

re-defining & re-imagining STEM

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(presentation notes on website)





STEM



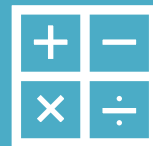
Science



Technology



Engineering



Mathematics



Systems Thinking



Thinking Routines



Problem Finding vs
Problem Solving

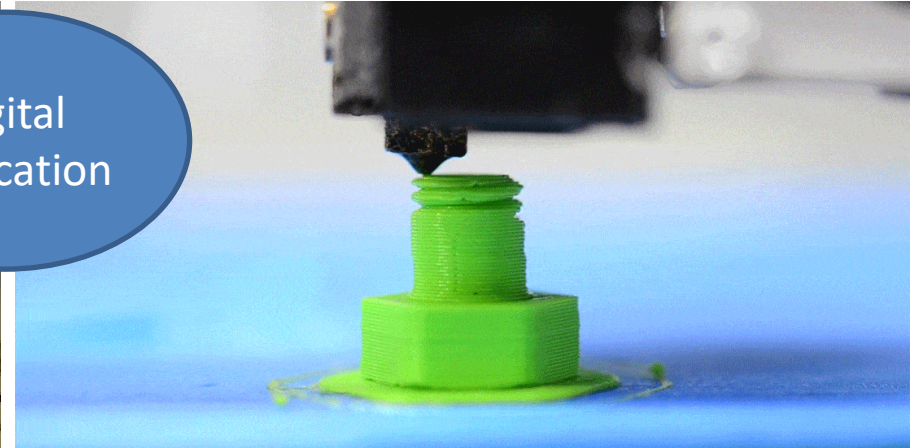


Systems Thinking vs
Design Thinking

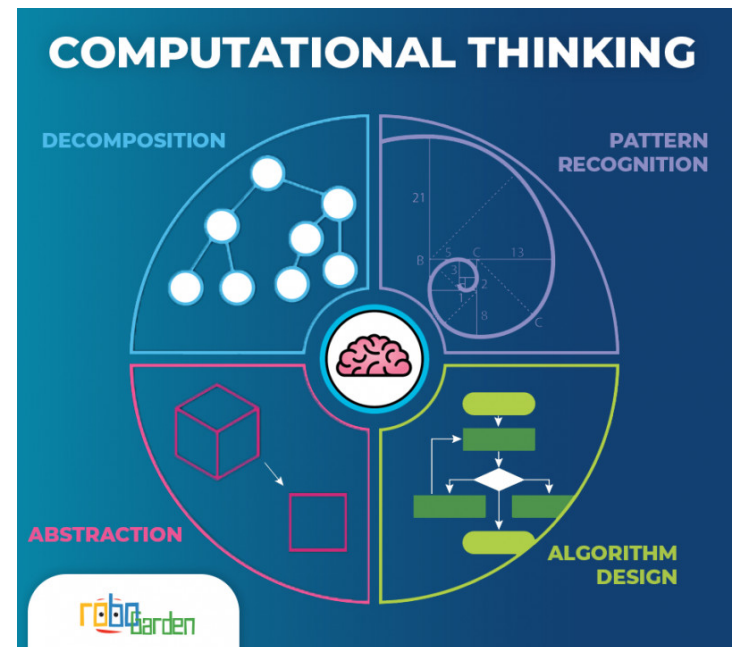


7-step Process –
Applied To Scenarios

Technical skills & knowledge



Technical communication



Empathy

» UI & UX



Designing
The Product



VS



Designing
The Experience

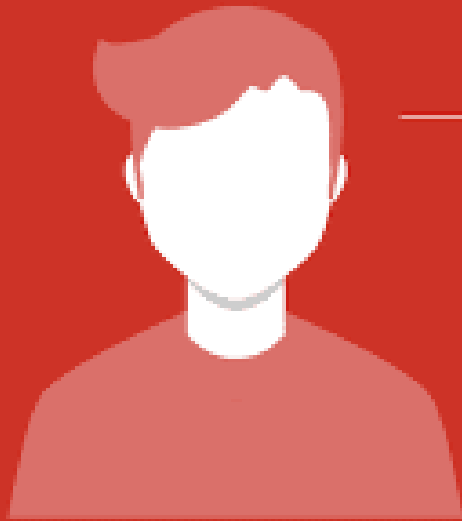
<https://syndicode.com/2017/10/06/ux-vs-ui/>

<https://www.slideshare.net/aveef/play-learn-in-global-uiux-design-competition-118773350>





Empathy



- As a [person in a particular role],
- I want to [perform an action or find something out],
- So that [I can achieve my goal of].

<https://www.smashingmagazine.com/2018/02/comprehensive-guide-user-experience-design/>



Inclusive Design Principles



These Inclusive Design Principles are about putting people first. It's about designing for the needs of people with permanent, temporary, situational, or changing disabilities – all of us really.

Adapted from inclusivedesignprinciples.org/

1 Provide comparable experience

Ensure your interface provides a comparable experience for all so people can accomplish tasks in a way that suits their needs without undermining the quality of the content.



2 Give control

People should be able to access and interact with content in their preferred way.



5 Be consistent

Use familiar conventions and apply them consistently.



Inclusive so everyone can use them safely, easily and with dignity.

Responsive taking account of what people say they need and want.

Flexible so different people can use them in different ways.

Convenient so everyone can use them without too much effort or separation.

Accommodating for all people, regardless of their age, gender, mobility, ethnicity or circumstances.

Welcoming with no disa

Realistic offering more t
and recognising that one

» Look for points of exclusion

- E.g. deaf users couldn't rely of audio-based prompts

» Identify situational challenges

- E.g. a user in a wheelchair can't get close enough to the game to play it, despite being physically able

» Recognise personal bias

- E.g. All instructions in English assume that all users have English as a language (or can read)

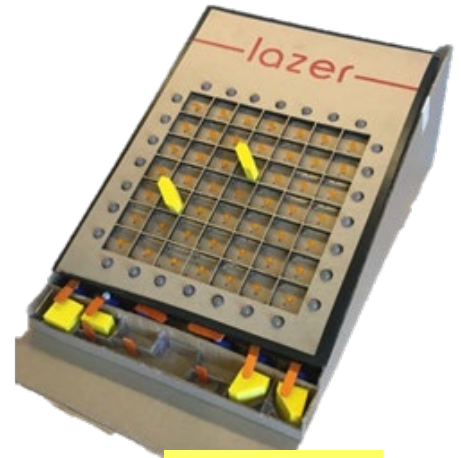
» Provide equivalent user experiences

- E.g. Providing an easier target for a user in a wheelchair does not provide the same experience as able users

Mathematical Thinking



chance and probability



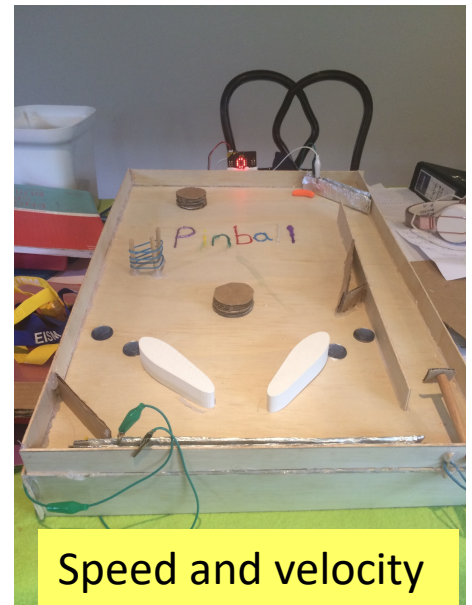
matrices



rebound angles



angles



Speed and velocity



Past

Present

Future