

# Project Based Learning Approaches

An Innovative Teaching Methodology



# Foreword

Kendriya Vidyalayas have been recognized for setting the standards for school education in the country. Over the years, the number of Kendriya Vidyalayas kept on increasing and almost nearing the 1,000th mark. These schools are being developed as quality Vidyalayas with some of the useful features of popular residential Vidyalayas.

The mandate given to the Kendriya Vidyalaya Sangathan (KVS) is to cater to the educational needs of children of transferable Central Government employees by providing a common programme of education, to pursue excellence and set the pace in the field of school education, initiate and promote experimentation and innovations in education in collaboration with other bodies like the CBSE, the NCERT etc.

ICT plays a vital role in developing favourable learning environment, bringing in a paradigm shift in educational practices that contribute immensely in developing new age skills among students.

The KVS has taken concrete steps for promoting computer education and computer-aided learning in all its Vidyalayas. For the successful implementation of computer-aided learning, all the Vidyalayas have been provided with good infrastructure. It strongly believes that technology in education can be a very powerful catalyst to promote learning and that education changes lives, families, communities, and ultimately nations. However, for this shift to happen it is very important that our teachers are empowered to use technology effectively in their teaching - learning processes.

I take this opportunity to convey my sincere gratitude and appreciation to Intel for training our teachers in integrating technology into education. I also thank all the teachers who have worked in partnership with Intel to publish a booklet on an innovative methodology of learning through Projects - "Project Based Learning."

The development of the teachers' resources is an important milestone and contribution to improve the quality of education in Kendriya Vidyalayas. I hope, teachers and students will enrich this resource as they go along and make the teaching-learning process very interesting. My best wishes to all.



**R Jamuda**  
Commissioner  
Kendriya Vidyalaya Sangathan



# Preface

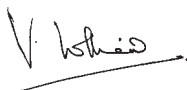
Today's generation spend their adult lives in a multitasking, multifaceted, technology driven and diverse vibrant world; therefore, they must arrive equipped to handle the challenges effectively. In order to make our students face the challenges of the knowledge economy, we must integrate Information and Communication Technology (ICT) in the teaching and learning process. Technology tools have to be creatively infused into teaching methodology in order to create an interactive and productive learning environment for the students.

Foreseeing the importance of ICT in the process of educational transformation of students, the Kendriya Vidyalaya Sangathan introduced the Computer Literacy Program. This program has transformed itself to a Computer Aided Education Program, with a well designed curriculum including the effective and intelligent use of Technology in Education.

Project based learning (PBL) approaches are an important and innovative method for teachers to provide for the requirements of students who face a continuously evolving global economy. PBL approaches help make learning relevant and are useful to students by establishing connections to life outside the classroom. PBL approaches address real world concerns, and help the student to develop real world skills. Many of the skills learned through PBL approaches are those which ensure that our young Indians are prepared to play an important role in knowledge creation and sharing. This helps steer the students' path towards higher education and prepares them for a productive career path.

Learning has shifted from the traditional passive teacher-centric learning environment to a more productive and interactive student-centric learning environment. This shift has been achieved due to consistent and sincere efforts by the teachers.

Shri. R L Jamuda, Commissioner, Kendriya Vidyalaya Sangathan has been a guiding force in this endeavour since its inception. We express our gratitude for his guidance and encouragement. It is earnestly hoped that this booklet will be very useful for the teachers and students to effectively integrate Project Based Learning Methodology into their teaching and learning processes.



**Valsa Williams**  
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## Chapter 1

# Introduction

Globalization on a fast track, economy redefined and the way networked communications has exploded, have all resulted in a change. Global economies need educated people as citizens of today and tomorrow. Learning in the 21<sup>st</sup> century is definitely a lot different from learning in any other century. How can students be prepared to succeed in the 21<sup>st</sup> century? This is a question of paramount importance to the country's educators, employers, parents and the public. Our community vibrancy, personal quality of life, economic viability and business competitiveness depends on a well-prepared citizenry and workforce. Education provides the bedrock from which our national and individual prosperity rise together. The education in science and mathematics that students receive from kindergarten through 12<sup>th</sup> grade forms the foundation of the nation's scientific, mathematical, and technological literacy. The nation needs a compelling vision for education that will inspire education leaders, teachers, parents and students alike. Today's education system needs to bridge the gap between what students learn and how they live. Hence, it is very important to prepare students for the challenges of work and life in the 21<sup>st</sup> century.

*"We need to educate our children for their future, not our past."*  
- Arthur C. Clarke

This century marks a shift to knowledge based economy resulting in the way...

**We work**  
**We communicate**  
**We create, and,**  
**We live**

As the current generation of students continue to arrive at college, the rapid changes in technology, the workplace, and the amount of general knowledge available to them creates a need for additional set of competencies. The driving question is: Are we equipping students with the right skills to be successful in the 21<sup>st</sup> Century?

There is a profound gap between knowledge students learn in schools and the skills they need in typical 21<sup>st</sup> century communities and workplaces. To successfully face rigorous needs of higher education courses, career challenges and a globally competitive workforce, schools must align classroom atmosphere with real world environment by infusing 21<sup>st</sup> century skills into their teaching and learning process.

Skills such as problem solving, innovation and creativity have become critical in today's global economy. One needs to understand that the knowledge-based economy cannot flourish without a proper education system. In the 21<sup>st</sup> century, in order to succeed in school, work and life, the core subjects like English, Mathematics, Science, Arts, Civics, History, Economics, Geography etc. must be expanded to include 21<sup>st</sup> century subjects such as global awareness, civic literacy, health and wellness, business and entrepreneurial literacy.

Traditional teaching is a one-way street, where teachers teach and students learn by rote, with most of the information coming from the teacher. Modern learning theory sees learning as an individual quest for meaning and relevance. Learning needs to move beyond the recall of facts, principles or correct procedures, and into the area of creativity, problem-solving, analysis, or evaluation. It is well known fact that students learn more when they are involved actively in learning than when they are passive recipients of instruction. Therefore teachers need to act as facilitators and partners for teaching and learning, and use flexible teaching strategies to provide an environment wherein learners are comfortable in their learning environment.

Our education system must focus on innovative teaching and learning practices such as inquiry based and project based learning methods etc., so that students connect curricular studies with real life situations, develop higher level thinking skills, work in teams and develop a scientific temperament and attitude. ICT can play a major role in developing such a classroom environment and bringing in a paradigm shift in education practices across the world.

## Chapter 2

# Essential 21st Century Skills<sup>1</sup>

In order to thrive in a digital economy, students will need digital age proficiencies. It is important for the educational system to make parallel changes in order to fulfill its mission in society, namely the preparation of students for the world beyond the classroom. Therefore, the education system must understand and embrace the following 21st century skills within the context of rigorous academic standards.

## 2.1. Learning and Innovation Skills

### Creativity and Innovation

- Demonstrating originality and inventiveness in work
- Developing, implementing and communicating new ideas to others
- Being open and responsive to new and diverse perspectives
- Acting on creative ideas to make a tangible and useful contribution to the domain in which the innovation occurs

### Critical Thinking and Problem Solving

- Exercising sound reasoning in understanding
- Making complex choices and decisions
- Understanding the interconnections among systems
- Identifying and asking significant questions that clarify various points of view and lead to better solutions
- Framing, analyzing and synthesizing information in order to solve problems and answer questions

### Communication and Collaboration

- Articulating thoughts and ideas clearly and effectively through speaking and writing
- Demonstrating ability to work effectively with diverse teams
- Exercising flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assuming shared responsibility for collaborative work

## 2.2. Information, Media and Technology Skills

### Information Literacy

- Accessing information efficiently and effectively, evaluating information critically and competently and using information accurately and creatively for the issue or problem at hand

<sup>1</sup> Source: Partnership for 21st Century Skills ([www.21stcenturyskills.org](http://www.21stcenturyskills.org)).

- Possessing a fundamental understanding of the ethical/legal issues surrounding the access and use of information

## Media Literacy

- Understanding how media messages are constructed, for what purposes and using which tools, characteristics and conventions
- Examining how individuals interpret messages differently, how values and points of view are included or excluded and how media can influence beliefs and behaviors
- Possessing a fundamental understanding of the ethical/legal issues surrounding the access and use of information

## ICT (Information, Communications and Technology) Literacy

- Using digital technology, communication tools and/or networks appropriately to access, manage, integrate, evaluate, and create information in order to function in a knowledge economy
- Using technology as a tool to research, organize, evaluate and communicate information, and the possession of a fundamental understanding of the ethical/legal issues surrounding the access and use of information

## 2.3. Life and Career Skills

### Flexibility and Adaptability

- Adapting to varied roles and responsibilities
- Working effectively in a climate of ambiguity and changing priorities

### Initiative and Self-Direction

- Monitoring one's own understanding and learning needs
- Going beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrating initiative to advance skill levels towards a professional level
- Defining, prioritizing and completing tasks without direct oversight
- Utilizing time efficiently and managing workload
- Demonstrating commitment to learning as a lifelong process

### Social and Cross-Cultural Skills

- Working appropriately and productively with others
- Leveraging the collective intelligence of groups when appropriate
- Bridging cultural differences and using differing perspectives to increase innovation and the quality of work

## Productivity and Accountability

- Setting and meeting high standards and goals for delivering quality work on time
- Demonstrating diligence and a positive work ethic (e.g., being punctual and reliable)

## Leadership and Responsibility

- Using interpersonal and problem-solving skills to influence and guide others toward a goal
- Leveraging strengths of others to accomplish a common goal
- Demonstrating integrity and ethical behavior
- Acting responsibly with the interests of the larger community in mind

## Chapter 3

# Guidelines by NCERT (National Council of Educational Research & Training)

Education is a medium through which people become productive citizens and actively participate in their societies. In order to succeed in a rapidly changing world, 21<sup>st</sup> century business needs graduates equipped with different, higher-order skill sets, and education systems are struggling to respond. Educational systems around the world are under increasing pressure to employ policies and practices that will help students in a knowledge economy.

**National Council of Educational Research and Training (NCERT)** took cognizance of the fact that the illiterate of the 21<sup>st</sup> century will not be those who cannot read and write, but those who cannot learn-unlearn and relearn. It also felt that education must be more robust, rigorous and relevant for students. This resulted in the formulation of the **National Curriculum Framework 2005**.

## 3.1 The National Curriculum Framework 2005

The National Curriculum Framework 2005<sup>2</sup> is the labour of a national steering committee of 35 eminent educationists and 21 national focus groups comprising teachers and educationists from across the country.

The **National Curriculum Framework 2005 (NCF)** lays emphasis on:

- Child centered pedagogy, which means giving primacy to children's experiences, their voices and their active participation.
- Encouraging children to ask questions, relate what they are learning in school to things happening outside, encouraging them to form answers based on their own experiences and in their own words, rather than by memorizing.
- Planning lessons so that children are challenged to think and not simply repeat what is told to them.
- The need for adults to change their perceptions of the child as a passive receiver of knowledge.
- Interacting with peers, teachers, older and younger people as it can open up many rich learning possibilities.
- Seeking out knowledge from sites other than the textbooks—from their own experiences, from experiences at home, community, library etc.

It is of the opinion that the approach to planning must therefore move away from the "Herbartian" lesson plan to preparing plans and activities that challenge children to think and try out what they are learning. By focusing on these methods, the framework emphasizes not just the role of the child, but also that of the teacher. This document is an unprecedented effort to transform Indian education to enable it to meet the needs of the 21<sup>st</sup> century.

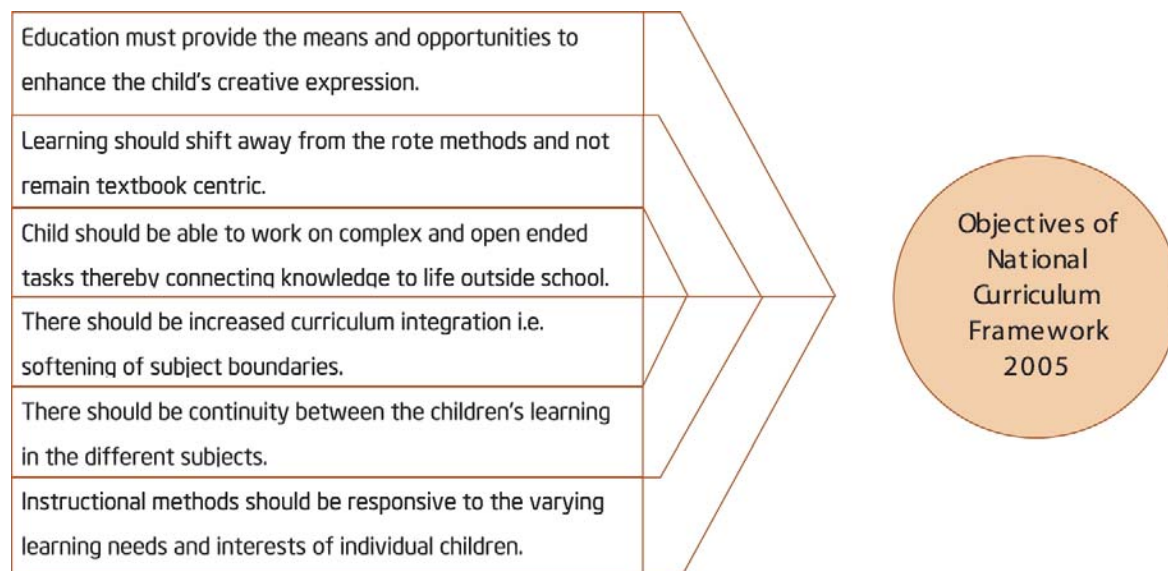
The NCF seeks to provide a framework within which teachers and schools can choose and plan experiences that they think children should have. In order to realise these educational objectives, the curriculum should be conceptualised as a structure that articulates required experiences. For this, it should address some basic questions:

- (a) What educational purposes should the schools seek to achieve?

<sup>2</sup> <http://www.ncert.nic.in/sites/publication/schoolcurriculum/NCFR%202005/contents1.htm> (October 2007)

- (b) What educational experiences can be provided that are likely to achieve these purposes?
- (c) How can these educational experiences be meaningfully organised?
- (d) How do we ensure that these educational purposes are indeed being accomplished?

One needs to plan and pay attention to systemic matters that will enable us to implement many of the good ideas that have already been articulated in the past.



Among the many initiatives that CBSE (Central Board of Secondary Education) took during last year, one of the most important was the strengthening of internal assessment at secondary level. The aim of this initiative was to integrate the principle of continuous and comprehensive evaluation with the Board examination and to widen the scope of assessment by the inclusion of multiple methods of assessment such as projects, interviews, questionnaires, etc. It was an attempt by CBSE to empower the teachers accordingly so that the curriculum transaction truly reflects the shift in educational paradigm as envisaged in NCF 2005.

Hence it formulated that<sup>3</sup>:

- Every student will do at least one project, based on the concepts learnt in the classroom.
- The project may not be mere repetition or extension of the laboratory activities, but should aim at extension of learning to real life situations.
- It should be somewhat open-ended and innovative.

**Kendriya Vidyalaya Sangathan** has the distinction of providing quality education in the Kendriya Vidyalayas by creating an environment that brings out the best among the teachers and students. The aim of the Sangathan is to adopt modern education techniques and enhance the potential of human resources and progressively transform it into a knowledge society. With its mission to provide good quality education to all children it was keen to introduce **Project Work** to align its educational objectives with that of CBSE as outlined by NCF.

<sup>3</sup> <http://cbse.nic.in/circulars/Circulars%20-%202007.doc>,

## Chapter 4

# Project Based Learning – An Innovative Teaching Methodology

## 4.1 Project-Based Learning Method – Definition

Project based learning (PBL) is a comprehensive instructional approach to engage students in sustained, cooperative investigation (Bransford & Stein, 1993). It focuses on the central concepts and principles of a discipline, involves students in problem solving investigations and other meaningful tasks, allows students to work autonomously to construct their own knowledge, and culminates in realistic products<sup>4</sup>.

## 4.2. Features of Project Based Learning <sup>5</sup>

- Encourages active inquiry and higher level thinking.
- Develops critical thinking, problem solving, and collaborative skills in addition to content knowledge through problem identification, formulation of hypotheses, and data searches.
- Fosters active learning by involving students in:
  - o Asking and refining questions, asking new questions
  - o Debating ideas
  - o Making predictions
  - o Designing plans and/or experiments
  - o Collecting and analyzing data
  - o Drawing conclusions
  - o Communicating their ideas and findings to others and creating artifacts
- Helps students develop skills for living in a knowledge based, highly technological society
- Is often aligned with engaged and constructivist learning: students are responsible for their own learning, are energized by and find excitement and pleasure in learning.

## 4.3. Technology and Project Based Learning

PBL is especially effective when supported by educational technology. Evaluations of K-12 instructions have shown strong evidence of learning gains associated with PBL plus technology<sup>6</sup>.

Using technology in project-based methodology makes the environment more authentic to students, because the computer provides access to data and information, expands interaction and collaboration with others via networks, promotes laboratory investigation and emulates tools experts use to produce artifacts<sup>7</sup>.

<sup>4</sup> <http://www.bie.org/research/pbl/index.php> <sup>5</sup> Based on discussions in: Bransford & Stein, 1993 □ George Lucas Educational Foundation □ Thomas, 1998 □ Bransford, Brown, & Conking, 1993 □ Torp et al, 1998 □ Jones, Rasmussen & Moffitt, 1997 □ Thomas, Mergendoller & Michaelson, 1999 □ Blumenfeld et al, 1991 □ BIE Web site. <sup>6</sup> Blumenfeld et al., 1991 ~ Cognition and Technology Group at Vanderbilt, 1992 <sup>7</sup> As reported by ISTE Report, (Blumenfeld et al, 1991, Gardner, 1995, Wiburg, 1994, Johnson & Johnson, 1989, Krajcik, et al, 1994, Thomas 2000, Ames 1992)

Project based learning encourages mastery of technology tools. Projects provide an ideal context for learning to use computer technology and graphic art tools, thus extending students' capabilities and preparing them for the world beyond schools<sup>8</sup>.

Students make effective use of Information Technology (IT) as they produce a product, presentation, or performance such that IT components are integrated into the learning and students are NOT learning IT skills in isolation.

## 4.4. Benefits of Project-Based Learning<sup>9</sup>:

**Motivation:** All things being equal, students who possess a motivational orientation that focuses on learning and mastery of the subject matter are more apt to exhibit sustained engagement with schoolwork than students whose orientation is to merely perform completed assigned work.

**Improved library research skills:** Most projects require students to move beyond easily available printed information sources such as textbooks, encyclopedias, and dictionaries. Project-based learning methodology promotes independent research and provides an authentic and motivating context for students to develop information literacy skills.<sup>10</sup>

**Increased collaboration:** Group work in many projects requires students to develop and practice collaboration and communication skills in an authentic environment. Current cognitive theories suggest that learning is a social phenomenon and that students will learn more in a collaborative environment.

**Increased resource management skills:** Part of becoming an independent learner is taking responsibility for completing complex tasks. PBL gives students instruction and practice in planning projects, and in allocating time and other resources to complete tasks on schedule.

**Learning to be an Expert:** The way to insure that young children become proficient at inquiry and problem solving is to simulate the conditions under which experts' master subject matter and become proficient at conducting investigations.

<sup>8</sup> <http://www.bie.org/research/pbl/index.php>

<sup>9</sup> As reported by ISTE Report, (Blumenfeld et al, 1991, Gardner, 1995, Wiburg, 1994, Johnson & Johnson, 1989, Krajcik, et al, 1994, Thomas 2000, Ames 1992).

<sup>10</sup> The American Literacy Association defines information literacy as the ability to know when there is a need for information, identify and find the needed information, evaluate and organize the information, and use the information effectively to address the problem or issue at hand (Breivik & Senn, 1994).



## Chapter 5

# Implementation of Project-Based Learning (PBL)

Project-Based Learning, like all lessons, requires good preparation and planning. Integrating Project-based learning in school curriculum involves the following four stages:

### Four Stages of Project Based Learning are:

1. Planning
2. Scheduling
3. Implementing and Monitoring
4. Reflecting

## 5.1. Planning of Projects

This is a very important part of PBL integration. The implementing teachers need to focus on the following key preparation areas while planning a project,

- **Determine specific learning objectives**

Using the syllabus guidelines and the desired higher order thinking skills identify the learning objectives.

- **Select suitable topics**

To achieve the identified learning objectives suitable topics must be selected. The teachers need to select topics that lend themselves to the use of PBL and technology. PBL methodology cannot be used for every unit in the syllabus. The teacher needs to identify the best units in the prescribed syllabus to teach using PBL. The topic selected for PBL integration should have the following characteristics. It should:

- o be based on syllabus guidelines
- o have real world connection
- o be relevant to students
- o be age appropriate
- o have scope for investigation
- o have an authentic task or scenario

- **Develop Curriculum Framing Questions**

In order to arouse the curiosity and to drive the study of the entire project, teachers need to develop questions that are open ended, multidisciplinary and address the heart of the content. Questions are the most powerful tools that we have for making decisions, solving problems, inventing, changing and improving our lives as well as the lives of others.

The following points need to be remembered while framing the questions<sup>11</sup> :

- o Choose the right question to launch the project
- o Select driving questions carefully so that the students will develop in depth understanding of the content stipulated in syllabus guidelines.
- o Make it such that students can feel that they are making an impact by answering the question or solving the problem.
- o The question should be a “NOW” question a question that has meaning for the students in their lives at this moment in time

▪ **Develop the assessment plan<sup>12</sup>:**

The overarching purpose of assessment is to give teachers the information they need to provide quality instruction. Embedded and on-going assessment is at the heart of project-based learning and provides a way for students to show and discover what they know in different ways. With assessment integrated throughout a unit of instruction, teachers learn more about their students’ needs and can adjust instruction to improve student achievement.

▪ **Purposes of Assessment<sup>13</sup>**

When planning assessment teachers should include both formative and summative assessment. Formative assessment will help guide students in their learning process. Summative assessment often takes place at the end of a unit to give feedback on what skills and knowledge a student has acquired. Formative and Summative assessment can be used to:

<b>Formative Assessment</b>	<ol style="list-style-type: none"> <li>1. Gauging student needs</li> <li>2. Encouraging self-direction and collaboration</li> <li>3. Monitoring progress</li> <li>4. Checking for understanding and encouraging metacognition</li> </ol>
<b>Summative Assessment</b>	<ol style="list-style-type: none"> <li>5. Demonstrating understanding and skill</li> </ol>

▪ **Gauging student needs**

Since students bring different levels of understanding, ability and interest to the classroom, being able to get a thorough understanding of the students’ background knowledge and understanding helps teachers design instruction to address misconceptions and to take advantage of relevant experiences.

- o **Assessment Methods** - Examining Student Work, Graphic Organizers , Know-Wonder-Learn (K-W-L) Charts, Think-Pair-Share, Brainstorming.

▪ **Encouraging self-direction and collaboration**

The ultimate goal of education is to produce independent learners - students who can learn on their own. This is especially critical in the 21st century when skills must be constantly learned and relearned. Self-directed learners are efficient at planning and following through without prompting.

<sup>11</sup> George Lucas Educational Foundation: <http://www.gleef.org/>

<sup>12</sup> Used with permission from Intel® Education website. All rights reserved <http://educate.intel.com/en/AssessingProjects/AssessmentStrategies/> (Accessed in 2008)

<sup>13</sup> Used with permission from Intel® Education website. All rights reserved <http://educate.intel.com/en/AssessingProjects/AssessmentStrategies/> (Accessed in 2008)

- o **Assessment Methods** - Project Plans, Self-Assessment and Reflection, Peer Feedback, Observation of Groups.

- **Monitoring progress**

Teachers monitor the progress of their students by collecting information about learning processes and concepts while students are working on projects. By providing feedback based on this information, teachers can address misconceptions and other learning problems appropriately.

- o **Assessment Methods** - Informal Observations and Anecdotal Notes, Learning Logs, Progress Checklists, Progress Reports, Project Meetings and Conferences Agenda

- **Checking for understanding and encouraging metacognition**

Metacognition, or “thinking about thinking” refers to the mental processes that control and regulate how people think. Metacognition is especially important in project work, because students must make decisions about what strategies to use and how to use them.

- o **Assessment Methods** - Written Journals, Assessment Methods, Video and Photo Journals, Structured Interviews and Observations, Informal Questioning, Written and Oral Tests and Quizzes.

- **Demonstrating Understanding and Skill**

Students can demonstrate their understanding and skill by showcasing the products that they create or by performances which are outcomes of what the students do.

- o **Assessment Methods** – Products and Performances.

## Sample Assessment Timeline<sup>14</sup>:

An assessment timeline is a simple way to show an assessment plan and it helps to visually represent how a variety of assessments can be embedded throughout a unit. Refer to the diagram below for a sample assessment timeline.

Assessment Timeline		
Before project work begins	Students work on projects and complete tasks	After project work is completed
<ul style="list-style-type: none"> <li>▪ Questioning</li> <li>▪ Journals</li> <li>▪ Project Plan</li> <li>▪ K-W-L Chart</li> </ul>	<ul style="list-style-type: none"> <li>▪ Written Summaries</li> <li>▪ Observation Checklist</li> <li>▪ Journals</li> <li>▪ Questioning</li> <li>▪ Group and Self-Assessment</li> <li>▪ Newspaper Rubric</li> <li>▪ Conferences</li> </ul>	<ul style="list-style-type: none"> <li>▪ Newspaper Rubric</li> <li>▪ K-W-L Chart</li> <li>▪ Mock Trial</li> <li>▪ Reflective Essay</li> </ul>

Check out for various assessment resources available at:

<http://educate.intel.com/in/AssessingProjects/>

- **Develop the Project Idea and Activities**

Successful implementation of the project would depend on the underlying idea/theme of the project work that students would undertake. Teachers should connect the content to a real world situation and develop a

<sup>14</sup> Used with permission from Intel® Teach Program Essentials Course Version 10.1 All rights reserved

project idea that is feasible to implement and measure the achievement of students. They should plan ways in which students can make real life connections and develop the desired higher level thinking skills and 21st century skills.

While developing the project idea a teacher should follow the guidelines given below:

- o Plan out effective scenarios for the project, keeping in mind curriculum, higher order thinking skills and development of 21st century skills.
- o Write down the **goal** of the project. State what is expected to be achieved at the end of the project.
- o Choose **roles**, which students can understand and relate. Provide a meaningful and realistic role for the students considering the real world connection.
- o Decide the **audience** the students would be addressing through their projects and sharing their end products. The audience should help students make the real world connections.
- o Design a **set of activities and tasks** through which students address the curriculum framing question, learn the desired content, and come up with final products while engaging their higher order thinking skills
- o Finalize the kind of **technology-supported end products** that you expect from your students as a result of working on this project

## Three phases of Project Planning

Phase 1	Activity (ies) to set the stage for the project
Phase 2	Activity (ies) that engage students in learning (may include trips, visiting experts, etc.).
Phase 3	Activity (ies) in which students shares their knowledge in a culminating event, as well as reflects on the project and their learnings.

### ▪ Finalize the grouping system

While implementing PBL, creating student groups is a very important aspect. Teachers need to address equity issues and also balance the outcome of the project so that the whole class is benefited and learning outcomes culminate as end products of group learning. While grouping students, structure individual and group accountability.

#### Before grouping students consider:

- Total number of pupils in class
- Number of Groups
- Number of Students in a Group
- Roles within the Group (problem solver, decision maker, investigator, documentarian, etc.)

### ▪ Check resources availability

While planning the project, the teachers need to make a list of all the resources that are required for the project implementation. It is important to make arrangements for having all the resources in place for successful project implementation

### ▪ Acquire school head and parents' support

This is another important area where the teachers need to present their plan to the school head or their subject coordinator. Based on the feedback received the teachers need to make changes in their plan. For successful implementation it is crucial to have the support of the parents and hence the teachers need to send out information to parents regarding the project.

## 5.2. Scheduling of the Projects

It is very essential to design a timeline for all project components so that teacher and students can follow the timelines and be able to track the progress and direction of the project. The teachers need to consider the total time that would be needed for the project. They need to decide the amount of class time that can be given to this project. It is essential to keep in mind the other things will be going on in their classroom and school that will impact the time frame of the project. To create the project schedule, teachers need to create milestones that will help them note the due dates and the checkpoints for the project goals to be completed. It is also important for the teachers to be prepared to allow for flexibility, growth and changes in the project.

Sample project schedule template

Day(s)	Time frame	Task

## 5.3. Implementing and Monitoring the Projects

Teachers need to follow the project schedule, mentor the project process and encourage students to work collaboratively. They need to ensure that each group and all the students of the group are going through the entire process of learning. During the project, teachers need to proactively promote discussions within the groups. Teachers need to facilitate the process and support students by proactively questioning students' thinking and challenging students to support their conclusions. While implementing the project, the teachers need to carry out progress review and assessment using various assessment tools. Sharing and showcasing are also very important for project implementation.

## 5.4. Reflecting at the End of the Project

At the end of the project, the teachers must take time for the students to reflect, individually and as a group.

They need to carry out a quantitative and qualitative analysis of student learning outcomes as well as an analysis of their own professional growth. It is important to share ideas, feelings and experiences with other teachers as this will lead to new inquiries, thus new projects.

For more information on integrating project based learning in the classroom visit- <http://educate.intel.com/in/ProjectDesign>

*Designing Effective Projects* provides a foundation for good planning and supports you in adapting project-based units or developing your own from scratch.

## Chapter 6

# Project Ideas

### Project Idea – 1

**Topic** – Women’s role in history

**CBSE Guidelines** – Choose two women from each field and document their lives, writings and their contributions. The women are to be chosen from women philosophers, political workers, revolutionaries, lawyers, doctors, soldiers, and social workers of the 19<sup>th</sup> and 20<sup>th</sup> centuries.

**Goal** –

- To study the role of women in the 19<sup>th</sup> and 20<sup>th</sup> century and explore the influence of their contributions in our lives.
- To analyze the condition of women from different social strata in the nearby community and suggest ways to improve their condition in society.

**Essential Question** – How can the past influence us?

**Project** – The students take on the role of researchers and explore the role of women in the 19<sup>th</sup> and 20<sup>th</sup> century from various fields. The students in groups choose 2 women from different fields conduct **research** and **document their life and contributions**. They reflect on the contributions made by these women, list out the different ways they have influenced their present day lives and prepare **a multimedia presentation** to showcase the same. They **produce a skit** portraying their lives - highlighting their achievements, contributions to the society and obstacles overcome by them.

Realising the role of women in society, the students conduct a **survey** in the nearby community and find out the status of women belonging to different social strata. They focus on their literacy level, role in decision making, their social and economic independence. They represent the data in a graphical form. They analyze the condition of women from different social strata and list ways to improve their condition in society. They share the outcome of their survey, the multimedia presentation and the skit with the **women of the nearby community** to help them emulate and rise above their status.

They create a **website** dedicated for emancipation of women and create **blogs** to invite suggestions from a wider community. They collate the suggestions and present a plan of action for women emancipation to the Ministry of Women and Child Development.

### Project Idea – 2

**Topic** – Adolescents – Myths and Issues

**CBSE Guidelines** – Prepare a questionnaire for an 18 year old boy/girl. Questionnaire should cover aspects like (1) Status and freedom at home and school (2) Ways in which drug abuse, smoking, consuming alcohol, rash driving are viewed and prevented (3) Freedom to earn and spend (4) Preference and eating habits and concern for nutritional values (5) Views on sex and reproductive health (6) Attitude towards external compulsions such as economic and social disparities, gender discrimination, peer pressure etc.

**Goal** – To deal with adolescent issues and provide solutions to sustain a healthy relationship with their peers and elders.

**Essential Question** – Are we truly independent?

**Project** – The students take on the role of **counselors** and prepare a questionnaire dealing with adolescent issues and **conduct a survey** in their school for different age groups from 13 to 18 year olds. They collect information on current preferences and practices as well as information on gender differentiation and economic background of their parents. Students identify adolescent issues, analyze the problems and interact with psychologists, doctors and sociologists to find ways of tackling them. They **organize an intra school debate** on “Adolescents – Are we difficult to deal with?” They collate the information and prepare a **multimedia presentation** on the most key issues faced by adolescents and suggestions to tackle them. They bring out a **newsletter** that voices their opinion, myths, problems and apprehensions. They also **organise meetings with parents, share the multimedia presentation** and address their feelings, issues, suggestions, behavioral and emotional problems associated with this age and discuss strategies to develop a healthy relationship with their children. The students form a “Friends for Life” club to recognize and sensitize the students with the kind of psychological, physiological, behavioral and social changes that occur at this age.

## Project Idea – 3

**Topic** – Conservation of Natural Resources

**CBSE Guidelines** – Collect information on bio reserves, National parks and wildlife sanctuaries focusing on the policy of conservation of endangered species.

**Goal** – To create awareness about endangered species and develop an action plan to protect them.

**Essential Question** – How can we live together in harmony?

**Project** – Students take on the role of **environmentalists**, collect information on the various bio reserves, national parks and wild life sanctuaries present in the country. They **analyze** the different activities of man that has endangered the lives of animals. They research and find out the various measures adopted by other countries in saving the endangered species. They prepare a **multimedia presentation** of the animals that might soon be endangered and steps to be taken to conserve them. They **organize a “Poster Competition”** in the school, come out with catchy slogans that would be published in the form of a **flyer** and circulated in the **school** and **community**. They collaborate with experts through mails and invite suggestions from a wider community through **blogs** to develop an action plan that can be submitted to the **government**.

## Project Idea – 4

**Topic** – Preparedness for disasters

**CBSE Guidelines** – Create activities to make primary children and school workers aware of disaster mitigation. Write a manual of instructions and make lists for use by teachers to manage laboratory, classroom, corridors and school building security and buses etc. and prepare instructions to deal with any accidents in school or in the bus.

**Goal** – To be aware of the accidents that might occur in the school and develop awareness to prevent and manage them.

**Essential Question** – How can I make a difference?

**Project** – Students as **members of ‘Safety Club’** conduct research and collect information about the various accidents that can happen in a school. They conduct a **survey** of various accidents that has happened in the past and analyze the steps taken by the school management. They conduct research about various safety precautions that need to be taken in a school environment and analyse different ways in which accidents are caused and the come up with strategies to avert these accidents and the also review ways to handle these accidents. The students prepare a **multimedia presentation** on the do’s and don’ts in case of any accident in

the school premises or in the bus and share it with **other students in the school**. They conduct fire drills, mock practices in case of an earthquake and other disasters. They develop a **manual** that provides training for a child on how to prevent, prepare for, deal with, and recover from emergency and crisis situations and distribute it to the **parents** during the Parent- Teacher Meeting.

## Project Idea – 5

**Topic** – Managing Disasters – The Role of students

**CBSE Guidelines** – Choose any one man made or natural disaster which your area may be vulnerable to e.g. gas leaks, building collapse, rail or road accidents, laboratory accidents, health hazards due to toxic waste disposal, earthquakes, floods, volcanic eruptions etc.

**Goal** – To study about the natural disasters or those caused due to human error, and provide solutions / precautionary measures to save lives.

**Essential Question** – How safe is our world?

**Project** – The students select any one natural or manmade disaster. They take on the role of **members of Disaster Management Committee** and do a detailed study of the disaster, **analyze** its causes, hazards and **suggest** precautionary measures to be undertaken in case of an emergency. They **interview** health officers, social workers and find out how they can be of use in case of the disaster. They also interview public safety agencies like fire brigades, police officers and analyze their role. They create **posters** and **enact skits** for “awareness generation” in the school. They also bring out a **brochure** that highlights the immediate steps to be taken by the community in mitigating the losses that might incur. They **analyze** the steps taken by the government to combat the disaster, spread awareness through both print and electronic media –and form **discussion forums** to discuss the changes that need to be established in the system. They also develop a multimedia presentation to deal with disasters and share it with the **school** and the neighbouring **community**.



## Chapter 7

# Guiding Questions for Project Planning<sup>15</sup>

Project Components	Reflection
<p>Questions that need to be addressed while developing the project:</p> <ol style="list-style-type: none"> <li>1. What is the goal of my project?</li> <li>2. Is my project based on and aligned to syllabus guidelines?</li> <li>3. What are the higher level thinking skills and the 21<sup>st</sup> century skills that I would like to target through this project?</li> <li>4. What are the learning objectives of this project?</li> <li>5. What is/are the subject(s) that would be covered in this project?</li> <li>6. What are the curriculum framing questions that would be used in this project to promote higher level thinking skills and to help students achieve the learning objectives?</li> <li>7. What are the different areas that my students would be assessed upon?</li> <li>8. What are methods of assessment that I would use throughout the project to help me understand the progress of my students?</li> <li>9. What are the different types of assessments that I would be conducting?</li> <li>10. When would I be conducting the above assessments?</li> <li>11. What are the processes and the purposes of the above assessments?</li> <li>12. What are the scenarios that need to be developed and presented to my students to help them achieve the learning objectives and effectively address the curriculum framing questions?</li> <li>13. What is/are the role(s) that my students will be playing during this project?</li> </ol>	

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[http://educate.intel.com/en/ProjectDesign/Design/PlanningProjects/Plan\\_a\\_Project.htm](http://educate.intel.com/en/ProjectDesign/Design/PlanningProjects/Plan_a_Project.htm)  
 (Accessed in 2008)

Project Components	Reflection
<p>14. Who is/are the audience(s) that my students would be addressing in this project? 15. What is/are the task(s) that my students will have to complete to help them establish real life connections and address real world concerns through this project?</p> <p>16. How many student groups would be there for this project?</p> <p>17. What are the grouping techniques that I would be using for this project?</p> <p>18. What are the roles that my students need to play within each group?</p> <p>19. What are the kinds of activities/ field trips that my students would need to undertake for this project?</p> <p>20. What are the support materials/ scaffolds that my students would need to complete the task(s) that has been set out for them?</p> <p>21. What are the resources that my students would need to complete the project?</p> <p>22. What are the different technologies tools that my students would need to use while working on the project?</p> <p>23. What are the kinds of technology based end products that I expect my students to develop in the course of the project?</p> <p>24. What is the kind of sharing/ showcasing activities that need to be done by my students?</p> <p>25. Who is/are the other teacher(s) that I need to work with so as to complete this project successfully?</p> <p>26. What is the kind of help and support that I need from the school management and parents?</p> <p>27. What is the project timeline?</p> <p>28. How much class time would be spent on this project?</p> <p>29. How much time is required to be spent by students outside the school time to complete this project?</p>	

## Chapter 8

# Sample Lesson Plans

Click on the lesson plans to see details

1. [Back to school](#)
2. [Shaking Earth](#)