. Main Functions and Objectives of Teacher Education

(i) Better Understanding with the Student

Teacher education is a must as it enables the potential teacher to understand the student better. The knowledge of educational psychology helps him/her a lot in dealing with children scientifically. Untrained teachers not familiar with the student may create problem children in schools.

(ii) Building Confidence

Teacher education builds confidence in the potential teachers. A trained teacher can easily face the class with confidence. He/she is not timid or shy. He/she can tackle many odd situations and he/she does not run away from problem situations.

(iii) Methodology of Teaching Competence

Through teacher education, the future teacher becomes familiar with the methodology of teaching. He/she also gets essential knowledge of methods required for a particular subject. He/she teaches with flair and not in a routine way.
(iv) Building a Favourable Attitude

It helps in building favourable attitudes towards the teaching profession. During the course of training, many doubts of the teacher trainees stand removed. It results in creation of love and respect for the teaching profession.

(v) Familiarising with the Up-to-date Information in Education

Teacher education programme familiarises the prospective teachers with all that is latest in education. An attitude of research and experimentation is to be created in them.

(vi) Familiarising with School Organization

During the course of training, the B.Ed. students are familiarising with organization and administration of the school. It is of immense use to them in later life.

(vii) Creating Social Insight

Teacher education programme creates a social insight in them by providing opportunities to live a community life.

(viii) Improving Standards

A well-organized programme of teacher education to prospective teacher would be a great help in improving the quality of education, and also in checking wastage, a great concern of the day.

(ix) Training for Democracy

Training is a must to produce teachers who can teach with zeal and zest and can strengthen the democratic set up in the country. Training is required not only with the sole aim of making one a good teacher but also making him/her a good citizen of a nation.

1.3. TEACHER AND TEACHER BEHAVIOUR

A teacher affects eternity; he can never tell where his influence stops.

(John Adams, 1735 - 1826).
The teacher is indeed the architect of our future. Society can neglect him at his own peril.

(Richard Hooker, 1554 - 1600).

The success or failure of any system of education depends on the quality of teachers who are the centre of the educational process. The teacher is not merely a transmitter of knowledge but also an innovator, agent of change and a social reformer. The teacher is expected to be a good person, competent in his subject, full of enthusiasm and a pacesetter of standards with meaningful human relationship. He should have an aptitude for teaching and must be capable of understanding the child as an individual and also as a part of the group.

Dr. Radhakrishnan’s (1888 - 1975) life as a teacher inspired everyone and he has been a shining example of a teacher who rose to unexpected heights in life.

In the words of K. Venkata Reddy (1991), the teacher is not merely an actor on the dais of his classroom; he is not merely a judge of the academic achievement of his pupils; he is not merely a director of co-curricular activities of his students; he is not merely an account - assistant of school office; he is not merely a record keeper of the periodical progress of his wards; he is not merely a supervisor of their studies and sports; he is not merely an assistant administrator to the Head; he is all these rolled into one (P.1).

According to Rajammal P. Devados (1983), the major professional responsibilities of the teachers are:

i. Character development,
ii. Effective teaching,
iii. Fostering sound human relations,
iv. Involvement in curriculum development,
v. Adjusting to individual differences,
vi. Classroom management,
vii. Judicious evaluation of pupils,
viii. School effectiveness, and
ix. Professional growth and ethics (P. 32).
The teacher is the one who possesses the following characteristics as observed by W.M. Ryburn, et al.,

i. Address,

ii. Personal appearance,

iii. Optimism,

iv. Reserve,

v. Enthusiasm,

vi. Fairness of mind,

vii. Sincerity,

viii. Sympathy,

ix. Vitality,

x. Scholarship,

xi. Tact,

xii. Capacity of leadership,

xiii. Good voice,

xiv. The sense of humour,

xv. Friendliness towards pupils,

xvi. Emotional stability,

xvii. Intelligence,

xviii. Social qualities, and


Teaching thus involves the dynamic interplay of human responsibilities, the central one being that of the teacher and the pupil. Based on the teaching, the teachers are classified as competent and incompetent teachers.

1.4. TEACHER EFFECTIVENESS

The main function of a teacher is to create a good learning environment in the class. An effective teacher can create the environment that motivates the students to learn more and more. It is obvious that teachers who are capable as individuals, who can flexibly fill new roles in working with students, and who are dedicated and active in seeking better educational opportunities for students are very much regarded. Hence, Teacher Effectiveness comes to mean as Rather, A.E. (1985) opined, the total impact
the teacher has on the pupils. Some teachers have lasting influence over the students. It is because of the impact of the teachers over the three domains of the students - cognitive, affective and psychomotor.

1.4.1. Criteria to Identify An Effective Teacher

Three major criteria are generally stated to identify an effective teacher. First one is the PRODUCT, or what students learn. Persons who prefer this criterion think that the best test of teacher effectiveness is how much and how well students achieve. This includes achievement in all domains-cognitive, affective, and psychomotor. Examples of this kind of criterion are:

(i) Student gain in subject matter, knowledge and related abilities.
(ii) Student gain in psychomotor skills and related abilities.
(iii) Student gain in interests, attitudes, personality integration, and other affective characteristics. It can be directly assessed with tests and performance ratings before, during and after instruction.

A second criterion is PROCESS. In this regard judgments about teacher effectiveness are made in terms of what the teacher does, what the students do, the interactions between student and teacher, or all the three, but not in terms of student achievement. Examples of this kind of criterion are:

(i) Teacher behaviours, such as explaining, questioning, leading a discussion, counselling, evaluating, etc.
(ii) Student behaviours, such as courtesy, industriousness, attentiveness, conducting an experiment, and leading a discussion.
(iii) Student - teacher interactions, such as teacher - directed and student - directed exchanges, and warmth. The use of process criterion involves making observations of teacher and student behaviours during instruction in the classroom.

The third criterion is PRESAGE. As its name implies, presage is partly a predictive factor. A teacher's present and probable future effectiveness is judged on the basis of his intellectual ability, college grades, personal appearance and other characteristics. Examples for this kind of criterion are intellectual abilities of the teacher, amount of college work completed in the teaching major, grade-point average in college, personal
characteristics and others. This can be assessed indirectly from college records, tests and ratings outside the classroom.

Thus, an effective teacher can be identified through the formative experiences, teacher characteristics, teacher behaviours, immediate effects and long-term consequences (S. Santhana Krishnan and M.A. Nightingale, 1994, P. 8).

The effectiveness of a teacher depends, then, on different kinds of factors and it is vital that they may be distinguished clearly from one another. They are:

1. Pre-existing teacher characteristics,
2. Teacher competencies,
3. Teacher performance,
4. Pupil’s learning experience,
5. Pupil learning outcomes,
6. Teacher training,
7. External context,
8. Internal context, and
9. Individual pupil characteristics.

1.5. TEACHING COMPETENCE

Though there are several factors that go into the making of teacher effectiveness, the major factor responsible for it is teaching competence.

Joyce and Weil (1972) define teaching, as a process by which a teacher and students create a shared environment including sets of values and beliefs which in turn colour their view of reality (P. 72).

According to G.N. Prakash Srivastava and Anju Bhargava (1984), teaching is a series of events wherein a teacher attempts to change the behaviour of students along the intended direction (P. 103).

A competent teacher possesses teaching skills to employ in a teaching situation in order to drive home to the child a point, an idea or a thought so as to bring about the desired change in the student (Satish Chand Bhadwal and Manjulla Sood, 1991, P. 155).
Brown and Atkins (1996) have listed the major skills of teaching as explaining with clarity, generating interest among students, using audio-visual aids, varying student activities, comparing and contrasting (P. 8).

Therefore, in general, teaching competence is nothing but the performance, ability, or the capacity of the teacher to teach. The following are the major constituents of the factor teaching competence:

1.5.1. Components of Teaching Competence

Knowledge of Subject Matter

The competent teacher is someone who is knowledgeable in the subject or subject field proposed for his/her professional certification, understands how his/her subject matter is organized and linked to other disciplines, and can convey his/her knowledge and understanding to students.

Communication/Language Skills

The competent teacher is someone who communicates in clear, understandable, and appropriate language. To meet this standard, a teacher must demonstrate that he/she
- Gives clear and concise explanations and directions;
- Frames questions which encourage inquiry from students;
- Uses probing inquiry questions to help students understand concepts and relationships;
- Makes the goals of learning clear to students;
- Uses language appropriate to the age, developmental level, special needs, and social, racial, and linguistic background of the students; and
- Uses clear and effective oral and written communication.

Curriculum Planning/Classroom Instruction

The competent teacher is someone who designs instruction to facilitate learning consistent with the needs and interests of students in a manner which maintains a sense of order and purpose. To meet this standard, a teacher must demonstrate that he/she
- Understands how students develop and learn;
- Plans instructional programs around specific goals and objectives;
- Develops objectives in a logical instructional sequence;
• Uses a variety of resources and instructional techniques appropriate to the needs of students and the planned goals and objectives;
• Uses information about students to adapt instruction to individual differences;
• Incorporates previously taught concepts into new lessons so that there is an effective transfer of learning;
• Checks regularly for comprehension to be sure that students understand the concepts being taught; and
• Provides and protects opportunities for all students to learn and to demonstrate achievement.

Evaluation of Students

The competent teacher is someone who uses the results of various evaluative procedures to assess the effectiveness of instruction. To meet this standard, a teacher must demonstrate that he/she

• Uses evaluative procedures appropriate to the age, developmental level, special needs, and social and linguistic background of students and corrects for any ethnic, racial, or sex bias in evaluation;
• Interprets the results of evaluative procedures and uses these results to improve instruction for the class and for individual students;
• Identifies problems which will inhibit learning and works toward remedying these problems;
• Encourages the involvement of students in evaluation of instruction;
• Reflects upon his/her own role, behavior, and performance in the classroom as they impact the effectiveness of instruction and makes adjustments as needed;
• Uses a variety of evaluation procedures, e.g., systematic observation, student portfolio review, and exams;
• Uses evaluation to determine when students have reached an acceptable level of mastery of program goals and objectives; and
• Uses evaluation to assess the effectiveness of curriculum and instruction.

Professional Characteristics

The competent teacher is someone who demonstrates equity, sensitivity, and responsibility in his/her dealings with all students. To meet this standard, a teacher must demonstrate that he/she
• Encourages and defends the exercise of students' rights to equal treatment and freedom of expression; responds to the needs of individual students;
• Works toward a learning environment which allows and encourages open inquiry;
• Encourages a learning environment which is devoid of ridicule and avoids racial, sexual, social, ethnic, religious, and physical stereotyping;
• Makes allowances for biases and limitations in his/her own background which may limit his/her responsiveness to students of other backgrounds; and
• Refrains from demonstrations of hostility, ridicule, or sarcasm.

Classroom Management

A competent teacher is someone who sets and maintains appropriate standards of classroom behavior that facilitate teaching and learning. To meet this standard, a teacher must demonstrate that he/she

• Relates to students in a manner which creates mutual respect. Possible methods by which a teacher may achieve this standard include
  • Respecting student privacy,
  • Promoting positive interaction,
  • Clarifying expectations, and
  • Striving to meet individual student needs, including seeking assistance from appropriate resources;
• Maintains discipline appropriate to the learning environment while addressing individual needs of students;
• Maintains a safe learning environment; and
• Maintains accurate documentation pertinent to his/her teaching assignment (e.g., certification, lesson plans, grades, etc.).

Personal Qualities

A competent teacher is one who understands the relationship between his/her personal qualities and effective teaching and learning. To meet this standard, a teacher must demonstrate that he/she

• Maintains personal qualities that foster professionalism, student learning, and a positive school environment. Possible methods by which a teacher may achieve this standard include
Grooming and dressing appropriately.
• Appearing interested and enthusiastic about work,
• Showing initiative, Being flexible and open-minded,
• Having an appropriate sense of humor,
• Being patient,
• Being a student advocate,
• Using appropriate language, and
• Maintaining professional peer relationships.

Community Relations

A competent teacher is one who promotes communication and involvement with parents and the community. To meet this standard, a teacher must demonstrate that he/she
• Fosters positive community relations. Possible methods by which a teacher may achieve this standard include
  • Participating in open house and/or parent-teacher conferences,
  • Communicating with parents/guardians on an ongoing basis,
  • Encouraging assistance and involvement by parents/community members,
  • Becoming a member of a community group, and
  • Becoming involved with children’s activities outside the classroom setting. (http://www.sad67.k12.me.us)

Moreover a good knowledge and appropriate application of the psychology of learning related to cognitive, affective and psychomotor domains play a significant role in decoding one’s level of teaching competence. Though quite a large number of researches have attempted to relate psycho-socio factors such as Interest, Aspiration, Motivation, Achievement Motivation, Self-concept etc., with teaching competence, not much work has been reported using the following cognitive characteristics:

1.6. LEARNING STYLES

According to Keefe (1979), learning styles are characteristic cognitive, affective and psychological behaviours that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment (P. 68).
Learning is something that takes place inside a person’s brain, and it is known to be an enormously intricate and complex process. Knowledge about learning can be accumulated by scientific methods and when such knowledge is adequately verified, it can be expressed as learning principles. Learning is a process, which enables the teachers to recognise that learning has taken place when they note a behavioural change in the learner and also when they note the persistence of this change.

Learning happens in stages, and at each stage students learn in different ways. Difficulties that arise in schooling are often due to differences in learning styles. Children’s academic performance and success in life depend on the thinking and problem solving skills, they develop in early childhood. By the time students reach the upper grades, their reading speed is sufficient for them to learn. But speed is not everything. Sometime, especially with textbooks, the tendency is to see the words, but not really read what is seen.

1.6.1. Categories of Learning Style

Dunn and Dunn (1993), whose work has been particularly school and classroom oriented have identified five categories of learning style variables.

15*Environmental:* The environmental strand refers to these elements: lighting, sound, temperature, and seating arrangement. For example, some people need to study in a cool and quiet room, and others cannot focus unless they have music playing and it is warm (sound and temperature elements).

*Emotional:* This strand includes the following elements: motivation, persistence, responsibility, and structure. For example, some people must complete a project before they start a new one, and others work best on multiple tasks at the same time (persistence element).

*Sociological:* The sociological strand represents elements related to how individuals learn in association with other people: (a) alone or with peers, (b) an authoritative adult or with a collegial colleague, and (c) learning in a variety of ways or routine patterns. For example, a number of people need to work alone when tackling a new and difficult subject, while others learn best when working with colleagues (learning alone or with peers element).
**Physiological:** The elements in this strand are: perceptual (auditory, visual, tactile, and kinesthetic), time-of-day energy levels, intake (eating or not while studying) and mobility (sitting still or moving around). For example, many people refer to themselves as night owls or early birds because they function best at night or in the morning (time-of-day element).

**Psychological:** The elements in this strand correspond to the following types of psychological processing: hemispheric, impulsive or reflective, and global versus analytic. The hemispheric element refers to left and right brain processing modes; the impulsive versus reflective style describes how some people leap before thinking and others scrutinize the situation before moving an inch. Global and analytic elements are unique in comparison to other elements because these two elements are made up of distinct clusters of elements found in the other four strands. The elements that determine global and analytic processing styles are: sound, light, seating arrangement, persistence, sociological preference, and intake.

Sarah Church defines Learning Style as "it is the way a person processes, internalizes, and studies new and challenging material. The cornerstone of this theory is that most people learn in their own unique ways of mastering new and difficult subject matter" (Dunn, 2000, Pp. 3 – 22). Sarah says, "Students perk up when you teach them the way they learn best. Learning to spot their general processing style (where they are on the global - analytical continuum), their preferred modalities (kinesthetic, tactile, auditory, visual), and their needs with respect to authority and structure, can speed up learning and clarify their practice" (Teresa Dybvig, 1998).

1.6.2. Models of Learning Style

Students have different learning styles – characteristic strengths and preferences in the ways they take in and process information, functioning effectively in any professional capacity, however, requires, working well in all learning styles. If teachers teach exclusively in a manner that favours their students less preferred learning style modes, the students discomfort may be great enough to interfere with their learning. An objective of education should be to help students build their skills in both their preferred and less preferred modes of learning. Learning style models make sure that the learning needs of students in each category are met at least part of the time.
1.6.2.1. The Myers-Briggs Type Indicator (MBTI)

This model classifies students according to their preferences on scales derived from psychologist Carl Jung’s theory of psychological types. Students may be (i) Extroverts or introverts; (ii) Sensors or intuitors; (iii) Thinkers or feelers; and (iv) Judgers or perceivers. The MBTI type preferences can be combined to form 16 different learning style types.

1.6.2.2. Kolbs Learning Style Model

According to Kolb (1990), there are four stages of learning: the concrete experience, the reflective observation, the abstract conceptualization, and the active preferences based on their personal experiences, personality differences, environmental factors and prior educational factors.

This model classifies students as having a preference for (i) concrete experience or abstract conceptualization and (ii) active experimentation or reflective observation. The four types of learners in this classification scheme are:

**Type – 1 (Concrete, Reflective):** A characteristic question of this learning type is ‘Why?’ Type – 1 learners respond well to explanations of how course material relates to their experiences, their interests and their future careers. Here the instructor should function as a motivator.

**Type – 2 (Abstract, Reflective):** A characteristic question of this learning type is ‘What?’ Type – 2 learners respond to information presented in an organised, logical fashion and benefit if they have time for reflection. To be effective, the instructor should function as an expert.

**Type – 3 (Abstract, Active):** Here the question is ‘How?’ Type – 3 learners respond actively on well-defined tasks and to learn by trial-and-error in an environment that allows them to fail freely. Here the instructor should be a coach.

**Type – 4 (Concrete, Active):** Here the question is ‘What if?’ Type – 4 learners like applying course material in new situations to solve real problems. Here the instructor should stay out of the way.
1.6.2.3. Hermann Brain Dominan’s Instrument (HBDI)

This method classifies students in terms of their relative preference for thinking in four different modes based on the task specialised functioning of the physical brain. The four modes or quadrants are:

- Quadrant – A (Left Brain, Cerebral) – Logical, analytical, factual, critical
- Quadrant – B (Left Brain, Limbic) – Sequential, organised, planned, detailed, structured
- Quadrant – C (Right Brain, Limbic) – Emotional, interpersonal, sensory, kinesthetic, symbollic
- Quadrant – D (Right Brain, Cerebral) – Visual, holistic, innovative

1.6.2.4. Felder-Silverman Learning Style Model

This model classifies students as:
- Sensing learners or intuitive learners.
- Visual learners or verbal learners.
- Inductive learners or deductive learners.
- Active learners or reflective learners.
- Sequential learners or global learners.

1.6.3. Factors Influencing Learning Styles

Do learning styles vary in predictable ways? There are four factors that significantly differ between groups and among individuals: global versus analytic processing styles, age, gender, and high- versus low-academic achievement (Dunn and Griggs, 1998). The educational implications of these four variables are important to fully comprehend and employ because they provide direction and structure for effective teaching strategies, especially for low-achieving children.

1.6.3.1. Global and Analytic

When learning new and challenging topics, people tend to have one of two processing styles-global or analytic. Certain learning-style elements cluster to form these two processing styles in the following ways. Global learners prefer to work in an environment with soft lighting and informal seating. People with this processing style need breaks, snacking, mobility, and sound. Analytic learners prefer to work in an environment with bright light and formal seating. They work best with few or no
interruptions, in a quiet environment, and little or no snacking. The majority of young children are global processors.

1.6.3.2. Age

Learning styles change with age. Some learning styles are developmental and many people’s styles alter, as they grow older. These style elements are: sociological, motivation, responsibility, and internal vs. external structure. Children tend to prefer to work with peers instead of being alone. For many people auditory and visual perceptual elements strengthen with age.

1.6.3.3. Gender

Boys and girls, and men and women tend to learn differently from each other. The perceptual strengths of males are often visual, tactile, and kinesthetic. They tend to need more mobility than females, and function better in an informal environment. Frequently, males are peer-motivated and nonconforming. On the other hand, females tend to be more auditory, need quiet while studying, work best in a formal setting, and need less mobility. Often they are more conforming, authority-oriented, and parent- and self-motivated than males.

1.6.3.4. Academic Achievement

High and low achieving students learn in statistically different ways from one another. In other words, the teaching strategies that are successful for one group will not produce similar outcomes in the other group.

There are learning modality preferences such as auditory, visual or competitive and individualistic learning styles. And of course, the concept of hemisphere dominance plays a significant role in the development of learning styles.

1.7. HEMISPHERICITY

The human brain is the most complex mass of protoplasm. The brain has three basic parts, which together are known as the “triune brain”. Each part of our brain developed during different times in the evolutionary history of human beings. First, the reptile brain, which the human being share with all reptiles. Behaviour that is seated in the reptile brain is related to the survival instinct. Its concerns are food, shelter,
reproduction and protection of territory. Second, the mammalian brain is the enormously complex limbic system. It is situated in the middle part of the brain. Its functions are effective and cognitive. It contains a person’s feelings, experience of pleasure, memory and the ability to learn. The limbic system is the central control panel which receives information from the senses of sight, sound, taste, smell and bodily sensation. It distributes the information to the thinking part of the brain, which is neocortex, which wraps around the limbic system. It sorts out the messages received through our senses. Reasoning, cerebral thinking, decision making, purposeful behaviour, language, voluntary motor control and non-verbal ideation are some of the functions of the neocortex.

Hemisphericity refers to the idea that people rely on a preferred mode of cognitive processing that is linked to predominant activity of either their left or right cerebral hemisphere. Individual hemisphericity was thought to be located somewhere on a gradient between right and left-brain dominance with most people being intermediate.

A reconstituted and quantifiable definition of hemisphericity, called hemisphericity made possible by this work: Hemisphericity is the bias in thinking orientation, behavioral style, and personality resulting from the inherent laterality of one’s sole executive system within the asymmetric bilateral brain. Thus, depending upon which brain side “the one and only you” inherently is located, one is either a left or a right brain oriented person. An L-bop’s cognitive and behavioral orientation is top-down, self-survival, important details view: a splitter. In contrast, an R-bop is biased toward a bottom-up, group survival, global orientation: a lumper.

“Right brain-oriented person” = R-bop = Rp = a Lumper
“Right brain-oriented female” = R-bof = Rf
“Right brain-oriented male” = R-bom = Rm
“Left brain-oriented person” = L-bop = Lp = a Splitter
“Left brain-oriented female” = L-bof = Lf
“Left brain-oriented male” = L-bom = Lm

Research has demonstrated the importance of understanding brain behaviour as it relates to learning styles and personality traits. In particular, studies revealed that brain hemisphericity greatly influences the individual’s learning style and all kinds of
intellectual and personality characteristics (Boyle and Dunn, 1998; McCarthy, 1996; Shiflett, 1989; Torrance, 1982).

1.7.1. Hemisphericity and Thinking Styles

The human brain functions in many ways and acts as two brains – right and left hemisphere – and that is the way in which people experience the world.

1.7.2. Functions of Right Hemisphere

The language area of the right hemisphere is capable of processing language if the discriminations are uncomplicated (e.g. a positive from a negative statement). It is non-verbal in nature with limited language processing ability, and it is creative in language. The right hemisphere deals with the tonal memory, tonal qualities and tonal patterns. For singing songs with pitch, rhythm, intonation and lyrics the right hemisphere should function effectively. The interpretation and retention of complex visual patterns, such as geometric designs and graphs, model building and recognition of faces are the important functions activated by right hemisphere. The right hemisphere functioning for left side of the body is also in charge of spatial movement, finding way in space, front and backspace awareness and perception of fine and gross motor activities. The functions of the right hemisphere have generally been described as creative, divergently productive, intuitive, holistic, gestation, concrete and analogical. It also deals with the body image and it controls emotional aspects such as laughing, crying and tonal expression.

1.7.3. Functions of Left Hemisphere

Expression of language through speech, verbal memory, word parts, syllable recognition, analyses of speech sounds, use of verbs and verbal aspect of writing are functions predominantly done by left hemisphere. Right visual field and right eye movements are controlled by left hemisphere and it deals with the functions such as naming of faces and labelling of parts. The motor activity of the right side of the brain, motor activities of speech, action words describing, movement of hands in speech, verbal expression of movement through memory are the functions activated by left hemisphere. The left hemisphere is considered to be a rational linear mind specialising in sequential processing, logical, analytical thinking, inductive and convergent in production of ideas.
Mathematical reasoning, particularly calculations and algebraic abstract maths, digital operations and computations are activated by left hemisphere. Left hemisphere functions in daydreams, drugging, meditation, fantasy, hypnosis, diversion and play. It also functions for activating aggressive behaviour of a man and maintaining his masculine nature.

### Style Differences between Right and Left Brain Learners

<table>
<thead>
<tr>
<th>Left Hemisphere</th>
<th>Right Hemisphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Utilizes motor skills more effectively</td>
<td>• Usually wants simple answers to complex problems</td>
</tr>
<tr>
<td>• Uses a more analytical approach to problem solving</td>
<td>• Prefers to think more holistically</td>
</tr>
<tr>
<td>• Does not like change</td>
<td>• Less organized than right brain learners</td>
</tr>
<tr>
<td>• Not creative in planning and organization</td>
<td>• More spatially oriented and creative in solving problems</td>
</tr>
<tr>
<td>• Typically have problems seeing the big picture</td>
<td>• Tend not to follow through with details</td>
</tr>
<tr>
<td>• Usually unemotional in their approach to human relations</td>
<td>• Does not follow procedures-likes to do their way</td>
</tr>
</tbody>
</table>

In general, people typically prefer the thinking style of one side of their brain or the other, although some people may use each side equally. Therefore, it is important for instructors to have knowledge of their own brain hemisphericity in order to identify advantages and disadvantages in their teaching techniques. In addition, knowledge of their own brain hemisphericity can assist them in becoming more flexible and effective in teaching in the classroom.

### 1.8. HEMISPHERICITY AND LEARNING STYLE

In the past quarter of a century considerable attention has been given to what is called brain hemisphericity. According to neurosurgeon Joseph Bogan (1975) 22brain hemisphericity is the reliance on one mode of processing than another by an individual. Roger Sperry (1975), a Nobel laureate in physiology for his work on hemisphericity, explained 23the nature of hemisphericity this way: “Each hemisphere has its own sensations, perceptions, thought, and ideas all of which are cut off from the corresponding experience in the opposite hemisphere. Each left and right hemisphere has
its own private chain of memories and learning experiences that are accessible to recall by the other hemisphere. In many respects each disconnected hemisphere appears to have a separate “mind of its own.”

These early brain researchers found that (1) The two halves of the brain, right and left hemispheres, process information differently; (2) In the split-brain patient, there seem to be two different people up there, each with his/her favorite ways of processing information, each with a different mode of thinking; and (3) Both hemispheres are equally important. These neurosurgeons’ findings had direct and obvious implications for teaching, but especially for the growing field of learning styles. Bernice McCarthy, who has applied the results of brain research to the 4 MAT model of learning sees the two hemispheres processing information and experiencing differently. Here are some differences that make a difference in helping to accommodate students with different learning styles. The concepts of brain hemisphere dominance play a vital role in the development of learning style.

1.8.1. Left and Right Hemisphere Information Processing

<table>
<thead>
<tr>
<th>The left hemisphere:</th>
<th>The right hemisphere:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Does verbal things</td>
<td>• Sees relationships</td>
</tr>
<tr>
<td>• Likes sequence</td>
<td>• Grabs for the whole</td>
</tr>
<tr>
<td>• Sees the trees</td>
<td>• Does visual-spatial things</td>
</tr>
<tr>
<td>• Likes structure</td>
<td>• Likes random patterns</td>
</tr>
<tr>
<td>• Analyses</td>
<td>• Sees the forest</td>
</tr>
<tr>
<td>• Is rational</td>
<td>• Is fluid and spontaneous</td>
</tr>
<tr>
<td>• Is theoretical</td>
<td>• Is intuitive</td>
</tr>
</tbody>
</table>

One of the arguments that brain researchers make is that school learning emphasizes and favors “left” brain learning over “right” brain learning. If listening to lectures and relying on the science textbook are left brain activities, then there is evidence to support this argument. For example, teachers who want to increase the number of right brain activities in their lesson plans, thereby giving right brain learners more of an opportunity for success would include such approaches as: mind-mapping, visualization experiences, imagery, analogies, use of paradox, role-playing, creative
writing (yes, in science), demonstrations, experiments, intuitive activities, connecting ideas, and creative problem solving.

Some researches showed that there is a tendency, as with any theory, to draw simplified interpretations, and so it is with brain functioning and student learning style. One of the major oversimplifications is that rationality is exclusively a left-brain function, and creativity a right brain function. Evidence supports the idea that both hemispheres play a part in rationality and creativity. There are, however, some results that have powerful implications for a teacher. Here are a few:

Ann Howe and Poul Thompsen report that hemisphericity can play an important role in motivation and science teaching. According to work being done in artificial intelligence, when a person is exposed to some new phenomenon, the first thing that occurs is that in the deep part of your brain you give a preliminary value to it: 'is it interesting or not?' If it isn’t, the person doesn’t give it any more attention. It is interesting then after 10 seconds or so it enters the right hemisphere, which attempts to make holistic sense of the phenomenon: ‘what’s this all about?’ If this succeeds, then the information is processed to the left hemisphere where the brain tries to deal with analytically. This notion supports the contention that we must pay close attention to the types of tasks that we present to students. Interest is an important aspect of science teaching, and the gatekeeper seems to be the deep recesses of the brain.

Another finding that has implications for teaching has to do with the role of emotion or feelings. The right hemisphere seems to play a special role in emotion. If students are emotionally involved in an activity, then both sides of the brain will participate in the activity, regardless of the subject matter or content. The two hemispheres are involved in thinking, logic, and reasoning, and in the creation and appreciation of art and music. This disputes earlier implications that the left-brain was the logical side, and the right brain the artistic side. This is how the question of the roles of hemisphere does not provide a definite answer but extends the scope of researchers in this area infinitely.
1.9. NEED FOR THE STUDY

The Government of Tamilnadu has made it a policy to appoint lady teachers to teach children in lower classes. The reason given for such an effort is purely psychological in nature, that is the women teachers are very much considerate towards children and maintain patience while dealing with sensitive but seemingly trivial problems often sighted in ordinary classes. However, the women teachers preferred for such position do have similar training as their men counterparts would have in teacher training institutes or colleges of education. The teacher behaviour developed during the course of the training programme is assessed in different stages in terms of its major components of teaching competence. Therefore, the investigator is posed with the following questions to identify the characteristics and the skills of teaching competence, which would provide an answer for the preference of female teachers to male teachers. (1) Are the female B.Ed. students better than the male B.Ed. students in teaching competence? (2) Are the female B.Ed. students better equipped with the classroom management skills than the male B.Ed. students? (3) Do the female B.Ed. students adopt learning styles different from those of male B.Ed. students? (4) Is the hemisphericity being adopted by female B.Ed. students an advantage over the male counterparts in manifesting better teacher behaviour? Therefore an investigation focusing on the gender difference in teaching competence in relation to certain important cognitive characteristics is a much-needed one to understand the uniqueness of teacher behaviour of female B.Ed. students in contrast to that of male B.Ed. students.

1.10. STATEMENT OF THE PROBLEM

Hence, the investigator has worked out the problem for research as an investigation into the teaching competence developed by student teachers studying in Colleges of Education in Tamilnadu in the context of their learning style and hemisphericity with reference to their gender.
1.11. REFERENCES


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