

Comparing the Design Cycle phases and the Victorian curriculum Design Thinking models.

The Design cycle phases made explicit. SOM.

The problem phase is where we meet our client and get an understanding of the scenario in which there is a solution to be sought. Who needs it, why do they need it, where do they need it, when do they need it, what does that do to do, and finally has this been done before? So here we introduce the search for “like solutions”, as a means of identifying solutions that are a close fit (or not) to what our artefacts/product will need to be.

The design phase is where all of the thinking and conceptualising are done, and where we reach a considered conclusion as to how and what the product/artefact will be. This is where we developed the blueprint that becomes the basic recipe for someone else to follow in order to make exactly, explicitly what we have described. This is where you outline the dimensions, the materials used, and the presentation or look of the final product.

The create phase is where we talk about the tools and equipment, and the processes used to actually make the artefact/product. Here in the create or making phase we can also acknowledge the use of personal protective equipment (PPE), and any other Occupational Health & Safety and welfare conditions.

The analyse phase is where we talk about how the end stacks up against the constraints and considerations of the original design brief. We are analysing if the artefact/product fulfils the initial criteria that were previously identified. The constraints are the things that we cannot change, we consider these the “immovables”. The considerations are the things that we can change, these are the “flexibles”. How in-depth and explicit the constraints and considerations are gives us very clear guidelines as to what our artefact/product, our solution must take into account.

The evaluate phase is where we get feedback from “the end product user”, the client or person who uses this artefact/product on a day-to-day basis. The feedback from this familiarity with the product provides insights into modifications and the fine-tuning of our final product. In terms of evaluating an artefact/product without actually using it, we undertake to use our imagination and project how this artefact/product would perform over time, and as such make our evaluation and suggestions based on this critical thinking.

Think of the design cycle critical reflection task as a tool that you can bring to school students to have them understand the explicit steps that must be taken in order to solve a problem, create an artefact/product, and be able to articulate those steps with confidence. The fewer the details involved in this process the more muddy or loose the outcome will be, and the greater and more explicit the details will be the more precise and considered the artefact/product becomes.

This Victorian curriculum design cycle;

Creating Design Solutions:

Investigating

Generating

Producing

Evaluating

Planning and managing

(Curriculum example chart on LMS)

Investigating –

Students critique, explore and investigate needs and opportunities, reflecting on how the choices they make have implications for the individual, society and the environment

Here it is understood the ‘context’ and the ‘client’ are of primary importance. In this phase the problem is defined, and ‘like-solutions’ are discussed in order to plan towards the best-case solution. Constraints and considerations are addressed here and the greater the detail of these the easier it is to analyse/evaluate if the solution is suitable.

Generating –

Students develop and communicate ideas for a range of audiences. Students make choices, weigh up options, consider alternatives and document various design ideas and possibilities.

Here it is understood the bringing together of design ideas will happen. The like-solutions previously identified provide a direction to 'realise' the preferred solution. This is where the details (the blueprint) of the solution will be identified. Measurements, materials, costs, time constraints, colours and such. The constraints and considerations are taken into account in order to generate the preferred solution as a viable artefact (system or object).

Producing –

Students apply a variety of skills and techniques to make designed solutions to meet specific purposes and user needs. They apply knowledge about components and materials, including characteristics and properties, to ensure their suitability. Students learn about the importance of adopting safe work practices. They develop accurate production skills to achieve quality designed solutions.

Here it is understood the actual 'making' of the solution will be undertaken. OHS measures are identified and followed to ensure all participants are not putting themselves or others at risk. The range of skills and level of mastery are identified (as appropriate to the task) and these skills are executed to fulfil the desired outcome. The level of mastery will impact on the quality of the build (implementation) and will be assessed in an age-appropriate, stage-appropriate manner. It is the 'doing' that is important and the learning to reflect on the processes involved. Peoples confidence can be built up or undermined if this is not realistic and clear.

Evaluating-

Students evaluate and make judgments throughout a design process, about the quality and effectiveness of their designed solutions and others. They determine effective ways to test and judge their designed solutions, and reflect on processes used and how they could transfer what they have learnt to other design opportunities.

Here it is understood that participants will 'value judge' their and others work. It is not sufficient to identify an outcome as good or not good. Participants will develop critical thinking skills to critique the outcomes and discuss aspects for appraisal and/or modification-rectification. Participants will take into consideration the skills-level of the maker and the context of the solution. Participants may have developed an explicit rubric to address the designed solutions attributes. Remember that 'prototypes' are a form of thinking in action and may not necessarily demonstrate the finished quality of the final solution.

It is most important that participants indicate modifications or re-design opportunities for the presented artefact in order to demonstrate that they fully understand the ongoing process of design thinking.

Planning and managing-

Students learn to plan and manage time, along with other resource, to effectively create designed solutions. Working individually and/or collaboratively, students progress from planning steps in a project, through to more complex project management activities that consider factors such as cost, risk and quality control.'

Here it is understood that participants will develop skills in addressing all aspects of project development and implementation. Participants will be self-reliant (individual and groups) and accountable for timely execution of the steps towards the final solution. Participants will develop skills and understandings of how to work effectively in groups and in collaboration with others. Clear plans and/or story-boarding will be evidence of developing these skills. Participants should rehearse/share leadership roles and provide clarity in role-distribution for the stages or processes involved with generating the final solution. Participants will provide evidence of committing to and completing the final solution within the evaluation criteria of that solution.