



INNOVATING TODAY
IMAGINING TOMORROW
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Course design and pedagogies: guiding engineering students' learning experience through student-initiated projects

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Technology and Society



Dr Samuel Achilefu has developed both the dye and goggle technology



- Design Goals
- Look Awesome
 - Perform Awesome
 - No Visible Strings or Mechanics

IRON MAN

Pat Starace

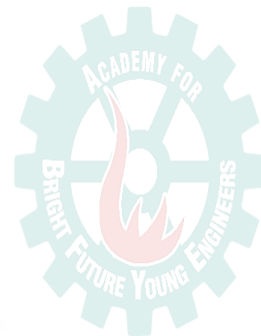
Pat Starace

3D Printed IRON MAN Super Hero Child Prosthetic Hand

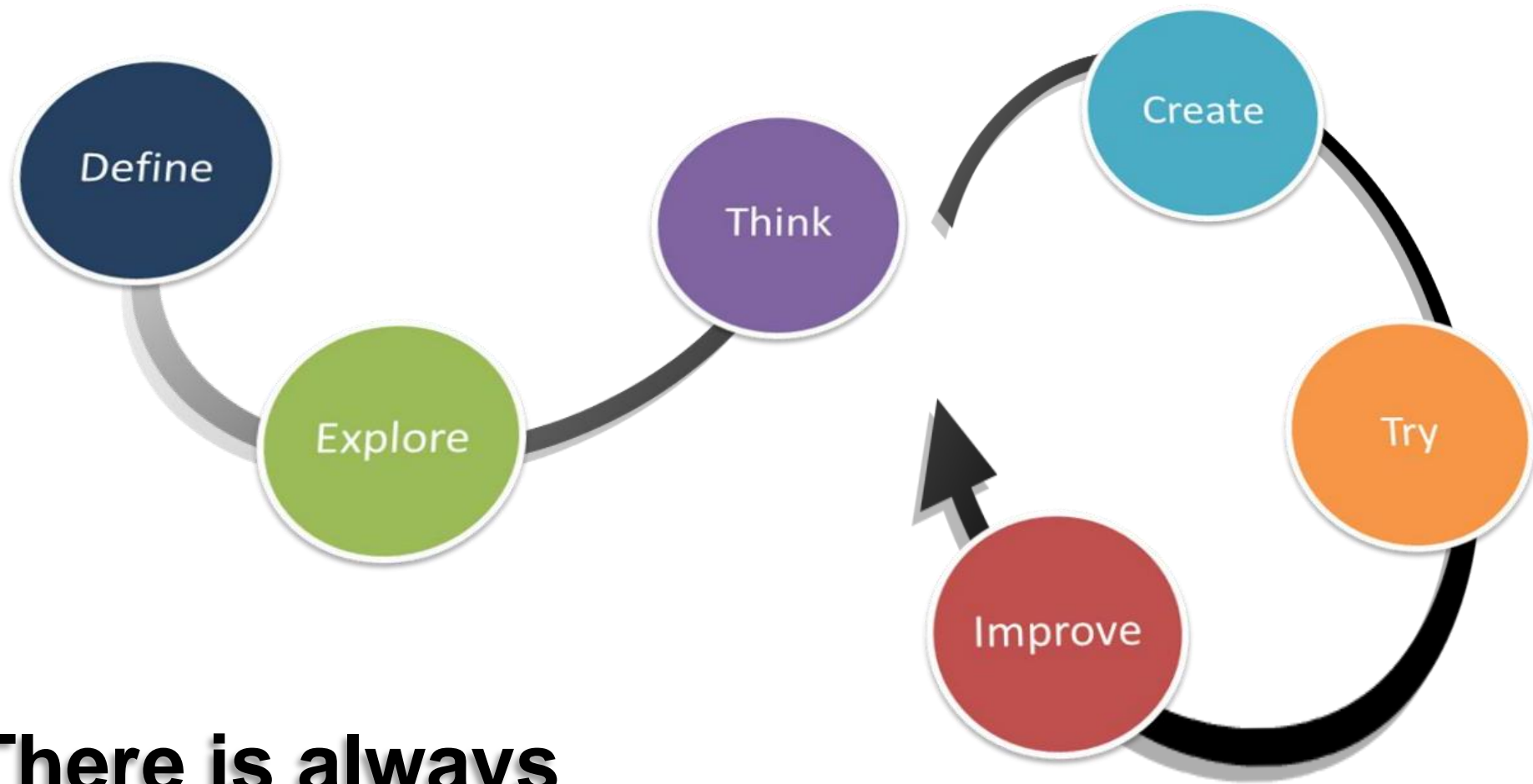


HOW TO CREATE?

**We create things to solve
a problem via an
engineering design
process**

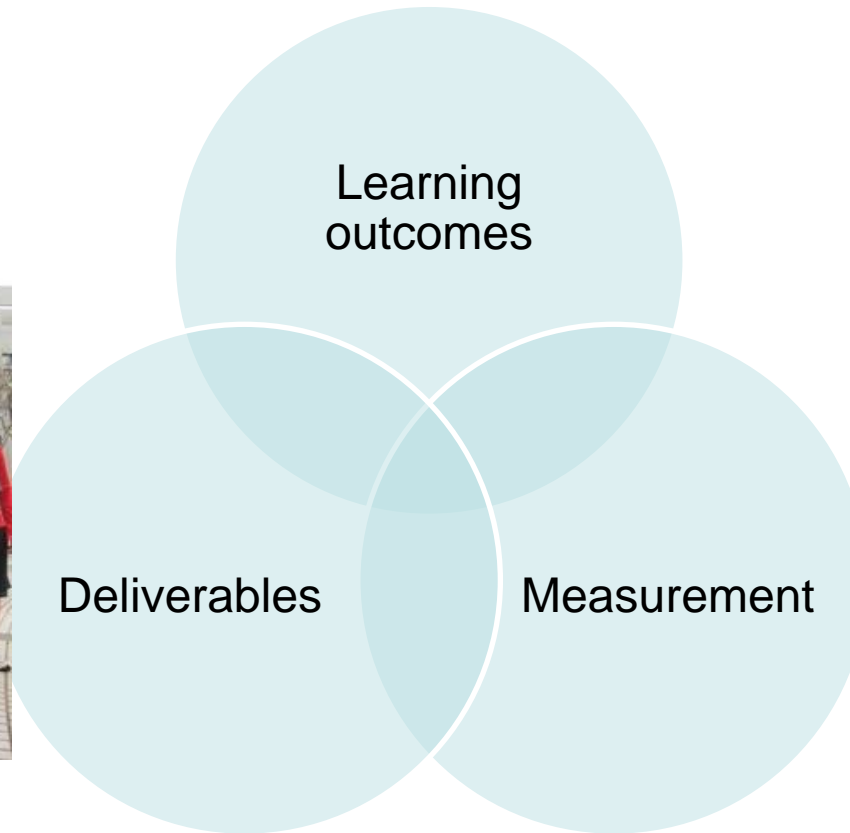


Design Process



**There is always
a better solution somewhere**

Course design



Starting from an embedded-system course

Departmental level – ECE UG Course

Student initiated projects

Team size : 2 – 3 students

Evaluated by Project Grading Rubric



ELEC 3300 Project Grading Rubric

Project Demonstration: Max 32 marks Project Presentation: Max 8 marks

Acknowledgment - This rubric is adopted and modified from the INQUIRY AND ANALYSIS VALUE RUBRIC by Association of American Colleges and Universities. Number in bracket shows the corresponding marks for that level of performance.

	4	3	2	Benchmark
Project Complexity (P03)	The whole project consists of a complex hardware and software design. Careful hardware design and software design algorithm is being shown. (12)	Hardware consists of various kind of interface before going to the processor, with software controlling the other interfaces (9)	Project hardware is a mix of analogue and digital signals, software part used all the features of the processor. (6)	The processor directly controls all the aspects of the hardware, simple controls are used in the software. (3)
Project Understanding (P05)	Clear understanding of the project. System is designed with justification and appropriate use of analog, digital signals and methodology. (10)	System is designed with appropriate use of analog, digital signals, and correct methodology (6)	System is simply designed according to the LAB understanding. Cannot justify uses of analog or digital signals or methodology (4)	Little understanding of the project. System is designed without justification of LAB knowledge or methodology (2)
Project Originality	Application of labs together with extra circuits or software extended to creative design. (6)	Extended integration of lab materials with extracircuits or software. (4)	Project is an application of all the labs done before. (2)	Project is an application of two to three of the lab experiments. (1)
Completeness (P10)	The project can run smoothly without major error. (4)	The project can run with specified inputs. It encounters error with input that is not specified. (3)	The project can run, however, it encounters errors on specified input. (2)	The project cannot run, however, can show partial functionality with forced input with either hardware or software. (1)
Oral Presentation with PowerPoint	Presentation referenced to information or analysis that significantly supports the project work. (8)	Project presentation is clear and consistent with the supporting material. (6)	Fair description of project, still understandable, but is not often repeated and is not memorable. (4)	Project function be deduced, but is not explicitly stated in the presentation. (2)

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

From project idea to prototype design



- How can I get the project idea?
- How do I know the feasibilities of project idea?
- How can I get the reflection from peers, teaching assistants and professor?
- Which knowledge do I learn in class and how do they link up?

- How does the practical experience help in project design? (lab)
- How do you grade my project?
- Who grade the project? Is the grading fair?
How can I get support for those technologies which are not discussed in class?

- Showcasing Good Teaching practice at HKUST
 - Center of Education Innovation

- An email from an international student in Spring 2014/15
 - I've decided to write you a small note, thanking you for your help. I enjoyed being taught by you immensely; you are an excellent teacher and have **inspired me to continue learning with an open and positive mind**. I appreciate all your hard work, it's meant so much to me. Once again, thank you so much for your time, expertise and patience!

Comments from students in SFQ

- Hands on experience to boost your creativity
- Projects! I love projects. And lecture videos~
- Provide a great freedom for student to work on the project they interested in
- The content of the course is interesting
- The course allows students to apply technical knowledge to a very tangible product. I like that the course is not tested by a final examination, but rather a more accurate assessment of what the students have learned.
- The labs are helping the project a lot
- This is a dream-landing course for us to do whatever we want, and better still, it encourages engineers to care for the community.
- Very stimulating

• Design Competition and/or Final Year Project



Braille Printer



2008年6月11日 星期二 | 44

舊物變新發明 復康工具便利長者

從陳勇教授 | 科技新知

【本報專訊】由香港中文大學機械工程學系陳勇教授帶領的「復康工具」研究小組，最近推出一系列復康工具，包括「復康工具」及「復康工具」等。這些工具旨在幫助長者及行動不便人士，提高生活質素。

陳勇教授表示，這些工具是經過多年研發，旨在解決長者及行動不便人士在日常生活中遇到的困難。這些工具包括：「復康工具」及「復康工具」等。這些工具旨在幫助長者及行動不便人士，提高生活質素。

此外，陳勇教授還介紹了「平安樓功能樓堂」的建設。該樓堂將為長者提供一個安全、舒適的居住環境，並提供各種復康服務。



特製盲打機

【本報專訊】由香港中文大學機械工程學系陳勇教授帶領的「復康工具」研究小組，最近推出一系列復康工具，包括「特製盲打機」等。這些工具旨在幫助盲人提高打字效率。

陳勇教授表示，「特製盲打機」是經過多年研發，旨在解決盲人在打字時遇到的困難。該機器具有多種功能，包括：自動定位、自動換行等。這些功能可以幫助盲人更輕鬆地打字。

設計概念

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10元舊printer 改裝印凸字

嘆失明父母升學難 科大生發明奪獎

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Q& A

Thank you.

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