

Creating a university makerspace

Mark Sabino and the Liverpool Maker Education
Working Group

<http://makerEd.wtf>

@HEdSpaceUK

HEdWorks - History



HEdWorks

Think. Make. Learn. Share

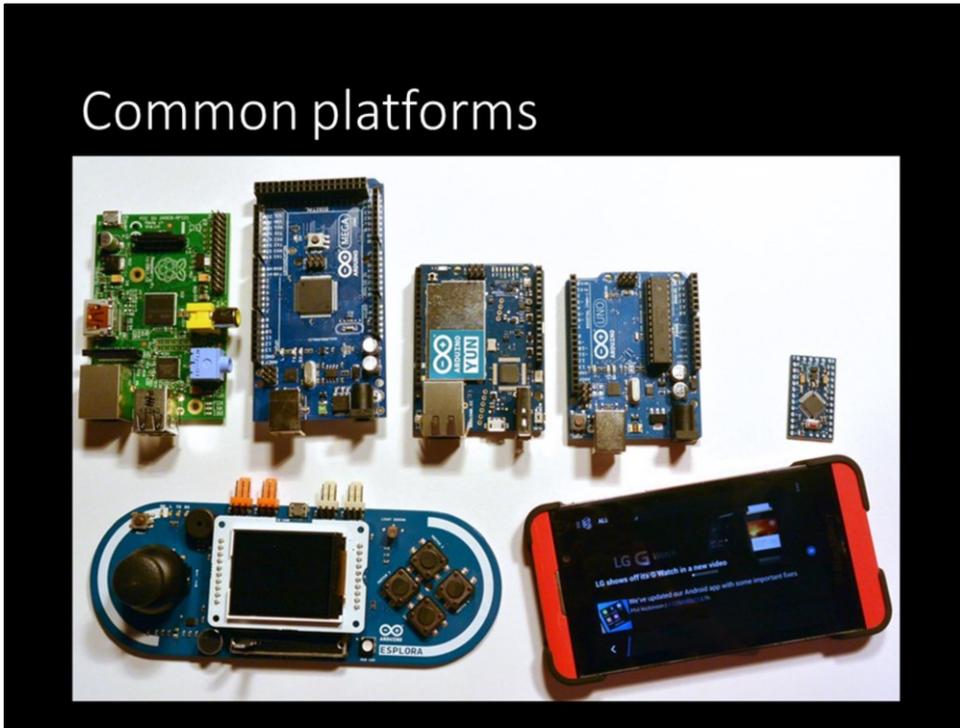
Dr. Mark Feltham, Principal Lecturer, School of Natural Sciences and Psychology
Chair of HEdWorks

Dr. Mark established a creative track to run in tandem with the didactic track

Creative track affords students a variety of platforms from mobile, quadcopters, and microprocessors, including components, etc...

*** common platforms are

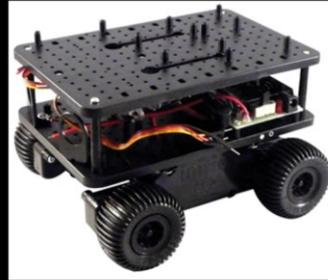
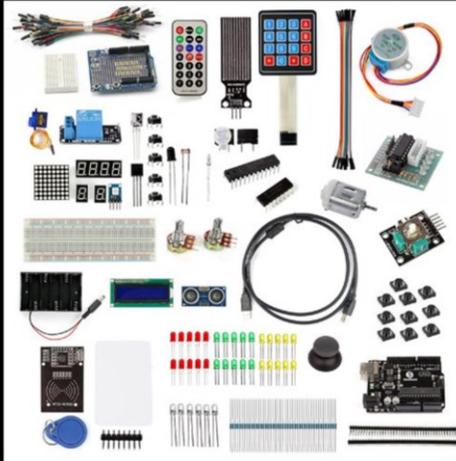
Common platforms



Arduinos, mobiles, raspberry pi, robotics platforms such as microdrones and UAVs

*** And an example of kit components

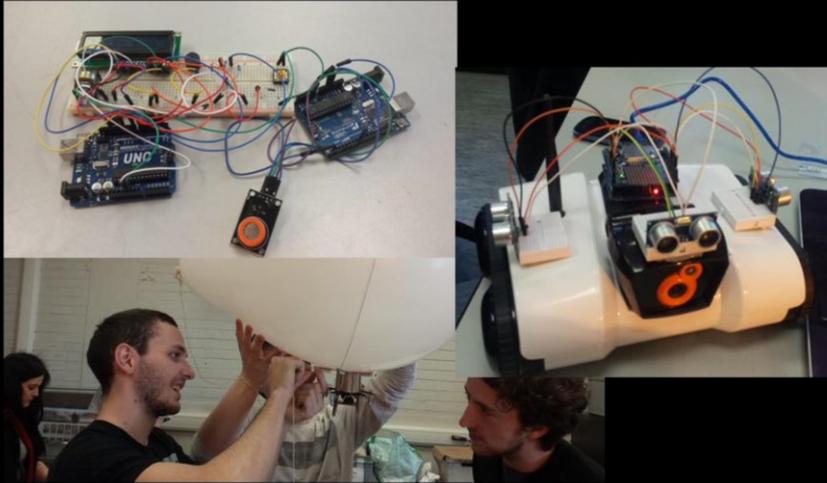
Components



Components vary, there are sensors, there are actuators, you could build a variety of bots or projects

*** Dr. Mark's aim's were for students to collect data....

HEdWorks in action, statistically!



Fundamentals of Scientific Research (4000NATSCI)

*** with this in mind Dr. Mark reached out to academic staff...

MEWG Formation

- June 2014
 - Informal invite to LJMU staff for “makers” to meet from Mark Feltham
 - Maker Education Working Group established
 - 15 members
 - Mailing list set up
- Present
 - Membership now includes external people
 - In addition includes partner organisations and communities
 - 30 people and 9 partners

*** MEWGs membership is wide, and growing....

MEWG membership



<http://makerEd.wtf/members>

*** Here in the school....

Membership in CMS

- Dr. David England, Assoc. Director of CMS
- Dr. Brett Lempereur, Senior Lecturer
- Dr. Andy Laws, Senior Lecturer
- Dr. David Llewellyn-Jones, Reader
- Mr. Jamie Roberts, Undergraduate
- Mr. Mark Sabino, Postgraduate

*** and across the university...

MEWG – University membership

- LJMU OpenLabs
- Pharmacy and Biomolecular Sciences
- Natural Sciences and Psychology
- Teacher Education and Professional Learning
- Built Environment
- Engineering, Technology and Maritime Operations
- Liverpool School of Art and Design
- LJMU FabLab

*** and in addition there are external members....

MEWG, external members and partners

- Caroline Keep, co-founder of HEdSpace and Future Tech Studio
- Adrian McEwen, Founder of MCQN Ltd, IoT guru and DoES co-founder
- Andrew Goodwin, DoES co-founder
- Chelsea Slater, co-founder Liverpool Girl Geeks
- Carl Simons, Edge Hill University
- Jayne McKay, Future Tech Studio
- Liverpool Libraries
- Liverpool MakeFest Committee

*** to this end, members in LJMU wanted to promote a 'maker ethos'

Fundraising in LJMU

- Curriculum Enhancement Bids
 - Cross faculty: Creating a university makerspace, recon., research and development, dissemination – successful 😊
- Capital Expenditure Bid
 - CMS: 3D printer, laser scanner, materials, Raspberry Pis, Robotic platforms, Arduino clones, and components-successful 😊

*** this fundraising has enabled a number of activities...

Activities from MEWG

- <http://makerEd.wtf> *
- UCL Institute of Making visit
- Mini MakerEd Faire *
- University of Kent The Shed visit *
- Exhibiting at MakerFaire UK *
- HEdWorks Asset Inventory *
- Exhibiting at Liverpool LightNight
- CMS MakerKit*
- G.37 Makerspace, Byrom St.

* relates to activities where funding was used (in part or in full).

*** lets take a look at each of these in a little more detail

makerEd.wtf

MakerEd, WTF?

The MakerEd Working Group (MEWG) is an organisation focused on supporting self led project based learning into education.

Members aim to establish 'maker education' (MakerEd) activities for students, staff, businesses, and the public in the North West.

We want to use MakerEd to champion university makerspaces by opening HEdSpaces in LJMU, and introducing creative higher education modules that run alongside traditional didactic ones, such as 'statistics done differently' with HEdWorks.

Mapping all making, arts, imaging, simulation, sensing, and fabrication expertise and resources available across LJMU and locally to connect students, business, researchers, educators and technicians.

*** what have other universities established?

Institute of Making, UCL



Just past it's second year, annual report is available :

<http://www.instituteofmaking.org.uk/blog/2015/04/institute-of-making-second-year-report>

Material Library

Workshop

Public events

Private events

Full scope from electronics to fabrication

*** so what were we at LJMU MEWG up to?

Mini MakerEd Faire



*** further a field recon.

The Shed, University of Kent



Operated by school of computer science, breaking the barrier to code...

*** time to hit the road again...

Maker Faire UK



NSP, ADA, CMS all heavily represented...

*** maker faire uk is....

Maker Faire UK



BUSY – 10,000 people over two days

*** in total 10 people exhibited on the HEdWorks stall

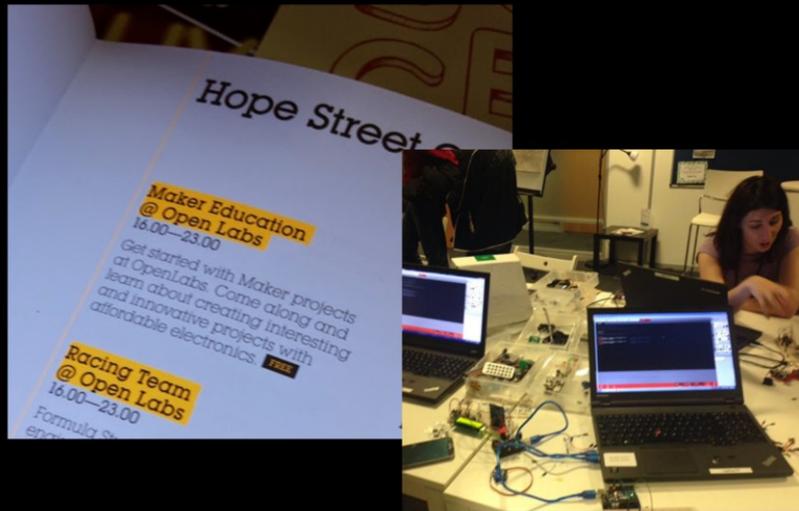
Maker Faire UK



Staff and students promoting MakerEd

*** remaining in liverpool

Liverpool NightLight



We took makerEd on the road
utilising the CMS maker kit

*** what we have

CMS Maker Kit



<http://makerED/call2015>

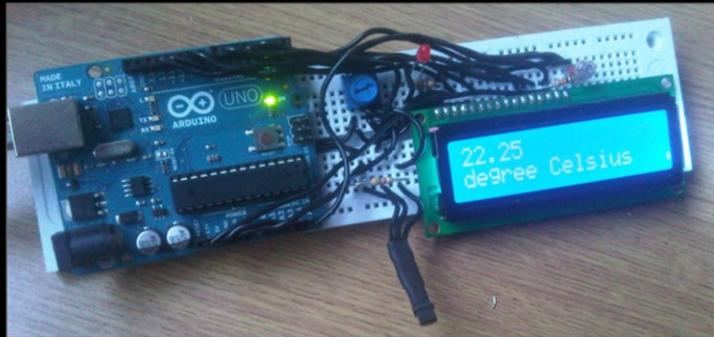
*** which can be demo'd

CMS Maker Kit



*** or used for a variety of projects

CMS Maker Kit



<http://makerED/call2015>

CMS Maker Kit

“The best way for students to become deeply invested in their work is for their projects to be personally meaningful, afforded sufficient development time, given access to constructive materials, and the students themselves encouraged to overcome challenges”.

<http://makerED/call2015>

CMS Maker Kit

The screenshot shows a web browser window with the URL <http://makerED/call2015/>. The page is titled "2015-2016 Final Year Maker Projects" and is part of the HEdWorks website. The header includes the HEdWorks logo and the tagline "Think. Make. Learn. Share." The main content area is titled "Maker Projects" and describes the school's initiative to enable physical computing projects. It lists various project types such as sensor networks, smart irrigation systems, and smart waste bins. The page also includes a search bar, a "MEMBERS" section with "Sign up" and "Log in" links, a "NEWS AND BLOGS" section with links to "Maker Kit Asset Inventory", "Maker Kit Available to Final Year Students", and "Maker Kit Fair", and a "HEDSPACE HACKSPACE" section with a map. A sidebar on the left contains navigation links for "OUR HEDSPACE", "OUR PEOPLE", "OUR PARTNERS", "OUR WORK", "OUR TWEETS", and "OUR NEWS".

<http://makerED/call2015/>

Call especially for final year students, get them to fill in the form!!!- interested researchers, or module leaders should contact Brett.

*** where can students, and individuals become makers? The answer...

Makerspaces

Hackerspace

From Wikipedia, the free encyclopedia
(Redirected from [Makerspace](#))

A **hackerspace** (also referred to as a **hacklab**, **makerspace** or **hackspace**) is a community-operated workspace where people with common interests, often in computers, [machining](#), technology, science, [digital art](#) or [electronic art](#), can [meet](#), [socialize](#) and [collaborate](#).^[1] Hackerspaces have also been compared to other community-operated spaces with similar aims and mechanisms such as [Fab Lab](#), [Men's Sheds](#), and with commercial "for profit" companies such as [TechShop](#).

In LJMU we want to foster co-creation, collaboration, holistic final year projects where multiple students, across multiple schools and faculties can create something independently that can become a whole-

Think – a place where - a software engineer, product designer, graphic designer, and someone who has identified a problem can create a high quality prototype for their degree...

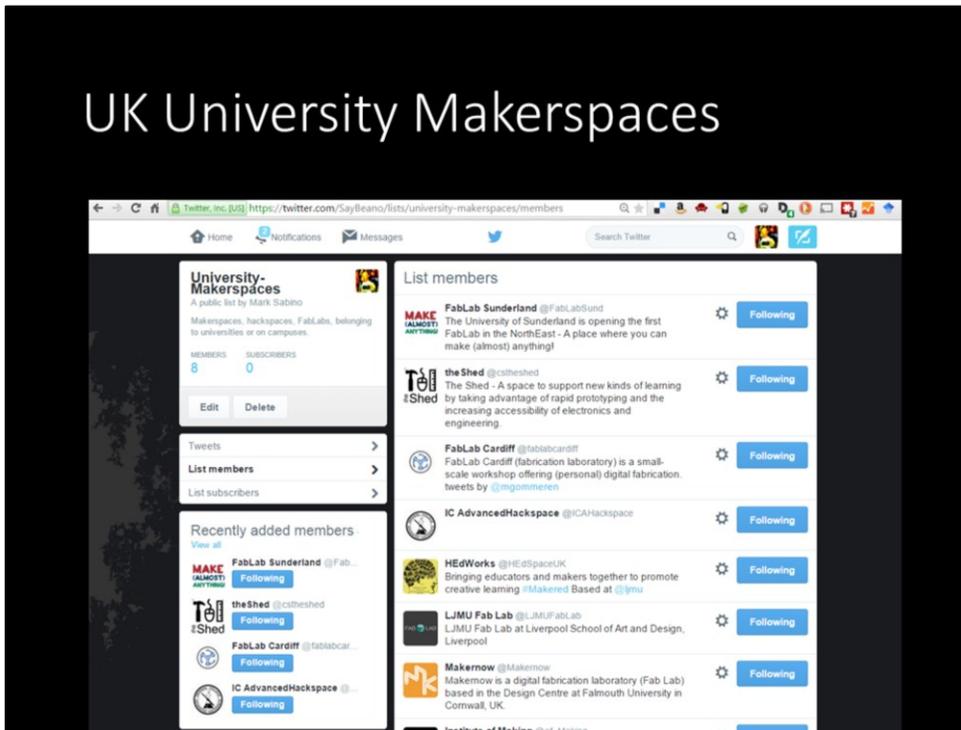
*** where are the makerspaces in the UK?

UK Makerspaces



*** Where are the makerspaces in universities?

UK University Makerspaces



Not many!

<https://twitter.com/SayBeano/lists/university-makerspaces>

*** hedworks / HEdSpace is US! And we are...

Makerspace in LJMU G.37



Here- Mondays, Wednesdays and Fridays through term time....but we want a permanent space....

Also specialists and some equipment can't be moved, needs risk assessments, training and / or supervision...

*** so to tackle this...

HEdWorks Asset Inventory

HEdWorks Maker Inventory

As part of a [curriculum enrichment programme](#) initiated by Maker Education working group (MEWG) members at LJMU this inventory aims to:-

- Identify assets relating to [STEAM](#) across the LJMU estate.
- Map these assets.
- Provide contact and access information to assets.

Its objectives are:-

- Improve the discovery and usage of STEAM assets for all.
- Share skills and ideas across campuses.
- Enhance student experiences and foster cross-collaboration.
- Drive external engagement across Liverpool City, and the Merseyside Region.

[Find out more...](#)

Feel free to contact [a member you might know](#) for information or help. Or [contact the group](#) directly.

<http://assets.makered.wtf>

Please share this with anyone in LJMU who you know has cool kit that people outside of their school / department could use...

*** so what's next....

What's next for MEWG?

- Resource catalogue...
 - Product of the asset inventory
 - Scope to include local makerspaces:
 - DoES Liverpool
 - FabLab Ellesmere Port
 - Open Device Lab Uniform
- Online staff resources...
 - Wiki base
 - Maker materials
 - LJMU relevant

Beneficiaries

- All staff across the University
 - making available resources to help them evaluate how and where maker activities can be integrated into their courses.
 - For those that choose to do this, the project will provide resources to enable them to do so.
- Students with courses that integrate the activities, or students that make use of the resources for their projects.
All staff and students will have the opportunity to benefit by attending maker events held in the University.
- Researchers benefit through improved capability in developing practical solutions and increased creativity, through access to the makerspace community and equipment.
- At least five immediate staff beneficiaries across faculties within the funding period with this number growing beyond.
- The mechanism for accessing maker resources within the University will include a process for recording who has accessed what.
- Staff integrating maker activities, a process will be developed for measuring the impact (e.g. through the student survey and comparing grade outcomes).

<http://makered.wtf/portfolio/cefoctober2015/>

Opportunities

- Become affiliated with MEWG at <http://makerEd.wtf>
 - Attend meetings
- Share the assets inventory <http://assets.makered.wtf/> with staff across the university
- Create interdisciplinary teams at the University, independently or through MEWG affiliation
- Identify multidisciplinary research opportunities
 - Apply for funding
 - Internal (CEF, CapExp), external (nesta, ESRC, Arts Council)
- Encourage final year students to apply for maker kit
- Consider creative tracks in modules
- Attend Liverpool MakeFest 27th June, Manchester MakeFest 8th – 9th August

<http://lpoolmakefest.wordpress.com>

*** what's at Liverpool makefest?! Well...

External fundraising for MakeFest

- Awesome Foundation Liverpool
 - Made up of 10 members
 - Each throw in £50 per month
 - Apply to the foundation supporting their 4 core themes
 - Solve a problem
 - Have a budget
 - Bring joy
 - Be local
 - Invited to present alongside other applicants
 - Members decide on the winner on the day

Which we won...

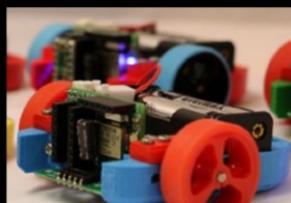
External fundraising for MakeFest



MakeFest Committee

- 13 co-founders
 - HEdSpace co-founders
 - LJMU MEWG members (MF, BL, DLJ, MS, AG)
 - Rest from Edge Hill University, Liverpool Libraries, DoES Liverpool, and individuals.
- Working to promote MakerEd, engagement, impact.
 - Think. Make. Learn. Share.
 - Experiment. Make. Take. Share.
- Peoples' skills and time are pro-bono
- Awesome award pays for food for exhibitors, crew, cabling, WiFi, consumables...

ZONE A – Bot Stage



ZONE B – Business

**Republic
Of Things**

LIVERPOOL SOUP



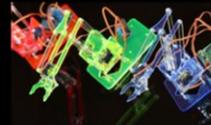
INNOVATORS
HUB



ZONE C – Crafters



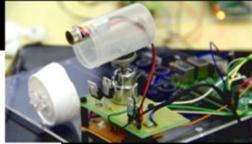
ZONE D – Education / Cool Kit / Wearable Tech
/ Drones / Virtual Reality



ZONE E – Sci-fi, steampunk & NERF Gun Range



ZONE F – Workshops



Thanks – Q&A

- Twitters...
 - @HEdSpaceUK
 - @saybeano
- Slides available at <http://marksabino.com/blog>