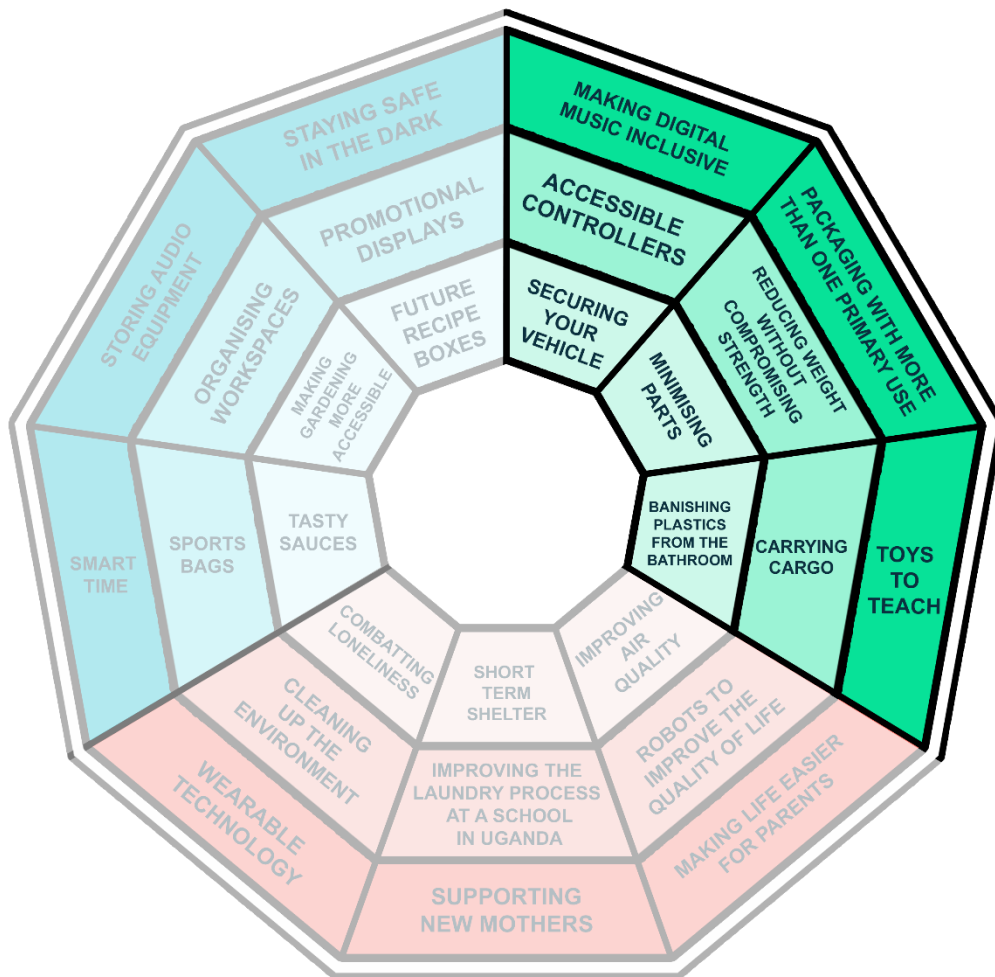


INSPIRED BY INDUSTRY

Celebrating success

#InspiredbyPentagram



Pentagram

Introduction

This context has been put together to allow for a range of opportunities for students to explore how they can create an award to recognise success. It lends itself to an aesthetic outcome and a range of approaches, including a possible 'mainly make' element. Whilst the company involved are a global design agency, they designed the UEFA Europa Conference League trophy and share their experience of that process in this context, including some interesting 'storytelling' case studies.

Materials

Because of this very open context, there is scope to use a wide range of materials. These may be rather 'traditional', such as selecting woods based on their finish, but also an opportunity to explore less common materials, such as fabrics or smart materials or those that may change over time, e.g. forming a patina. Depending on how confident the group is, it may be advisable to constrain it to potentially one sector – such as a sporting achievement, possibly bringing in a class client to work for. Similarly, group work may be possible for this context to develop a more challenging outcome. There is a good opportunity to explore 3D printing and CAD modelling in this context as well as more traditional approaches such as wood turning and brazing.

Potential outcomes

The outcomes are prototypes but will require testing in terms of their function and performance but are likely to form a largely aesthetic approach. The teacher may decide to take a more conceptual route and look at a non-working prototype, exploring CAD functions such as FEA and generative design as well as comparing mass from material libraries.

It is important that students are given some freedom within this context and so outcomes should vary between students/groups, ideally rethinking what it means to celebrate success and have a token of this recognition. You may decide to limit your class to 2-3 outcomes as mentioned above.

Examples may include (but not be limited to):

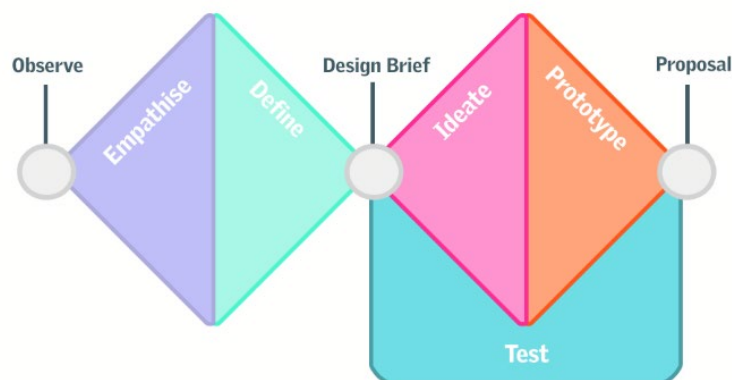
A commemorative plaque or shield for a school achievement, a trophy for a sports team, a cast medal for sports day, a fabric award for a winning horse at a show.

Consider any sport, activity, or achievement that might be recognised with an award.

Consider sharing work on social media using the hashtag #InspiredbyPentagram

Design cycle

The design cycle shown can be worked through in a range of orders. It's advised that the areas are revisited throughout the process depending on your time. We advise that a graphical representation of thinking convergent and then divergent may be shown to your students.



The following are some tips as to the type of activities you could do with your students.

Empathize stage

- Students should be introduced to this term if not already familiar.
- Access to a range of existing trophies and awards will be useful. Also consider that students may create something completely new and innovative, but the reference to existing awards will still be useful.
- At the start of the context, students should be thinking wide with their thoughts, exploring the problem and not deciding too soon what they 'want to make', but observing what is happening and identifying problems.
- Trying various aspects as a group can also be useful – using and analysing existing awards for example, then sharing thoughts and feedback.
- Collaboration software such as Miro, or Google/Microsoft collaboration can be good to use to collate ideas from all.
- Students should get as much information to help them later in the challenge. They may present this in any way they wish.
- When looking at a range of different awards it is an opportunity for students to look at Gantt charts and similar, to identify common features or attributes as well as planning their time and highlight any possible issues that may arise. Consider the typologies IEA task to support this.
- Equally, it may be an opportunity to not look at any awards due to the possible preconceived ideas and design fixation that can follow. Instead, spend time investigating and analysing the activity/event that this intends to celebrate.
- Consider different approaches such as the green jacket in golf, yellow jersey for the Tour de France, Championship rings for the NBA... what can be drawn from very different activities?

Define stage

- This is where students try to get to the real root of the problem and decide what they are going to do.
- There may be a whole range of potential outcomes identified. Identifying the user base and their needs, as well as constraints or barriers to making the awards in school, may help.
- Remember that the company uses a football trophy as a basis for the examples in the videos, but your students can focus on any sport, activity or performance they think is suitable to create an award for.
- Try to get students to tell a story with their idea. What are they going to draw inspiration from? Whilst there are well-known items such as the Burj Khalifa and its inspiration from a [desert flower](#), there are lots of other case studies, such as those [here](#).
- For this stage, you may possibly constrain it to ensure students are working with materials and processes you wish to cover in the unit of work. There will still be plenty of opportunity for designs, testing, iteration etc.
- Whilst it may not be applicable at this stage initially, defining costs for an existing solution and then comparing it with their proposal could be useful. Students could create a cost spreadsheet showing savings made if the award were made in larger numbers.

- Consider looking at storytelling videos in design such as this from [Google](#).
- It's important to try and avoid stating what it will look like yet, but rather inspiration and a direction.
- Students could pitch their concepts to peers (or the client) as agencies like Pentagram would, to win a bid.

Ideate stage

- For the ideation stage, you may be drawing on existing ideas (e.g., improving an existing award) rather than starting from scratch.
- Consider giving students the initial freedom of how to approach their ideas. For example, it may be CAD, a card model or a sketch. Giving students autonomy of how to approach their designs will prevent them feeling restricted. Working in groups can help generate creative ideas.
- You may wish to show students examples of where awards have been designed to make use of modern materials or to be more sustainable.
- Consider pre-making and demonstrating/testing a few designs. For example, 3D-print a scale trophy or laser-cut elements to make a sports shield.
- Focused Tasks can inspire students and show them what is possible. Vacuum forming over card letters can create an embossed effect, laser-etching 3D printed surfaces, pyrography, vinyl lettering, enamelling... There are a number of techniques that can be demonstrated to inspire students, and a great opportunity to input areas of the KS3 and 4 curriculum into this open brief, especially around decorative techniques.
- Encourage students to annotate elements of their drawings – things like WHY it's that big, WHY it's that shape, WHY it is that material etc.
- A range of techniques such as 2D, 3D, exploded and cross sections are good. It is likely that for this unit, 3D drawings may not be the most useful viewpoint for the product being designed, and instead, 2D images are more beneficial. The designers themselves suggest the use of a silhouette sketch approach when developing initial ideas to provide a striking, unique shape (could the shadow that is cast, be an element?...)
- CAD programs will be of great use here. Many have easy-to-use simulation elements and photorealistic rendering to show how the final award might look in a range of materials. Some CAD programs also have generative design which could create stronger, lighter versions of your designs.

Prototype stage

- Getting students to realise when and why to make a prototype is key. What are they looking to prove / disprove? Linking the prototype method with the problem is a good task. In the video they suggest any realisation of a design is a prototype, even small-scale trials.
- Prototypes may be mechanical or structural models, test rigs, mock ups, painted models, or CAD models and/or assemblies.
- The following are all suitable CAD programs:
 - [AUTODESK](#) free for schools/students. Mac & Windows
 - [CREO](#) free for schools/students (PC only)
 - [FREECAD](#) free for schools/students

- [ONSHAPE](#) free for schools/students
- [SKETCHUP](#) free for schools/students
- [SOLIDEDGE](#) free for schools/students
- [SOLIDWORKS](#) discounted for schools
- There are some good Autodesk Fusion tutorials [HERE](#) and TinkerCad [HERE](#)
- Consider asking stakeholders to give some feedback on the prototypes, as they are being developed and at the testing stage.
- Whilst the CAD models produced may be fairly simplistic in their nature, it is an opportunity to explore different techniques with students such as creating parts to assemble or rendering out final images. Again, you may produce some examples in advance to showcase the feature of the CAD software being used
- Investigating properties of materials lends itself well to this context. Students will naturally test items in the next stage, and so learning about a range of properties is useful.
- The assignment of actual materials to models is necessary if both FEA and generative design are to work correctly. You could use this opportunity to introduce the theory of material properties to this context.

Test stage

- Although this is the final stage of the design cycle, encourage students to evaluate throughout and act on their feedback (and consider the feedback of others too). It is not a final thing, but a step to improve further.
- Test in as many different scenarios as possible to ensure you get realistic feedback. Observe how users are interacting with the product and use these observations to add more detail to your questions for feedback.
- Consider whether you need to test with static or dynamic tests, and show students the difference between these. This [short video](#) helps to explain, using a can to illustrate it.
- Be sure to record the testing results, either in data form, written test, or use digital audio and video to record. You may wish to get students to do lab-testing (testing in the classroom) and also field testing (testing with a user).
- With destructive testing, it is important to ensure safety at all times, as products may react in unexpected ways. For example, if students are to test the strength of a trophy by dropping it, get the students to attempt to write a risk assessment for the test. This will be similar to what is done in science, and ensure they adhere to all relevant PPE and safety procedures when carrying out supervised tests.
- Draw on approaches from science here. It may be worth speaking with a science colleague to replicate how students predict and record experiments. Doing this using similar methods will help to reinforce the learning.

Focused Tasks

'Sketching'	'Wall plaque'
This is a good opportunity to revisit, and develop, your sketching skills. There is no need to draw in complex shapes in 3D if you are not comfortable drawing, you could concentrate on the elevations (flat views) of the design until you create ideas that you are happy with. These could then form the basis of a CAD model, which is 3D printed or sculpted in clay or plasticine.	Wall plaques are often used to celebrate success. These can form a permanent reminder of the success and be attached to a wall. There are a range of methods for creating a wall plaque. Have a go at creating an acrylic 'plate' with engraving or vinyl for the name and celebration on a shaped wooden piece (that is attached to the wall). Consider making stand-offs from threaded aluminium pieces or maybe even nylon? Finish with mirror screws or similar.
'Character Trophy'	'Advanced CAD modelling'
Trophies often reflect the sport or activity in which the achievement is recognised. Create a trophy that reflects the action or pose of a character. Create this character from wire, rod which is easy to shape and form Alternatively, use a modelling material such as Polymorph to mould the character You could also create a CAD model of your character and 3D print it, or create a mould for casting it in metal or resin.	CAD is a prominent feature of the development by Pentagram. Try using CAD to realise your designs in 3D. You may even want to try a path and a sweep to replicate the process that Pentagram used for their trophy. Experiment with rotations, different cross sections and more to create intricate designs in minutes!

Investigative and Evaluative Activities

'Awards through time'	'Disassembly'	'Inspiration'
Rather than looking at new or recent awards, consider looking at how success has been celebrated over the years. Research awards from ancient times up to the modern day and use the typologies to classify these into different types. Also consider the materials and how they were made as well as how they reflect the achievement they recognised. The Olympics could be a good starting point.	To get an idea of how products are made and assembled, it can be a good idea to disassemble an existing product. Try some of these: - Carefully take apart a trophy or award and see how the individual parts have been assembled. - Use parts from different awards to create your own 'Frankenstein' award. - Reuse parts from one award, such as a wooden base or shield, and incorporate them into your own unique design.	Using the case study from Pentagram where the free kick inspired the lines of the trophy, consider doing this for a sport or performance you are using as the basis for your design. - Take still photos of the performance and sketch over key shapes, figures or actions for inspiration - Freeze frame videos and trace over movement or actions to get inspiration.

