



# প্রতিধ্বনি the Echo

*A Journal of Humanities & Social Science*

**Published by: Dept. of Bengali**

**Karimganj College, Karimganj, Assam, India**

**Website: [www.thecho.in](http://www.thecho.in)**

## **Advance Learner Guided Learning Approach: An Effective Approach for Science Learning At School Stage**

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### ***Abstract***

*Advance learner guided learning approach has great implication for science learning. This approach can be used for the development of science concepts, process skills and science achievement. Science being a way of thinking, it always searches for truth and hence it requires observation, experimentation, open-mindedness etc. During experimentation children may face a lot of difficulties. In advance learner guided learning approach; both the tutor and tutee belong to the same class, so there is a democratic environment in the classroom. Tutees share their difficulties in an easy manner to the tutor and solve their problems with the guidance of tutor. Children may have different types of problems and they may attend to the problems from different angles to find the solution of the problem. Advance learner gives attention to all the problems of students and guides them in finding the solution of the problem by clarifying all their doubts.*

**INTRODUCTION:** In recent years the quality of education in schools and especially the effectiveness of teaching and learning have drawn the attention of educational policy planners and practioners. Researchers conducted by NCERT and other research institutes in the context of Minimum Levels of Learning (MLL), District Primary Education Programme (DPEP), Mid Term Assessment Surveys and Achievement Surveys indicate/ reflect the poor quality of learning and teaching in our schools. Parents, teachers, students, educationists and politicians are all dissatisfied with quality of teaching and learning in schools and have demanded radical changes in the nature and structure of curricula, teaching strategies and assessment procedures. The

recommendations of the Jomtien Conference (1990) addressed the issues of 'access', 'quality', 'relevance', 'equality', 'gender' and 'efficiency' of education. It suggested a change in approach to education, from individual to collaborative and recommended a pedagogical shift from 'teacher centered' to 'learner centered' approaches. The Jacques Delors Commission Report (1996) on 'Education For The Twenty First Century' proposed that the education system should be characterized by *learning to be, learning to learn, learning to do and learning to live together*. It recommends learner centered approaches to achieve these objectives of education. The Advance learner guided learning approach is an innovative learner centered approach of



learning which emphasizes the needs, interests of the learners. It is like peer to peer learning, but there is a difference. In peer to peer learning the doubts, difficulties of the learners is clarified by a peer who may be of same age, superior age or anybody having some knowledge regarding the particular topic. In this approach, the teacher first discusses a topic in the classroom and then divides the entire classroom into various groups. Each group is headed by a student academically superior in the class, called the advance learner. Hence the name of the approach is advance learner guided learning approach. Groups composed of students who gave more explanations were found to be most effective at promoting attainment in cooperative learning contexts. Tutor (advance learner) help the tutees and guides them in finding out the solution of their problems. Tutor being a member of that group and classmate, trusting relationships develop which facilitate self-disclosure of ignorance and misconception, enabling subsequent diagnosis and correction. The helper's modeling of enthusiasm, competence and the possibility of success can influence the self-confidence of the helped, while a sense of loyalty and accountability to each other might help to keep the pair motivated and on-task. This leads to the joint construction of a shared understanding between helper and helped. This type of mutual interaction enables and facilitates a greater volume of engaged and successful practice, leading to consolidation, fluency and automaticity of core skills.

**WHO IS AN ADVANCE LEARNER:** Advance learners are students whose primary interest lies in science, sports, music or a dozen of other fields. They are students

who learn best by working alone and those who are most successful working in groups.

**CHARACTERISTICS OF ADVANCE LEARNER:** In addition to high test scores and advanced course level placement, some general characteristics that typify such a learner are:

- 1) An early reader with good comprehension.
- 2) Learns basic skills quickly, with less practice.
- 3) Asks several 'how' and 'why' questions in a single conversation.
- 4) Responds well to teachers, parents and other adults.
- 5) Works independently for longer periods of time than peers on one or more topics.
- 6) Is an original thinker who seeks new and unusual associations among seemingly unrelated objects, ideas or facts?
- 7) Thrives in problem situations.
- 8) High level of curiosity about objects, ideas, situations, or events, displays a questioning attitude and actively seeks information.
- 9) Has a large store house of information regarding variety of topics.
- 10) Express opinions and ideas and often exhibits spirited disagreement
- 11) Reads a great deal on his/ her own, preferring text written for older students.
- 12) Keen powers of observation with an eye for important details.
- 13) Likes structures, organization and consistency in learning environment.
- 14) Exhibits an intrinsic motivation to learn, to find out or explore.



- 15) Has a longer attention and concentration span than peers on one or more topics.
- 16) Here above average ability.
- 17) Show openness to experience, sensitivity to stimulations and a willingness to take risks.

**WHAT IS ADVANCE LEARNER GUIDED LEARNING APPROACH:** Advance learner guided learning approach is a learner centered approach, where students take on the roles of tutor and tutee. The influence of peers in school setting is considered here. Peer group culture is important to learners as way of learning, enjoying and adapting to school life. At the secondary stage boys and girls tend to form separate social groups. Within a school or even in a class, sub-cultural groups based on language, educational achievement, religion, region etc. are also formed. These peer groups influence achievement and self esteem of students. Some peer cultures favour school attainment and are likely to reinforce teacher efforts towards a positive approach to learning. Other peer cultures derive meaning from alternative values and students influenced by such cultures approach school with minimum expectations. These students still construct understanding and 'make sense' of the learning material. Teacher guides/ trains the advance learners how to lead the class and gives them the entire responsibility of clarifying any doubts and difficulties that are faced by the children in the topic taught by the teacher. In this approach both the tutor and tutee belong to the same class, hence children/ group members are much more comfortable in sharing their problems and difficulties with their tutors. They learn through mutual cooperation by actively participating in the discussion. Since there is a democratic environment in

the classroom, every child has an equal chance to ask questions, tell their difficulties and share their thoughts with their peer members as well as with their tutor. Tutor gives attention to each and every child and tries to remove all their difficulties. This process will continue until the whole topic is properly understood by the group members.

**FUNDAMENTAL PRINCIPLES OF ADVANCE LEARNER GUIDED LEARNING APPROACH:**

- (i) Concrete to Abstract – Learners advanced in a subject often benefit from tasks that involve more abstract materials, representations, ideas or applications than less advance peers.
- (ii) Simple to Complex – Learners advanced in a subject often benefit from tasks that are more complex in resources, research, issues, problems, skills or goals than less advanced peers.
- (iii) Basic to Transformational – Learners advanced in a subject often benefit from tasks that require greater transformation or manipulation of information, ideas, materials or applications than less advanced peers.
- (iv) Fewer facets to multi-access – Learners advanced in a subject often benefit from tasks that have more facets or parts in their directions, connections within or across subjects or planning and execution than less advanced peers.
- (v) Smaller leaps to greater leaps – Learners advanced in a subject often benefit from tasks that require greater mental leaps in insight, application or transfer than less advanced peers.



- (vi) More structured to more open – Learners advanced in a subject often benefit from tasks that are more open in regard to solutions, decisions and approaches than less advanced peers.
- (vii) Less independence to greater independence – Learners advanced in a subject often benefit from greater independence in planning, designing and self-monitoring than less advanced peers.
- (viii) Quicker to Slower – Learners advanced in a subject will sometimes benefit from rapid movement through prescribed materials and tasks. At other times, they may require a greater amount of time with a given study than less advanced peers so that they may explore the topic in greater depth and/ or breadth.

**DIFFERENCE BETWEEN ADVANCE LEARNER GUIDED LEARNING APPROACH AND TRADITIONAL APPROACH OF LEARNING:**

- i) The traditional method of teaching is based on objectivist view of knowledge; while advance learner guided learning approach is based on constructivist view of knowledge.
- ii) In traditional method of teaching teacher directs the teaching learning process and the students act as passive listener. In advance learner guided learning approach, an advance learner of the class takes the role of a facilitator of knowledge/ learning. Children remain active in such classroom.
- iii) In traditional classroom teacher teaches the whole class. There is no division of the classroom. In

- advance learner guided learning approach, teacher divides the class room into various groups, and each group is taught by an academically superior child of the class.
- iv) In traditional learning approach, less emphasis is given on student's needs and interests. In advance learner guided learning approach main emphasis is given on learners' needs and interests.
- v) In traditional classroom usually lecture method is followed. Use of teaching aids is very minimum. But in advance learner guided learning approach, a variety of hands-on activities are administered in order to promote successful learning and to keep the learners motivated in the classroom.
- vi) In traditional learning approach, retention is very short lived. In advance learner guided learning approach, students learn by doing, hence retain it.
- vii) In teacher-directed instructions, learners are given external motivations like grades and rewards to internalize the information, but in advance learner guided learning approach, children are intrinsically motivated.
- viii) In traditional classroom due to authoritarian attitude of the teacher, interaction between teacher-student is less, but in advance learner guided learning approach, both tutors and tutees belong to the same class, and more or less of equal age, a good cooperative relation is established between tutor and tutee.



- ix) Traditional approach of learning is principally for testing (examination oriented), while in advance learner guided learning approach, learning is principally for understanding of the subject matter.

**ROLE OF ADVANCE LEARNERS AND OTHER LEARNERS IN ADVANCE LEARNER GUIDED LEARNING APPROACH:**

Advance learners are the students who are academically superior in the class. In advance learner guided learning approach; advance learners play the role of a teacher and take the responsibility of clarifying all types of confusions faced by the students. Advance learners are successful students who assist teachers and serves as a role model for others. They help in course planning, modeling course objectives and implementing course goals. They serve as mentor and bridge the gap between teacher and student. Advance learner guided learning approach engages students acting as teachers and their students in four activities such as questioning, summing, classifying and predicting. By providing a frame work that encourages questioning, analysis, discussion and debate among group members, advance learner is thought to help students collaboratively build their knowledge and master course materials.

In Advance learner guided learning approach; both tutor and tutee are of equal standing, which enhances the value of student-student interaction. In a sub-group, since tutor is the person who is a classmate of remaining members of that group, children are more free in discussing the confusing matters. They think in as many ways as they can, discuss with their friends/ tutor more freely without any fear/ hesitation. That is all the time the students remain active in finding the solution of a

problem, which motivates them and inspires children to help each other while reaching the same goals. Since science students always work in groups during an experiment in the laboratory, so what children need is the skill of working in groups. Advance learner guided learning approach is one such innovative approach through which children get the scope of inculcating such skills.

**POSITION OF TEACHER IN ADVANCE LEARNER GUIDED LEARNING APPROACH:**

In advance learner guided learning approach the teacher first discusses a topic in the class. He then divides the classroom in various groups depending upon the size of the classroom and identifies advance learners in the classroom. Teacher guides/ suggests the advance learners to lead each group and gives them the responsibility of clarifying all the doubts and difficulties that are faced by the children in the teacher's discussion. The classrooms which are led by advance learners offer a variety of learning opinions designed to meet different readiness levels, interests and learning profiles. In such a class the teacher (advance learner) uses

(i) a variety of ways for students to explore curriculum content, (ii) a variety of sense making activities or processes through which students can come to understand and "own" information and ideas, and (iii) a variety of options through which students can demonstrate or exhibit what they have learned.

It is not appropriate to have more advanced learners do extra math problems, extra book reports or after completing their "regular" work to be given extra extension assignments. Asking students' to do more of what they already know is hollow.



Asking to do the regular work plus extra inevitably seems punitive to them.

Among the instructional strategies that can help teachers to manage a differentiation in advanced learner classroom and also to help students find a good learning “fit” are the following:

- 1) use of multiple texts and supplementary materials
- 2) use of computer programs
- 3) interest centers
- 4) tiered sense-making activities and tiered products
- 5) group investigation
- 6) complex instruction
- 7) learning contracts
- 8) compacting
- 9) independent learning contracts
- 10) product criteria negotiated jointly by student and teacher
- 11) graduated task and product-rubrics
- 12) tasks and products designed with a multiple intelligence orientation.

#### **SALIENT FEATURES OF ADVANCE LEARNER GUIDED LEARNING APPROACH:**

To teach science at the secondary school stage, the teacher not only must know the subject matter but must also know the nature and methods through which these can be effectively learnt. To read about science is one thing, but it is something else to learn about science in the laboratory-making measurements, moving balance weights and devising experiments. Science involves activity. In advance learner guided learning approach emphasis is given on ‘learning by doing’ and ‘active learning’ of the learners. Use of active learning techniques in the classroom is vital because of their powerful impact upon students’ learning. In this approach, advance learners guide their corresponding

group members in problematic situations (i.e. learning tasks given by the teacher) and students try to find the solution in a divergent thinking style. That is students remain active throughout the entire teaching learning process. Active teaching learning offers opportunities for interaction among teacher and students, amongst the student themselves, as well as between students and materials, the topic itself or the academic discipline which are very essential for learning the subject science.

Advance learner guided learning approach has the following features:

- 1) Advance learner guided learning approach increases student engagement, motivation and performance.
- 2) Advance learner guided group helps children to work together on problems that are carefully structured to help the students build conceptual understanding and problem solving skills.
- 3) In this approach, since there is no answer key for the students or the group leader, emphasis is given on learning to find, evaluate and build confidence in answers.
- 4) Advance learners provide a supportive environment that helps each student participate actively in the process of learning science.
- 5) This approach allows students to assess their own understanding of key course concepts.
- 6) Students learn to work in teams and to communicate effectively.
- 7) This approach has been found to be successful in courses of chemistry, biology, physics, mathematics, computer science and engineering.



- 8) Advance learners learn teaching and group management skills and gain self-confidence.
- 9) Many students are more willing to discuss their questions with other students than with a professor.
- 10) The supportive, small-group format encourages questions and discussion that lead to conceptual understanding.
- 11) Since tutor and tutee belong to the same class, children are more comfortable in sharing their problems and difficulties. Hence a good rapport is established between tutor and tutee.
- 12) Teaching learning process becomes more enjoyable and meaningful for the learners.

**EXAMPLES OF SCIENCE LEARNING ACTIVITIES USED IN ADVANCE LEARNER GUIDED LEARNING APPROACH:** Learning tasks relating to concept attainment:

1. Choose the correct option:
  - (a) Particles of matter are stationary/ vibrating in one position/ in continuous motion/ rotating about an axis.
  - (b) The force between the particles of matter is called as cohesive force/ adhesive force/ kinetic energy/ thermal energy.
  - (c) Mixing of gases is called effusion/ diffusion/ filtration/ sedimentation.
  - (d) In gases particles vibrate about their mean position/ about a vertical axis/ about a horizontal axis/ in any direction.
  - (e) Kinetic energy of a body is directly proportional to its mass/ speed/ weight/ velocity.
  - (f) Diffusion is a fast/ very fast/ slow/ very slow process.

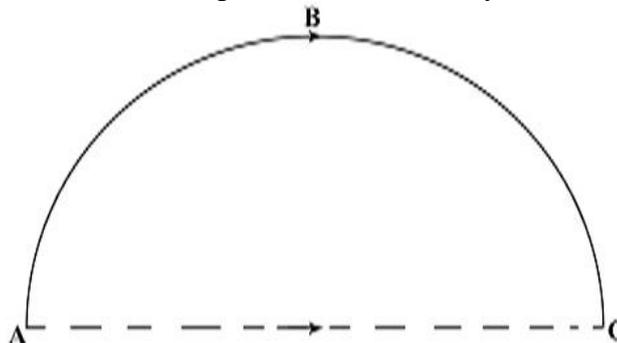
## 2. Give two examples of diffusion.

### Key answers/ explanations relating to learning tasks:

1. (a) Continuous motion (b) Cohesive force (c) Diffusion (d) In any direction (e) Mass (f) Slow
2. Milk drops dissolved in water, perfume sprayed in a room.

### Learning tasks relating to the development of process skills:

1. Look at the figure below. A person is moving from A to C via B in a nearly circular path. Write the distance and displacement covered by the man.



2. Write True/ False for the following statements:
  - (a) Distance is a scalar quantity



- (b) Displacement of a particle cannot be zero
- (c) Displacement of a particle does not depend on its intermediate position
- (d) Displacement does not require any direction for its complete description
- (e) The odometer of a car measures distance.

**Key answers/ explanations relating to the learning tasks:**

1. Length ABC along the curve represents distance travelled. The dotted line AC with the arrow head represents displacement.
2. (a) True (b) False (c) True (d) False (e) True

**POTENTIAL BENEFITS OF ADVANCE LEARNER GUIDED LEARNING APPROACH:** Advance learner guided learning approach introduces student leadership as a key unifying element that catalyses student engagement and achievement in the learning of science. Advance learners serve as the role models. They are academically sound; demonstrate good communication and leadership skills. They are enthusiastic and motivated and have the desire to contribute to the learning of their peers. They are catalysts in forming a community of students that can serve as a support group for each other beyond the life of the course. In addition through this approach gap among the students and instructors is filled up. This approach also helps tutees feel more at ease and concentrate better on the subject matter with a tutor from their class rather than professional teacher. Through this approach tutees receive individualized instruction. Since tutee respond to their peer teachers more than a professional teacher, learning becomes permanent. By learning through this approach, learners also develop the skill of working in small groups in a cooperative way. Advance learner guided learning approach also trains students for improving reading comprehension, raised hopes and expectation, and better achievement. This

approach helps advance learner increase their own understanding of the subject matter as they guide other students of the group, which boosts confidence and can carry over their desire to learn other subjects. This approach also improves their communication skills with the group members. And aids in the development of cognitive skills. Learners become confident and assertive and a positive community role model for other young people.

**CONCLUSION:** In advance learner guided learning approach; both the tutor and tutee remain active. Students/ teachers in such a classroom construct knowledge through mutual interaction. Learners get guidance from the advance learner in solving their problems. Tutor (advance learner) can provide interventions to help children to construct their own concepts. When children encounter new information, they use their own prior knowledge and personal experience to make sense of the new material. During the meaning-making process, individuals formulate the new information, restructure their existing knowledge and reorganize their prior conceptual schemes. This approach is thought to work because learners are at similar developmental levels socially negotiated and construct individual meaning. Results of various research also



show that peer led team learning has a small but positive impact on critical thinking gains in some science courses and that it improves grade performance and retention in science and mathematics courses, particularly for females. This approach stresses the importance of enquiry, observation, action, investigation, formulating hypothesis and evaluating new

ideas and theories. Classes guided by the advance learners have scope for divergent learning styles. In order to effectively use this approach, teachers must understand the learners, their prior experiences, learning disposition, context and culture. This method cannot be grafted on traditional methods and require a change in the classroom culture.

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