Evaluation of the Institute of Physics

Thank Physics Campaign

Brighton and Hove, November – December 2011

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1. Introduction

One of the aims of the Institute of Physics (IOP) is to bring positive experiences of physics to public audiences who do not expect to be exposed to physics. In November 2011 the IOP launched their ‘Thank Physics’ beer mat campaign aimed at 25 – 40 year olds in the Brighton and Hove area. The aim of the campaign was to show how physics underpins the modern technology we rely on every day with the strapline ‘Thank Physics for That’.

The campaign aimed to communicate the following main messages:

- Physics underpins technology and therefore continued research in physics will continue to improve technology
- Physics has a positive impact on our everyday lives

And had the following desired outcomes:

- Discussion among 25 – 40 year olds in social groups about the relevance of physics in everyday life in pubs and on social media
- Raised awareness among 25 – 40 year olds of the value of physics to society and the economy
- Increased traffic to www.physics.org/thankphysics

To achieve these aims, 50,000 beer mats were distributed to pubs in the Brighton and Hove area, supported by dedicated Thank Physics pages on physics.org. The four week campaign (14 November – 11 December) was accompanied by social media activity and targeted online advertising.

1.1 Physics and technology

The mats were printed with four different designs each focusing on a modern technology with a related multiple choice question, see appendix 1 for full designs. The viewer could find out the correct answer by either using a QR code which directed them to the relevant Thank Physics page on physics.org, or by texting a key word to a number which would result in an automated response indicating whether they were right or wrong with a link to physics.org.

The social media campaign was delivered via Facebook, Twitter and blogs, and included strategies such as a photo competition, regular Tweets and updates on Facebook directing users to physics.org. Once a week during the campaign, a more focussed attempt was made to stimulate engagement on Twitter and Facebook using open ended questions such as ‘What was the first album you ever bought and what format was it?’.
The Thank Physics pages of physics.org contained further information on the physics behind the technology through dedicated articles and related links.

The campaign also included online Facebook and Google ads that targeted web users who were in the 25 - 40 age group, within 10 miles of Brighton and whose online activity included key words and interests relating to individual mats.
2. Methodology

50,000 beer mats were distributed to 50 pubs across Brighton, Hove, Lewes and Rottingdean on 14 November (each pub received 250 of each design). Data collection took place from 26 November to 11 December, weeks 2 – 4 of the campaign. Week 1 was avoided to ensure that pub goers had time to view the mats.

Data was collected through a combination of pub customer and staff surveys and interviews, an online survey on physics.org, and web statistics.

Customer and staff data was collected from 11 of the 50 pubs on the distribution list (22% of pubs on the distribution list).

Three different areas of Brighton and Hove were visited to give a mix of pub goers within residential and town areas, and to gain feedback from families, friends and colleagues socialising. Pubs were visited at peak times during the day to ensure a high number of customers. Weekend and mid week visits also took place to help give a mix of different groups socialising.

- Hove 1 (mainly residential, Aldrington rail station) Sunday lunchtime through to evening
- Hove 2 (residential with some ‘town’ customers, based between Brighton and Hove rail stations) Friday evening and Saturday lunchtime through to evening
- Brighton (North Laines close to Brighton station, and Hanover mainly residential) Thursday lunchtime, Friday lunchtime and afternoon

According to Neighbourhood Statistics (2001 census data, www.neighbourhood.statistics.gov.uk), over 50% of the local population within the areas of Hove 2 and Brighton above have A-Levels and further qualifications. Under 30% of the local population have A-Levels and further qualifications in the area of Hove 1. These areas were chosen to give some diversity to the educational background of those surveyed.

2.1 Brighton and Hove pubs

22 pubs were phoned in advance to ensure that they were using the mats and that they were happy for someone to evaluate them. Half of the pubs phoned in advance were not using the mats, or did not plan to use them. This was due to their policy of not using beer mats (the mats sometimes get shredded causing mess), or not having received the mats. See appendix 2 for a full list of pubs and map of their location.

To provide a basic profile of the 11 pubs visited, observational data was collected and combined with interviews from the staff. Three pubs had less than 40% of customers in the 25 – 40 age group, one had 40 – 60% of customers in the target age group and seven had 60 – 80% in the target age group. The pubs were a mix of younger neighbourhood pubs, football/ Sky Sports focussed pubs, older locals pubs and younger fashionable town pubs.

Of the 11 pubs visited, three were using all designs at the same time. The remaining pubs were using one or two designs at a time. From observational data, and from staff surveys, this was because the mats were delivered in separate packets for each design, meaning that pub staff tended to use one packet at a time. One pub had also only received one design.

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When evaluating the favourite design, pub customers were shown all four designs so that they could comment on them.

2.2 Pub customer and staff sample

Customers were given a short self complete survey which, if the opportunity allowed, was followed up with interview questions to gain more detail about their answers. Interviews were sometimes conducted with groups of customers rather than one to one. An opportune sample was obtained by asking everyone who was in the pub at the time to take part in the survey. Age, gender or social grouping (sitting on own, in couples, with a larger group of friends etc) was not targeted by the evaluator.

Members of staff were also surveyed and interviewed to record their observations of customers looking at and discussing the mats.

2.3 Online survey

To help ascertain whether the beer mats have driven traffic to physics.org, an online survey was linked to the Thank Physics pages. The online survey included questions about how they heard about physics.org, favourite designs and how likely they are to return to the site.

Respondents were also asked some basic information about how often they visit the site, and how they rated the Thank Physics web pages. A copy of the surveys used can be found in appendix 3.

2.4 Web statistics

Web statistics were recorded for the period of 14 November – 11 December. Stats include traffic to physics.org from QR code scans, online ads and social media.

2.5 Data treatment

The data collected was broken down by age wherever possible to identify trends from the target audience.

To help inform future campaigns, analysis concentrated on the campaign’s effectiveness in delivering the main messages and desired outcomes, feedback on individual designs, and the use of QR codes and online ads.
3. Results of pub surveys and interviews

3.1 Basic demographics

103 pub goers were surveyed and 55 individuals or groups interviewed. From the total 103 surveyed, 40% were female and 60% were male. In total 63% were in the target 25 – 40 age range, 11% were under 25, and 26% were over 40. Within this over 40 age group, over half were aged 41 – 50.

55% lived in the Brighton and Hove area (BN postcodes), 33% lived outside of Brighton and Hove, predominantly London based, and 12% chose not to leave postcode details.

3.2 Level of engagement

The target age group engaged more with the mats than other ages.

Graph 1. Level of engagement by age

The target age group had noticed, read and discussed the mats more often than any other age group. They had also texted, used the QR code and visited the website more than other age groups (17% of the 25 – 40 age group had used the QR code compared with 4% of the over 40s and only 1% of the under 18 age group). However, all those who had visited the website had also used the QR code and so had counted it as one and the same.
The target age group of 25 – 40 year olds were also more likely to text, use the QR code or visit the website in the future.

![Graph 2. Intention to text, use QR code or visit website](image1.png)

### 3.3 Rating of mats by target audience

The target age group of 25 – 40 year olds rated the beer mats more highly than the over 40s, finding them more interesting, relevant and easy to understand.

The target age group also rated the design as more attractive compared with over 40s (rating of 7.25 compared with 5.19), although gave similar ratings to that of the under 25s.

![Graph 3. Rating of beer mats by age](image2.png)

Both men and women gave the beer mats similar ratings for how interesting and easy to understand they were. Women found the mats slightly more relevant to them (rating of 5.10 compared to 4.42 from men). Both men and women gave similar rating for the design.
3.4 Favourite mats

Of the 103 people surveyed both the MP3 player and the Internet designs were rated as favourites (27% each). The GPS design was the least favourite with 21%, but overall the four designs appeared to be favoured reasonably equally.
When broken down by gender, women preferred the Internet design with 35% choosing it as favourite compared to 22% of the men. Half of the women who liked this design said it was the colour that attracted them to it.

Graph 6. Most popular beer mat design by gender

31% of 25 – 40 year olds selected the Smartphone design as favourite. The MP3 player was more popular with the 18 – 24 age group, but this age group did not rate the Smartphone design at all. The over 40 age group favoured the Internet design.

Graph 7. Favourite beer mat by age
A further breakdown of the ratings for each mat by the target age group reflects the popularity of the Smartphone and the MP3 player designs as they were rated more interesting, easy to understand and attractive than the other designs. The Smartphone design was considered to be more relevant to this age group than the other designs.

Graph 8. Rating of beer mats by 25 - 40 year olds
3.5 Detailed feedback on each design

The results of the surveys and interviews can be used to give more detailed feedback on each design.

3.5.1 GPS design, n = 21

The reasons given for liking this design was that it stands out/ is eye catching, the use of different fonts and the subject;

‘It has a comet on it. I like comets’ (25 – 30 year old male)

‘It has a heart and the words ‘Polar Bear’ on it which makes it a little friendlier or more ‘girlie’ than the others’ (51 – 60 year old female)

One fifth of respondents who selected this as favourite said that they liked the retro feel of the mat;

‘It looks like a 60s retro diner’ (31 – 40 year old female)

‘Almost old-skool form of advertising. Mad Men-esque’ (31 – 40 year old male)

From the interviews, the GPS mat appeared to spark more discussion than the other mats and pub goers wanted to find out the answer.

Although the design was popular with some, it was also criticised by others as being too busy, using too many fonts and being confusing. The use of Lindsay Lohan’s name also seemed to divide opinion about the mats with three people citing it as a reason why they disliked the mat;

‘I’d prefer questions about science without popular culture references i.e. Lindsay Lohan’ (25 – 30 year old female)

‘Not have Lindsay Lohan - I stopped reading’ (31 – 40 year old female)
3.5.2 Smartphone design, $n = 24$

Almost half of those who had selected the Smartphone mat as their favourite stated that the colour, or use of colour had attracted them to it. The subject and use of graphics, particularly the use of the skeleton figure, were also given as reasons;

‘It’s different to our typical beer mat and the question is interesting as I did not know smartphones were capable of doing some of these things’ (25 – 30 year old female)

‘Good colours and simple but interesting physics’ (25 – 30 year old male)

From the interviews, this question appeared to be the one that many people found hard to answer and often had to guess at what it might be.

3.5.3 MP3 Player design, $n = 27$

Again the colour, graphics and design were given as a reason for this being favourite, particularly the clear and simple design which made it easy to understand. Personal interest in music was also given as a reason and pub goers appeared to be more nostalgic about this design than they were with the others;

‘It reminds me of the 80s and I’d like to know the answer to the question’ (25 – 30 year old male)

‘The font of the word ‘tape’. I still use cassettes’ (25 – 30 year old female)

‘Because it has an olde worlde cassette to confuse the young folk’ (41 – 50 year old male)

From the interviews, this design stimulated a lot of discussion particularly as pubs goers queried the length of the cassette tape in question as this would determine the total cassettes you would need to work out the answer.

It appeared that people found it easier to talk about this question as they could relate directly to their experience of using MP3 players and cassettes.
3.5.4 Internet design, n = 27

Almost half of those who selected this design as favourite liked the colour. Subject matter, graphics and ease of reading were also given as reasons to like this mat;

‘I’m an IT professional and I think it’s the best design’ (25 – 30 year old male)

‘Clear wording. I have bad eyesight and this is the only one with words clear enough for me to read’ (41 – 50 year old male)

From the interviews, it appears that this mat stands out due to its clear graphics and colours, but there was less discussion around the question and people seemed less interested in knowing the correct answer.

However, when asked what they thought the answer might be, most people selected the correct answer. Anecdotal feedback suggests that they knew the answer would be a large number, so they selected the highest value available.

3.6 Improvements

When asked what improvements could be made to the mats, 17% of respondents said that they could not be improved and they like the mats as they are, however, 12% said that they found the design too busy and confusing;

‘They could be less wordy, looks like they are trying to advertise about 10 different products’ (41 – 50 year old male)

‘Possibly with a heading at the top which shouts to me that there is a quiz/ question on the mat. They’re quite busy and I’m not sure I would notice the quiz part straight away’ (25 – 30 year old male)

‘Less variation of fonts and colours. Looks a bit confusing’ (31 – 40 year old female)

Other suggested improvements include having the answers on the mats, making the website and instructions clearer/ bigger, and making the questions easier to work out rather than a ‘random guess’.
3.7 Main messages of the campaign and relation to physics

When asked what the main messages behind the campaign were, 10% of respondents thought that the mats were trying to promote the Institute of Physics and 4% thought the mats were promoting iPhones or the use of QR codes to find out information. 17% couldn’t give a main message for the campaign.

18% of respondents felt that the campaign was to get people thinking about, finding out about or talking about physics;

‘Physics is dull at school, but this is interesting - gets you talking’ (25 – 30 year old male)
‘Start a conversation and gets people thinking’ (25 – 30 year old male)
‘To open people's minds to the interesting side of physics’ (18 – 24 year old male)

12% thought the main messages were to show physics as being part of everyday life;

‘Physics is amazing and relevant to everyday life’ (31 – 40 year old female)
‘It’s to make you have interest and curiosity in learning about physics that is important or relevant in your life’ (31 – 40 year old male)
‘Trying to teach you that physics is wider than space and gravity’ (31 – 40 year old female)
‘To make physics more interesting (a campaign to promote it) by using topics that are relevant in today's culture, and to show that physics is used everywhere’ (31 – 40 year old female)

6% made the link between physics with technology;

‘Physics is not just boring geeky stuff, it's technology and useful science’ (31 – 40 year old male)
‘Celebrating physics and technology’ (25 – 30 year old male)
‘How far technology has come’ (31 – 40 year old female)

And a further 3% linked the campaign to technology alone and didn’t make connection to physics;

‘Physics is a deep subject, but don’t think of the mats as science as such. Thought of them as general technology not physics’ (18 – 24 year old male)
‘The questions don’t link to physics directly, but more to do with technology advancement’ (25 – 30 year old male)

Although the majority of quotes above come from those within the target age group, the main messages outlined here were universal across all ages.
3.8 Use of text messages

88% of the total number surveyed said that they would not text or did not intend to text to find out the answer to the mats. They were either not motivated to find out the answer by text, or were unsure of the costs involved and the number of spam messages they would receive back.

91 messages were received from 14 November – 5 January, although 9 were incorrectly formatted. The GPS design was the most popular and elicited the greatest number of correct responses (79% correct). The MP3 player was the least popular and elicited the least number of correct responses (38% correct).

Although the overall number of text messages received was low and so making drawing solid conclusions difficult, this trend reflects the data obtained by customer interviews with the GPS question being one that respondents wanted to find out the answer to.

3.9 Use of QR codes

During the campaign a total of 386 people scanned the QR codes 500 times between them. Scans were fewest on Mondays and Tuesdays and peaked on Fridays and Saturdays.

When compared with previous IOP beer mat campaigns, QR codes were scanned more times than those that used text message alone (399 text messages received from the Tyne and Wear beer mat campaign in 2009, and 295 text messages received from the Norwich beer mat campaign in 2008).

13 people surveyed had scanned the QR codes, 11 of these were aged 25 – 40, and when interviewed it appeared that using QR codes was ‘less effort’ than texting to find out the answer. The majority didn’t have any problems with downloading pages from physics.org on their phone, although two respondents experienced difficulties, particularly in downloading the images from the site. One of these respondents had downloaded an app especially so that he could find out the answer.

Three people had scanned the QR code whilst waiting for someone to come back from the bar/toilet.
The Smartphone and GPS QR codes were scanned the greatest number of times (139 and 136 scans respectively) with the MP3 QR code being scanned the least (102 scans). With the exception of the smartphone design, this trend is similar to the number of text messages received.

Graph 10. Number of individual scans of QR codes

Those visiting via the Smartphone QR code spent on average 1min20secs on the site, compared to 1min for the Internet QR code, 42secs for the MP3 player QR code and 37secs for the GPS QR code.

The average bounce rate (those leaving the website after viewing one page) for all visits was 74.2% indicating that 25.8% of visits went beyond just finding out the answer to the question on the beer mat – of these, the majority went on to try another question, however, only 11 viewed the ‘what’s physics got to do with it?’ articles.

In total 67% of people surveyed in the pubs had not used, or did not intend to use the QR code on the mats. This was because they either weren’t motivated to use it to find out the answer, they didn’t have a smartphone, or they were confused about what QR codes were and how they should be used, this was particularly noted by the older age group. Some respondents without smartphones saw the QR code and immediately stopped reading as they thought the campaign was for smartphone users only.

3.10 Online activity

In total 7,777 people visited one or more pages of the Thank Physics pages during the campaign spending an average of 3min06secs on the site which is similar to the average time spent on site for January - October 2011 (3min11secs).

13 people completed the online survey. Six of these were from the UK (two of who were from Brighton and Hove), five were from the US, one was from Norway and one from India.

One respondent, who was in the target age group, had seen the beer mats in a pub in Brighton and Hove and had used the QR code - this was their first visit to site. This respondent had not discussed the mats in the pub, but had done so after they had left the pub.
3.11 Social media activity

Over the course of the four week campaign, physics.org gained 307 Twitter followers and 129 Facebook fans compared to an average of 178 and 78 respectively (average four-week period January – October 2011).

From tracking bit.ly links clicked (links that are created to be used with Facebook and Twitter) there were 2,410 visits to physics.org via Facebook (excluding ads) and Twitter during the course of the campaign (compared to 649 referrals during an average four week period January – October 2011).

On twitter, the #thankphysics hashtag was used a total of 580 times during the campaign although many people tweeted without using it.

The majority of Tweets relating to the campaign were in response to the weekly questions and associated promotion posted by the IOP;

‘RT @DoTryThisAtHome: Can you imagine life without the internet? See the 1st ever website and find out how the web was born http://t.co/6NwC0ZgN #thankphysics’

@DoTryThisAtHome imagine life without Internet? Of course I can, I’m older than the Internet #’

Other comments reflected the campaign main messages in relating physics and technology to everyday life;

‘In the past 20 years, new physics-based technologies have revolutionised our everyday lives, #thankphysics for that. j.mp/usb5R6%0A’

‘Hang on "Now 5" on vinyl is now bubbling to my consciousness for #firstalbum - I wonder if I can #thankphysics for that being on MP3 now?’

And there were some more in depth discussion around individual questions, including the ethics of using GPS, and analysis of the MP3 question;

‘@{removed} At Click’s podcast data rate of 64kbps, it would take 1000+ cassettes--#thankphysics has some unstated assumptions there’

Two people from the online survey had gone to physics.org from reading a Tweet, both had been to the site before, and one person had visited physics.org after seeing a post on Facebook - this was his first visit to the site.

3.12 Use of internet ads

Facebook ads were targeted at those within the target age group, living within 10 miles of Brighton and whose profiles included interests relating to individual designs, for example ‘iPhone’ as a key word for the Smartphone design, or ‘backpacking and ‘half marathon’ for the GPS design. Four people completing the online survey had gone to the site from clicking an online ad, one was from the Brighton and Hove area. All of those who had clicked on the online ad were visiting physics.org for the first time.
In total there were 1,423 visits to physics.org through Facebook ads. The click through rate (which is the number of times the ad is clicked divided by the total number of times it is displayed) was highest for the MP3 player (0.026%) and lowest for the GPS design (0.008%).

Google ads were in 9 different sizes (2 or 3 for each beer mat design), with some animated and some not. Ads were displayed for users within the target age group who were within 10 miles of Brighton and Hove and were displayed on web pages with relevant key words.

In total 2,409 visits to physics.org were from Google ads, with over 90% having not visited physics.org before as opposed to 74.5 % for the site on average (January -October 2011). When comparing static ads in identical format the click through rate was highest for the Internet design (0.34%) and lowest for the MP3 design which did not receive any clicks, however, the MP3 design appeared much less than the Internet design (1,771 and 104,583 impressions respectively).
4. Evaluation of results against desired campaign main messages and outcomes

The campaign was targeted at 25 – 40 year olds and aimed to communicate the main messages of physics underpins technology and therefore continued research in physics will continue to improve technology, and that physics has a positive impact on our everyday lives. The desired outcomes of the campaign were discussion in social groups about the relevance of physics in everyday life in pubs and on social media, raised awareness of the value of physics to society and the economy, and increased traffic to www.physics.org/thankphysics.

To evaluate the effectiveness of the campaign, the results of the data collected will be related back to these main messages and desired outcomes.

4.1 Main messages

4.1.1 Physics underpins technology and therefore continued research in physics will continue to improve technology, and physics has a positive impact on our everyday lives

The retro feel to the designs along with the nostalgic content for the MP3 player helped reinforce the message of a ‘continuum’ for physics and technology, and a small percentage (6%) of respondents linked the campaign to physics and advances in technology.

The main content relating to current research in physics and technology was through the articles on physics.org rather than the mats themselves giving online users more exposure to the main messages than those in the pub. Although few QR code users read the articles online, a total 7,777 people visited the Thank Physics pages during the four week campaign, which includes new visitors from online ads and social media activity. Unfortunately it is unclear from this evaluation whether those visiting physics.org identified this main message, but Tweets received via Twitter during the campaign appeared to reflect this main message suggesting that it had been recognised by online users.

12% of those surveyed related physics to everyday life, and comments reflected the importance of physics to everyday life showing that the campaign was more effective at communicating the main message that physics has a positive impact on our everyday lives.

4.2 Desired campaign outcomes

The Thank Physics campaign was effective at reaching groups of 25 – 40 year olds in the Brighton and Hove area. The target age group was more likely to notice the beer mats, discuss the content and interact with the campaign through using QR codes than other age groups.

The target age group also found the design more appealing, found the content more relevant and discussed it more than other age groups.

33% of Brighton and Hove’s population is in the 25 – 44 age group (Neighbourhood Statistics), which is slightly higher compared with other South Coast cities (28% for Southampton and 30% for Portsmouth). It is also estimated that Brighton and Hove has one of the highest pub per capita ratios in the UK, and it is recognised as having an established ‘pub culture’.

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When compared to the South East region as a whole, a higher proportion of Brighton and Hove residents work in higher level occupations. 48% of Brighton and Hove residents (16 – 74 year olds) work as managers and senior officials, or in professional occupations, compared to 44% in the South East. This city demographic could have had an influence on the level of engagement with the campaign.

4.2.1 Discussion among 25 – 40 year olds in social groups in pubs and on social media

The campaign did promote discussion among 25 – 40 in social groups in pubs and engagement with the campaign was high when the full set of all four designs was being used in pubs that contained a high percentage (over 60%) of the target age group. However, it is more difficult to establish an accurate figure for the total number discussing the mats due to problems with distribution and the way that data was collected.

Half of the pubs called in advance were not using the mats due to their policy, or not having received the mats. Therefore we can assume that around half the pubs on the distribution list may not actually be using the mats.

The way the data was collected for this evaluation could also have slightly positively skewed the number of people claiming to have engaged with the campaign. Pub goers’ attention was drawn to the mats as they completed the survey making them notice, read and in some cases discuss the mats.

However, as an indicator we can look at the number of QR codes scanned during the campaign. From the survey data, 30% of those who had discussed the mats had also used the QR code, the majority of which were from the target audience group. If we take the total number of people visiting physics.org via the QR code then we can assume that three times as many conversations were taking place in pubs giving an estimate of 1,158 separate conversations by the target audience during the course of the campaign.

The QR codes have also continued to be used beyond the end of the campaign with 330 individual scanning the codes between 12 December and 8 January suggesting that mats are still being used by pubs, and giving the campaign a wider reach than the four weeks it was live. Using these updated figures we can give a larger estimate of 2,148 separate conversations taking place around the mats.

It is more difficult to track conversations about the mats online, but some online discussion did take place on Facebook and Twitter.

Articles posted on Facebook received one or two comments each, with five people commenting on the question: ‘What was the first album you ever bought and what format was it in?’ Twitter discussions attracted more participants, with around 35 people responding to the first album question. Some more in depth discussions, for example surrounding the ethics of GPS tracking were also stimulated on Twitter, although discussion may have been wider than as not all Twitter users used the #thankphysics hashtag.

The blogs that the campaign appeared in didn’t receive any comments and the photo competition that was promoted via social media didn’t receive any responses, although these don’t appear to be heavily promoted or particularly aimed at starting discussion around the campaign. Discussion may
also be more difficult to promote online as people tend not to be in social groups, unless social media is particularly targeted.

In addition, none of the respondents interviewed in the pub had said that they had seen the online activity surrounding the campaign which could have had an effect on the number of people taking part in the photo competition.

4.2.2 Discussion among 25 – 40 year olds in social groups about the relevance of physics in everyday life

The campaign was successful at highlighting the relevance of physics in everyday life with 12% of those surveyed identifying this message. The designs discussed the most were the MP3 player and the GPS for two different reasons; people discussed the MP3 player question because they could relate to it from firsthand experience, and the GPS design was discussed as it had a more ‘human’ side to it with the reference to Lindsay Lohan and polar bears.

The Internet design was more popular with the over 40s. This could be because this age group would have seen the introduction and development of the internet during their adult life, however, many people appeared to select the correct answer to this question without feeling the need to discuss it.

Those who hadn’t discussed the mats said that they were in the pub to be with their friends, not to discuss physics, although there were others that had confessed to discussing physics related subjects until the ‘small hours of the morning’ without actually labelling it as physics before.

4.2.3 Raised awareness among 25 – 40 year olds of the value of physics to society and the economy

It is harder to determine from this evaluation whether the campaign raised awareness of the value of physics to society and the economy. 6% of respondents within the target age group linked physics to the advancement of technology and other practical applications which could demonstrate a raised awareness of the value of physics, however, this was not explicitly stated by respondents so it is harder to draw any solid conclusions as to whether the campaign was achieving this outcome.

4.2.4 Increased traffic to www.physics.org/thankphysics

4.2.4.1 Via QR codes

Those who were familiar with using QR codes were happy to scan the mats and felt that it was easier than texting, but others who did not know what QR were, or did not have a smartphone felt that the campaign was not aimed at them. This was particularly noticeable with the older end of the over 40s age group, but still came through in data from the target audience.

The designs that received the greatest number of QR code scans were the Smartphones and the GPS questions. People appeared to have difficulty in working out the correct answer for these questions which could be why these codes were scanned the greatest number of times.

By comparison the Internet and GPS designs elicited the greatest number of text messages, however, these two designs were most popular with the older age group who, from this evaluation, tend not to use QR codes.
Once on physics.org, QR code users spent an average of 1min33secs on the site with most going on to try other questions but few viewing the articles. This could be because users were going to the site to only find out the answer to the question, then would go back into a conversation with their friends. However, some were using QR codes whilst sitting on their own which suggests that the articles didn’t appeal to smartphone users, possibly due to the length of text or the nature of online browsing using a smartphone. It is unclear from this evaluation whether these users will return to physics.org in the future.

Two thirds of all respondents surveyed said that they would not use QR codes making this method of driving people to the website selective and this should be taken into account when planning future campaigns.

4.2.4.2 Via online ads

The online ads generated 3,832 visits to physics.org. Online ads have the advantage of reaching new audiences by appearing on web pages with keywords or interests that were non physics related, for example ‘backpacking’. This is reflected in the results of the online survey with all four of those who had visited physics.org via an online ad were first time visitors, three of who were quite likely or very likely to return to the site.

4.2.4.3 Via social media

Social media activity supporting the campaign increased the number of visits to physics.org, Twitter followers and Facebook fans. The campaign also appeared in a number of different blogs, some of which were not physics or technology related, such as design based blogs, increasing exposure to audiences who may not already have an interest in physics.
5. Suggested improvements

5.1 Distribution

The greatest impact was achieved when mats were out in pubs that used all four designs with over 60% of its customers being within the target age group. Therefore to achieve maximum impact in the future it is recommended that pubs are carefully selected to receive the mats.

One third of Brighton and Hove’s population is in the target age group, and Brighton and Hove has high number of pubs and established pub culture. Therefore the campaign could be run again in Brighton and Hove, but with a more informed selection of pubs made.

5.2 Design

The target audience liked the colourful and retro feel of the design, but it was also criticised as being too busy and confusing which acted as a barrier to some people reading it, or carrying through with any further actions such as using the QR code, texting or visiting the website.

Therefore it is recommended that the design is reviewed to become more simplistic with clearer instructions on how to find out the answer.

5.3 Promotion of discussion around physics relating to advances in technology

The questions that stimulated the most discussion in the pub were those that people had firsthand experience of, or that had a ‘human’ side to them.

Therefore to further promote discussion around the developments in technology, questions could be modified to give the viewer something they can relate to in their past and link it to modern day technology, for example, Sonic the Hedgehog is now available as an iPhone app, something that used to take an entire Sega Mega Drive to power.

The campaign had a limited success at promoting discussion online. The campaign could be linked to wider discussion points around technology, for example, opinion based discussions could be promoted more widely such as ‘what is the best format for your music?’

5.4 Driving people to physics.org

Social media is a low cost way of driving web users to physics.org, and it can be used to engage a wider audience who may not be expecting to be exposed to physics by linking to further ‘non physics’ sites. Online ads have also shown to be an effective way of driving new audiences to physics.org.

Therefore it is recommended that social media activity and online ads continue to be used in future campaigns.

QR codes also drove people to physics.org, but the time spent on the site was relatively brief. It is unclear from this evaluation whether these users will return to physics.org in the future, but QR codes could be used in the future, although it may not be the most effective way of generating a high number of visitors.
5.5 Use of QR codes on beer mats

Using QR codes does run the risk of alienating audiences who do not have smartphones, or who are not interested in using QR codes, but feedback from this evaluation shows that QR code users find them an easy way to quickly access online information.

Therefore QR codes could be used in the future as way to ‘reveal’ answers in the future, but only if the campaign is targeted at a tech savvy audience.

5.6 Use of text

The use of text was low in this campaign, this could have been because the audience saw it at a smartphone only campaign and missed the use of text message, however, from interviews it was found that people were unwilling to use text due to the cost and the risk of spam.

Therefore it is recommended that text is not used for future campaigns for this audience, but an alternative way to reveal the answer on mats should be offered to none QR code users, such as heavy promotion of the website.

6. Conclusion

The Thank Physics campaign was successful at engaging 25 – 40 year olds in the Brighton and Hove area with physics through the use of beer mats. It appeared to be successful at promoting discussion in pubs and showing that physics is part of everyday life.

The campaign also increased the number of new visitors to physics.org, and interaction with QR codes was higher than previous campaigns that used text messaging alone.

Although those within the target age group made the connection between physics and technology, this evaluation suggests that the campaign was less successful at communicating the main message that physics underpins technology and therefore continued research in physics will continue to improve technology.
Appendices

1. Beer mat designs

1.1 Internet
1.2 MP3 Player

HOW MANY CASSETTES WOULD YOU NEED TO...

TAPE

ALL THE SONGS ON A 32GB MP3 PLAYER?

ONE HUNDRED CASSETTES

FIVE HUNDRED CASSETTES

ONE THOUSAND CASSETTES

SCAN TO ANSWER

Or text ‘one hundred’, ‘five hundred’ or ‘one thousand’ to 07786 202 844 and see if you’re right.

Standard network charges apply and this is the only text we will ever send you.

7000 TUNES IN YOUR POCKET

THANK PHYSICS FOR THAT

Find out more at physics.org
1.3 GPS

TRUE OR FALSE?

Lindsay Lohan,
Polar Bears AND
Halley’s comet

HAVE ALL BEEN TRACKED USING
GPS

LINDSAY LOHAN, POLAR BEARS AND HALLEY’S COMET HAVE ALL BEEN TRACKED USING GPS

True?
False?

SCAN to answer

Or text ‘true’ or ‘false’ to 07786 202 844 and see if you’re right.
Standard network charges apply and this is the only text we will ever send you.

Pinpoint your location in seconds
THANK PHYSICS FOR THAT

Find out more at physics.org
IOP Institute of Physics
1.4 Smartphones
2. Beer mat distribution list and location

* Pubs taking part in the survey

<table>
<thead>
<tr>
<th>Name of pub</th>
<th>Address</th>
<th>Contacted</th>
<th>Received Mats</th>
<th>Using Mats</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Neville</td>
<td>214 Nevill Road, Hove, East Sussex BN3 7QQ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Hove Park Tavern</td>
<td>156 Old Shoreham Road, Hove, East Sussex BN3 7AP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Westbourne</td>
<td>90 Portland Road, Hove, East Sussex BN3 5DN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poets Corner</td>
<td>2 Stoneham Rd Brighton, Brighton and Hove BN3 5FS</td>
<td>11.12.11</td>
<td>Yes</td>
<td>No, but would only use them on the bar</td>
</tr>
<tr>
<td>Kendal Arms*</td>
<td>18 Payne Avenue, Hove, East Sussex BN3 5HB</td>
<td>11.12.11</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>The Ancient Mariner</td>
<td>59 Rutland Road, Hove, East Sussex BN3 5FE</td>
<td>11.12.11</td>
<td>Yes</td>
<td>Haven't been using them, but will do</td>
</tr>
<tr>
<td>The Connaught</td>
<td>48 Hove St, Hove BN3 2DH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Alibi*</td>
<td>22 Victoria Terrace, Hove, East Sussex BN3 2WB</td>
<td>26.11.11</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Neptune Inn*</td>
<td>10 Victoria Terrace, Hove, East Sussex BN3 2WB</td>
<td>26.11.11</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>The Sussex</td>
<td>17 St Catherines Terrace, Hove, East Sussex BN3 2RH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Red Lion</td>
<td>1 Hove Place,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cliftonville Inn</td>
<td>98-101 George Street, Hove, East Sussex BN3 3YE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Sussex Cricketer</td>
<td>Eaton Rd, Hove, East Sussex BN3 3AF</td>
<td>26.11.11</td>
<td>No</td>
<td>Don't use mats - company policy</td>
</tr>
<tr>
<td>Farm Tavern*</td>
<td>13 Farm Road, Hove, East Sussex BN3 1FB</td>
<td>26.11.11</td>
<td>Yes</td>
<td>Are using them, but not all the time</td>
</tr>
<tr>
<td>Name of pub</td>
<td>Address</td>
<td>Contacted</td>
<td>Received Mats</td>
<td>Using Mats</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------------------</td>
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<td>------------</td>
</tr>
<tr>
<td>The Wick Inn*</td>
<td>63 Western Rd, Hove, East Sussex BN3 1JD</td>
<td>26.11.11</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Queen Victoria</td>
<td>54 High Street, Rottingdean, Brighton, East Sussex BN2 7HF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Horse Hotel</td>
<td>Marine Drive, High Street, Rottingdean, Brighton, East Sussex BN2 7HR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Black Horse</td>
<td>65 High Street, Rottingdean, Brighton, East Sussex BN2 7HE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lansdown Arms</td>
<td>36 Lansdown Pl, Lewes, East Sussex BN7 2JU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Royal Oak</td>
<td>36 Lansdown Pl, Lewes, East Sussex BN7 2JU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yates</td>
<td>59 West Street, Brighton, East Sussex BN1 2RA</td>
<td>25.11.11</td>
<td>?</td>
<td>Don't use mats</td>
</tr>
<tr>
<td>The Leconfield Arms</td>
<td>116-118 Edward Street, Brighton BN2 2JL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulldog</td>
<td>31 St. James's Street, Brighton, East Sussex BN2 1RF</td>
<td></td>
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</tr>
<tr>
<td>Northern Tavern</td>
<td>85 Ditchling Road, Brighton, East Sussex BN1 4SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Hydrant</td>
<td>75 London Road, Brighton BN1 4JF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Branch Tavern</td>
<td>52-53 London Rd, BRIGHTON, East Sussex BN1 4JD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Martha Gun Inn</td>
<td>00 Upper Lewes Road, Brighton, East Sussex BN2 3FE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of pub</td>
<td>Address</td>
<td>Contacted</td>
<td>Received Mats</td>
<td>Using Mats</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------</td>
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<td>------------</td>
</tr>
<tr>
<td>The Engineer*</td>
<td>32 Argyle Rd, Brighton, East Sussex BN1 4QB</td>
<td>11.12.11</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Franklin Tavern</td>
<td>158 Lewes Road, Brighton, East Sussex BN2 3LF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bat &amp; Ball</td>
<td>49-51 Ditchling Road, Brighton, East Sussex BN1 4SB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewers Arms</td>
<td>91 High Street, Lewes, East Sussex BN7 1XN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer Inn</td>
<td>12 Eastgate Street, Lewes, East Sussex BN7 2LP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Snowdrop Inn</td>
<td>119 South Street, Lewes, East Sussex BN7 2BU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Portland Hotel - No longer called this. Now called Stoneham pub</td>
<td>153 Portland Rd, Hove, East Sussex BN3 5QJ</td>
<td>11.12.11</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>The Eagle</td>
<td>125 Gloucester Road, Brighton, East Sussex BN1 4AF</td>
<td>25.11.11</td>
<td>?</td>
<td>Don't use mats</td>
</tr>
<tr>
<td>The Green House Effect</td>
<td>63 Church Road, Hove, East Sussex BN3 2BD</td>
<td>26.11.11</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>The Blind Busker</td>
<td>77 Church Rd, Hove, East Sussex BN3 2BB</td>
<td>26.11.11</td>
<td>No</td>
<td>Don't use mats</td>
</tr>
<tr>
<td>The Conquerer</td>
<td>16 Lower Market St, Hove, East Sussex BN3 1AT</td>
<td>26.11.11</td>
<td>No</td>
<td>Don't use mats</td>
</tr>
<tr>
<td>Lord Nelson</td>
<td>36 Trafalgar Street, Brighton, East Sussex BN1 4ED</td>
<td>25.11.11</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sportsman</td>
<td>Withdean Stadium, Tongdean Ln, Withdean, Brighton, East Sussex BN1 5JD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of pub</td>
<td>Address</td>
<td>Contacted</td>
<td>Received Mats</td>
<td>Using Mats</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------</td>
<td>-----------</td>
<td>---------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>The Rock Inn</td>
<td>7 Rock Street, BRIGHTON, E SUSSEX BN2 1NF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Newbush Inn</td>
<td>1 Arundel Road, Brighton, East Sussex BN2 5TE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duke of Beaufort</td>
<td>175 Queen’s Park Road, Brighton, East Sussex BN2 9ZA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Hanover</td>
<td>242 Queen’s Park Road, Brighton, East Sussex BN2 82B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Prince Albert*</td>
<td>48 Trafalgar Street, Brighton, East Sussex BN1 4ED</td>
<td>25.11.11</td>
<td>Yes</td>
<td>Prefer to use mats that advertise beer. Only received one design</td>
</tr>
<tr>
<td>The Bath Arms</td>
<td>4 - 5 Meeting House Lane, Brighton BN1 1HB</td>
<td>25.11.11</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>The Evening Star*</td>
<td>55-56 Surrey St, BRIGHTON, East Sussex BN1 3PB</td>
<td>25.11.11</td>
<td>Yes</td>
<td>No, prefer to use mats that advertise beer</td>
</tr>
<tr>
<td>Heart &amp; Hand*</td>
<td>75 North Road, Brighton, East Sussex BN1 1YD</td>
<td>25.11.11</td>
<td>Yes</td>
<td>Yes, only put them out the day before</td>
</tr>
<tr>
<td>The Brighton Tavern*</td>
<td>99-100 Gloucester Road, Brighton, East Sussex BN1 4AP</td>
<td>25.11.11</td>
<td>Yes</td>
<td>Yes, but only use them during the week as they get shredded</td>
</tr>
<tr>
<td>Montpelier Public House*</td>
<td>7-8 Montpelier Place, Brighton, East Sussex BN1 3BF</td>
<td>26.11.11</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
2.2 Map showing Brighton and Hove pubs on distribution list

Note: pubs in Lewes and Rottingdean are not on this map, but their details can be found in the beer mat distribution list.
3. Surveys used

3.1 Thank Physics For That campaign - customer survey

We want to find out what you think about the Thank Physics For That beer mat campaign so please help us by filling in this short survey.

**What is your age?** (please tick)
- Under 18 □
- 18 – 24 □
- 25 – 30 □
- 31 – 40 □
- 41 – 50 □
- 51 – 60 □
- 61 – 70 □
- 71 + □

**What is your gender** (please tick)
- male □
- female □

**What is the first part of your postcode?** (e.g. BN1) ………………………

This survey is about the beer mats in this pub. Have you:

- Noticed them? Yes □ No □
- Read them? Yes □ No □
- Discussed them with anyone whilst in the pub? Yes □ No □
- Texted to find out the answer? Yes □ No □
- Used the QR code to find out the answer? Yes □ No □
- Visited the website? Yes □ No □

If you *haven’t texted*, do you think you will? Yes □ No □
If you *haven’t used the QR code*, do you think you will? Yes □ No □
If you *haven’t visited the website*, do you think you will? Yes □ No □

**Please rate the beer mats on a scale of 1 – 10 (circle your answer)**

<table>
<thead>
<tr>
<th>Boring</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confusing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Not relevant to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Horrible design</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Which is your favourite design: □ MP3 Player □ Internet □ GPS □ Smartphones

Why do you like this design?

How could they be improved?

What do you think are the main messages behind the campaign?
3.2 Thank Physics Beer Mat Campaign Staff Survey

We want to find out what you think about the Thank Physics Beer Mat Campaign so please help us by filling in this short survey.

Which age group do you think most of your customers belong to?

- Under 18
- 18-24
- 25-30
- 31-40
- 41-50
- 51-60
- 61-70
- 70+

What proportion of your customers do you think are aged 25 - 40?

- 0 – 20%
- 20 – 40%
- 40 – 60%
- 60 – 80%
- 80 – 100%

Have you:

- Seen anyone reading the mats? Yes [ ]  No [ ]
- Seen anyone texting for the answer? Yes [ ]  No [ ]
- Seen anyone using the QR codes? Yes [ ]  No [ ]
- Discussed the mats with your customers? Yes [ ]  No [ ]
- Seen or heard anyone discussing the mats with anyone else? Yes [ ]  No [ ]

What positive comments have you heard from your customers about the mats?

What negative comments have you heard from your customers about the mats?

Have you:

- Texted to find out the answer? Yes [ ]  No [ ]
- Used the QR code to find out the answer? Yes [ ]  No [ ]
- Visited the website? Yes [ ]  No [ ]

If no to any of the above then ask why:

Please rate the beer mats on a scale of 1 – 10 (circle your answer)

<table>
<thead>
<tr>
<th>Boring</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confusing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Not relevant to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Horrible design</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Which is your favourite design: □MP3 Player □Internet □GPS □Smart

Why do you like this design?

How could they be improved?

What do you think are the main messages behind the campaign?

How do you think the mats relate to physics?

Do you have any other comments about the mats?