PEOPLE | PLACE | PARTNERSHIP

Teaching transversal skills through on-campus extra-curricular activities

Engineers Ireland, 30th November 2023

Professor Colin Turner CMath CEng PhD FIET FIMA PFHEA NTF
Dr Michael Jennings MEng PhD

Ulster University

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Teaching transversal skills through on-campus extra-curricular activities

OR

Facilitating Learning of transversal skills through on-campus extra-curricular activities

Ulster University

What…

"The Three Musketeers"

Dr Michael Jennings
Christopher McCausland
Apoorva Kashyap

Co-founded Ulster Society of Student Engineers

Had ideas for student induction I liked better than mine

So I gave them time, money and support to deliver it.

Magic happened…

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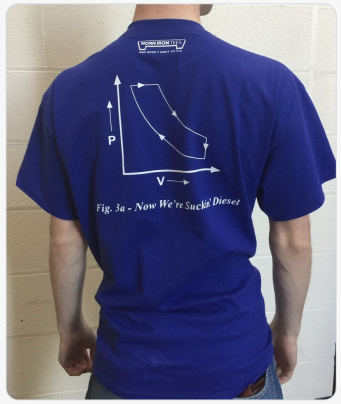
Bling… and outreach…

USSE @USSEngineers · Sep 7, 2017

We had a great final day at #ulsteruniopendays hope to see you all starting a @UlsterUni engineering course soon!

USSE @USSEngineers · Sep 5, 2017

A huge thank you to @NornIronTees for the design. Should see a few more of these on campus soon! #wilegood

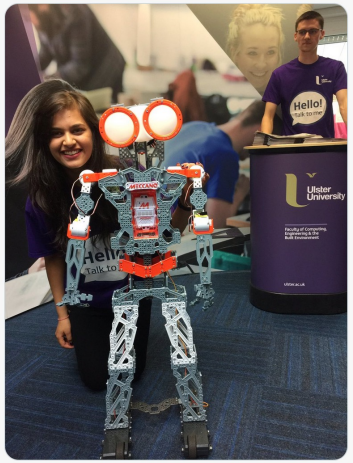


USSE @USSEngineers · Aug 29, 2017

We have received delivery of our first society banner! #freshersready #Engineering @UUSU @UlsterUni @IETCommunities @IETNI

USSE @USSEngineers · Sep 6, 2017

Apoorva and Meccanoid had a great time @UlsterUni open day! See you tomorrow #chooseulsteruni



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They designed and ran induction

USSE @USSEngineers · Sep 19, 2017

Attending our student engineer induction day tomorrow? Here is the schedule for the day! #EngDay

		Group	0900-	1145-	1215-	1330-	1350-	1410-	1430	1450-	1510-	1530-	1550-	1610-
30	Mechanical Engineering	A + C	Individual Registration	Briefing 9F03	Lunch SU Bar	Drones 16D Foyer	Auto Solo Car Park 9	Pathways 16G Foyer	Technician Intro 16D Foyer	Library	USSE Mall	Engineers Ireland -- 16D05	Course Director 16D08	SU
30	Mechanical Engineering	C + D				Course Director 16D08	Drones 16D Foyer	Auto Solo Car Park 9	Pathways 16G Foyer	Technician Intro 16D Foyer	Library	USSE Mall	Engineers Ireland -- 16D05	
32	Engineering Management + Electronics	G + S				Engineers Ireland -- 16D05	Course Director 16D08	Drones 16D Foyer	Auto Solo Car Park 9	Pathways 16G Foyer	Technician Intro 16D Foyer	Library	USSE Mall	
30	Technology & Design	J + K				USSE Mall	Engineers Ireland -- 16D05	Course Director 16D08	Drones 16D Foyer	Auto Solo Car Park 9	Pathways 16G Foyer	Technician Intro 16D Foyer	Library	
30	Mechatronic Engineering	P				Library	USSE Mall	Engineers Ireland -- 16D05	Course Director 16D08	Drones 16D Foyer	Auto Solo Car Park 9	Pathways 16G Foyer	Technician Intro 16D Foyer	
22	Biomedical Engineering	W				Technician Intro 16D Foyer	Library	USSE Mall	Engineers Ireland -- 16D05	Course Director 16D08	Drones 16D Foyer	Auto Solo Car Park 9	Pathways 16G Foyer	
22	Biomedical Engineering	X				Pathways 16G Foyer	Technician Intro 16D Foyer	Library	USSE Mall	Engineers Ireland -- 16D05	Course Director 16D08	Drones 16D Foyer	Auto Solo Car Park 9	
22	Biomedical Engineering	Y				Auto Solo Car Park 9	Pathways 16G Foyer	Technician Intro 16D Foyer	Library	USSE Mall	Engineers Ireland -- 16D05	Course Director 16D08	Drones 16D Foyer	

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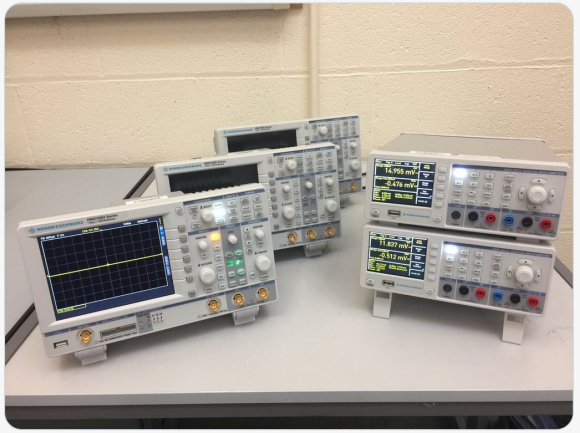
Company Visits … Toys …

USSE @USSEngineers · Oct 12, 2017

A huge thanks to @Yelotestsystems and @IETNI for tonight's tour, it's fantastic to see local engineering in action!

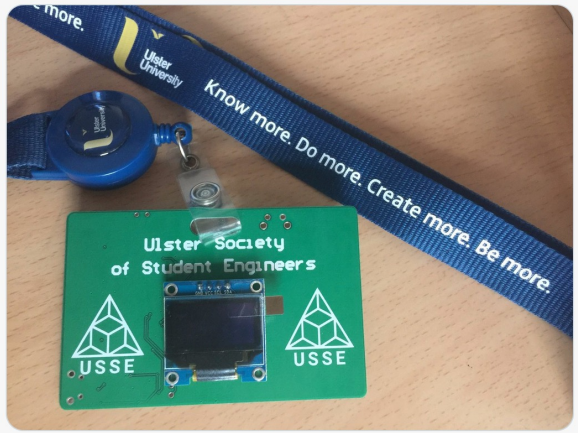
USSE @USSEngineers · Oct 25, 2017

A massive thank you to IMEX Systems Ltd for the support! We love the new kit @Rohde_SchwarzUK #engineering



USSE @USSEngineers · Sep 17, 2017

Have a look at our latest project on the @element14 blog space. @altium @UlsterUni #createmore goo.gl/hwQqk2



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Social Events…

USSE @USSEngineers · Feb 10, 2018

We hope you all enjoyed the formal as much as we did. It certainly seems so from all the smiles! A huge thank you to everyone that attended

More outreach, and Meet the Lecturer

USSE @USSEngineers · Feb 8, 2018

Thank you @UlsterUni, @UUSU and @4cornersbelfast for the festival! We hope everyone had as much fun as we did at our robotics workshop #STEM

> **Ulster University** @UlsterUni · Feb 8, 2018
>
> Collaborating and exploring educational and career pathways through a wide range of workshops in different subject areas. Thank you to the Year 11 students who attended yesterday's event, the third annual event organised by @UUSU and @4cornersbelfast

USSE @USSEngineers · Nov 8, 2017

Great to see IET on Campus QUB and IET On Campus Stranmillis for the meet the lecturer series. A very informative and enjoyable afternoon!

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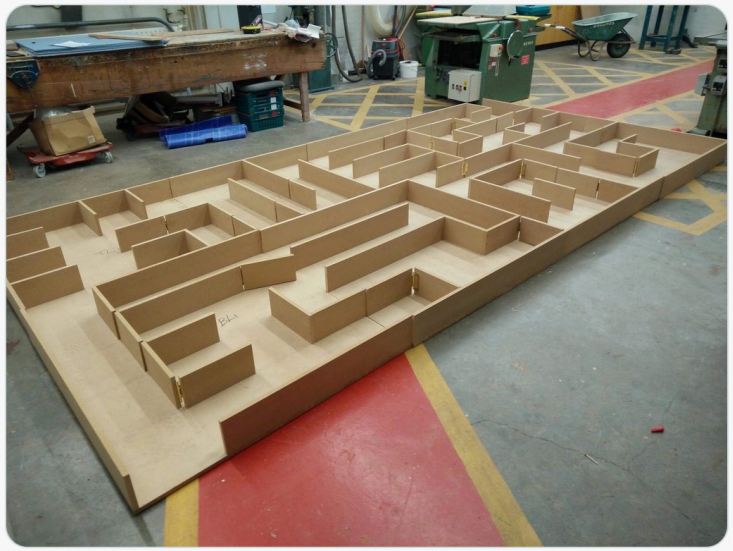
A First Year and a Robotics League

USSE @USSEngineers · Feb 19, 2018

It's safe to say everyone is very excited for the robotics competition! @UUSU @IETNI #STEM

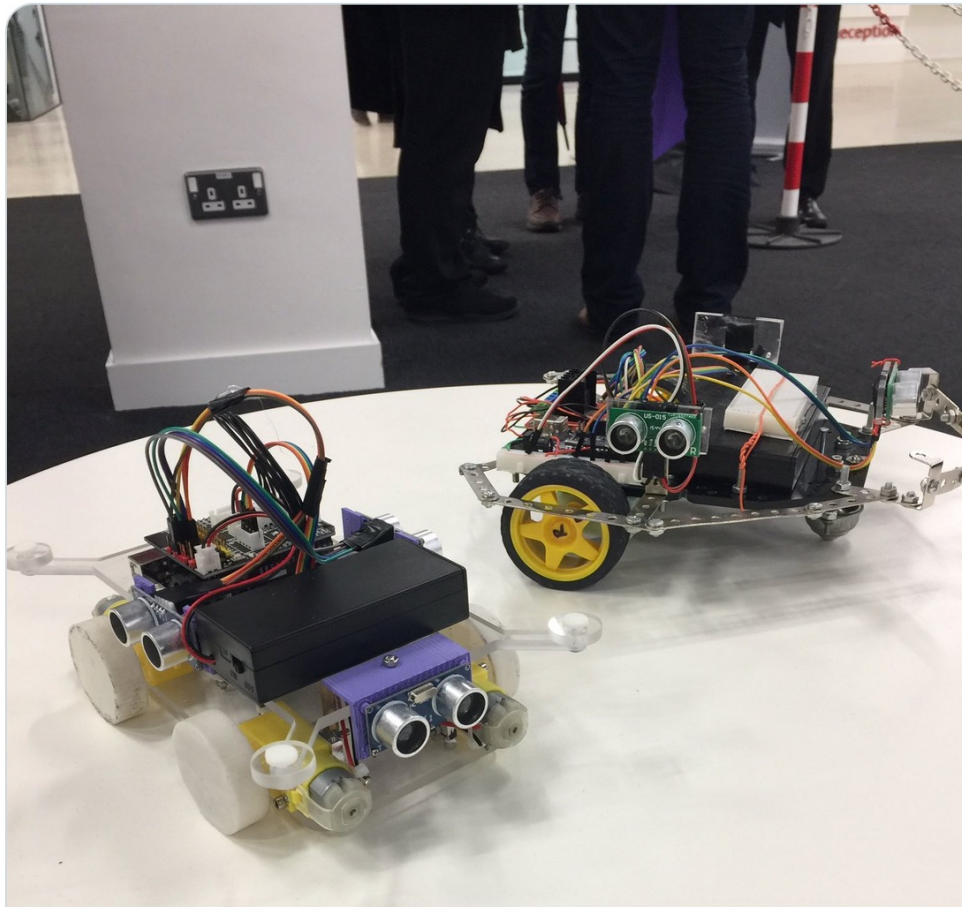
USSE @USSEngineers · Jan 24, 2018

A huge thank you to @UlsterUni Building Resource Dept. for all the hard work today. We can't wait for the competition! #robotmaze



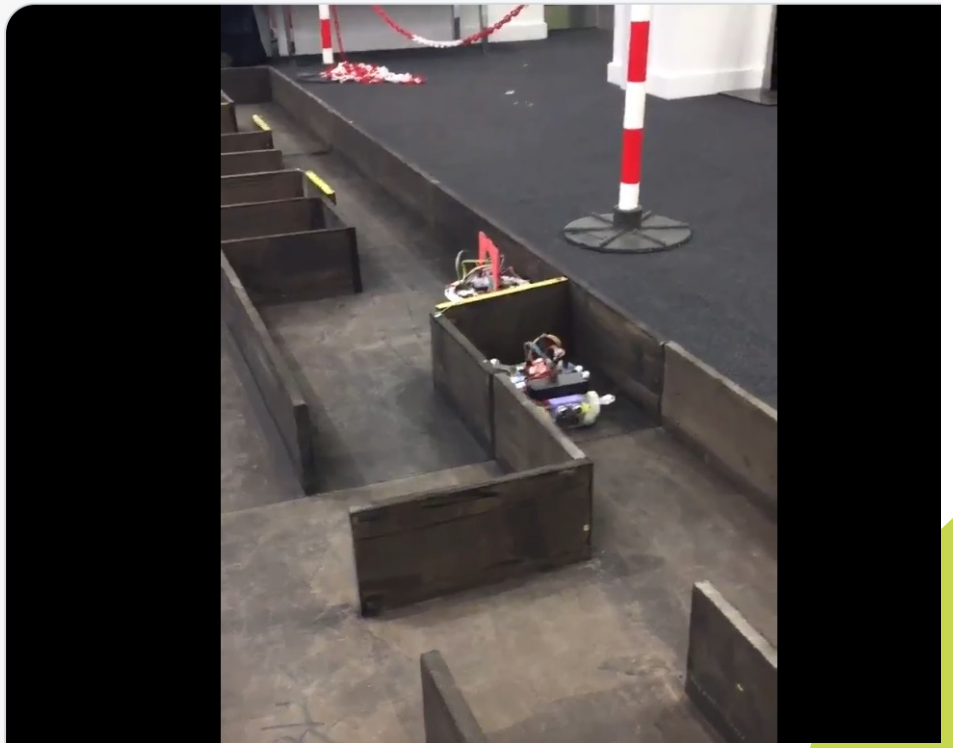
USSE
@USSEngineers

Some of tonight's robotics competitors. A great competition so far!



USSE @USSEngineers · Feb 19, 2018

Good to see both @UlsterUni and @QUBelfast teams on the move at ou robotics event!



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USSE reposted

Noel Sharkey @NoelSharkey · Feb 19, 2018

Belfast robot competition tonight - interesting: new university of ulster v the much older queens university.

Turning that into more outreach…

USSE reposted

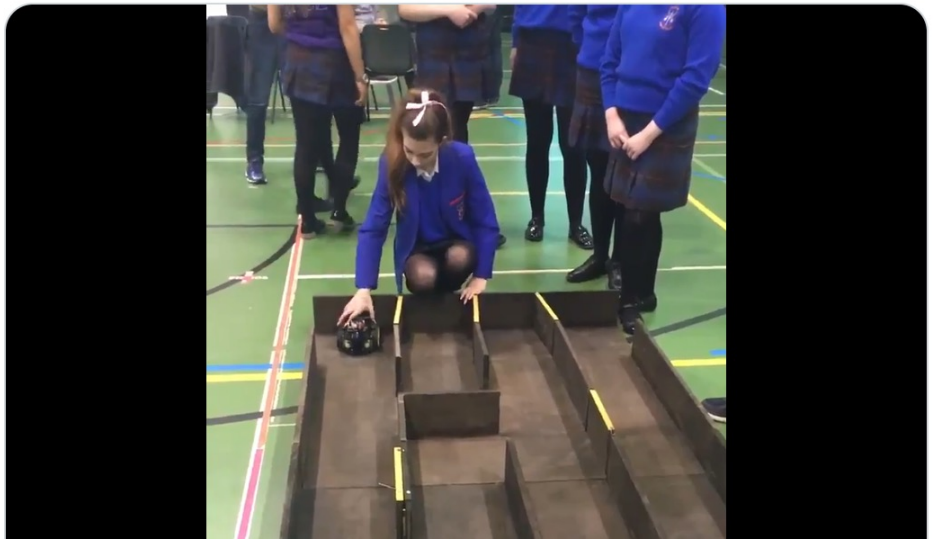
Flexible Education @UlsterFlexEd · Feb 21, 2018

#Schoolpartnerships Hands on engineering and robotics activities across a wide range of workshops @ulsteruni @StudyAtUlster @UlsterUni @_stgens @STEMLearningUK @abhs_belfast @UlsterFlexEd @niscifest @ULSTER_BSABE

USSE reposted

Flexible Education @UlsterFlexEd · Feb 21, 2018

#Schoolpartnerships Great to see St Genevieves engaging with Smart Robots, coding, ardrino and elegoo...future female engineers @UlsterEquality @StudyAtUlster @UlsterUni @_stgens @abhs_belfast @UlsterFlexEd @niscifest @ProfCTurner @pwgriffiths @Athena_swan @USSEngineers



Charity Fundraising

USSE reposted

Pretty 'n' Pink NI @Prettynpinkni · Mar 8, 2018

A massive #ThankYou to the @USSEngineers committee who raised an amazing £1122 from their fundraising event. Thank you for supporting #PrettynPink. #USSEngineers #RaisingFunds #BreastCancer 🎀💓

Prizes…

USSE @USSEngineers · Mar 9, 2018

Congratulations to the team on winning the #nisg annual H&S quiz. The team now progress to the all Ireland final @UlsterUni @UUSU

USSE @USSEngineers · Apr 19, 2018

An amazing night at the #SEA2018 , a huge thank you to @UUSU for a very enjoyable night!

UK National Prizes…

USSE @USSEngineers · Mar 28, 2018

Delighted to have been shortlisted for two @NUS @SocietiesAwards. Thank you to @UUSU and SoE @UlsterUni who supported us! #DoMore

USSE @USSEngineers · May 9, 2018

An amazing night at the #nationasocawards18 winning Best New Society and runner up in the Best Academic Society! #DoMore @UlsterUni @UUSU

More Prizes… And Awards…

USSE @USSEngineers · May 16, 2018

We are nominees of the @UUSU Learning & Teaching Awards 'Team of the Year' for our close bond with the School of Engineering staff. We couldn't have done anything this year without them! #team #LTA18

> **Ulster Uni Students' Union** @UUSU_Online · May 16, 2018
>
> Well Done to Nominees for @UlsterUni Team of the Year! MSc Counselling Studies & Therapeutic Communication (MSc), Interactive Media BSc, School of Engineering staff support team for Ulster Society of Student Engineers (USSE) uusu.org/blog/learning-...

USSE @USSEngineers · May 25, 2018

Delighted to have won the @UUSU Partnership Award! Another massive thank you to all the @UlsterUni School of Engineering staff! #LTA18

USSE @USSEngineers · Aug 23, 2018

Congratulations to former chairperson Michael Jennings on winning The First Trust Bank Ulster University Undergraduate Student of the Year Award. Along with being one of the founders of the USSE he has been an inspiration and a fountain of knowledge to every member.

Michael Jennings

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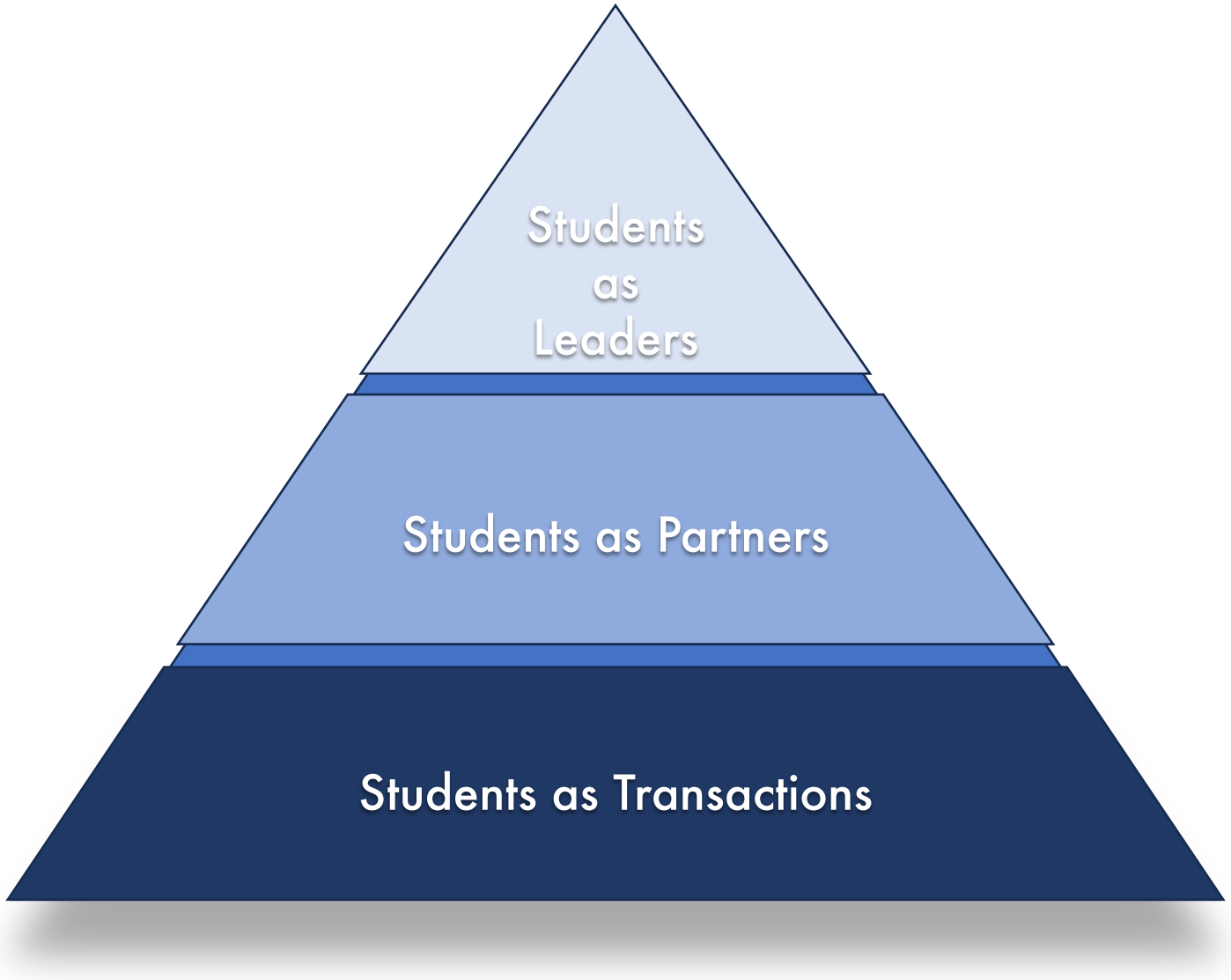
That was some of one year…

Not shown: Electronics courses for Mechanical Engineers, Revision Classes and more…



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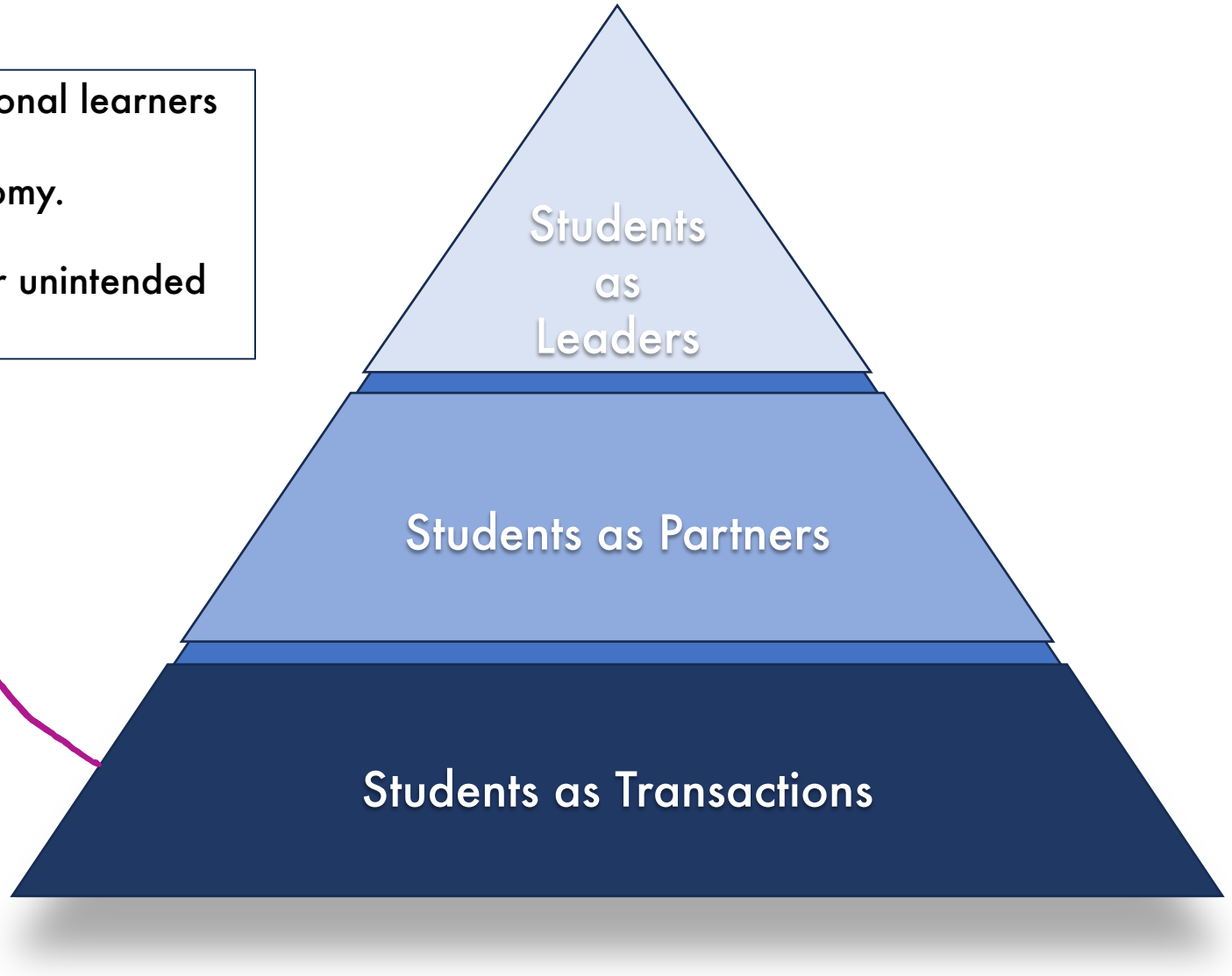
Students seen as transactional learners

Students have little autonomy.

Little or no opportunity for unintended Learning – by all parties.



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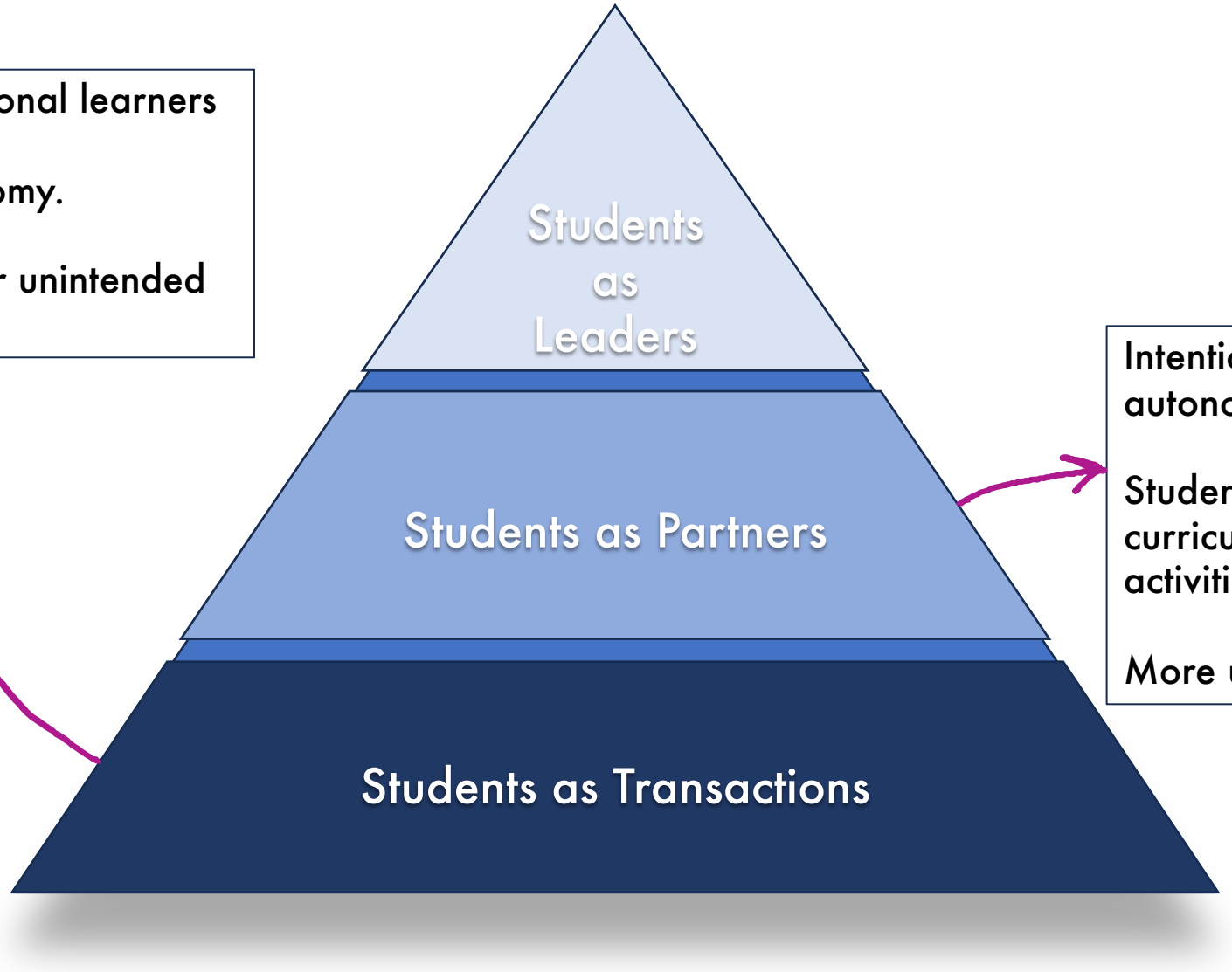

Intentional sharing of autonomy.

Students engage in co/extra-curricular staff designed activities.

More unintended learning.

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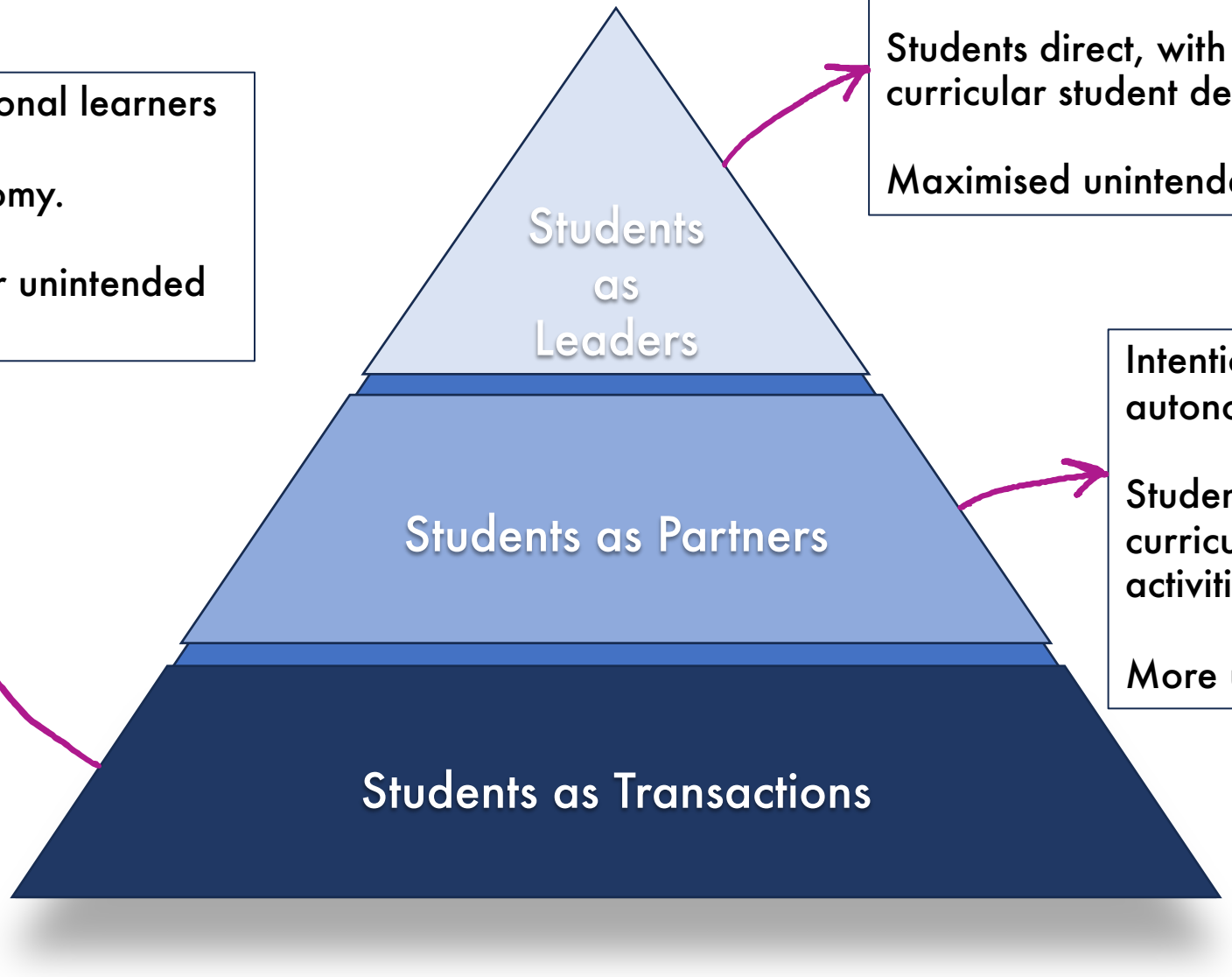

Intentional, bi-directional sharing of autonomy

Students direct, with staff support, co/extra-curricular student designed activities

Maximised unintended learning.

Intentional sharing of autonomy.

Students engage in co/extra-curricular staff designed activities.

More unintended learning.

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"Student-led initiatives create sustainable innovation through shared vision and partnership." [1]

It makes your job easier.

[1] Murray, J. (2018), "Student-led action for sustainability in higher education: a literature review", *International Journal of Sustainability in Higher Education*, Vol. 19 No. 6, pp. 1095-1110.

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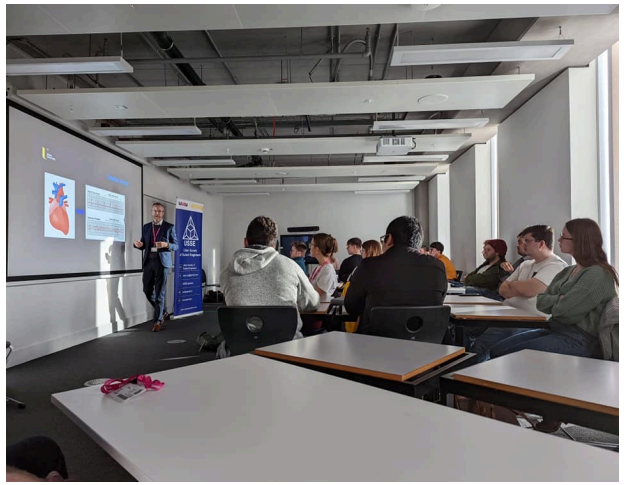
What's Possible?

Building teams – The good kind.



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Retention.

Culture shift.

Management experience.

Project-based learning.

No "cockpit gradient"

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What's Not Possible?

- Students will only do things they are passionate about.
- You cannot sustain innovation without funding.
- Micromanaging.
- Staff cannot help without being given time by their line manager.

Why…

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People
(students & staff)

Holistic Understanding → Sense Making

Emotional Intelligence → Empathy

Authenticity → Inclusivity

Personal Experience & Excellence → Living Values

Building Partnerships

Partnerships

Setting Culture

Setting Strategic Direction

Communication & Challenge

Developing Leaders

Developing and Empowering Leaders with a positive culture

Students as Partners and Leaders

- Student Centred
- Developing Students as Leaders as well as our Staff
- They can and will do things we cannot
- They can and will do things we will not imagine

- Impacts sustainability in the broadest sense, including recruitment, retention and progression
- Promotes campus based education, the social life of our campuses, and the sticky campus
- Potential to improve postgraduate, research and PhD recruitment
- Potential to improve EDI and work life balance

- **Student led is a much stronger concept than student facilitated**

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How…

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Some tips…

- It’s not just the students who need to lead
- Leadership is **not** stifling the autonomy and leadership of others
- Some things will go “wrong”. That’s ok. Process matters.
- If students do work that would otherwise be done by staff – pay them!
- Be inclusive – of both student and staff talent

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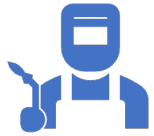
How do we start?

Nominate a student champion.



Build your student team.

Create your student-led project.

Allocate funding.

Monitor milestones.

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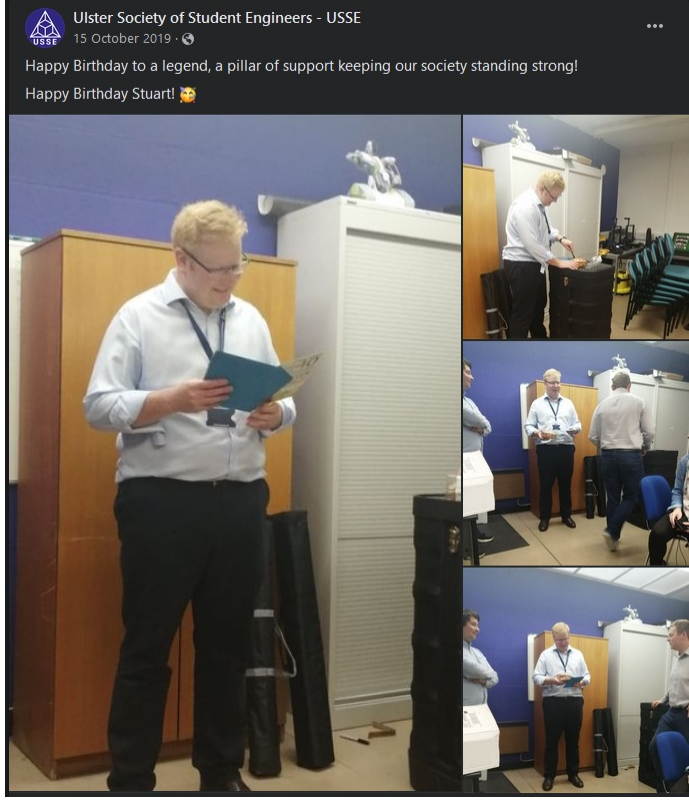
1. Nominate a student champion

- This can be any member of staff within your school passionate about student experience.

- Must be given time to meet and coordinate with students.

- Is responsible for the monitoring of projects against deadlines, booking of rooms, and support requests to the school.

- *Optional: The students can nominate an individual they are already working closely with.*



2. Build your student team

CAN BE AN ACADEMIC SOCIETY, STUDENT REPS, OR THE "TROUBLEMAKERS".

A DIVERSE TEAM IS MORE LIKELY TO BECOME SELF-SUSTAINING.

PRESENTING AT THE FIRST FIVE MINUTES OF A LECTURE IS THE IDEAL TIME TO RECRUIT.

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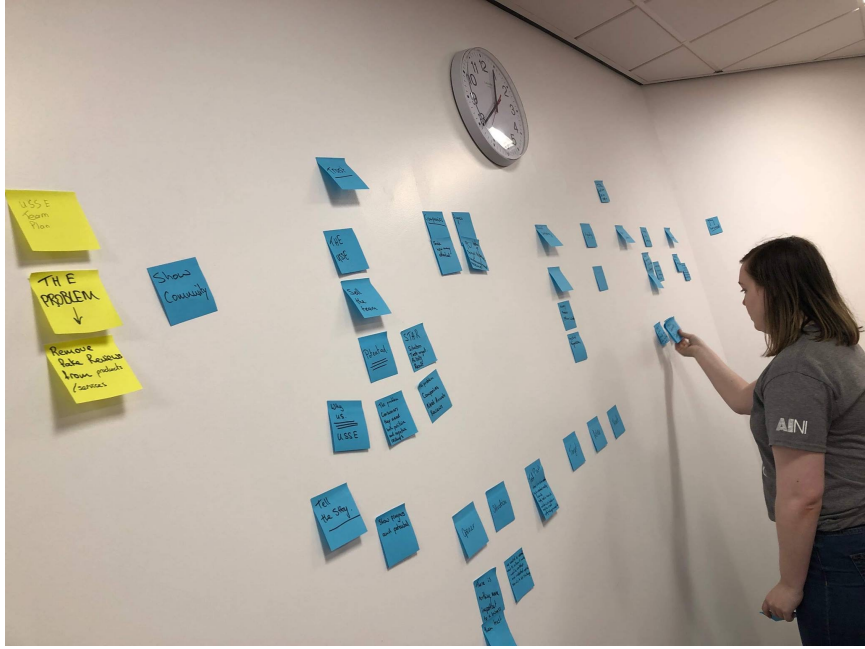
3. Create a project



- What is bothering your students?

- Solicit the project from the students. Remember, student-led.

- Staff responsibility to measure expectations e.g.

"We could build a moon rocket, but let's start small with a drone."

- *Some ideas: building an app, collecting data via citizen science, school formal dinners, pub quiz, company visits, Meet the Lecturer events.*

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4. Allocate Funding

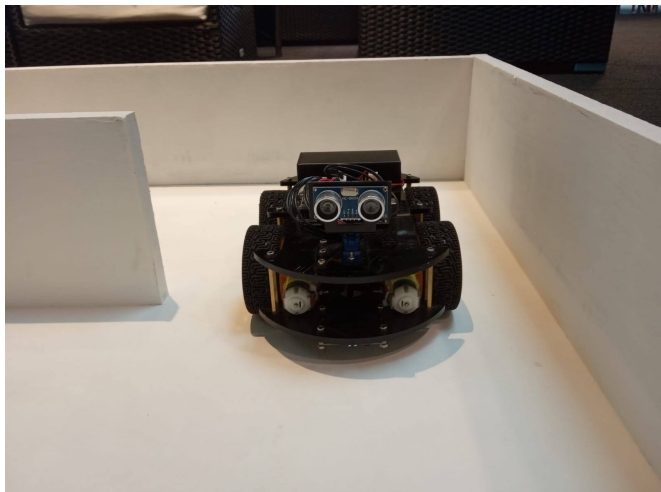
- Students prepare a one-page summary.

- Five-minute presentation of:
  - Why is this needed?
  - How much?
  - When will it be completed by?
  - What support do you need from the school?

- **Keep this simple.** Bureaucracy will turn students away.

5. Monitor milestones

- Student champion helps release money for specific spending.
- Weekly progress meetings between student champion and students.
- Progress updates provided by the student champion to the school staff.



6. Achieve sustainability

- At the end of the project, the students will no-doubt have another lined up.
- Students can approach the school for additional funding for new projects.
- Student champion can take over the "managing expectations" role.
- External partnerships will form, easing funding burden.

Mapping to Transversal…

UNESCO Transversal Skills

1. Critical and Innovative Thinking
2. Interpersonal Skills
3. Intrapersonal Skills
4. Global Citizenship
5. Media and Information Literacy
6. Others

UNESCO 2016: School and teaching practices for twenty-first century challenges

Your first steps

- You might need to provide potential exemplars to students, before they can tell you what they want.

- Follow the steps in the previous slides.

Nominate a student champion.

Build your student team.

Create your student-led project.

Allocate funding.

Monitor milestones.

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Thank you.

And thanks to MJ aka Dr Jennings

And thanks to all the students and staff who have worked on this.

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