

Public Engagement and Outreach Strategy: Inspiring the next generation

Context: The Way Forward includes 'Social responsibility' in the Guiding Principles for our Actions with a focus on 'Social and Educational Inclusion'. Good public engagement activities are now valued in University promotion cases, where benchmarks in the promotional indicators include "evidence of activities that promote/enhance the University's reputation" and "evidence of sustained knowledge transfer through demonstrable social impact", "contribution to cultural enrichment" and "the public understanding of one's subject at a national level". *This will require us to have a professional culture that recognises and values the benefit of high quality public engagement.*

During 2010-2013, the School of Physics and Astronomy undertook a departmental review of Public engagement (PE) and outreach including an assessment of the School's approach to engagement using RCUK's EDGE tool ([Appendix 1](#)), a self assessment tool which describes 'Embryonic', 'Developing', 'Gripping' and 'Embedded' approaches to supporting engagement. This review highlighted a number of excellent practices in PHYSX as well as areas which are still in need of development, in particular the need for a strategic and focussed approach to public engagement (PE) and outreach rather than the current small ad-hoc and reactive approach was identified. The review also identified the following priorities (see also [Appendix 2](#)):

I. Maximise the social and economic impact of research in the School of Physics and Astronomy by engaging and inspiring the general public, school children and policy makers, with no barrier to gender, race or ethnic origin groups; and ultimately increasing the talent pool

Public engagement (PE) enhances research by individuals in the University by raising profiles of individuals, projects and institutes, improving the communication skills of scientists, and providing greater accountability and transparency in research. PE also contributes positively to society and culture, the public should be able to access the research carried out and generated by their wealth. This has the added benefit of broadening attitudes and ensuring research institutes remain relevant to society.

II. Focus outreach in the School to fewer large departmental-wide projects and ensure a support mechanism is provided for anyone in PHYSX wishing to engage with outreach, whilst continuing to monitor and demonstrate evidence of impact and societal change through these programmes

III. Develop critical skills for our undergraduates, postgraduates and postdoctoral researchers, improving the general skills of the Welsh and UK workforce

PHYSX will develop the critical skills needed to contribute to the UK's science, technology, engineering and mathematics (STEM) workforce, particularly in supplying high quality graduates into STEM areas. We will do this by supporting the career development of researchers and undergraduates through recognising that public engagement is an effective way of developing transferable skills.

How will we address these? The strategy for the School is detailed on a point-by-point basis in the Action Plan ([Appendix 2](#)). This lists the actions required to achieve the goals listed above and also includes a number of success measures which may be achieved by implementing the long term strategy for the School during the next 5 years.

The overall aim of this strategy is to ensure an efficient running of higher quality outreach events in the School (reducing the burden on staff where appropriate); we will focus on partnering with schools and teachers over the next five years due to increased external funding in this area, and aim to demonstrate societal and educational change with these projects. We will use UGs and PGs to help implement our strategy and to enhance their personal development. We also envisage building stronger connections with the University's Community Engagement Team, Schools Partnership Officer, CoPSE Admissions and Recruitment Fora etc. to streamline organisation of events and activities.

To achieve these goals a number of changes have already taken place within the School, including the appointment of an academic Head of PE and Outreach which reports to the Director of Innovation and Engagement. There is also a new outreach structure outlined in [Appendix 3](#). This consists of (i) a small team running two large externally funded outreach projects (NSA and [ISE](#)) until 2016; (b) the **Public Engagement Team** who are responsible for day-to-day running of outreach in PHYSX (see [Appendix 5](#) for a full list of roles) and (c) the **Outreach Committee** (a steering group, whose membership is detailed in [Fig A.1](#) with terms of reference provided in [Appendix 4](#)).

A1. Evaluating PHYSX Outreach with the EDGE Tool - highlight indicates current status within the School

The EDGE tool

	Focus	Embryonic	Developing	Gripping	Embedding
PURPOSE	Mission	There is little or no reference to public engagement in the organisational mission or in other institution-wide strategies	PE is referenced sporadically within the institutional mission documents and strategies, but is not considered a priority area	PE is clearly referenced within the institutional mission and strategies and the institution is developing an institution-wide strategic approach	PE is prioritised in the institution's official mission and in other key strategies, with success indicators identified. It is a key consideration in strategic developments in the institution
	Leadership	Few (if any) of the most influential leaders in the institution serve as champions for public engagement	Some of the institution's senior team act as informal champions for public engagement	Some of the institution's senior team act as formal champions for public engagement	The VC acts as a champion for PE and a senior leader takes formal responsibility. All senior leaders have an understanding of the importance and value of public engagement to the institution's agenda
PROCESS	Communication	The institution's commitment to public engagement is rarely if ever featured in internal or external communications	Public engagement occasionally features in internal and external communications	Public engagement frequently features in internal communications, but rarely as a high profile item or with an emphasis on its strategic importance	PE appears prominently in the institution's internal communications; its strategic importance is highlighted, and resources and strategic support have been allocated to sustain this
	Support	There is no attempt to co-ordinate public engagement activity or to network learning and expertise across the institution	There are some informal attempts being made to co-ordinate PE activities, but there is no strategic plan for this work. Some self-forming networks exist, not supported by the institution	Overnight and co-ordination of PE has been formally allocated (e.g. to a working group or committee) but there is minimal support and resource to invest in activity	The institution has a strategic plan to focus its co-ordination, a body/ies with formal responsibility for oversight of this plan, and resources available to assist the embedding of PE. There are a number of recognised and supported networks
PEOPLE	Learning	There is little or no opportunity for staff or students to access professional development to develop their skills & knowledge of PE	There are some opportunities for staff or students to access professional development and training in PE, but no formal or systematic support	There are some formal opportunities for staff or students to access professional development and training in PE.	Staff and students are encouraged and supported in accessing professional development, training and informal learning to develop their skills and knowledge of engagement
	Recognition	Staff are not formally rewarded or recognised for their PE activities	Some departments recognise and reward PE activity on an ad hoc basis.	The university is working towards an institution-wide policy for recognising and rewarding PE activity	The university has reviewed its processes, and developed a policy to ensure PE is rewarded & recognised in formal and informal ways
PEOPLE	Staff	Few if any opportunities exist for staff to get involved in public engagement, either informally or as part of their formal duties	There are opportunities for staff in a handful of faculties or departments to get involved in PE, either informally or as part of their formal duties	There are structured opportunities for many staff members to get involved in PE; but not in all faculties or departments. There is a drive to expand opportunities to all	All staff have the opportunity to get involved in public engagement, either informally or as part of their formal duties, and are encouraged and supported to do so
	Students	Few opportunities exist for students to get involved in PE, either informally, through volunteering programmes, or as part of the formal curriculum	There are opportunities for students to get involved, but there is no coordinated approach to promoting and supporting these opportunities across the institution	Many (but not all) students have the opportunity to get involved in PE and are encouraged and supported to do so. There is a drive to expand opportunities to all	All students have the opportunity to get involved in PE, and are encouraged and supported to do so. The institution offers both formal and informal ways to recognize and reward their involvement
Public	Little or no attempt has been made to assess community need, or to support 'non traditional' groups in engaging with the institution	Some attempt has been made to analyse community need and interest; and to begin to tackle access issues to open up the institution and its activities to the public	The institution has committed resources to assessing community need and interests, and to using this insight and feedback to inform its strategy and plans	The institution has assessed need & committed resources to supporting a wide range of groups to access its facilities and activities, and to systematically seek their feedback and involvement.	

A2. Public Engagement and Outreach Action Plan

Goal	Evidence?	Action	Success Measures
<p>Streamline, focus and improve quality and professionalism of outreach and PE in the School</p>	<p>NA</p>	<ol style="list-style-type: none"> 1. Appoint academic head of public engagement and new outreach structure in the School Review outreach and engagement practices, including a year on year report by the Head of PE 2. Focus on large projects and obtaining external funding for these rather than individual small events with little impact 3. Ensure more physics outreach projects if appropriate 4. Ensure all staff and students have access to information about outreach by updating web information 5. Have a one-stop shop for enquiries from schools 6. Review skills of PHYSX members to optimise their contribution to PE and ensure transparency in roles 7. Make more use of University provision in this are by working more closely with CU Community Engagement Team and Schools Partnership Officer etc 8. Use keen UGs to help deliver our outreach strategy 9. Provide guidance to mentors/supervisors/appraisers so that highest quality PE is formally recognised 10. Ensure PHYSYX notified about upcoming PE grants and opportunities 11. Set up an outreach budget for the School. 12. Use CU calendar of events or PHYSX calendar of events 	<ol style="list-style-type: none"> 1. Report of outreach in department over last 5 years written and EDGE tool used to review (Appendix 2) - completed 2013 2. Head of public engagement appointed and Outreach Committee formed (Appendix 3, 4 & 5) - completed 2013 3. More physics staff and students doing outreach. 1 major physics outreach project during 2014-2016. 4. Increased participation of staff/students in large outreach projects rather than small events 5. Increased applications and success rate for funding in the School to support larger focused projects - completed 2013 6. External web pages updated to highlight activity with community - completed 2013 7. Internal web pages updated to give info and best practice on PR, funding, training etc, emails sent by Head of PE whenever opportunities arise.- completed 2013, ongoing 8. Outreach strategy available online and talk given to School 9. Schools Liaison Officer moved to Schools Co-ordinator role (from WS to CN) and revised responsibilities - completed 2013 11. More UGs helping at outreach events and/or signed up for Cardiff Award Scheme/STEM Ambassador scheme 12. Evidence of high quality PE being recognised and recorded in Appraisals and/or promotion cases e.g. through departmental awards, comments from appraiser, written in guidelines from HoS, PE roles recognised in Workload Model. 13. Evidence of progressing in all areas under EDGE (Appendix 2)

Goal	Evidence?	Action	Success Measures
<p>Demonstrate effectiveness and impact from a small number of focused outreach projects</p>	<p>NA</p>	<ol style="list-style-type: none"> 1. Finish REF Impact cases for 2013 2. Identify future REF impact cases 3. Continued monitoring of numbers, events etc through 4. Provide annual reports on outreach in the School 5. Design an evaluation strategy 6. Revamp Schools talks 	<ol style="list-style-type: none"> 1. Two 3* REF Impact reports in REF - completed 2013 2. At least one >3* Impact case in next REF round based on large outreach and engagement projects which are evidence based. 3. Evidence that our projects have made societal impact (see all other entries in this table) 4. Annual reports available online and in tea room 5. New/revised Schools talks being delivered to secondary schools
<p>Raise the University's profile, engage with policy makers and inspire the general public</p>	<p>NA</p>	<ol style="list-style-type: none"> 1. Staff should accept invitations to be on public committees or involved in policy, also group leaders to think about nominating their group members to be on relevant committees. 2. Writing press releases, web stories, popular magazine articles, appearing on TV and radio shows etc. 3. Continue monitoring outreach and PR/marketing in School form 4. Evaluate the reach and impact of these activities and whether they inspire, or change anything 	<ol style="list-style-type: none"> 1. Evidence that more staff are on public policy committees and contributing to decision making at different levels in society. 2. Evidence of changing perceptions and knowledge level of the general public and policy makers. Evidence of the relevance of the University to the community. 3. Evidence of Cardiff research/outreach/staff appearing in the news and online, including increased news stories on PHYSX home website and CU main site. 4. Evidence in increasing numbers of UG/PGs as a direct result of higher visibility in public

Goal	Evidence?	Action	Success Measures
<p>Improve the quality of teaching in Wales and beyond at GCSE and above, bring research into the curriculum.</p>	<p>Estyn find lower standards in STEM subjects in Wales compared to rest of UK. Royal Society report shows that students in Wales less likely to do A Level Phys, Chem, Bio and Maths. Decline in students taking up GCSE STEM in Wales.</p>	<ol style="list-style-type: none"> Promote educational resources already created including Black Hole Hunter, Star in a Box, Chromoscope etc Provide CPD for teachers including teacher training events, workshops, mini conferences, visionary workshops. Continue to run our Schools Sixth Form and IOP Christmas Lecture events Target non-engaging schools in Wales Evaluate these events 	<ol style="list-style-type: none"> Resources created in PHYSX are listed as useful resources in the Exam Board/Syllabi and/or in PGCE training. Evidence that resources are being used in the classroom and/or by trainee teachers. Evidence in increased engagement with socio-economically poor schools, rural schools, Welsh speaking schools etc. Exam boards use Cardiff research to guide subject materials and syllabus Evidence for increased University applications into STEM subjects Evidence of increase in grades and/or numbers taking STEM subjects further due to our events (including choosing Single Award Science at GCSE).
<p>Improve the general STEM skills of the Welsh and national workforce (and therefore contributing to the economy)</p>	<p>National Assembly for Wales report: Enterprise and Learning Committee on the STEM <u>Agenda</u></p>	<ol style="list-style-type: none"> Attend science exhibitions, give public lectures, run schools events, "sidewalk astronomy", talk to community groups, media appearances. Provide formal in-house CPD for UGs, PGs and postdoctoral researchers in science communication. 	<ol style="list-style-type: none"> Evidence of supplying high quality UGs/PGs to teacher training courses Evidence of UGs and PGs taking up training courses in PHYSX. Evidence of increasing uptake of PhDs by UGs or skilled employment by UGs/PGs Postgraduate lectures on Science Communication and Outreach Opportunities in the School

Goal	Evidence?	Action	Success Measures
<p>Encourage more girls and other minority groups to take Physics and/or Astronomy further; to address the unfair large scale biases currently facing schoolchildren.</p>	<p>IOP it's different for Girls and IOP Closing Doors Report on ASPIRES project In house analysis suggests gender bias towards girls not taking science at A Level is worse in Wales than England.</p>	<ol style="list-style-type: none"> 1. Positive action with workshops just for these groups - continue supporting successful Saturday Discover Clubs 2. Ensure positive role models in PHYSX public engagement activities to promote diversity in scientists 3. Target young audiences and families to address the biases at earlier earliest ages 4. Implement NSA funded project to improve perceptions of scientists in primary children 5. Evaluation of activities 	<ol style="list-style-type: none"> 1. An increase in the number of girls (and other minorities) in taking University Physics as a result of our engagement. 2. An increase in the numbers of/grades of girls at GCSE/A level (and students from minority groups) due to our outreach/engagement. 3. Evidence that our events have positively changed pupils, teachers and parents perceptions of gender, race and other protected groups in STEM subjects, science and careers generally. 4. An increase in number of female (and other minority groups) in taking on a PhD as a result of including UGs in our engagement work

A3. New Structure for Outreach in the School:

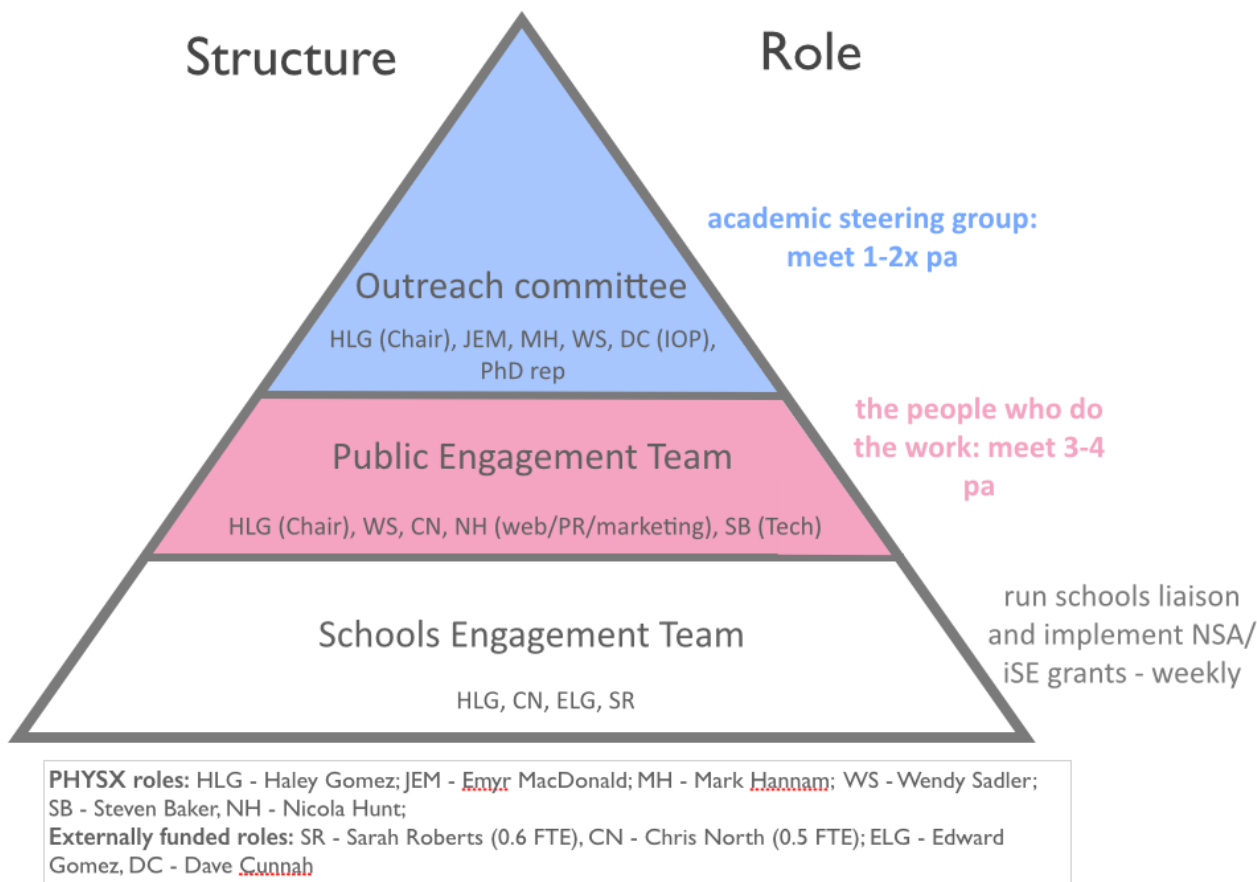


Fig A1: Activities co-ordinated by the Public Engagement Team (PET), led by Head of Public Engagement and Outreach under direction of the Director of Innovation and Engagement. The Outreach Committee provides a forum to give academic advice and support to PET and for PET to communicate with research groups and students across PHYSX.

Who to contact for what? (see detailed role description in A3):

- ☀ for any **outreach enquiries** regarding current programmes, ideas, funding, website, training, or any other, contact the **Head of Public Engagement and Outreach (Haley Gomez)**.
- ☀ for any enquiries based on **evaluation, policy, REF, best practice** contact the **Public Engagement Policy Coordinator (Wendy Sadler)** and copy in the Head of Public Engagement and Outreach
- ☀ for any enquiries regarding **projects with schools**, contact the **Schools Coordinator (Chris North)** or **schools@astro.cf.ac.uk**, and copy in Head of Public Engagement and Outreach
- ☀ use your representative on the **Outreach Committee** to provide input, advice, and feedback to the educational and public outreach programme in PHYSX. This can also be done informally by emailing the Head of Public Engagement and Outreach

A4. Terms of Reference for Outreach Committee

The Public Engagement Team will run the day to day outreach in the School and will report to the School's Outreach Committee. This is an academic advisory board set up during 2012 by HLG which will meet **once or twice** a year and provides a forum for academics, academic groups and postgraduate students to communicate their needs with the PET and the Chair, the current Head of Public Engagement and Outreach.

The Outreach Committee is responsible for:

- I. To advise Public Engagement Team on academic matters where appropriate.
- II. To advise if any member of the School requires support in outreach and engagement including training, applying for funding, support for REF impact cases etc.
- III. To provide strategic input from academic groups across the School
- IV. To review the outputs from the PET
- V. To report back to their respective groups on Public Engagement in the School
- VI. To discuss and review any Outreach budget

The membership of this committee will be typically:

- Head of Public Engagement and Outreach (Chair)
- Astro rep
- Physics rep
- PhD/PDRA rep
- Public Engagement Policy Coordinator
- External rep (currently IOP Coordinator for Wales)

A5. Roles of Public Engagement Team

Head of public engagement (academic role 0.05/0.1 FTE)

1. To be responsible for chairing the Outreach Committee and overseeing the PET
2. To create and implement a strategy for the School with measurable objectives
3. To liaise with the Public Engagement and Policy Co-ordinator and the Director of Innovation and Engagement on REF impact studies
4. To liaise with the Community Engagement Team, and the University on outreach and educational projects
5. To co-ordinate and collect quantitative and qualitative data
6. To create an annual report on public engagement activities for PHYSX
7. Design and implement a formal postgraduate training scheme in communication and public engagement in partnership with the University and College
8. To design a calendar of events for activities in the School (with admin support)
9. To notify the department of funding and outreach opportunities/events
10. Provide support, best-practice and training information for any member of the School who wishes to do outreach and/or apply for grant funding
11. Be responsible for the external and internal Web pages on Public Engagement and outreach

Public engagement and policy coordinator (0.4 FTE)

1. Provide support and best practice advice for the School (also at College and University level)
2. To provide strategic input into engagement activities in the School and help develop the long term strategic plan with the Head of Public Engagement
3. Represent the School and University at policy level (Wales' Science Advisory Board etc.)
4. To co-ordinate the evaluation and, where appropriate, the publication of the School's engagement activities, therefore to be responsible for evaluating impact and reach of the School's strategy, particularly looking towards future REF submission
5. Look towards designing a Science Communication module for undergraduates or PGT
6. Support and advise on the issues of Women in STEM subjects
7. Liaise with the Community Engagement Team

Schools coordinator (0.5 FTE externally funded until 2016)

1. Deliver the PHYSX strategy on engagement with Schools
2. Design and run teacher training events
3. Oversee Christmas Lecture and Sixth Form Conference (with NH, SB)
4. Identify schools we should be targeting i.e. those who don't traditionally engage with the School or science, socio-economic groups etc.
5. Liaise with the Community Engagement Team in relation to Schools outreach and education
6. Advise on strategy for schools and education

PR and press engagement officer (0.05 FTE)

1. To provide administrative support for PR and press related enquiries including media
2. To liaise with Sys Admin for uploading news stories and relevant press releases for the School in a timely manner
3. To liaise with the Public Engagement Team and PRComm with PR issues
4. To support the Schools Coordinator with Schools events and on-the-day organization

Technical engagement officer (0.05 FTE)

1. To provide advice on technical support for outreach events and demonstrations
2. To liaise with the Public Engagement Team and Technical team
3. To support the Schools Coordinator with Schools events activities and on-the-day organization