

# The Impact of Experiential Learning Approach on Students Performance

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*Abstract - Experiential learning plays an important role in increasing the analytical skills and scientific temperament of the students. In addition, experiential learning has the potential to help students make deep and lasting connection with course material, supports student motivation for learning, heightens the impact of emotion on learning and promotes learning through critical reflection. In order to promote the experiential learning I have researched and developed hands-on activities, which are mapped with the curriculum and boost child's confidence, curiosity and creativity. Students will do the activities in the classroom without the need of any laboratories or at their home. In addition, in this pandemic students are not going to school and not performing any experiments or activities but with these hands-on activities they can perform the activities even at the comfort of their home. This paper includes the analysis of the feedback of the pre-test and post-test scores of the students before and after the Hands-on-approach was given as well as students' interview responses. The study showed positive improvement on both the students' performance and participation on science or STEM based activities and willingness on the part of the teachers to use Hands-on-approach in communicating scientific concepts to their students.*

**Keywords:** Experiential learning, Hands-on activities, academic performance, STEM, scientific concepts

## I.INTRODUCTION

When you set up experiential learning situations for students, they can apply course concepts and knowledge to real-life problems and situations like ones they may encounter in their own professional and personal lives. Through this process, they begin to see patterns in problems and potential solutions. When they encounter similar problems in the future, they can draw on the rich bank of examples and knowledge of patterns among problems and solutions have helped them to build. All this experience moves them on the path to developing expertise in their fields<sup>1</sup>. Experiential learning also has the powerful potential to support student motivation for learning. Experiential learning presents learning opportunities that focus on material and skills that are relevant to students' lives, which has a positive impact on their motivation to learn.

When students have a high degree of motivation for learning, they tend to engage in learning activities because they enjoy and value them—as opposed to being motivated purely by grades. Research on the impact of experiential learning suggests that participating in a class featuring experiential learning increases students' intrinsic motivation to learn over the course of the class<sup>2</sup>.

One way that experiential learning supports motivation is by giving students a degree of autonomy in their learning—students must take the lead in searching for and applying solutions to problems, and they make many decisions throughout the process that shape their own learning<sup>3</sup>.

Students' emotional experiences as they learn are often overlooked, but recent research in the field of psychology highlights the connection between the way humans experience emotion and cognition; they go together rather than functioning as independent systems<sup>4</sup>. Students participating in experiential learning may experience more heightened emotional responses than in a more traditional lecture-based classroom experience. The process of critical reflection helps students make deep, real, and lasting connections among the foundational knowledge they have previously gained, the learning they have experienced because of an experiential learning activity, and the situation or context where the learning occurred.

## II. EXPERIENTIAL LEARNING IS THE FUTURE OF LEARNING

More than a hundred years ago, Hermann Ebbinghaus formulated the learning curve, which describes the relationship between memory and time. In a nutshell, it says that, during a lecture, if your absorption rate is at 100 percent on day one, there is a 50-80 percent loss of learning from the second day onward, which is reduced to a retention rate of just 2-3 percent at the end of thirty days. Critical thinking and conceptual clarity along with Experiential & Interactive Learning are the most important aspects which are needed for the students to compete in this fast world rather than rote learning.

Why experiential learning is the future of learning.

### A. *Accelerates Learning.*

Repetitive Learning or learning by rote has long been replaced by 'Learning by Doing.' Experiential Learning methodology uses critical thinking, problem solving and decision making to deliver a training module. This has become an established method to accelerate learning

### B. *Provides a Safe Learning Environment*

Simulations use real life scenarios that depict several challenges, which a participant will eventually face after the course completion. It is only natural that mistakes happen during the course of learning, and using simulations is like taking kids to a playground, and getting them to have fun, try new things and learn, in a safe controlled environment.

### C. *Bridges the Gap between Theory and Practice*

By moving beyond theory to the realm of "learning by doing," the trainee gets a firsthand experience of practicing what has been taught. This plays a crucial role in retaining concepts and ideas.

### D. *Produces Demonstrable Mindset Changes*

There are very few learning methods that can have a dramatic impact on the participant's mindset. Experiential Learning

is one of them. Management guru Henry Mintzberg pointed out long ago that, "Leadership, like swimming, cannot be learned by reading about it".

### E. *Increases Engagement Levels*

The high focus on collaboration and learning from each other benefits the participant as it increases engagement. On the other hand, since the participant is immediately involved in the problem solving activity or event, the level of ownership of the outcome is high.

### F. *Delivers Exceptional Return on Investment (RoI)*

Experiential learning is personal and effective in nature, influencing both feelings and emotions as well as enhancing knowledge and skills. It goes beyond classroom learning and ensures that there is high level of retention, thereby delivering exceptional RoI over a traditional learning program.

### G. *Provides Accurate Assessment Results*

Assessing the effectiveness of the training program in terms of the benefits to the trainees and the company is a crucial element of any learning program. Most assessments are data driven and traditional tools use tests to measure effectiveness. When it comes to experiential learning programs, it is extremely difficult to gather data, which can be used for assessments. This is where analytics come in. When combined with simulations and gamification, experiential training products become a powerhouse of data, which can be used to deliver assessments results accurately across cognitive learning, skills affect and objective results. The analytics engines in these simulations record, analyze and provide a detailed report on the participants' interaction throughout the simulation.

### H. *Enables Personalized Learning*

In order to enable personalized learning, every program needs to enable a journey through the following phases: Assessment, teaching and learning strategy, and curriculum choice. Experiential learning methodology is highly effective in meeting these requirements to enable personalized learning. It is a radical departure from traditional learning methods and takes the learning beyond the classroom. The participants set their own learning pace. By

combining technology and simulations with experiential learning, companies are making this concept available anytime and anywhere, across multiple devices. This has introduced the concepts of flipped classroom, where the learning goes to the students and not the other way

### III. BENEFITS OF EXPERIENTIAL LEARNING

#### A. *Boost Child's Confidence, Curiosity & Creativity*

Assembling a Science or STEM Educational activities, builds child's/students confidence to make things with their hands, on their own; fuels child's curiosity as they try to figure out how the mechanisms work and enhances child's creativity as they find innovative solutions to challenges and additional activities included in the learning section. Student/Child will demonstrate:

- Confidence to make things
- Readiness to take on challenges
- Creativity to find innovative solutions
- Responsibility to take ownership

#### B. *Enhance Child's Focus, Patience & Attention Span*

Children are restless, and attention spans are reducing with each new generation. Every Science/STEM activity is designed to engage child's mind and body. Each activity has a construction time of between 45 min to over 6 hours. As child gets engrossed in building their activities, you will notice a marked improvement in their ability to sit in one place, to be patient and to finish what they have started.

Our aim is to help your child:

- Experience immersive mind + body engagement
- Develop persistence & commitment
- Increase attention span
- Improve focus & patience

#### C. *Empower child with Scientific Temper*

We believe in going beyond rote-learning and helping children play with Science, through practical application of fundamental concepts.

Scientific Temper is one of the most valuable tools to empower your child's success when they grow up. Science/STEM Educational activities are designed to help your child build this essential quality. A child builds and plays with activities, child will learn to observe, analyze, evaluate, and make rational decisions based on core science/STEM principles, through play.

Our activities empower child/student with:

- Deeper understanding of Science/STEM Concepts
- Longer retention based on experiential learning
- Linking theory to practical application
- Scientific temper to succeed In real life

#### D. *Prepare child for Success in Real Life*

As a parent, primary concern is to prepare child for success in real life when they grow up. STEM/Science Educational activities are designed to equip child/student with core skills that are pre-requisite for success in any field - creativity, confidence, scientific temper, analytical thinking, adaptability, asking the right questions, problem solving, decision making, cognitive abilities and independent thinking. As child plays with activities, all these faculties and skills are called-upon and enhanced through play.

Child's/student's success tool-kit, built with activities:

- Decision making
- Problem solving
- Analytical ability
- Cognitive skills
- Independent, scientific thinking

### IV. EXPERIENTIAL LEARNING IN SCHOOL CURRICULUM

Today experiential learning has become an essential method in all innovative pedagogical practices as it holistically strives to shift the child from rote learning and memorization to learning by doing through experience and activity.

We have developed around 200 hands-on activity based experiments/activities for students in grade 1<sup>st</sup> - 10<sup>th</sup>. Each activity is mapped with the curriculum chapter wise. The activities also include explanation videos, manuals, question bank, multiple choice questions. These activities not only help students in understanding the concepts behind Science or STEM but also help educators, teachers to teach the concepts of Science or STEM in a better way.

#### V. STATEMENT OF THE PROBLEM

Science or STEM learning as the substratum of any nation is expected to produce individuals that are capable of solving their problems as well as those of the society. Such an individual is expected to be autonomous, confident and self-reliant after his graduation from school<sup>6</sup>. In recent times, applicability of what one learns in school to real life situation is very low. Based upon the data obtained from the CBSE and Council for the Indian School Certificate Examination, it has been found that priority for Science is declining<sup>5</sup>.

#### VI. RESEARCH QUESTIONS

- 1). is there any significant difference in performance of students in the pre-test and post-test scores based upon the hands-on activities?
- 2). to what extent students are familiar with the experiments/activities and the material used for performing the activities?
- 3). what is the frequency of the response of the students to the use of activity-based method in learning Science?

#### VII. MATERIALS AND METHOD

The main research design used for this study is experimental research design where students were given the activities based upon science. MCQ's, subjective Questions items and interview were also used to get their responses on the Hands-on-approach used. The study was carried out in a Shivalik International Sr. Sec. School, Naraingarh (A) and Saraswati Niketan School, Ambala (B). We have selected total of 60 students from per school i.e. total of 120 students from junior, Middle and Senior classes. We have selected students based upon their mid-term test scores based upon the science exam. Two classes of 30 students each in each school were used. The selection is shown in Table 1.

School Name	Classes	Sample Size	Boys (%)	Girls (%)
A	SI6A	30	20 (66.7)	10(33.3)
A	SI7B	30	12(40.0)	18(60.0)
B	SN6C	30	15(50.0)	15(50.0)
B	SN7D	30	18(60.0)	12(40.0)
Total		120	65	55

We have taken the pre-test of the selected students. The test consists of MCQ's & subjective questions followed by interview. The questions asked in MCQ's are based upon the syllabus. After that we have provided the hands-on activity based experiential learning science kit activities to the selected students. Each kit contains around 25 activities as per the curriculum. Teachers have taught those 25 activities to the students in the classroom in four to six months. After the completion of the activities, we have taken the post-test of the students.

#### VIII. RESULTS

The Table 2 has shown the pre-test and post-test response of the students.

School Name	Classes	Pre-Test (%) Average	Post-Test (%) Average	Improvement
A	SI6A	39.33%	71%	82%
	SI7B			
B	SN6C	44%	80%	81.8%
	SN7D			

Table 3 shows the students response

Statements	Male	Female	Yes	Male	Female	No
I enjoy the hands-on activities based experiential learning Science activities	55	50	105 (87.5%)	10	5	15(12.5%)
This method makes me have more interest in learning the concepts of Science	58	50	108(90%)	7	5	12(10%)
I prefer activity based assessment over other traditional methods	60	52	112(93.33%)	5	3	8(6.66%)
Activity-based learning is the best method to determine how well I perform in the Science	65	54	119(99.16%)	0	1	1(0.833%)
This method help me to familiar with the raw material for performing the activities as well as identification & Characteristics of the material	58	50	108(90%)	7	5	12(10%)
My concepts are cleared using the activities and built confidence in me	60	52	112(93.33%)	5	3	8(6.66%)

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#### IX. CONCLUSION

It is very important to understand and realize that we are moving toward a highly diverse and creative world where communication and creativity matter. If a child is exposed to experiential learning for kids at a very young age, they are sure to learn greater things in life. In today's world, technical skills and bookish knowledge don't matter much. What matters is the knowledge that one has gained from experience. The result also shown that experiential learning helps students in understanding the basics concepts in a better way and the hands-on activity based experiential learning method is the best method to improve the scientific temperament and analytical skills of the students.

#### X. REFERENCE

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