PROJECT SRIJAN

Ideas: Students could take up either:

I. Invent A Game/Product Challenge – Ideate – Digital Design

II. Design A Game/Product Challenge – Create – Tangible Design/*Maquette

The Invent/Design a Game/Product Challenge offers an incredible opportunity to develop students' interest in interactive games' and toys' design to stimulate innovation, creativity and higher order thinking skills. This is a special and imaginative adventure in learning.

Sites and Ideas to Explore

1) Design today for tomorrow activity from Teaching Expertise looks at an art movement as a starting point for designing and making a product.

2) The By Kids for Kids is a website dedicated to developing children's creativity. Although the contests posted are open to only American children the ideas and resources posted on the web are phenomenal starting points for nurturing ideas. The brain sheets are superb.

3) Arvind Gupta's site has a veritable cache of resources on designing low cost or no cost toys and games as well as resources on how to design working models of scientific creations.

Explore the following web links. They are posted on the school website for easy referencing and research and will open up a veritable Ali Baba's cave of innovative insights and tools.

- http://www.teachingexpertise.com
- http://www.bkfk.com/Modules/Ideation/IdeationArchive.aspx
- http://www.arvindguptatoys.com

GUIDELINE

1. This guideline along with the web link will help you in conducting research for and conceptualizing and framing ***Project Srijan.***
2. A suggested set of activities, as an adjunct to encourage students to innovate, design and create is available on the By Kids for Kids website.
3. It will help spark your innovation and creativity as you engage in activities that teach you the concepts of digital designing or actual product design, helping you shape your creative skills.

4. As you innovate it will help you to explore your creative skills. We encourage you to investigate, experiment, design and create.

Ideation Tips: Reinvent, Re-engineer or Recycle

You can reinvent, re-engineer or recycle an old idea to create your treasure trove of innovative products. Here's **BKFK's** list of handy tips to help you crank out great ideas!

Step 1. Identify Your Idea:

You can find solutions in one of the following 3 areas:

- Mobility – something that moves things or people – e.g. a pulley drawn to pull aside curtains or a car pool service to fuel green choices for kids' fun and learning over the week-end – e.g. Mum's Fun Zone – kids create a mums' pool which organizes creative but cost-effective leisure activity plus food
- Environment – something that protects the environment adds value to it and is practical – e.g. used or discarded car spanners to be re-designed as an innovative letter box or exterior décor as planters or sculpture
- Play – something kids play with inside or outside – indoor games or toys or puzzles or puppets for story telling or theatre – for ideas on low cost or no cost toys and games as well as modelling of designs you could visit Arvind Gupta's web site via the link posted.

Choose the area that you think you could improve on with an invention

Step 2. Choose Your Concept & Brainstorm:

- Zero in on your idea – work out what stuff you need – material, resources, internet, notepad, sketch book or pencils, CDs, library books or journals etc.
- Find out what trash materials you can use for reuse and recycling
- Pick at least 2 discarded materials to develop your invention
- Take the idea that you have identified and brainstorm other solutions with your friends, family and/or mentor

Step 3. Design:

Once you settle on an idea to start with, you will need to build on the idea, understanding that your first solution is not always your best solution. Draw your solution on paper and then **SCAMMPER** to find out what you can do.

- Substitute – What could you do instead? Can you use another material or process?

- Combine – How about a blend of two or more ideas or processes?
- Adapt – Can you make it better?
- Minify – Can you make it smaller?
- Magnify – Can you add something to it?
- Put to other uses – How or where else could you use it?
- Eliminate – What can I need to get rid of?
- Reverse – Will it work backwards?

Finally the Branding or Naming

- Naming & Testing: Choose a name that best defines your idea.

Step 4. Test it

Get thoughts and reactions of friends, family, peer group and mentors to understand if your idea really works. Use your friends as a sounding board to critique and review the product.

- Does it work? Is it eco-friendly? Is it workable?
- Who will use your invention the most? What is the value addition?
- Will people like it? How did the value addition make the product unique?

The Process of Developing an Idea or a Product

All suggested activities are based on the inventive thinking and design process. They introduce the concept of design to students, and then use activities to lead the kids through the following steps:

1. Brainstorming – use the SCAMPERR worksheet

2. Identify Your Challenge

3. Design

4. Refine & Redesign

5. Name Your Game/Product & Do Proper Market Research

For tailor-made sculpture design, a ***maquette*** is used to show the client how the finished work will fit in the proposed site. **The term may also refer to a prototype for a game, film, or any other type of media.**

*A ***maquette*** (French word for scale model) is a small scale model of an unfinished architectural work or a sculpture. It is used to visualize and test

shapes and ideas without incurring the cost and effort of producing a full scale product.

*__Maquette__ (definition Merriam Webster): a scale model of an object, building, creature or character, often intricately detailed and painted to show the colour and texture of the surfaces, skin or clothing. Maquettes are often made in film studio-production art departments, and can be digitised in order to create a three dimensional image or simply used for reference in texture painting, lighting tests and usage trials. These concepts are an interesting starting point for developing ideas about the project. The sky is the limit to students' creativity and inventive design.

Design Today for Tomorrow

When you have produced your design make a *__maquette__ and, depending on your conditions for the project undertaken, make it, fire it, drink tea from it, exhibit it, sell it. Finally record your research and make a presentation of it. The projects will be adjudged before a panel of judges.

Mandatory Rules:

I. A PPT must accompany the concept you evolve whether it is a digital design you explore or a maquette, and if the latter your model should be exhibited as well as the PPT.

II. Contestants must work in groups of at least four and a maximum of six.

III. There will be just one set of prizes for the winning team's design, and one set each for the first and second runners-up respectively.

IV. Steps of the design have to be detailed methodically through illustration, sketches, diagrams, photographs and flowchart

V. The innovation or value addition to a former idea or product has to be clearly, visibly presented.

VI. Each group member's role has to be defined clearly and their contribution brought to light.

VII. Finally there is a **Challenge**: This project will have just **one category for all participants ranging from classes VI-XII** for any student wishing to participate so the ante is indeed high! A group of class VI students could pip their class XII seniors to win the prize!

VIII. Members of a team could be from different classes and sections.

IX. Each student participating in the Inventive Thinking Toolkit will receive a certificate of recognition and will share the invention with other students at our school "Invention Convention."

X. The project must be submitted on or before Thursday, 11th February, 2010.

XI. The final projects selected for Jury Presentation will be announced on Monday, 15th February, 2010.

XII. Selected finalists have to make the presentation to Jury on Saturday, 20th February, 2010.

SAMPLE DESIGN CHALLENGER FROM BKFK

Design and build a table out of newspaper tubes. Make it at least eight inches tall and strong enough to hold a heavy book.

BRAINSTORM AND DESIGN

Look at your materials and think about the questions below. Then sketch your ideas on a piece of paper or in your design notebook.

1. How can you make a strong tube out of a piece of newspaper?

(This challenge uses tubes because it takes more force to crumple paper when it's shaped as a tube.)

2. How can you arrange the tubes to make a strong, stable table?

3. How can you support the table legs to keep them from tilting or twisting?

4. How level and big does the table's top need to be to support a heavy book?

BUILD, TEST, EVALUATE & REDESIGN

Use the materials to build your table. Then test it by carefully setting a heavy book on it. When you test, your design may not work as planned. If things don't work out, it's an opportunity—not a mistake! When engineers solve a problem, they try different ideas, learn from mistakes, and try again. Study the problems and then redesign.
For example, if:

• The tubes start to unroll —
Re-roll them so they are tighter. A tube shape lets the load (i.e., the book) push on every part of the paper, not just one section of it. Whether they're building tables, buildings, or bridges, load distribution *is a feature engineers think carefully about.*

• The legs tilt or twist —

Find a way to stabilize and support them. Also check if the table is lopsided, too high, or has legs that are damaged or not well braced.

• A tube buckles when you add weight –
Support or reinforce the weak area, use a wider or thicker-walled tube, or replace the tube if it's badly damaged. Changing the shape of a material affects its strength. Shapes that spread a load well are strong. Dents, creases, and wrinkles that put stress on some areas more than others make a material weaker.

• The table collapses –
Make its base as sturdy as possible. Also, a table with a lot of triangular supports tends to be quite strong. A truss *is a large, strong support beam. It is built from short boards or metal rods that are arranged as a series of triangles. Engineers often use trusses in bridges, buildings, and towers.*

MATERIALS (per person)

- 1 piece of cardboard or chipboard (approximately 8 ½ x 11 inches)
- heavy book (e.g., a textbook or telephone book)
- masking tape
- 8 sheets of newspaper

PAPER TABLE: TAKE IT TO THE NEXT LEVEL

- If a little is good, a lot is better! Build a table that can hold two or more heavy books.
- The sky's the limit. Build a table that can hold a heavy book 16 inches above the ground.
- Matching furniture! Build a chair out of newspaper.

ENGINEERING IN ACTION

A paper house? Better leave your matches outside! Check out these items that engineers made out of paper. Then choose from the list and see if you can figure out the year each item was invented.

Quiz: Match the years these items listed A-F were invented: 1922; 1931; 1967; 1995; 2004; 2007 [The dates are jumbled up.]

Paper guitar?

Build a great-sounding guitar out of a box, string, wood, and wire. See how on Make Magazine's project page at makezine.com/designsquad

A. Paper Church: After a big earthquake in Japan, engineers quickly made a building by stretching a paper "skin" across 58 paper tubes, each over 16 feet long. The church was only meant to be a temporary place of worship. But it's still standing today.

B. Paper Video Disc: This disc holds more than three times as much data as a standard DVD and is much better for the environment. But you'll have to stay tuned—there's no release date set.

C. Paper House: An engineer built a vacation home out of newspaper. He glued newspapers into one-inch thick slabs and then used them to make the walls. It's still standing!

D. Paper Towels: By mistake, a factory made rolls of paper that were too thick for toilet paper but too weak for most other uses. But where others see problems, engineers see possibilities. The paper was sold as "Sani-Towels," which soon became known as paper towels.

E. Paper Batteries: They're smaller than a postage stamp but can power a light bulb! And they decompose in landfills. Engineers are still figuring out how to get them to work with all our gadgets.

F. Paper Dresses: Engineers created paper outfits that could be printed with designs. They were sold in boutiques and in stationery stores, where you could get a tablecloth to match!

(Answers: A: 1995; B: 2004; C: 1922; D: 1931; E: 2007; F: 1967)

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PROJECT
SRIJAN

REGISTRATION FORM

NAME:
GROUP LEADER

CLASS & SEC:

SCHOOL:

PROJECT TOPIC:
BRIEF DESCRIPTION

PROJECT NAME

NAMES OF GROUP PARTICIPANTS WITH CLASS, SECTION & ROLL NO.:

SIGNATURE OF GROUP LEADER