Using project work to enhance learning

THE OLD SCHOOL MODEL OF PASSIVELY LEARNING FACTS AND ROTE MEMORISATION IS NO LONGER SUFFICIENT FOR PREPARING STUDENTS TO SURVIVE IN TODAY'S WORLD. PROJECT-BASED LEARNING CAN HELP FOSTER 21ST CENTURY SKILLS, SAYS DIVYA KAPOOR.

What does a classroom of the future look like? We would like to imagine it as a technology-enabled space delivering modern pedagogies. In the context of developing countries, the role of pedagogy in classrooms remains critical as countries with low-income often find it difficult to build infrastructure.

In essence, the classroom of the future should be an engaging one where teachers foster in students 21st century knowledge, skills and attitudes such as critical thinking and problem-solving. Learning is a shared responsibility and cooperative learning can help achieve desired learning objectives.

In order to cater to the needs of millennial learners, it is important for educators to enhance the quality of learning. Along with restructuring and streamlining of the curriculum, modifications in teaching practices can support learning in their own way. Solving highly complex problems requires students to be equipped with fundamental skills of reading, writing, and mathematics, along with soft skills like teamwork, time management, etc.

Project-based learning at our school

Teachers in our school have been using project work as a tool to develop skills such as critical thinking and problem-solving. The main characteristics of project-based learning have been identified by several researchers and studies (See for instance, Cocco, 2006; Al-Balushi & Al-Aamri, 2014; Wurdinger, Haar, Hugg & Bezon, 2007) and are broadly believed to be:

- Student-centred
- Context-specific
- Requiring active participation of learners
- Based on learning through social interactions and knowledge sharing
- Inquiry-based
- Focused on real-life problems

Further, Blumenfeld, Fishman, Krajcik,

Marx and Soloway in their 2000 study described the process of project-based science as '…the presumption is that students need opportunities to construct knowledge by solving real problems through asking and refining questions, designing and conducting investigations, gathering, analysing, and interpreting information and data, drawing conclusions, and reporting findings'.

In today's educational scenario, education systems have to pay greater attention to the development of thinking skills. If we would like to make our students critical thinkers, we as teachers have to think differently. This requires building an environment where the school and teachers work collaboratively to create challenging academic and para academic exercises, project work being one of them.

Building a thinking and learning community

Project work helps students to connect to real life situations. This is noted as one of its major advantages; students can be encouraged to become independent workers, critical thinkers, and lifelong learners with the help of this approach.

Let me provide a few classroom examples to explain tested activities that can help teachers understand a child's academic progress and development of skills. Such activities encourage students to research, find solutions, and then present them to the wider audience. This is nearly impossible when learning is text-based and learning styles of children remain unacknowledged.

Case 1: Investigating the effect of fuel consumption on the environment

The project will require students to gather first-hand information and study the problem in-depth to examine its seriousness and find some workable solutions. The following phases can be followed.

Phase 1: gathering data

Students will be required to create a survey with questions on the fuel consumption of a family per month, monthly expense on fuel, distance travelled by family per month, etc. They may further create a calendar for a particular month illustrating details like distance travelled, petrol/diesel consumption, and expenditure in the last 30 days. This exercise can cover more than one family or more than one city.

Phase 2: presentation

Students will then present their findings with support of quantitative and qualitative data. They are also required to explain the methodology of the exercise.

Phase 3: designing a newsletter

Students can then be asked to design a newsletter.

Page 1 – Introduction to crude oil, its usage, price in the city, etc.

Page 2 – Harmful effects of increasing the use of crude oil on the environment.

Page 3 – Details of the data collection process.

Page 4 – Innovative alternatives by which consumption of crude oil can be reduced and our role in doing so.

Presentation of data in a table

Details	City with highest fuel price	City with second highest fuel price	Host city Delhi	City with least but one fuel price	City with least fuel price
Distance travelled					
Fuel Consumption					
Price of fuel per litre					
Total amount spent					

Case 2: Examining the impact of advertisements

Phase 1: fact file

Students will be required to create a fact file based on research conducted and present it in a concise manner. These may include advertisement techniques, its usage, its benefits, etc.

Phase 2: jingle making

Students will be asked to compose a short commercial jingle using instruments, vocals, and lyrics to convey a message. They may use graphics to support their jingle.

Phase 3: t-shirt design

Students can design a t-shirt with a social message. They can draw, use pictures, or words. They can then show the T-shirt in class and explain why they have chosen a particular topic and how advertisements help in spreading a social message.

Impact of assessment through project-based work

The graph below depicts the number of students securing different grades in two different formative assessments – one a pen and paper test and the other involving innovative formative assessment tools. The data clearly reflects that the performance of the students is better in a formative assessment using innovative tools. This is because project-based formative assessment tools provide students with wider platforms to present their learning in comparison to pen and paper tests.

Comparision between pen and paper test and overall FA result
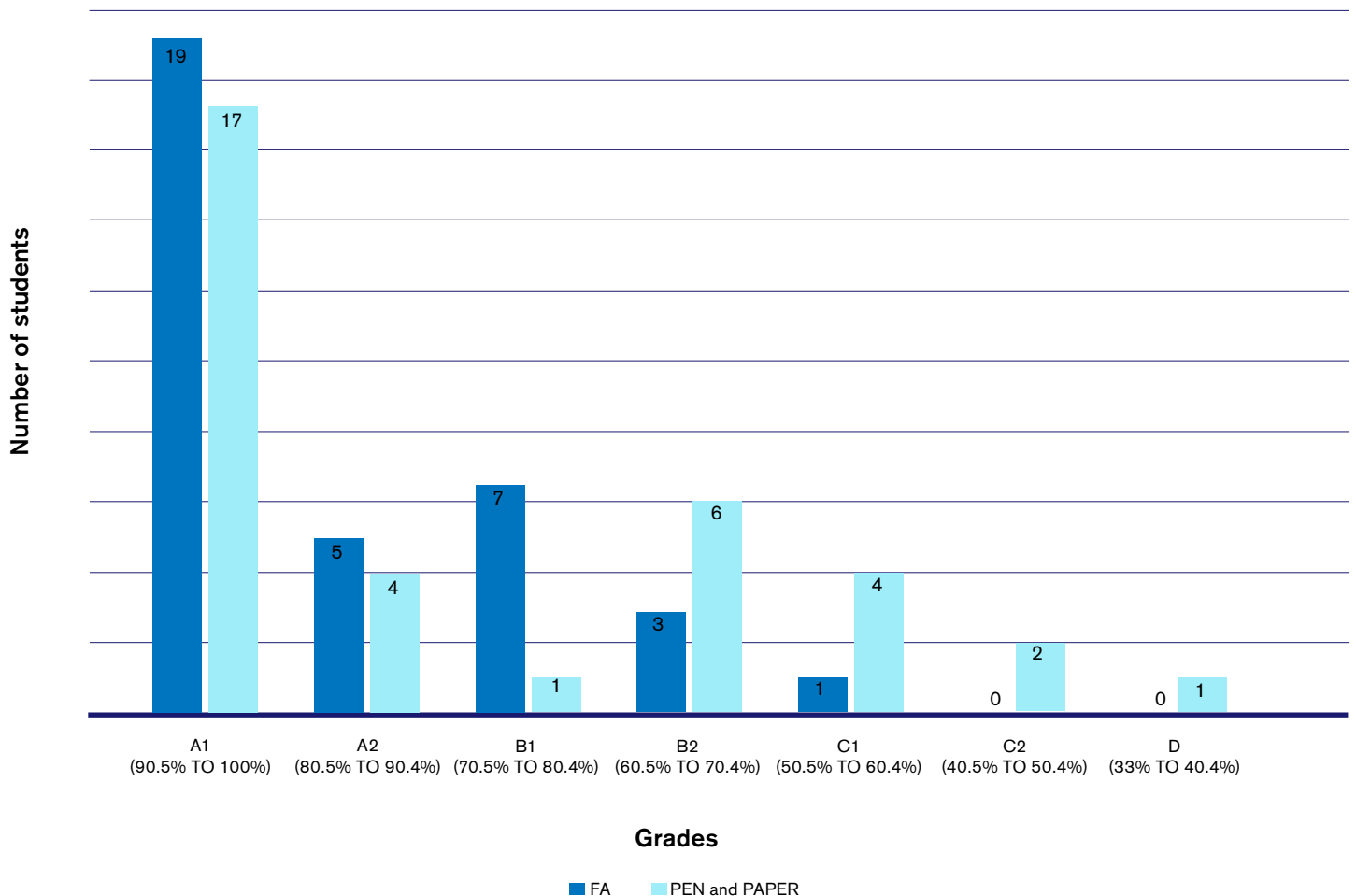
The image reflects the actual performance graph of Class 5 students in our school

Practical implications of project work

Project and group work have been explored as a unique tool to teach and assess critical thinking and problem solving skills of modern day learners.

From the teachers' perspective, it

▮ enables teachers to explore multiple assessment opportunities

▮ allows them to learn more about a child as a person

▮ helps teachers to communicate with a child or a group of learners in progressive and meaningful ways on a range of issues

▮ supports assessment and development of the dominating intelligence of learners as suggested by Multiple Intelligence Theory

▮ helps teachers organise the progression of activities according to the development of learners and their personal involvement with a topic

From the students' point of view, it

▮ allows students to demonstrate their capabilities while working collaboratively

▮ enables learners to engage with their peers, thus developing interpersonal relationships including the art of conflict management

▮ enables children to become constructors of new knowledge by providing hands-on experience which moulds them into active lifelong learners

Take away

One of the best ways to help students master critical thinking is 'learning by doing' or project work. It is well known that interdisciplinary activities across various disciplines lead to deep learning. Through collaborative learning, students learn the important techniques of questioning and finding solutions to different kinds of problems. In addition, project work helps students to learn from their peers and supports learning outcomes, while also providing effective and immediate feedback.

Finally, it offers students with a non-threatening environment encouraging a participatory culture where 'No response is incorrect'. **T**

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LINKS
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https://www.bie.org/about/what_pbl

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