CHAPTER – I

INTRODUCTION
CHAPTER – I
INTRODUCTION

1.1 Introduction

Effectiveness is the criteria through which educational systems may be scaled in Teaching Learning System. We are interested to find out the effective teaching learning system in the present research work so that we can have a better way for realizing education to make it productive.

The various strands of educational-effectiveness research have had contributed to the current multidisciplinary and multi-level conceptualization of school effectiveness will be described in more detail.

Teaching Learning system is seen as the degree to which schools achieve their goals in terms of student-intake, and other conditions by the school or the immediate school context.

1.2 Background Study

Teaching Learning System is the focus of the evident in the feelings and attitudes about a school expressed by students, teachers, staff and parents and other stakeholders with its Environment. Teaching Learning System is a significant element in discussions about improving academic performance and school reform.

Components of School Environment in Teaching Learning System:

Although there is no consistent agreement in the literature on the determinants of school Environment, most writers emphasize caring as a core element.

Several aspects of a school’s physical and social environment comprise its identified following areas are given below:

- Appearance and physical set-up.
• Faculty relations.
• Student interactions.
• Leadership or decision making.

School Performance and Academic Achievement:

Numerous studies document that students in schools with a better school climate have higher achievement and better socio-emotional health. Probably the most comprehensive work in this area is being done by the Search Institute, a nonprofit organization that encourages schools and communities to develop and empower young people.

In a review of studies on the impact of support in school, the Search Institute found that a caring school is associated with Academic Achievement both in qualitative and quantitative way for better Teaching Learning System.

• Higher grades,
• Engagement,
• Attendance,
• Expectations and aspirations,
• Sense of scholastic competence,
• Fewer school suspensions,
• On-time progression through grades,
• Higher self-esteem and self-concept,
• Less anxiety, depression and loneliness and
• Less substance abuse.

Another study by John Schweitzer of Michigan State University, found that when students in Detroit schools felt a sense of community with one another and a sense of belonging to their schools, they achieved higher scores.
Teaching Learning System and Instructional Effectiveness:

Improving student behavior and academic performance generally requires changing school climate and school culture. Change may require moving individuals and organizations along a continuum from improving teaching Learning System.

While making positive changes in school climate motivates staff and students to improve, the district-level school culture must also change if school reforms are to be sustained for long-term improvement.

In Teaching Learning System, significant attention is to be given when major changes are being implemented in the school system. It is worth noting that educational reform under the No School Left behind is essentially a long-term effort to change school culture. The central themes of educational reform for better teaching learning consider the following points:

• Teachers and the school are accountable.
• All children can and must learn.

Some Approaches towards Teaching Learning System:

Promoting a Safe and Orderly Environment.

• Maintain buildings in good physical condition.
• Reward students for appropriate behavior.
• Enforce consequences for inappropriate behavior.
• Use contacts with students to reinforce behavioral expectations.
• Post behavioral policies on bulletin boards; periodically announce them over the public address system.
• Initiate anti-bullying, conflict resolution and peer mediation programs.
• Engage students, staff and parents in planning school safety activities.
• Increase number and accessibility of counselors, social workers and mentors.
• Create anonymous tip lines or suggestion boxes for reporting potentially dangerous situations or providing ideas to improve school climate.

• Develop strategies to ensure safety during lunch periods and between classes; provide more structured activities during lunch hour.

• Provide accommodation or time-out rooms throughout the day.

• Provide in-school suspension programs with academic supports and consistent staffing

According to Kelli Ballard and Alan Bates, accountability, high-stakes, and student achievement are popular terms among educators. Students’ performance on standardized achievement tests is used to a high extent in reflecting the quality of instruction students receive from teachers as an intra-culture.

According to Vandevoort, Amrein-Beardsley and Berliner (2004) the quality of a teacher in the classroom is the single most important factor in determining how well a child learns. Throughout the United States, schools are being evaluated based on their students’ performance on a state mandated test given every year for the betterment of the total process. The two main purposes are:
1) Teachers’ accountability,
2) Assuring quality and facilitating improvement institutional atmosphere.

It will best be achieved when teachers and their organizations claim the responsibility for developing and implementing methods for assessing their performance that respect the complexity and depth of their professional knowledge and practice (Kleinhenz & Ingvarson, 2004). In other words, do current teacher evaluation procedures assess all the components that teachers are supposed to possess?

The majority of educators agree with the fact that holding teachers accountable is imperative for student learning to take place. However, a lively
debate surrounds the question of how accountability is established and about the place and value of professionalism in accountability (Bullough, Clark, & Patterson, 2003).

According to Gallagher (2002), schools such as Vaughn Elementary in Los Angeles, California evaluate teachers in ten domain areas, and teachers are not only evaluated by their principal, but by peers and themselves, too. Teachers are rated on a scale of one to four on each standard. This school found that the alignment between taught and tested curriculum, both in terms of content and cognitive demand, is a highly significant predictor of student performance. This study did make it clear, however, that no single measure should be seen as the sole criterion for judging performance rather than combining both the intra and determinants for academic success.

As Gallagher (2002) concurs, most people would argue that teaching requires a variety of proficiencies that can justifiably contribute to teacher evaluation, yet which may only indirectly influence student performance on a given assessment. Teachers need to become familiar with current research on student achievement and network with colleagues to learn more about teaching expertise.

Teachers are responsible for finding ways to educate all children and it is a teacher’s duty to participate in professional development activities that foster this responsibility. Practices such as differentiated instruction, data driven instruction and identifying areas of weakness in students are crucial to developing the quality of classroom teachers. Differentiated instruction is vital for increased student performance because it meets the needs of every student. This connects to the notion of schools making improvements based on test data, especially in weak areas. Teachers need to remember that external characteristics, such as student socio-economic status and parental educational attainment, impact student achievement in significant ways, but when those differences are controlled for, teachers are the most important determinants of
student achievement (Gallagher, 2002). These findings support the views of Bullough et al. (2003) that if, as some teacher education detractors argue, academic ability and scores on standardized achievement tests are good measures of teacher quality, these students ought to be outstanding.

Because of increased accountability in Teaching Learning System demands places on schools and teachers, researchers question how influential these outside factors are, especially those that cannot be controlled by classroom teachers. Thrupp, Mansell, Hawksworth, and Harold (2003) found that educators were adamant that they could only be held accountable for student achievement to a limited extent because of the impact of family background. In their study, teachers, principals and governors were asked how accountable they felt school staff could actually be for student outcomes. The majority of the participants in the study felt that “outcomes-based assessment of schools would always be unfair because of the way it assumes the efforts and effectiveness of staff can be read off student achievement” (Thrupp et al., 475).

Another factor that influences student achievement is the status and parental level of education as well as the home / family background was found to be uncontrollable factor in the classroom where high stakes tests were administered. Other schools have relatively high test scores and their student population consists of primarily low-income students with little parent involvement, which argues against the excuse of not being able to control certain factors. Student’s performance on high stakes tests can cause increased levels of anxiety, stress and fatigue. All three have detrimental effects on student’s performance (Abrams, Pedulla, & Madaus, 2003) we can consider for teaching and learning:

1) Motivation and responsibility of the individual student.
2) Socioeconomic status.
3) Students with high test results are rewarded externally.
4) For students who do not perform well, such as those with test anxiety,
language barriers or special education students who are required to take a grade equivalent test, this extrinsic reward system can be devastating.

5) Research shows that in many cases, classroom instruction is changing to better match the content found on high-stakes tests. Also, instruction focuses on test content or test-taking skills and ignores subject areas that are not on the test. High-stake tests limit the scope of the classroom instruction and student learning in undesirable ways (Stecher & Barron, as cited in Abrams et al., 2003).

6) In a study by Cankoy and Tut (2005), one group of fourth grade students spent 70% of class time on test-taking skills, a second group spent 50% of class time on test-taking skills, and a third group only spent 30% of class time on test-taking skills. Test-taking skills included completing test questions from former tests, giving tests for drill, teaching procedures for answering multiple-choice questions and memorizing rules. The study found that teaching students standard procedures to solve different types of math problems is not an effective approach to teach problem solving. Also, there was no difference in the three groups’ performances on non-routine math story problems, and spending more class time on test-taking skills did not affect the non-routine story problem solving. To conclude, this study feels that tests and classroom instruction should emphasize and foster problem-solving skills more so than test-taking skills.

Howard Miller, Associate Professor of Education at Lincoln University, has established twelve steps for teachers to promote teaching and learning. These are as follows:

1. Develop a set of written expectations you can live with and enforce.
3. Be patient with yourself and with your students.
4. Make parents your allies. Call early and often. Use the word “concerned”. When communicating a concern, be specific and descriptive.
5. Don’t talk too much. Use the first 15 minutes of class for lectures or presentations, then get the kids working.

6. Break the class period into two or three different activities. Be sure each activity segues smoothly into the next.

7. Begin at the very beginning of each class period and end at the very end.

8. Don’t roll call. Take the roll with your seating chart while students are working.

9. Keep all students actively involved. For example, while a student does a presentation, involve the other students in evaluating it.

10. Discipline individual students quietly and privately. Never engage in a disciplinary conversation across the room.

11. Keep your sense of perspective and your sense of humor.

12. Know when to ask for help.

According to Center for Teaching Effectiveness at Pennsylvania State University, the following dimensions are adopted for managing the classroom environment:

1. Start class on time, sending a message that being there is important.

2. End class on time.

3. Announce your class hours and keep them faithfully.

4. Set policies at the beginning of the course.

5. Be conscious about ethnographic position in the classroom situation.

6. Refer students with psychological, emotional, academic, or financial trouble to the appropriate counselors. You can be sympathetic and supportive, but becoming a student’s counselor can cause problems.

7. Involve yourself only to the extent that you are expected to be involved.

According to the Indiana University Center for Adolescent Studies, another way to apply the ideals of a positive classroom climate is to create a peaceful environment.
classroom. The Center promotes seven guidelines:

1. Have a genuine interest in your students.
2. Communicate classroom rules clearly.
3. Be objective, not judgmental.
4. Show that you are human.
5. Minimize the power differential in everyday communication.
6. Address problem behavior directly and immediately.
7. Adopt a collaborative approach.

(Hawley, 1997).

**Effective Teaching Strategies for Direct Instruction:**

- Specify clear lesson objectives.
- Teach directly to those objectives.
- Make learning as concrete and meaningful as possible.
- Provide relevant guided practice.
- Provide transfer practice activities.

Effective teaching should be thought of as helping students to learn and every student encounter should be thought of as a student’s opportunity for learning.

**Foster a Good Learning Atmosphere:**

- Be serious without creating excessive tension
- Be prepared, have a flexible teaching plan in mind but be ever on the lookout for the “teachable moment”.
- Be positive toward learners, guard against sending unintentional messages.
- Be confident (not arrogant) but comfortable in not knowing everything.
Use of Effective Teaching Techniques:
• State what should be learned here.
• Situate the topic in respect to the adequate context.
• Involve learners in the process by having them, for example, present the problem, respond to questions, summarize the findings and discussion and research and report on unanswered questions.
• Use questions effectively.
• Summarize at the end of discussion or activity.
• Use follow-up research and reporting to the group in a classroom situation.

Effective teaching is the basis of successful learning. Effective teaching identities and builds on prior knowledge, makes real life connections, develops deep understanding and monitors and reflects on learning.

Observing Effective Schools:
1) An effective school is a school in which students achieve high standards that they can use in their fulltime education or the workplace, a school where students feel safe and happy.

2) It promotes those values that will help pupils to become good and responsible citizens, enable them to become involved in their community and become good family members. We all write these sort of things in our school mission statements and school documents, but we are all too often distracted from them in day-to-day planning.

3) High standards are not the preserve of a few socially advantaged individuals and we should never lower our expectations on the basis of social background. For that reason, contextual data can leave us too easily satisfied with poor performance.

4) Establishing priorities in your own school will necessarily come from a consultation with school stakeholders.
In our country at the end of 20th century we are looking for globalized pattern of education system which seeks to clarify productive nature of education. Most of the schools in West Bengal are now not in the position to evaluate itself in this way but that does not mean we cannot avoid the reality. Some important aspects of institutional effectiveness are furnished below:

**Empowering Leadership:**

The key role for a head teacher is that of empowerment, creating a culture in which the vast intellect, ability and talent of the staff is not only solved, but fully utilized. If head teachers do not make it clear that all staff have the authority to make decisions, to be innovative and creative, then they will assume that they do not. If that happens, the vast wealth of knowledge and experience that exists in all schools will remain untapped.

**Relying on Collaboration:**

Choosing the appropriate networks to work with a matter of personal choice and school context. It is useful to work with local school leaders through local authorities in collaboration. Leadership incentive grants, Excellence in quality practice and so one can develop initiatives that may directly involve students across a locality.

**Effective School Leadership:**

Although it is recognized that head teachers pay a crucial role in school-wide effort to raise standards of teaching and pupil learning and achievement, evidence-based knowledge of what makes successful leaders remains elusive. The most popular theories are located in the transaction and transformational models identified more than 20 years ago (Burns, 1978) and lately reinvented through such terms as ‘liberation’ (Tampoe, 1998), ‘educative’ (Duignan & Me Pherson, 1992), ‘invitational’ (Stoll & Fink, 1996) and ‘moral’ leadership (Sergiovanni, 1992).
What is clear from these and from the effective school literature, is that successful leaders not only set direction but they also model values and practices consistent with those of the school, so that ‘purposes which may have initially seemed to be separate become fused’ (Sergiovanni, 1995).

Significantly, along with some positive aspects, there were also ongoing problems. Heads of different institutions worked long hours and were enabled to continue to develop partly through the unsung support of external network of colleagues, friends and family. It was however, both their personal values and their abilities to maintain and develop learning and achievement cultures, at the same time they have to manage some ongoing tensions and dilemmas, which were the main features of their success:

1. Leadership versus management.
2. Development versus maintenance.
3. Internal versus change.
4. Autocracy versus autonomy.
5. Personal time versus professional tasks.
6. Personal values versus institutional imperatives.
7. Leadership in small versus large schools.
8. Develop or dismiss.
9. Power with or power over.
10. Subcontracting or mediation.

According to Sammons, Hillman and Mortimore (1995) the characteristics that help make a school effective are broadly outlined as follows:

1. Focus on teaching and learning.
2. Purposeful teaching.
3. Shared visions and goals.
4. High expectations of all learners.
5. Accountability.
6. Learning Communities.
7. Stimulating and secure learning environment.
8. Professional leadership.

**Focus on Teaching and Learning:**

Effective schools are focused primarily on teaching and learning. They carefully consider time spent on academic and non-academic learning. Effective schools deploy their resources strategically to enhance teaching and learning. Professional learning activities and programmes are aimed at improving the teaching-learning relationship, paying particular attention to developing the subject and pedagogical knowledge of teachers.

Forming answers to the following questions may help to provide a focus on teaching and learning in a school:

- How well does our school manage the time spent on the three strands?
- Identify one or two strategies that were implemented in the school to bring about improvement in the teaching-learning relationship. Analyse how effective the strategies have been. What worked well? What hindered successful or full implementation? Should the strategies be persevered with?
- How effective are our professional learning activities that aim to improve student learning?
- How well does our school manage the workload of staff, in particular the balance between time focused on teaching and learning and time spent on administrative tasks?

**Effectiveness through Student Evaluation**

Research on student evaluation of teaching generally concludes that student ratings tend to be reliable, valid, relatively unbiased and useful (Murray, 1994) with the following measures:

1. Evaluations are generally consistent across raters, rating forms, courses
and time periods for a given semester.

2. They correlate moderately too high with evaluations made of the same instructor by independent observers.

3. They correlate significantly with various objective indicators of student performance such as performance on standardized exams.

4. There are low correlations with extraneous factors such as clam size, severity of grading etc.

**Model at the Interactive Teaching-Learning System by Young-shen-chen (2004)**

An alternative Indian model by Dibyendu Bhattacharya is also looks relevant mentioned below:

**Teaching-Learning System**

- School Environment
- Curriculum Structure
- Available Resources
- T/L Process
- Modified Process
- Mechanism of T/L process
- Evaluation System
Here the process being modified by application of the mechanism of teaching learning process in a classroom situation.

The teaching learning system should be based on situational factors, availability of resources, infrastructural facilities, curriculum structure, teaching learning process and examination pattern is that the different components of a Teaching-Learning system.

Investigation will be conducted through survey on the basis of information taken from various schools in West Bengal including school environment, curriculum structure and availability of resources in secondary schools on the basis of a standardized questionnaire.

Remedial solution has been given on the last chapter by giving a suggested model namely Interest Diversification Model after investigating the input and the output. By comparing the input and the product, finally conclusion has been made through mechanism of teaching and learning system.

1.3 Teaching Learning System (2002) by Roy Lee Foley

The process of system dynamics for a teaching-learning system consists of five stages.

- **First stage**: It is the description or mapping of the system. It requires taking various bits of information about teaching-learning systems in the real world and turning them into a unified theory.

- **Second stage**: The formulation and construction of a simulation model is performed. The system description is translated and converted into the level and rate equations of a system dynamics model by providing the requisite parameters. Creating the simulation model requires that the rather general and incomplete description of the first stage be made explicit.

- **Third stage**: Simulation of the model will start after the equations of the previous stage pass the logical criteria of an operable model, such as all variables being defined and consistent units of measures. The first simulation
at this stage will raise questions that cause repeated returns to the prior stage until the model becomes adequate for the purpose under consideration.

- **Fourth stage**: Some policy alternatives are chosen for testing.
- **Fifth stage**: Proposal policy changes will be tried to the model to maintain or obtain sustainable improvement in performance while considering the feasibility of implementing these changes in its real world. If the model is relevant and persuasive, then the process can be concluded for the necessary evaluations.

According to N. Eftekhar and D. R. Strong, 2008 Dynamic Modeling of a Teaching Learning System can be mentioned as follows:

**Description of System Structure**:

1) The analysis of the dynamic behaviour of a learning process is undertaken using what is termed a “System approach”. This approach calls for the consideration of a “Complex” set of relationship as a system. “Complexity” refers to a higher-order, multiple-loop, nonlinear feedback structure. All social systems belong to this class. Educational systems and specifically a learning teaching process that is a complicated set of interrelationships and activities has all the characteristics of a complex system. 2) Application of system analysis to a learning process requires the definition of the structure of interacting functions. The definitions of the structure must identify not only the separate functions but also their methods of interconnection. According to the theory of system structure, the four conceptual hierarchies are the closed boundary, components of the system especially stock level and flow rate variables, feedback loops and policy structure.

2) The closed boundary defines the higher layer of the model. In fact, it is the control system of our interest. In this study, the boundary encloses a single
system for a single student learning process. Interaction between this system and other sub-systems in a learning environment is simplified at this stage. The model structure developed is basically includes a main center-part for a learning process and some arbitrarily supporting infra-structures inside the defined boundary. Parts of the infra-structure represent sub-models and interact with the center-part.

3) The next hierarchy of system structure is the components of the system. These are four basic components of building blocks in the system: the stocks, the flows, the converters and the connectors. Stock levels and low rates relate to the accumulations and activities within the system. Stocks can be referred to as system state variables. They are integrations or accumulations of system flows that represent measurements of the state of the system at any given point in time. Flows are the instantaneous rates of flows that represent the means by which the system is controlled and represent activity points in the system. Converters are auxiliary functions converting states to system activities. They represent the decision process in the system. Finally the connectors are links that connect the components forming are that influence the flows that regulate the system.

4) Feedback loops represent the structural setting which all decisions are made. It is any structure of two or more casually related components that close back or themselves. Thus, the feedback loops provide a format for identifying flows of information and the relevant variables which articulate the system giving rise to cause and effect. For example, information about student achievement can provide an input to decisions concerning degree of student comfort, which in turn, controls the demand of student’s effort. Any system which has a purpose has an internal structure of feedback loops through which the system is controlled. Entire feedback loops, as well as the
individual relationships within a loop, are described as either positive or negative. When any variable in a positive loop changes, the resulting interactions cause that variable to change further in the same direction. The positive loop, in other words, characteristically produces self-reinforcing change (unrestrained growth). By contrast, when any variable in a negative loop is changed, then the loop causes the variable to readjust in the opposite direction. The negative loop produces self-regulating change (controlling and restorative behavior).

5) Implicit in rate equations, therefore, are the actions and policies which reflect the administration of the learning process. For example, the learning rate equation which controls the amount learned by a student reflects the policy of the student regarding the standards required for acquiring knowledge. Thus the last hierarchy in a general system structure can be defined as policy structure. Decisions are made for a purpose which, in turn, implies a goal which, in turn, implies a goal which the decision process in trying to achieve. Policy structure is mainly reflected in the definition of the rate variables.

1.4 Significance of the Study

A holistic approach has been suggested for explaining the Effective Teaching Learning System in physical science. Mostly it is talked about the effective teaching or sometimes effective school or effective management or administration etc. but what is our observation is that one variable is highly related to another or summation of all the variables makes the system. Therefore it is of interest to develop the system as a whole and try to prescribe for better school. There should be an effective system not only as a single dimension but in the pluralistic way crystallizing the system to produce maximum output.

- The output of the system is dependent on its effectiveness. Effectiveness of a system is therefore a professionalized pattern relevant to the present day
teaching learning scenario.

• In developing countries like India, system approach is very much significant in controlling the quantity and quality ratio; as well it accelerates the quality of education in the present globalized system.

The complexity of teaching and learning can not be removed by mere technology as innumerable components are interrelated and interdependent on it. Therefore an alternative may be focused through this approach with the help of technology and humanizing the system too.

1.5 Objectives of the Study

1. To study the Effective Teaching Learning System in Physical Science at some selected secondary level schools in West Bengal.
2. To construct a standardize questionnaire of Physical Science regarding Effective Teaching Learning System.
3. To find out the components of Effective Teaching Learning System on the basis of review of studies.
4. To determine significance level for Effective Teaching Learning System on the basis of locality.
5. To determine significance level for Effective Teaching Learning System on the basis of gender.
6. To find out mechanism of Teaching Learning System by applying a model in an experimental condition.

1.6 Methodology

The study was survey type descriptive research. For finding out the components of the Teaching Learning System statistically, parametric and non-parametric analyses have been conducted with other descriptive statistics.
A) Tools:

A standardized questionnaire regarding Effective Teaching Learning System was used for conducting the study.

B) Sample:

Ninth grade students of some selected schools of Bankura district in West Bengal were considered as sample for conducting the study. Sampling technique was purposive in nature. Two hundred samples were taken randomly for conducting the t-test and 90 samples were taken for Chi Square Test.

1.7 Limitations

1. The study was confined to only ninth grade students of West Bengal.
2. For Teaching Learning System, only some of the components were taken to explain the system as a whole.
3. For statistical analysis, only selected softwares were used for study.