Grade: 7 Design

Unit 3: Structures

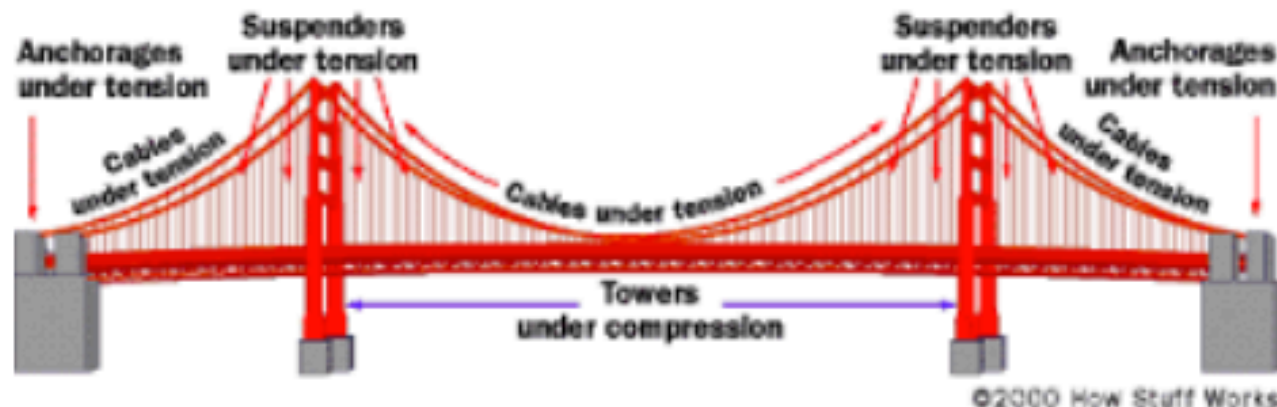Suspenders under tension — Anchorages under tension — Cables under tension — Towers under compression

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Design Challenge:

Design and build bridge structure out of limited materials (straws, popsicles, string, glue gun, staples, card paper).

Must hold 0.5 kg weight, span distance of 250 mm and 60mm wide

Statement of inquiry:

Good design incorporates how humans adapt objects and environments to their needs

Global Context: Scientific and Technical Innovation

key concepts: Communication

Related concepts: Collaboration and Function

What do we want to know and explore:

- Why humans adapt environments and objects to their needs ?
- What do the end users want from us the designer ?
- Who are we designing for?
- How do we communicate and convey information or meaning?
- What do we need to know in order to be successful?
- How does using limited materials enhance or diminish the desirability of a product


Design Cycle focus:	TASK: **What do we know and need to know?**	Check list:

Our final bridge design was overall successful. Improvements can be recognized compared to my group's prototype. Our bridge has strengths and weaknesses alike. A strength was that our bridge passed all of the requirements such at least holding 500 grams and having three toy cars pass through. A weakness was that one of the 2 ends didn't correctly attach to the bridge, since we ran out of time to glue them together well. Another strength we had the idea to decorate the bridge, which made the bridge aesthetically pleasing. From the start, our design plan for our bridge required the final materials given, not paper. This means that our final bridge turned out much better than our weak prototype. We both suggested/ thought of very good ideas to make our bridge unique and strong. For example, my group member suggested the idea of wrapping tape around the roof to make it strengthen and look better. Also, I thought of colouring the trusses with marker and using straws for the base.

Richard
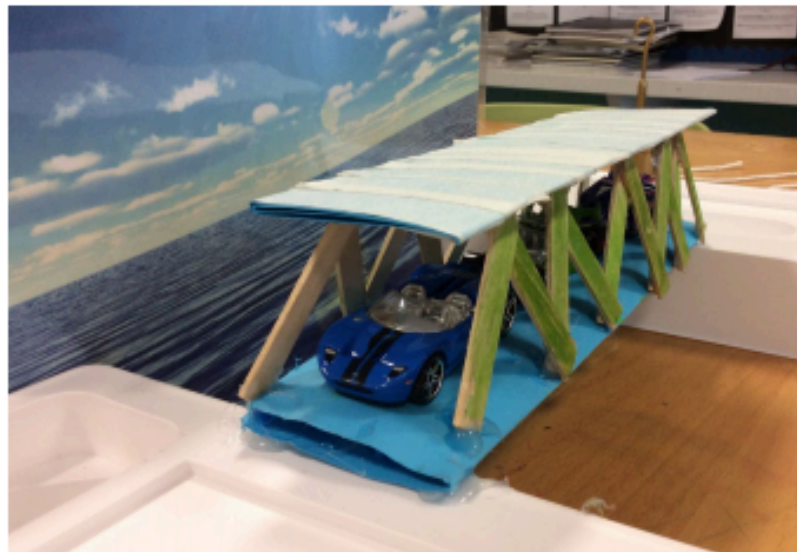
Reflection for my Final bridge - Arnav

This time we made a suspension bridge out of various materials. After I finished my bridge, I added the leftover materials at the bottom of the bridge to make the base more strong (so it doesn't snap). Then after adding the weight, I thought that I should have spreaded the leftover materials equally around the base of the bridge. Since I didn't do that, one part of the bridge was bent because it wasn't supported equally at the bottom. There were many strengths and weaknesses in my final bridge. One strength my bridge had was that it could not snap very easily and was flexible since it was supported at the top by the strings. But one thing I could have improved on was the bending issue (as I said before). Another strength my bridge had was that the base was very stable and flat. But one thing I could have improved on was making the 4 towers more strong by adding more popsticks on the sides. One more strength my bridge had was that the top is very flat meaning if weight is put at the top, the surface will be flat enough to hold it perfectly. Something I could have improved on was to add a better variety of materials in certain parts of my bridge. I think this project was a success since my bridge did take 0.5kg weight and it also looked aesthetically pleasing plus you could identify what type of bridge it was.

Student Name: _____   **Teacher: Ms Gilliam**

Subject Area - Topic: Grade 10 Design   **September 2016**

Assessment Type:	IGCSE PROJECT Criterion A, Inquiring and analysing Criterion B, Developing ideas

What to do:	Students will; • **Research, analyse and summarise existing products and market trends(questionnaire and mood board)** • **Write a personalised design brief, situation and specification** • **Create a series of annotated design ideas and and justify their final design**

Conditions:	Work will be completed in class and at home. Students evidence will be in the form on A3 page in their design folder,

Due Date:	OCTOBER 2016
	Prior to Submitting Work
	❏ **Did I clearly identify, explain and analyse all my research?** ❏ **Did I include a wide range of inspirational images and information?** ❏ **Did I include a clear Design Brief?** ❏ **Did I write a relevant and personalised specification?** ❏ **Did I show range and variety in my design ideas?** ❏ **Did I annotate and analyse my design ideas?** ❏ **Did I develop and justify my final idea?** ❏ **Did I proof-read my work?** ❏ **Did I share with peers to collect feedback on my ideas?** ❏ **Did I go back and edit my work again including new suggestions for my work?**
Achievement Level	

Hermann Klein-Hessling

Primary Research: Analysis Of Existing Board Games

Comparison between Monopoly and the Game Of Life

There are quite some similarities between the game of Monopoly and The Game Of Life. For example the first thing they have in common is that they both have a in-game currency which the players must spend wisely. Both games also have an underlying factor which is that they both teach you about things you may come across in life. For example Monopoly teaches you about buying properties, paying rent and mortgage of properties. The Game Of Life also teaches you about things such as marriage, jobs and the different routes of education. One progresses in the game of Monopoly by rolling a dice. However in the Game Of Life a spinner is used. Additionally, both games have elements of chance and luck but are not purely based on them. Decision making is crucial in both games one mistake can stunt your success or progression in both of the games. Both games can be played, and enjoyed by multiple people, and also the game is universal meaning it can be played by anyone, no matter the age. After some time Monopoly's gameplay can become a bit repetitive whereas the Game Of life always has something in quick succession that is different from the previous thing. Furthermore, both games end in different ways. In Monopoly the player's objective is to make the other players bankrupt and to have the most money out of all players. Whereas the Game Of Life ends with retirement which is another aspect that we all come across eventually at some point in our lives.

Differences between Monopoly and The Game Of Life:
- Steps are taken in Monopoly by rolling a dice. Whilst in The Game Of Life a spinner is used.
- The gameplay in Monopoly can become a bit repetitive whereas the Game Of Life always has something in quick succession that is different from the previous thing.
- Different end-game scenarios; The game of Monopoly ends when one player bankrupts all the other ones. In the Game Of Life it ends when you grow old, retire and die like in real life.

Similarities between the Game of Life and Monopoly:
- Teach you about common occurrences in real life
- Have elements of chance and luck. However strategy is also present
- Decision making is important
- Can be played with multiple people
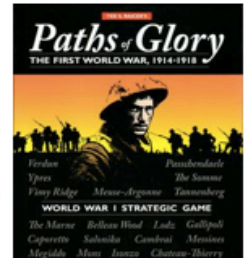- Universal meaning (they can be played by anyone

Comparison between Risk and Paths of Glory

Paths of Glory: The First World War, is a strategic war-game which allows players to step into the shoes of the monarchs and marshals who triumphed from 1914 to 1918. As the Central Powers you must use the advantage of interior lines and the fighting skill of the Imperial German Army to win your rightful 'place in the sun.' As the Allies you must bring your greater numbers to put an end to German militarism and ensure this is the war 'to end all wars.' Both players will find their generalship and strategic abilities put to the test, as Paths of Glory's innovative game systems let you recreate all the dramatic events of World War I. The game covers WWI from its outbreak to American intervention and spans all of Europe and the Middle East. Not only is the game innovative, but it also plays fast, usually within just an evening. While the game itself has all of the normal expectations of a war-game, with various units, and other various things to micromanage. Players are given a hand of cards to play out six sub-phases of a turn. Each sub-phase allows for the use of a card or a pass with a minimal movement of units. Each card has four possible uses: operational movement, strategic movement, special events, and replacement points. The card play forces players to constantly make tough decisions as they feel that they need to do a little bit of everything but they can only do one thing at a time. How you play your cards will decide to a large degree the outcome of the war. Risk is another more well known strategic war-game which allows players to battle for global domination. It could also be considered a simplified version of Paths of Glory with less things to worry and micromanage about. The game Risk is played on a board that looks like a map (just like Paths of Glory). The map is divided up into countries, or parts of countries. Each separate country (or part of a country) is called a territory. The classic map has 42 different territories. Each territory borders on one or more other territories, either by directly touching a neighbouring territory, or by a line on the board that makes a link between two territories. Each territory is also a member of a group of territories near each other that form a continent; special awards are given to players who own all the territories that form a continent. At

Similarities between Risk and Paths of Glory:
- Both Risk and Paths of Glory are strategic war games
- They both are historical and represent real events which

Differences between Risk and Paths of Glory
- Paths of Glory is more simplistic than Risk and requires less micro-management
- Risk's game board

Situation & Design Brief

Board games are really engaging because everyone loves having fun, killing time and win, right? They can either teach you how to react in the given circumstance because you would have to adapt to the game or the Situation, some games teach you tactics, memorising pieces, while others could teach you strategy. Take monopoly for an example, it teaches us about managing money, making the right moves and decisions, which is why I want to make a board game that be engaging to my father and I and teach a little bit of history.

Where?

The board game will fit inside a squared box, so you could take it anywhere you like. If I was to actually produce this for business, I would do it in China or Vietnam because the materials are cheaper there.

Why?

Because there are no vietnamese game that are like this, I feel like this will remind and make Vietnamese people proud of where she is from.

Analysis of the design problem/challenge

What?

To design a board game that will be engaging, and something that vietnamese people would be proud of and play.

Who?

the board game will be most suitable for children who are older than the age of 10. Other then that, there are no other restrictions.

When?

Probably by 2018 or 2019.

Design Brief

I intend to make a board game that will be engaging and fun. A very easy, simple game to understand and play, but there will be so many ways that you can arrange and place the pieces. This will improve strategy, memory and technique. A plus for all the players who like war and strategy games out there! I also want to make something that would be easy to produce, and something that could be made with the materials there are at your home.

Date: January 9-13	Project: Designing a …
What you did this week	We did some research about different candy and chocolate and put our favorite wrappers onto our own mood board. On this mood board we also created a colour scheme that our design might look like.
What went really well	I think I found some great wrapper designs that other people came up with that my design might be inspired off of.
What went wrong	I think I could have found more and better colour schemes if I spent more time finding the right colours
How you will or did solve any problems	Just spend more time at home looking for these different colour schemes that will look good with my mood board
Your aim for next week	Collect pictures and analyze products

Date: January 16-20	Project: Designing a …
What you did this week	This week we analyzed different product packaging and wrote down some of the positives to each package in our design sketchbook. We also drew out the design cycle. Lastly we looked at different criteria that you need to keep in mind when making your design/product.
What went really well	I did my design cycle and design criteria very well with detailed information about each one.
What went wrong	I only had time to analyze one of the packaging examples because I spent too much time working on the design cycle and design criteria.

I created my product in the period of three weeks. I had a lot of color scheme research and product research before making my final product. I looked at many different chocolate box designs and colors people were attracted to. I created connections between them to create my product. My research was where I gained inspiration to create my product and I knew it would look good because I found out what people liked. In addition, I used the best resources that I had and combined it well together. I have a clear title of my product. It is called 'Sweet Bites' and a subtitle which is on the sides 'chocolates'. This is for people to know what sweet bites is. The font I chose was cursive

Name _____

The Newspaper Airplane challenge

The mission is to invent, build and test ways to:

_____

Timing: _____

My plan: _____

Materials needed: _____

Unknowns: _____

Description of the Challenge / Design Brief: