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Review of National Science Academy funded show development and tour of Welsh theatres 2013-2015

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Introduction

In 2013 **science made simple** obtained funding from the Welsh Government National Science Academy (NSA) Grant Scheme. This report details the project activity and records the knowledge gained.

The grant allowed the company to create a new suite of theatrical science demonstrations. These were worked into an existing show format. Subsidised performances were offered to theatres in Wales, alongside an innovative marketing platform, science busking, at local events and schools. The new show was called *The Experimentrics*.

Following a press launch at the Royal Welsh College of Music and Drama (RWCMD), the new show toured to seven theatres geographically spread across Wales, with a total audience of 2664 plus a further 1910 engaged through science busking activities at schools and public events and places.

A bilingual website was created to act both as a marketing tool, but also as a resource for audience members to access ideas for demonstrations linked to the show. Other resources include teacher sheets with explanations of show topics and a performance programme with ideas for things to try at home.

In addition, show development links with the RWCMD and NoFit State Circus were strengthened, while new ones were forged with The Wales Millennium Centre, Sherman Theatre and Pontio, as well as the show-hosting theatres.

The performances themselves were very well received by audiences and reviewers alike. Although total attendance for the shows was fewer than aimed for in the proposal this was largely due to the postponement beyond the project finish date of the Pontio performances. Alternatively our science busking engagement hit far greater numbers than anticipated.

The Proposal

science made simple proposed to reach family audiences through the expansion of their existing innovative show, *Visualise*, and touring to arts venues across Wales. The mischievous mix of physical theatre and live science demonstrations has proved a hit around the world. The non-verbal approach, the use of humour and the level of theatrical production values make the show appealing to a different kind of audience compared to many science, technology, engineering, mathematics (STEM) activities at science-based attractions or higher education institutions (HEIs).

The show encourages parents and children to enjoy together a culturally enriching experience that will shift their attitudes and behaviours about science subjects. It encourages children to ask more questions about the world around them and have conversations with their parents/carers about science. The show supports inquiry based learning and has a range of follow-up activities to try at home.

A key part of this project was establishing relationships with theatres and creating an appetite for science-related performance in Wales, with the key strategic objectives as follows:

- Extend the existing show performance time by developing new material for the show
- Tour new version of the science theatre show to arts venues spread throughout Wales.
- Target family groups. Performing at arts venues to help reach non-traditional science audiences and change parental attitudes to science to assist family learning.
- Establish relationships with arts venues in Wales with a view to increasing audiences for science shows as a leisure choice for future years.
- Explore ways to attract diverse communities to science theatre, including public science busking, exploring ‘communities first’ engagement initiatives and investigating whether family performances are best placed within term-time or during school holidays.
- Renew current physical theatre show and invest in kit to enable cost-effective touring in future years.

Initial Theatre Discussions

On receipt of funding decision approaches were made to theatres, both directly, in the case of theatres **science made simple** had already worked with, and indirectly, through the Arts organization Creu Cymru, which is an Arts Council of Wales funded body with the remit to promote events to theatres.

Owing to the nature of the show's site specificity, visits were paid to theatres at which we had no prior experience. These were:

- Pontio (Bangor)
- Theatr Felinfach (Felinfach)
- Barry Memo (Barry)
- The Stiwt (Rhosllanerchrugog)

Thanks to the comprehensive nature of the technical specifications at Y Ffwrnes (Llanelli) and Taliesin (Swansea) theatres site visits were not necessary and all communications were conducted via email and telephone. Pontardawe Arts Centre and Blackwood Miners Institute had both been performed at in previous years, and so site visits here were also unnecessary.

The initial tour dates were agreed as follows:

- Barry Memorial Hall – 14 Oct (2 shows, 10.00 and 13.00).
- Theatr Felinfach – 17 Oct (3 shows, 10.00, 13.30 and 19.00)
- Pontardawe Arts Centre – 21 Oct (3 shows, 10.30, 13.00 and 19.00)
- Y Fwrnes, Llanelli - (3 shows, 10.00, 13.00 and 18.30).
- Taliesin Arts Centre, Swansea - 3 (17.00) and 4 December (10.00 and 13.00)
- Stiwt, Rhosllanerchrugog - 21 Feb (18.00)
- Blackwood Miners' Institute - 5 Mar (2 shows, 13.30 and 19.00)
- Pontio, Bangor - 13 March, (2 shows, 10.00 and 13.30) and 14 March (2 shows, 11.00 and 14.00)

Map of venues in Wales

Marketing Activity

Alice Baynham, an experienced marketing consultant with knowledge of arts venues in Wales was recruited. She was able to advise on the communication strategy and supply venues with assistance and information concerning the show throughout the tour. She also raised the profile of the project in the media.

Branding

The show was rebranded as *The Experimentrics* to better reflect the fun nature and family-friendly tone of the show. A new logo and illustrations were also designed with the target audience in mind.

Marketing Pack

A marketing pack was compiled. It included show copy, company information, reviews of *Visualise*, a list of marketing materials and support available, suggested target audiences and key messages / benefits, a sample direct mail aimed at public audiences in both English and Welsh and a sample bilingual press release. Alice ensured that any extra materials, information, etc. (e.g. press updates, info about advertising) was circulated to venues and constantly offered help and advice to venue marketing staff.

Print Advertising

Individual posters were produced for each location alongside generic flyers. These were used at the venues to promote the shows and whilst busking in the surrounding area. Other places used by families, such as libraries and leisure centres, were also targeted.

Adverts were placed in a number of local papers as follows

- Primary Times (Felinfach, Pontardawe, Ffwrnes and Taliesin dates) – half page in South West Wales October issue
- Wrexham Leader and Leader Live (Stiwt date) – ¼ pages in 13 Feb, 19 Feb and 20 Feb issues, 10000 online ad impressions
- Caerphilly Observer paper and online (Blackwood date) – ½ page in 19 Feb issue, 10000 online leaderboard impressions from 23 Feb
- Caerphilly Campaign Series (Blackwood date) – 5 x 2 inch ad in Entertainment, Theatre and Shows section, ran from 25 Feb for one week in paper and online

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In addition, Facebook advertising campaigns were used for the public shows at The Stiwt in Wrexham on 21 February and Blackwood Miner's Institute on 5 March.

For the Wrexham campaign, a total of £100 was spent which resulted in a reach of 30354 and 286 click throughs to the show page on The Stiwt's website.

For the Blackwood campaign, a total of £300 was spent which resulted in a reach of 79225 and 1251 click throughs to the show page on Blackwood Miner's Institute's website.

Press

A press release was issued in September to regional and national press and then followed up over the course of the tour in conjunction with the venues. The following coverage was achieved:

- BBC Wales Science Cafe - dedicated programme on **science made simple** - 2 Dec
- Guide to Swansea http://www.guide2swansea.com/events/85473/Experimentrics-----Science--Made--Simple---Pontardawe--Arts--Centre
- Llanelli Star - http://www.llanellistar.co.uk/Experimentrics-bring-innovative-science-theatre/story-23059546-detail/story.html
- Primary Times (South West Wales) - editorial with image alongside advert
- South Wales Echo - http://www.walesonline.co.uk/whats-on/family-kids-news/fire-tornados-smoke-rings-flying-8883444
- South Wales Evening Post - preview http://www.southwales-eveningpost.co.uk/Family-science-fun/story-23287500-detail/story.html
- South Wales Evening Post - number 1 in '5 great things to do in south west Wales tonight' feature - http://www.southwales-eveningpost.co.uk/5-great-things-south-west-Wales-tonight/story-23306956-detail/story.html
- Wrexham Leader - preview

Website

A bilingual website was setup at www.experimentrics.co.uk which provided background information and resources.

Social Media

Facebook – The **science made simple** facebook page, which has over 2000 ‘likes’, was used to promote the tour dates.

Twitter – A designated @experimentrics Twitter account was created. This was used alongside @scimadesimple and venues own accounts to interact with potential audience members and other local networks.

Social media provided the additional ability to share photos, videos, further resources and receive feedback from audience members.

Science Busking

science made simple has been at the forefront of the development of this engagement technique. Small portable science demonstrations and phenomena are taken out on to the street, or into the classroom, to challenge and surprise people in a fun and informal manner. It works very well in drawing crowds and engaging families and classes.

For this project, this method was used as a means of promoting the performances at the theatres. This means of marketing was offered to all participating theatres, and was taken up by Theatr Felinfach, Pontardawe Arts Centre, Y Ffwrnes, Theatr Taliesin and Blackwood Miners Institute. Our science busker, David Price, spent 5 days working in schools near Felinfach and Pontardawe, and at events such as Llanelli Retro Fest. The full list is as follows:

- Fun Palaces, Wales Millennium Centre 100 general public
- Felinfach, 300 pupils
- Pontardawe (Llangwig, Ynsytawe and Godregraig Primary Schools), 410 pupils
- Llanelli Retro Fest: approximately 500 general public.
- Swansea Waterfront, approximately 300 general public.
- Blackwood (outside supermarket) approx. 300 general public.

Development

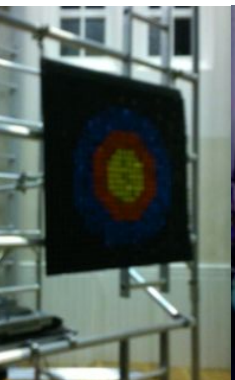
Prop and show set development began after sourcing development and storage space. Significant equipment purchases included:

- Projection screens
- Scaffold tower (stage set)
- Smoke machine
- Flight cases and road trunks.
- Projector
- Van ramp
- UV lighting
- Cue control software




Certain props were purchased from external providers, whilst others were developed from scratch. The list of new demonstrations for development was as follows:

- Chaotic pendulum
- Giant version of existing flame tornado
- Redevelopment of existing flame tornado to allow 3 different coloured chemical tornado
- Pendulum wave (pendulums set at special lengths)
- Pitch activated Pong game
- Different yellows – colours appearance under different wavelengths
- Bottle orchestra
- Smoke tornado
- Air cannon target
- Vacuum bazooka
- Fish scanimation illusion
- Slow exposure illuminated hoop





Rehearsal space

Considerable problems were encountered in finding suitable rehearsal space at appropriate times, however rehearsals and technical developments occurred at regular intervals throughout the project at the following venues:

- Sherman Theatre
- Wales Millennium Centre
- NoFit State Circus Four Elms training space

Directorial Input

The chosen Director was Steve Fisher, Senior Lecturer in Drama at the University of South Wales. His time commitments meant that there was less time to work with him than planned for, however the limited time spent was very useful to the project's development.

The Tour

Just as touring was due to begin in October, there was a proposed strike action that affected the planned performances at Barry Memo. These shows were therefore rescheduled from the planned October 2014 until March 2015.

Furthermore the performances at the new Pontio theatre in Bangor had to be postponed indefinitely as the new building's construction seriously over-ran. The performances will now take place outside the scope of the project.

The Audience

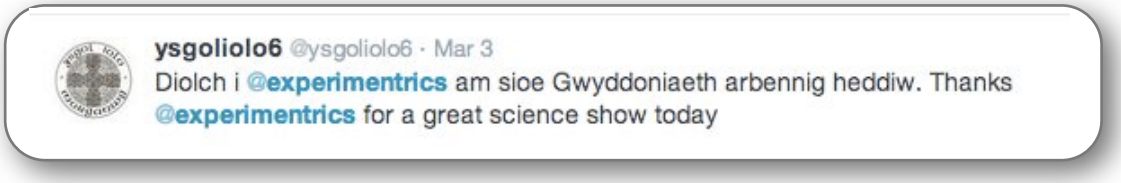
Venue	Schools shows	Audience	Public shows	Audience	Busking Total	Theatre Total
RWCMD	0	0	2	181 (total)		181
Fun Palaces, WMC busking					100	
4 x Felinfach school busking					300	
Theatr Felinfach	2	193, 169	1	40		402
4 x Pontadawe school busking					410	
Pontardawe Arts Centre	2	331 (total)	1	46		377
Retrofest, Llanelli busking					500	
Y Ffwrnes	2	250, 305	1	67		622
Waterfront Museum busking					300	
Taliesin Arts Centre	1	249	1	187		436
Stiwt	0	0	1	52		52
Barry Memo	2	135, 224	0	0		359
Blackwood supermarket busking					300	
Blackwood Miners' Institute	1	172	1	63		235
				Grand total	**1910**	**2664**

The performances themselves were very well received by audiences and reviewers alike (see later sections for more detail). The project was aimed at family groups but many theatres were keen to schedule daytime schools shows to fulfill their education mission and to reach greater numbers.

As predicted the show was very popular with girls as well as boys.

Loved the show last night thanks all, daughter can't wait to see more!"
Juliette Shearman via Facebook

It was also particularly welcomed by Welsh-language schools, who can sometimes feel overlooked by the informal science sector.



Project Review

The project achieved the objectives set out in the proposal. There were a number of challenges but these were overcome and the project was completed on time and within budget. It enabled **science made simple** to try out different strategies and gain useful knowledge of arts venues in Wales, helping to build their reputation within the Welsh theatre community. It also led to a number of fruitful relationships.

The project outputs were as follows:-

Proposed	Actual
Number of NSA STEM engagements –18 performances * Science theatre show tour to 6 arts venues spread across Wales.	Number of NSA STEM engagements -16 performances in 7 arts venues across Wales, plus two performances at a Press Launch.
Number of NSA participants - 4,200. 2100 parents, 2100 children 5-11yrs * 3 performances per venue reaching an estimated 200 people per show. (Total theatre audience – 3600: Parents – 1800, Children – 1800)	Number of NSA participants – 4564. Approx. 1270 parents, 3294 children and schoolchildren.
NSA educational learning resources * Creation of a take-home booklet with activities to try at home. * Six different flyers/postcards for the show with science activities to try at home.	NSA educational learning resources 1. The take-home booklet with activities. 2. Rather than create the postcards it was decided to create a bilingual website in order to allow for resource downloads thus increasing the reach of the project. 3. Bilingual teacher sheets for primary science teachers.

Notes on project objectives

Extend the existing show performance time by developing new material for the show.

The grant enabled **science made simple** to undertake a very valuable period of research and development. A number of new demonstrations made it through initial testing and were refined. The demonstrations were worked into the existing script and an extended show, 90 minutes with interval, was trialled as part of the tour. Overall the 60 minute show format proved more popular with venues and suited younger audiences. The flexibility to mix the new material into one hour gives greater scope for coping with potential venue restrictions in the future.

It was desirable to spend further time with a director to refine the overall narrative arc and character development, but this was not possible at this time.

Tour new version of the science theatre show to arts venues spread throughout Wales.

Very positive comments were received from the venues and the tour helped to build relationships with the invitation for further touring next year.

Financially it can be a struggle to get Welsh venues to book and it is highly unlikely that an unsubsidised tour would have reached as many venues. This is a problem across the board in Welsh theatre. **science made simple** have previously experienced difficulties with funding and the long lead times required involved in theatre programming (12 months) so it was helpful that this grant was spread over 18 months. Despite this, contractual delays at the commencement pushed the tour period towards the final quarter. As a consequence the predicted spend in each quarter had to be revised.

It was disappointing not to include Pontio, Bangor in this tour period due to the delay in completing their building. This meant the project did not serve North Wales as well as hoped. However, they have expressed a desire to continue with the booking as and when they are able.

Target family groups. Performing at arts venues to help reach non-traditional science audiences and change parental attitudes to science to assist family learning

The best shows for families proved to be earlier matinees. Unfortunately a number of venues were reluctant to programme weekends with the show and preferred weekdays. Evening shows were difficult for families with younger children. There was a noticeable drop in audience numbers for these shows. Whilst there was a broad cross-section of ages represented in the family shows, the average age was generally younger than previous tours. This may be in part down to the revised branding.

The website www.experimentrics.co.uk was a great resource for the venues in terms of understanding the content and feel of the show. It was good to have the 'Try this at home' activities online and a few of the venues commented that it was really useful to be able to point people directly to the website for these educational aids.

Establish relationships with arts venues in Wales with a view to increasing audiences for for science shows as a leisure choice for future years.

A number of venues discussed working together on education initiatives. They also seemed interested in other **science made simple** projects, which is a very positive outcome. It also helped achieve the objective of increasing appetite for science events in Wales.

Finding suitable rehearsal space was more complicated than originally envisaged, but the process of contacting various venues around Cardiff helped broadened relationships with a number of arts organisations and led to some new contacts. For example, the Fun Palaces initiative at the Wales Millennium Centre came about as a result of using their rehearsal space. Shared storage space with No Fit State led to **science made simple** assisting them a community film event and No Fit State donating demonstration equipment from a previous joint project. There is huge potential to reach our target demographic through working together like this.

Explore ways to attract diverse communities to science theatre, including public science busking, exploring 'communities first' engagement initiatives and investigating whether family performances are best placed within term-time or during school holidays.

As ever, attracting audiences proved to be the most difficult part of the project. A number of different strategies were used, including posters, Facebook adverts, local newspaper print, targeting libraries and leisure centres and social media. As is common in this situation, one tour where there was only a few performances at each venue was not sufficient to build up the necessary word-of-mouth required to encourage people to book tickets. Regular touring would allow audiences to build naturally.

The grant enabled **science made simple** to try various marketing tactics and strategies. In particular, using the services of a professional marketing consultant who helped us to produce a very professional marketing pack and ensured that communication between the team and the venues was strong. The most successful marketing strategy was busking although it was also the most time intensive and expensive. However, it reached more people on a personal level and connected with those who had no relationship with the local theatre at all.

As the tour covered so many months, there was always the risk that performance dates would change, which they did (namely the cancellation of Pontio dates and the postponing of the Barry Memo show). Therefore in the later stages of the tour the printed materials were not as accurate as they could have been.

Tickets sales for schools performances were generally good, although sales for public performances varied, with some on the low side.

Support from and engagement of venues and their marketing teams was very mixed, although in the experience of our marketing consultant, this is the case for all touring companies and is not specific to **science made simple**.

It seems that for a lot of venues, one / two performance runs are not particularly a priority, even when the venue is paying a guarantee fee. This is often to do with lack of resources and time, rather than a lack of willingness.

Renew current physical theatre show and invest in kit to enable cost-effective touring in future years.

The previous show relied on using a back projection system. This made it unsuitable for venues with reduced stage depth. The grant enabled **science made simple** to invest in a new front projection screen and developed additional material to replace back projected content. This increases the number of suitable venues and increases the flexibility of the show.

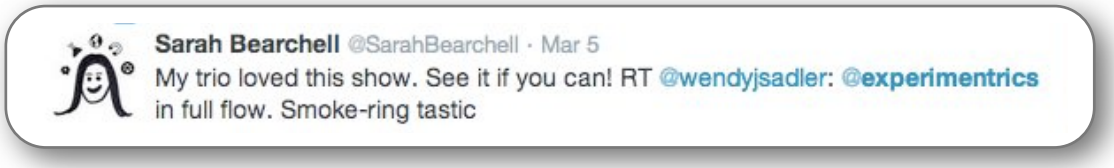
Other purchases such as UV lighting and cue management software helps the show to be more self-sufficient and less reliant on rented or borrowed equipment.

An unexpected benefit of touring closer to home was familiarising an additional freelance technician with the specific rigging and cues required. This expands the pool of technical support for future touring.

Review of Outcomes

Instill in the audience a sense of awe and wonder at the world around us, and motivate them to find out more.

There was a very good response from audiences and the show provoked a lot of discussion between children and accompanying adults. Many also indicated that they would book tickets again to see **science made simple** again.



"The kids? They barely stopped 'wow'ing or gasping or laughing.' *Online review*

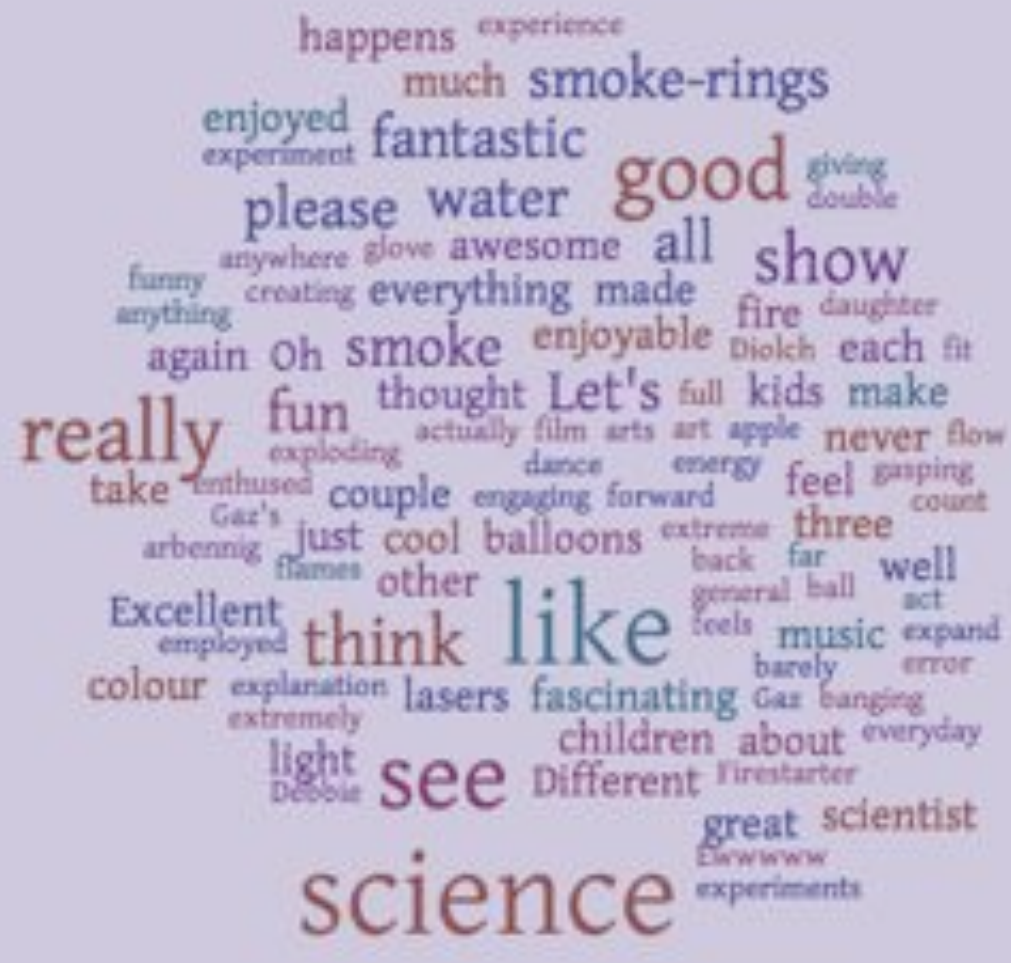
"it was fascinating to see how much science is out there surrounding you and how little you notice it and the show really brought that forward"

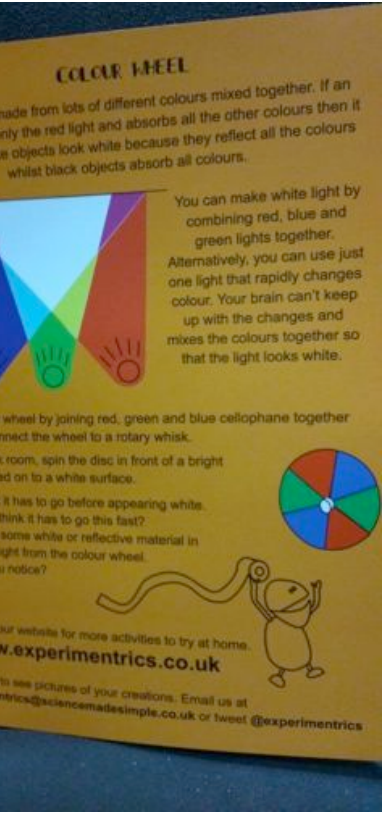
"… the colour change and the paper, I thought that was, well, remarkable really"

"It was fascinating to see stuff about science in the real world and to see all the different things that happen."

Audience post-show comments

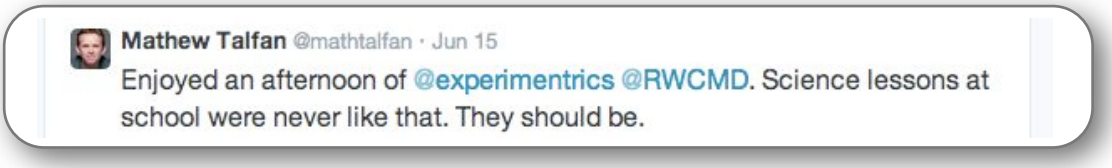
Audience feedback was compiled into a word cloud, shown below, which highlights some of common themes.





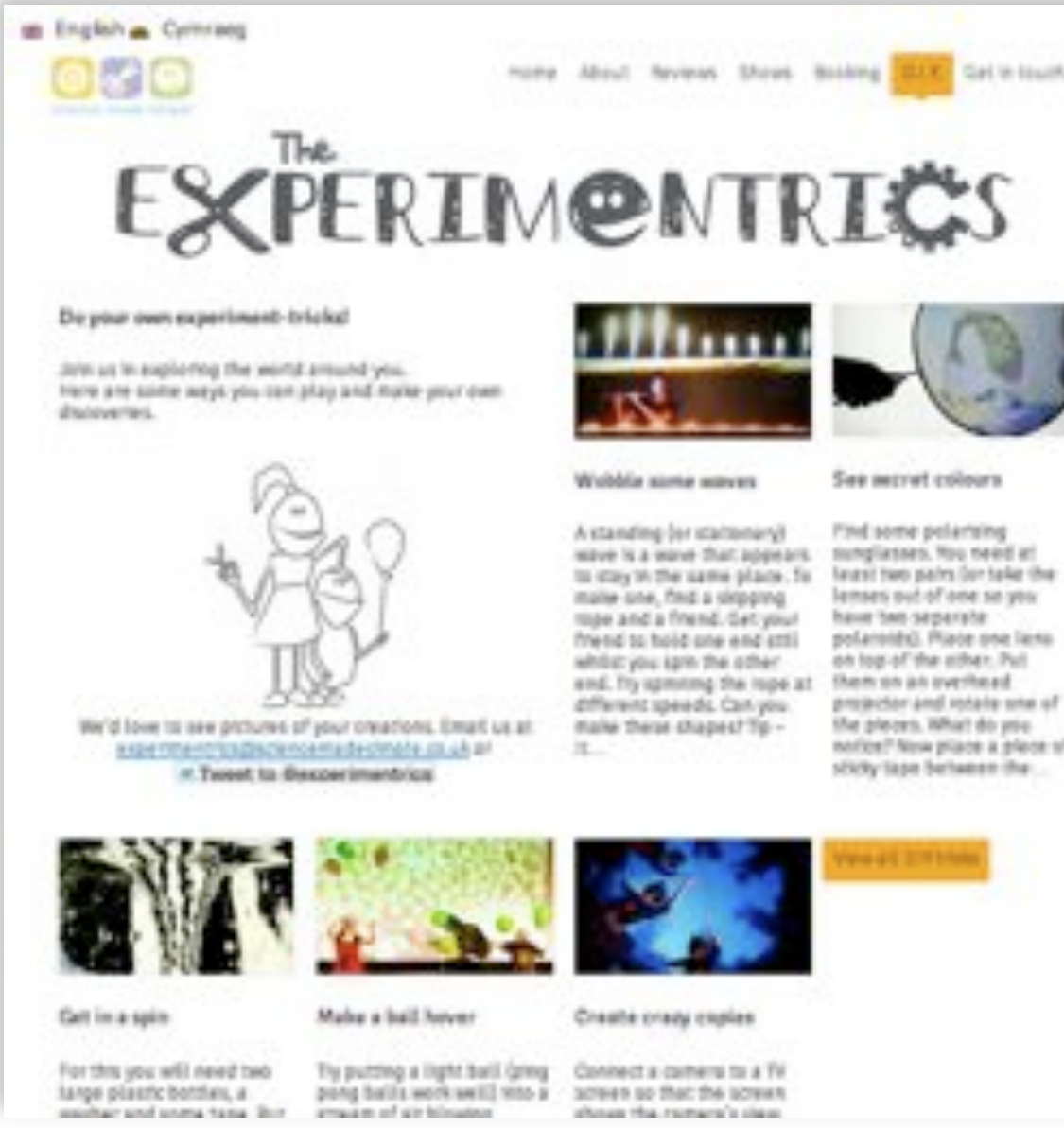
Encourage a spirit of investigation (thus supporting inquiry based learning) in the home, as well as at school.

The bilingual programme contained a number of activities to try at home and this was backed up by further materials available from the website. Creating online resources allows further activities to be added over time and gives the project a legacy. The feedback was very positive about this and venues in particular commented that it was good to have somewhere they could direct people towards. It also tied in nicely with social media, which helped to raise awareness of the resources available.



"It enthused me so much that I had to take notes, not for review purposes but so we could expand on some of these experiments back at home." *Becky Condron Online review*

Another advantage of online resources was being able to let the audience choose their preferred language, without limiting the volume of information available. In printed media the space is split between the two languages.



Establish on-going relationships with arts venues so that science is seen as part of their family programming.

Very positive comments were received from the venues and the tour helped to strengthen some existing contacts and establish new relationships with a range of venues.

"The audience came out absolutely buzzing. We'd definitely like to talk about having you back again next year"

Comment from venue programmer

Theatres were more interested in reaching school groups. Whilst this was not a priority for the project it did demonstrate that there is actually a strong market in this area for a show like this. The response from schools was also very strong.

The science busking by David Price proved to be especially popular

"How lovely to meet you yesterday David and thank you so much for all you did to engage the hundreds of young people you encountered. Rachel was fulsome with praise – and said you made a big impact on the teachers (so thank you for the public relations exercise – very helpful). Everyone very excited now to come to the performances"

Email from venue programmer

Invest in key items of science demonstration props and theatre performance equipment. As a project legacy this will make it more financially viable for future tours in Wales.

Developing new material alongside touring proved to be a very effective strategy. It allowed the team to try out material in front of a live audience. It also enabled various demonstrations to be road-tested, and allowed improvements to be made along the way. This iterative process of development was invaluable.

For example, a demonstration that used a vacuum cleaner to launch foam pellets across the stage was incorporated into the show. Rehearsals helped risk assess this. Further dynamic risk assessment in a variety of venues built confidence in the safety procedures. The pellets were subsequently refined to make them even lighter and easier to replace when needed. The revised kit was then evaluated in the next live show.

Appendix 1 - Review

http://www.westonsupermum.com/the-experimentrics-at-blackwood-miners-institute/

The Experimentrics at Blackwood Miners' Institute

Posted on March 7, 2015

"**science made simple** has a mission to inspire the next generation of scientists and engineers, and to embed science and engineering within popular culture," says Wendy Sadler, Founder of science made simple. And, whoa, do they achieve this in *The Experimentrics*, a live show where art and science hurtle towards each other and collide with all the energy of exploding stars, giving birth to something really rather beautiful.

Gaz and Debbie are like a slapstick double act; clown and scientist, constantly trying to outdo each other, get the upper hand. This is a performance that never once uses the spoken word, making you feel that you are witnessing a 'silent' Laurel and Hardy film but in extreme technicolour and with music that makes you want to get up and dance.

The Experimentrics is extremely visual, presenting science for children in a way that is fun and ultra engaging. It enthused me so much that I had to take notes, not for review purposes but so we could expand on some of these experiments back at home. Think large screen light shows, lasers, banging tunes, smoke, fire, photography.

Where can we experience shapes in everyday life? What happens when water boils? How can we make a musical instrument out of a straw? What do sound waves look like? How do lasers work? How many reflections can you make with three mirrors? What happens when you combine the three primary colours of light? Often it feels like illusion but, actually, everything has a logical, scientific explanation.

The technology employed here is wide – really, you can put a microscope and camera just about anywhere! We have a couple of apple macs and a turntable for vinyl. Gaz's music choices are excellent and you can see that he is clearly having a ball (I particularly enjoyed T-Rex's *Children of the Revolution,* playing loudly when the pair investigate everything that can possibly spin! And The Prodigy's *Firestarter* when creating a spiral of flames).

As you can tell from my terminology, I am as far from a scientist as it is possible to be but this had my brain ticking. Oh, sorry, the kids? They barely stopped 'wow'ing or gasping or laughing. "I feel like we're at a carnival," shouted my 8 year old daughter.

I've long understood that an incredible amount of learning can take place via the arts, in general, and the theatre, in particular. *The Experimentrics* has cemented this knowledge. Both of us are inspired – let's grab whatever objects we come across and experiment with them. Let's trial and error it. Let's have fun with science!

Please, please, please, science made simple – can you travel over the Severn Bridge and share your wonderfulness with Bristol and Somerset? I can think of a couple of local theatres that you'd fit into, like a magician and his glove.

Brilliant!

– Check out *The Experimentrics* website for some simple activities you can try at home

– Review by Becky Condron