

Internet Citizens

Impact Report

Louis Reynolds





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Acknowledgements



First and foremost we would like to thank the young people who came to our workshops. Without their positivity, curiosity and passion these workshops would never had taken place, let alone been successful. We would also like to thank the truly inspiring youth workers who helped organise and run the workshops, and whose experience and energy was vital to them.

We are indebted to Google, whose generous support made this project possible, and grateful for the hard work of Liza Belozerova, Paul Dudley-Ward, Neta Gull, Naomi Gummer, Thea O'Hear, Ankur Vora and the rest of the Google team.

This project was a joint effort between Google, UK Youth, Livity, Wonder and the Institute for Strategic Dialogue (ISD), which brought together a wide range of people with a diversity of talent and passions.

We would like to thank Tom Ellis, Emily Goldhill, Kate Harwood, James Honess and Gerald Onyango from Livity, who played vital roles in making this project work, as well as David Dawnay from Wonder, Maddie Dinwoodie, Jessica Lee, Melissa Smith, Emma Roberts, Melissa Robertson, Ruhena Uddin and Sarah Woodcock from UK Youth, and our photographers Frances Augusto and Henry Gill. Charlie Cadywould's assistance in the quantitative analysis was indispensable.

The hosts for the workshops, Alain "Fusion" Clapham, Efe Ezekiel and Nadir Nahdi, deserve special thanks for their integral role and seemingly limitless energy.

At ISD, special mention goes to Natasha Hankel-Spice who was the lynchpin of the project. We also thank Rashad Ali, Kelsey Bjornsgaard, Sahar Eljack, Charlotte Moeyens, Nourhan Nassar and Lucie Parker.

Any mistakes or omissions are the author's own.

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December 2017

1. Executive Summary

₹ | Truth gains more even by the errors of one who, with due study and preparation, thinks for himself, than by the true opinions of those who only hold them because they do not suffer themselves to think. 99

John Stuart Mill

Online spaces play an increasingly vital role in our social, cultural and political lives. More and more we express and explore our identities and beliefs online. Young people in the UK spend more than 31 hours a week on social media. For many, the online space is now the principal arena in which their lives as citizens are lived. Yet as young people have spent greater periods of time online, and as the online space has become a prominent public forum, social media has become an increasingly important tool for extremist and hate groups of all types. For these groups, social media often plays a vital role in communications, the distribution of propaganda and the grooming of potential recruits.

Extremists rely on false promises of status and purpose, manipulation, conspiracy and divisive rhetoric to exploit young people online. Against these methods, critical thinking skills and media literacy, social and emotional skills and meaningful digital citizenship capacities are a strong defence.

While social media now plays a vital role in the everyday lives of young people as citizens, education systems across the developed world have been slow to react. The success of a modern, pluralistic, tolerant society has always rested on a bedrock of good citizenship. In the 21st century, its success will depend on good digital citizenship. Today's young people may be digital natives, but they still need to be taught how to stay safe, make their voices heard and play a positive role as citizens in the online space.

The Internet Citizens project sought to address this need.

The Project

A partnership between Google, UK Youth, Livity, Wonder and ISD, Internet Citizens ran day-long educational workshops for 13–18 year olds in youth centres across the UK, from Glasgow to London, Kent to Cardiff. These workshops were designed to teach media literacy, critical thinking and digital citizenship, and sought to encourage young people to be positive voices online while increasing their resilience to hate and extremism. It further sought to help give participants the confidence to use platforms like YouTube to express their identities, as empowered producers and not just consumers of content.

Through engaging activities and active discussions, which brought together credible hosts, youth workers and young people in informal settings, the workshops tackled topics ranging from how to spot fake news to how to deal with hate speech online, from how echo chambers influence our interactions online to why some people use "us and them" rhetoric.

To support and accompany these workshops, the partnership trained youth workers involved in the project in Internet Citizens delivery, created and published free lesson plans and toolkits to allow youth workers around the UK carry out their own workshops, and developed how-to videos in which the hosts of the first phase of workshops shared their tips on how to run a successful day.

Internet Citizens is an ongoing partnership, and its delivery will continue and expand over the coming months, with new adaptations for school delivery, trainthe-trainer models and a range of other approaches.

This Report

The first phase of delivery saw the workshop take place in 17 youth centres, reaching 500 young people and around 75 youth workers. These first 17 workshops were subject to an impact and process evaluation, designed to ensure that they reached the target audience, to identify whether the workshops had the desired impact and to find out what changes should be made for future delivery.

This evaluation is presented in this report. We hope it will provide an insight into the project, help other organisations and partnerships identify best practice, and promote further development in the vital area of digital citizenship.

This report describes why this project and projects like it are so necessary, presents why it was created, and outlines its theory of change. It presents our reflections on Internet Citizens, and closes with a series of recommendations for future work in this area.

Key Findings

The full evaluation of Internet Citizens, along with methodological description, is presented in chapter 5, while technical information, including data tables, effect sizes and significance testing are presented in the technical appendix at the end of the report.

Below we present a selection of key findings from our evaluation.

Participant Profiles: Attendees in the workshop were incredibly diverse. They were born in 27 different countries and had parents born in 51 different countries, and came from homes where one, two or three of 33 different languages, from Swahili to German, were spoken.

Impact Measures: The 16 main impact measures examined in this evaluation were based on levels of participant agreement with confidence-related statements in pre- and post-surveys, delivered before and after the workshops. Across all 16 measures, significant positive changes were observed.

Over the course of the project an analysis of pre- and post-survey impact data showed there was a:

- 34 percentage point increase in the number of participants who were confident they could identify fake news
- 28 percentage point increase in the number of participants who were confident they would know what to do if they came across hate speech online
- 20 percentage point increase in the number who said they felt confident expressing their views online
- 18 percentage point increase in the number of participants who reported feeling responsibility for other people connected to them through social media.

Participants were overwhelmingly positive about the workshops and the effect they would have on them:

- 96 per cent of participants reported that they enjoyed the workshops.
- 89 per cent reported that the workshops were relevant to them.
- 97 per cent felt they gained new knowledge or skills.
- 83 per cent felt that as a result of Internet Citizens their behaviour online would change.

The observations of the youth workers involved in the workshops supported the judgements of the participants themselves:

- 99 per cent felt that the young people enjoyed the
- 97 per cent reported that the content was relevant to participants' lives.
- 99 per cent felt that the participants understood some or all of the subject matter by the end of the workshop.
- 97 per cent thought that their involvement in Internet Citizens would influence participants' behaviour online.

Conclusion

On the basis of a highly positive evaluation, the Internet Citizens partnership will seek to expand and promote this project, adapting it for new contexts and audiences. However. the evaluation also highlighted areas where modification and development of the resources, their delivery or their organisation could improve the experience of young people and increase the project's impact. Our future efforts will take these learning points into account.

2. Why Digital Citizenship Matters

In a remarkably short period of time, the internet has changed the shape of human society. Over the last 20 years, increasing levels of internet penetration, the popularisation of social media and the development of smartphones has transformed our economic, cultural, social and political lives.

The explosive proliferation of new technologies has presented incredible opportunities for mankind, as well as complex and dangerous challenges. It has left less time for reflection, adaptation and consolidation than any technological revolution that has come before, and its integration into our societies far outpaces our ability to understand its deeper impacts.

In 2000, around 6 per cent of the global population were connected to the internet. Today, over half of humankind is online. Ten years ago, 30 per cent of the UK population used social media at least once a day.² Now more than two-thirds of the population are daily social media users, and the average Briton spends more time online than they do sleeping.³

Governments, political systems, educators – those who determine and enforce our laws, who raise and teach our children – have often been slow to react to these changes, struggling to adapt analogue systems, laws and social norms for a digital age.

One of the greatest challenges which face us is how to prepare our young people to lead happy, fulfilling lives in a constantly changing world. Social media is no longer a venue for the discussion of politics and society — it has become a vital part of being an active citizen.

If we want young people to make the best use of new technologies, to be positive actors in the digital world, and to stay safe and independent online — in the face of the challenges they are presented with, from trolling to fake news, from hate speech to online manipulation — we need to empower them as digital citizens.

We need to teach everyone how social media changes how we communicate, what processes dictate the information we consume, how to sort truth from lies online, how to react to hate speech online and how to identify misinformation and manipulation. There should be a renewed emphasis on critical thinking and media literacy, as well as encouraging positive attitudes and behaviours, including a sense of responsibility for your social networks and the wellbeing of other people online.

Just because someone is a digital native does not mean they do not need digital citizenship education. In fact, the evidence repeatedly demonstrates that people of all ages need more guidance than they get.

A recent Stanford University study showed that young people have a remarkably low capacity to sort truth from falsehood online, while the Demos report Truth, Lies and the Internet highlighted how many young people judge the truth of an article based on the aesthetic quality of the webpage it is hosted on.4 Other studies have shown that young people tend to overestimate their digital skills, and that awareness of what they should do online does not always change their behaviour effectively.⁵ Around one in five European young people report having come across things online they wish they had not, while one in three are reluctant to talk about the negative or upsetting content they come across online.⁶ Across a range of vital digital skills, young people are under-skilled and poorly supported, a situation that makes young people more vulnerable to manipulation, misdirection and exploitation by extremists than they should be.7

The internet was intended to bring people together, but it can just as easily drive people apart. Few today would say that the prediction made by former MIT Media Lab Director Nicholas Negroponte 20 years ago, that by 2017 "children who are used to finding out about other countries through the click of a mouse 'are not going to know what nationalism is'" has come to pass. Fewer still would agree that the world envisioned by cyber-utopian

John Perry Barlow in "A Declaration of the Independence of Cyberspace", where the culture, ethics and unwritten codes of the internet would provide more order than could be obtained through law and state power, is close at hand.9 Yet a technology's social value is dictated less by its nature and more by its use.

In formal and informal education across the world, too little is being done to teach young people effective digital citizenship – beyond just the bare minimum of basic online safety.

Digital citizenship needs to be central to education, taught universally and from a young age. Making this happen requires the commitment of governments, educators and civil society in a cohesive, well-resourced and urgent effort.

Internet Citizens is an important contribution to this effort. This report describes the project and shares its initial impact. We hope it will help stimulate a greater focus on the need for digital citizenship and the practical steps that can be taken to encourage it.

3. Internet Citizens

This chapter presents an overview of Internet Citizens. It details the team involved and their roles, the design process for the creation of the resources, the theory of change for the project, and its unique features. It describes the resources produced, and the workshops which were the primary output of the project.

The Team

To make Internet Citizens work, a wide range of expertise and capacities was needed.

The project required education and expertise in countering violent extremism (CVE), particularly in an online context, in order to ensure the efficacy of the educational intervention itself, as well as measuring and evaluation capacities in order to assess that effectiveness. ISD provided this expertise, specifying the learning objectives, designing the curriculum and shaping its delivery, and evaluating the project.

Internet Citizens further required a practical knowledge of youth work, as well as access to youth networks. The youth charity UK Youth fulfilled this role, coordinating access to youth workers and youth centres, and adding their practical insights to the project design.

It was also vital to ensure that the workshops were appealing to the young people who were our target audience, and to add creative and artistic input to the design of the workshops. The youth-led creative network Livity was responsible for this work, and coordinated the overall design and delivery process.

The creative agency Wonder carried out the visual design of the workshops, including sets and digital resources, and the logistics supporting the physical assets of the project.

In delivery, the most critical asset was the facilitators who would lead the activities and discussions with young people. These "hosts" needed to be credible voices with whom the participants could identify, with experience working creatively with young people in youth centres on educational projects. The hosts for the workshops were creative and youth facilitator Alain "Fusion" Clapham, the Founder of Industry in the Streets, Efe Ezekiel, youth mentor and founder of Ushine Ishine, and Nadir Nahdi, YouTuber and founder of BENI.

While either Fusion or Efe led the workshops, Nadir undertook creative filming exercises alongside the curriculum delivery in the workshop, designed to bring the participants together, engage their creativity and reinforce the key messages of the workshop.

The Activities and Design Process

The overall concept, delivery model and project structure was created over the course of a year, and its formulation involved all the project partners, all of whom contributed to its design with their varied perspectives and expertise. The workshops were centred on five key activities – games tied into discussions that allowed participants to explore complex issues related to digital citizenship in an engaging and active way. All the activities were designed to be participant-led and dialogue-based, conveying learning points and skills to the participants not through a lecture or presentation, but through structured discussions designed to lead them to come to the right conclusions, reinforced at the end by a summary of key learning points.

The five key activities were Haters Gonna Hate, Off to Mars, Three Sides to Every Story, The Bubble and Emotional Manipulation. All of the exercises were led by the host at each workshop, and supported by the youth workers in attendance.

Haters Gonna Hate

Haters Gonna Hate was designed to give the participants the skills they needed to distinguish between free speech and hate speech and know how they could practically react to hate speech and negative content online, from flagging content for removal to positing positive content in response. It also explored the motivations of trolls and those who spread hate online. It involved participants exploring a number of real negative comments, deciding which ones were hate speech, and considering how they might respond to seeing each one and why.

Off to Mars

Off to Mars centres on Us and Them dynamics, demonstrating to participants the power of divisive rhetoric, why it was used and how to identify it. Participants are dvided into two groups, and asked to explain why their group should be selected for a mission to Mars and why the other group should not be, creating an Us and Them dynamic that is subsequently identified and discussed through dialogue. The activity closes with a video from TV2 in Denmark, called All That We Share, which highlights how much people from seemingly different groups actually have in common.

Three Sides to Every Story

Three Sides to Every Story examines fake news online, why it is created, what its effects are and how to identify it. It also explores bias in media content, why people have biases, and what the warning signs of bias are. The activity centres on printed headlines. In the fake news part of the activity, participants have to identify the real news in a series of otherwise fake news headlines, and in the biased content portion of the exercise they have to decide which headlines showed bias and why. The activities give structure to a detailed discussion between participants.

The Bubble

The Bubble was designed to highlight the effect and power of echo chambers, making participants aware of the echo chambers they might be in and how it can dictate the perspectives and media content they consume. It also explains filter bubbles, and how social media platforms can reduce the variety of perspectives to which you are exposed. In this activity, participants are divided into three groups. One group is given samples of media content showing one perspective on an event; a pro-police perspective on a student riot, for example. The other is given the opposite perspective, for example anti-police content. The third, smallest "neutral" group is given content from both samples. In presenting their conclusions about the content, each group is provided with an example of an echo chamber. and shown how the lack of alternative perspectives can reduce understanding and empathy for certain groups or our understanding of events, which informs a closing discussion.

Emotional Manipulation

Emotional Manipulation focuses on how content can be made to stimulate emotions in those who consume it, and how this can be a powerful persuasive tool for good and for bad. This activity centres on video clips of charity adverts. The clips are played to the participants, and followed up with a discussion of what emotions were conveyed, how, and why it was done. Participants are encouraged to consider the motivations of those who seek to make them feel strongly about something.

Delivery of the Workshops

All of these activities were produced through a cocreative process with young people, recruited by Livity, in weekend workshops at their office attended by all the project partners. The young people participating not only provided feedback on the exercises, but came up with the exercise content and in one case designed the whole exercise. This ensured that the activities were relevant to the young people who participated in the actual delivery of the workshops.

These workshops, consisting of the five above described exercises and concurrent creative filming exercises with participants run by Nadir, were delivered in sixhour sessions, including breaks. In these workshops the youth workers who accompanied the young people supported the hosts. In each workshop, a number of the youth workers present were trained in the workshop curriculum and facilitation techniques, including handling sensitive conversations and situations, before the workshop itself.

Theory of Change

The theory of change underpinning Internet Citizens is described in brief below.

Context

Young people are disproportionally targeted by extremist propaganda and grooming efforts, particularly online where organisations and movements are producing and targeting increasingly sophisticated content to recruit and manipulate individuals.

At the same time, young people online face a number of related challenges, which also contribute to the growth of extremism online, reduced social cohesion and other negative social outcomes, including fake news, media bias and hate speech.

In order to stay safe, make a positive contribution and be empowered citizens online, young people need the skills, attitudes, knowledge and behaviours which will make them more resilient to these challenges.

There is evidence that critical thinking, media literacy and digital citizenship skills can make young people more resilient to extremist propaganda and grooming on social media, and more able to process information critically and deal with hate speech online.

However, many young people, particularly those less engaged in formal education or from less privileged backgrounds, do not receive sufficient digital citizenship, media literacy or critical thinking education, increasing their vulnerability.

Inputs

For the successful implementation of our project we require:

- education expertise, specifically in media literacy, critical thinking and digital citizenship
- CVE expertise, specifically in an online context
- creative support and design expertise for materials and content
- logistical and management capacities
- local expertise and insights across the UK
- credible messengers
- Access to young people and youth workers
- Youth centre venues across the UK
- M&E expertise



Outputs

In this project we need to:

- create effective and engaging digital citizenship, critical thinking and media literacy resources guided by a curriculum structure
- develop an effective and scalable model for the delivery of these resources
- create a set and physical resources to support the workshops
- bring together a network of youth workers and young people to train
- Deliver these resources in youth centres throughout the UK
- Develop and deliver an M&E framework to assess the impact of the project
- Format and publish the resources so that anyone can deliver the workshops

Participants

For this pilot phase of the project, we need to engage young people at a formative stage of their development as citizens from across the UK. We particularly want to engage those who might not always be fully engaged in formal education.

Considerations: Exercises and materials should be appropriate for those with special educational needs and those who have English as a second language. Workshops should be delivered in youth centres accessible to the widest number of young people. Target age is 13–18 years old.

Reach:

- 500 young people
- 17 workshops

Outcomes

The workshops participants will give young people the media literacy, critical thinking and digital citizenship skills they need to be resilient to hate and extremism online, and to be empowered, positive digital citizens. It will achieve this by:

- encouraging participants to regard themselves as responsible, empowered citizens who can make a positive contribution online, in order to increase their confidence communicating in the online space and motivate them to take positive action against hate online
- giving participants the skills they need to identify fake news and media bias, and change their attitude towards sharing media content online, encouraging social responsibility in information sharing and fact checking
- giving participants the knowledge to identify hate speech and distinguish it from free speech, and to react effectively to hate and negative content online including by flagging it for removal, and change their attitude towards their online networks, increasing their sense of responsibility for their online networks
- giving participants the skills they need to identify emotional manipulation in online content, and encourage them to consider the motivations of content creators
- providing participants with the knowledge of what echo chambers, filter bubbles and online disinhibition are, and how they affect our communications and media consumption online, and change their attitudes towards media consumption online.
- Providing participants with knowledge of what 'us and them' rhetoric and scapegoating is, in order to make them more aware of persuasive devices, and increase the criticality with which they receive arguments based on these concepts.

Impact

Young people will be more resilient to extremist grooming and propaganda online, more able to react effectively to hate and negative content online, and more active digital citizens.

Fewer young people will be drawn into extremist groups, movements and ideologies, and they will be less sympathetic to extreme viewpoints. Fewer young people will suffer the negative effectives of online hate. The social networks in which young people operate will be more positive and healthy spaces.

Youth workers will have the resources and guidance they need to train further young people, expanding the scale of impact. The efficacy of the project will be tested, with a view to expanding it in future.



The Resources

The project involved the creation of a range of resources designed to facilitate the delivery of the workshops, and to allow youth workers to deliver the workshops themselves, independent of the project. These resources are publicly available, for free, online. They are accompanied by explanatory videos from the hosts, providing guidance and "pro-tips" on delivery.

These resources consist of:

- session plans, which provide all the information and materials youth workers need to deliver the workshops, either in full-day formats or exercises lasting 45 minutes to an hour
- a facilitator guide, giving guidance on how to establish a positive atmosphere, handle sensitive conversations, undertake constructive dialogues and host the workshops effectively
- a digital presentation deck, containing a session structure, the video clips and images related to the exercises, and key learning points.

Unique Characteristics

These resources were designed with a range of unique characteristics in mind.

First, these resources sought to go beyond basic online safety, and curate a positive, empowering message about the responsibilities and capabilities of young people online, and their vital role in creating a better internet. This message was threaded throughout the workshops, in an effort to motivate participants to action and develop an attitudinal change. These workshops were designed to encourage attitudinal and behavioural change, rather than merely provide the participants with useful skills.

Second, these resources were designed to be dialoguebased and accessible, rather than academic in nature and based on lectures. None of the exercises require writing beyond a few flipchart bullet points, and all of them are based on games or rich media content rather than lengthy text. All of the activities are designed to shape and encourage an open conversation, rather than one directional messaging.

Third, a principal objective in the design of these resources was to be fun. The young people at the workshops were not taking part in a lesson at school – a compulsory and controlled activity – but volunteered their time, often on weekends, to be at the workshop. Often, these young people did not enjoy or regularly participate in formal education at school. In order to achieve a positive impact effectively, the workshops had to be engaging and enjoyable. The creative filming activities, the nature of the games and exercises, and the presence of a YouTube creator helped to achieve this.

4. Evaluation

This section presents our evaluation of the process and impact of the Internet Citizens workshops.

The evaluation included both qualitative and quantitative elements. Measurements consisted of pre- and post-participant surveys examining changes in skills, knowledge, attitudes and behaviours through a series of confidence-related Likert statements as well as process questions; a survey of youth workers participating in the workshops in order to capture their perspectives on the overall experience; interviews with youth workers to gain a greater depth of insight; and interviews and focus groups with participants.

Method

The quantitative evaluation of impact was based on pre- and post-surveys completed by the participants of the workshops. The 16 impact questions were 1-7 Likert scales, which measured agreement with a series of confidence and knowledge confidence statements, from strongly agree to strongly disagree, filled out before and after the workshops and accompanied by a number of demographic and process-related questions.

Individuals' pre- and post-surveys were anonymously matched through the use of an anonymous code generator, so at no point did evaluators have access to participants' identifying information.

These surveys were delivered directly before and directly after the workshops, principally because of the logistical challenges of distributing surveys to participants outside the context of the workshops.

All 500 of the participants were surveyed, and 444 respondents returned completed surveys, an overall attrition rate of 11 per cent. In some cases, returned surveys were not entirely complete, so some questions have lower sample sizes, particularly impact questions where both a pre- and post-survey completion was required for the match-pairing of data.

These participant surveys were accompanied by postsurveys delivered to youth workers involved in the workshops at the end of each one, which presented them with a series of process questions; all 72 youth workers completed them. Some of these youth workers attended a short pre-workshop training and briefing session to help them in their role as facilitators, while others just turned up on the day.

These surveys were complemented by qualitative research, which focused on the participants' experience and process, as well as the extent to which participants and youth workers felt they had gained new skills or knowledge, or undergone an attitudinal or behavioural change. These qualitative elements included six semistructured interviews with youth workers involved in the project, which lasted approximately 20 minutes, and interviews or focus groups with 12 young people involved in the workshops after the pilot. The youth worker interviewees were self-selected volunteers, and the young people we interviewed were selected by youth workers according to their availability and willingness to participate.

In considering these results, it is important to make a number of observations regarding location, sample sizes and the comparability of the data. The significant challenges associated with assembling a comparison group of young people attending youth centres around the country meant that all the impacts observed within this evaluation are among the participants, and represent change before and after the workshops rather than change against a comparison group. Where comparison groups are more feasible, for example in school-based digital citizenship projects, ISD evaluations include comparison groups.

This being noted, the sample size allows a large degree of confidence in these results. This evaluation is the single largest scale evaluation of a CVE education intervention yet conducted in the UK. The 441 completed participant surveys came from 17 workshops run across the UK, from Kent to Glasgow, Cardiff to London, with significantly diverse groups. While a randomised controlled trial model would have provided

fuller information, the sample sizes, their geographic spread and the diversity of contexts strengthens the evaluation.

For further details on the methods used and analysis undertaken on this data, and the calculations we made, see the technical appendix at the end of this report.

Participant Demographics

As well as examining the impact of Internet Citizens, it is important to identify who experienced those impacts. Relevant participant demographic information was collected through the participant pre-surveys.

The demographic details below demonstrate that Internet Citizens reached its intended target audience in age and gender terms, one that that was significantly diverse in ethnicity, religion and place of birth.

Roughly a third of participants were aged 16–17, a third were aged 15 or under, and a fifth were 18 or over, with the remainder not stating their age (Figure 1). This age range approximately matches the target age range of the project.

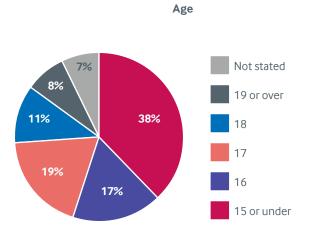


Figure 1 Participant Age (n=441)

The participants were roughly balanced in terms of gender, with slightly more men attending the workshops than women (Figure 2).10

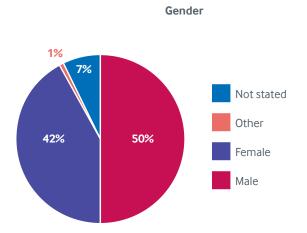


Figure 2 Participant Gender (n=441)

Participants came from a wide range of religious backgrounds, with some notable differences from the general population, as observed in the roughly but not exactly comparable religious demography that can be seen in other surveying among young people, for example in Lord Ashcroft's autumn 2016 polling of 16–24 year olds on their religious beliefs.

Participant Demographics (continued)

Nearly half (47 per cent) of participants identified as non-religious, compared with approximately 55 per cent of young people in the UK in the Ashcroft polling. Christians were slightly under-represented (23 per cent against roughly 30 per cent among 16-24 year olds in the Ashcroft polling), while Muslims were overrepresented (21 per cent against 6 per cent in the Ashcroft polling) (Figure 3).

Participants at the workshop came from every ethnic group covered in the UK census. Comparing the data again to recent Ashcroft polling, 64 per cent were white against 81 per cent among all UK 18-24 year olds, a slight underrepresentation, while all other ethnic groups were slightly over-represented (Figure 4).

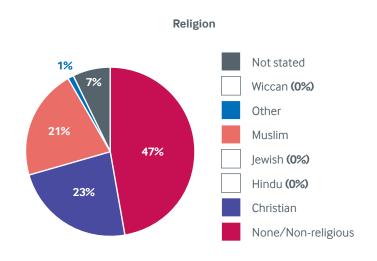


Figure 3 Participant Religion (n=441)

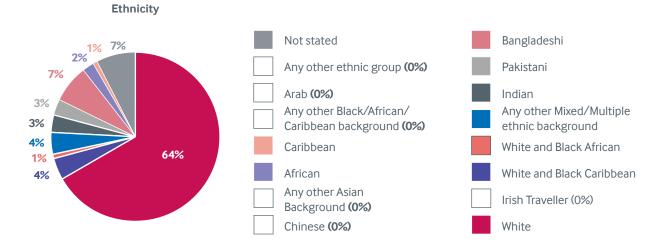


Figure 4 Participant Ethnicity (n=441)

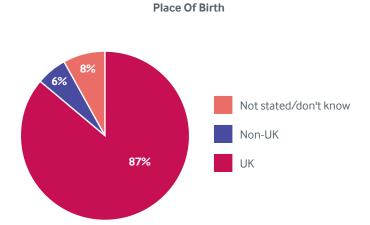


Figure 5 Participants' Place of Birth (n=441)

Another indicator of the diversity of the audience for the Internet Citizens programme was the number of first and second generation migrants the programme reached. At least 6 per cent of attendees were first generation migrants (Figure 5), while 17 per cent of attendees were second generation migrants (Figure 6).

Finally, the participants had a wide range of linguistic backgrounds, being from homes where one, two or three of 33 different languages, from Swahili to German, were spoken. In at least 9 per cent of participants' homes, English was not the only spoken language (Figure 7).

Languages Spoken In The Home

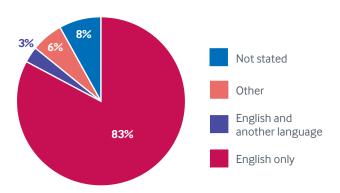


Figure 7 Languages Spoken in Participants' Homes (n=441)

Parents' Place Of Birth

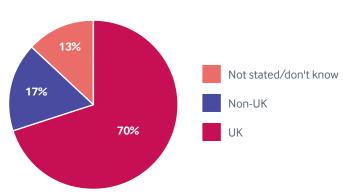


Figure 6 Participants' Parents' Place of Birth (n=441)

Evaluation Findings

The following impact assessment is based on the pre- and post-surveys returned by over 300 young people who participated in the workshops. Significance levels and samples sizes are provided in the text under each graph. Full details on statistical significant calculations and effect sizes, including the Likert data demonstrating the baseline and the post-workshop Likert values, can be found in the technical appendix at the end of this report. In total, we analysed impact across 16 indicators, which we group into the following categories:

- media literacy, information consumption and fake news
- hate speech and free speech
- confidence online
- potentially negative aspects of online behaviour
- wellbeing online.

Overall, Internet Citizens achieved significant and consistent positive impacts in all the key areas of the project.

Media Literacy, Information Consumption and Fake News

A significant portion of the Internet Citizens workshops was dedicated to education around media literacy, information consumption and fake news. This was achieved through a series of exercises that centred on the identification of bias, the identification of fake news online, and the identification of emotional manipulation in online content. Discussions covered why people share things online, when that might not be a good idea, when it is important to fact check content before sharing it, and the importance of consuming media from diverse sources, including ones you might disagree with or not normally engage with.

Across all five measures concerning these topics, participants reported an increased level of knowledge and confidence after the workshops. Particularly notable was the 34 percentage point increase in the proportion of participants saying they felt confident identifying fake news, and the 27 percentage point increase in motivation to seek out views and opinions that differ from their own online (Figure 8).

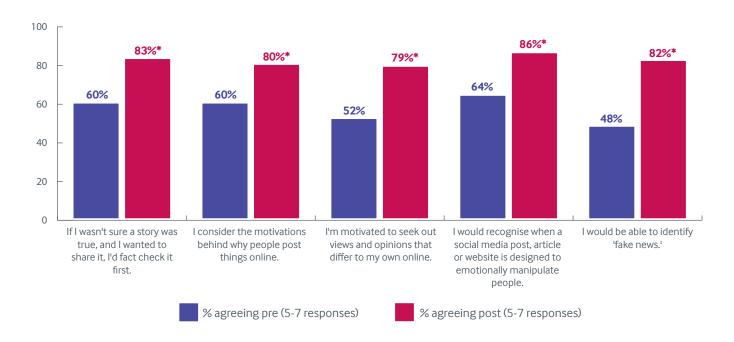


Figure 8 Impact Results Related to Media Literacy, Information Consumption and Fake News, Percentage Change Between Pre- and post-Surveys (n=319-321, * = significant at p <0.0001 level)

Hate Speech and Free Speech

The first and last activities of the workshop concerned hate speech and free speech. The first was designed to teach participants the differences between hate speech and free speech, and the last was designed to improve their knowledge of how to respond to hate speech and their confidence in doing so. Discussions covered the law in the UK, the difference between a distasteful or prejudiced opinion and hate speech, what you can do if you see hate speech online, and its effects on individuals and society.

Across all three measures, participants reported an increased level of knowledge and confidence after the workshops. Participants experienced a 28 percentage point increase in confidence that they would know what to do when they came across hate speech online, and how and why to flag content, suggesting they gained specific and applicable skill in countering hate online (Figure 9).

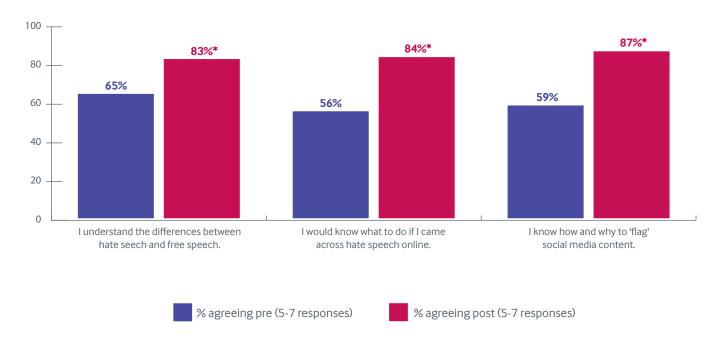


Figure 9 Impact Results Related to Hate Speech and Free Speech, Percentage Change Between Pre- and Post-Surveys (n=314–320, * = significant at p <0.0001 level)

Confidence Online

An overarching objective of the workshops, threaded throughout the activities of the day, was to make people more confident in expressing themselves online and talking to people unlike themselves. This was achieved through the workshop itself, which brought together people from a diverse range of backgrounds, in addition to the Internet Citizens' curriculum explaining the motivations of trolls online, what can be done in the face of trolling, and the important, proactive role that young people can play creating a more positive online space.

Participants reported an increased level of confidence across both measures for this topic after the workshops: a 14 percentage point increase in their comfort speaking to people from different backgrounds to their own and a 20 percentage point increase in their level of confidence expressing themselves online (Figure 10).

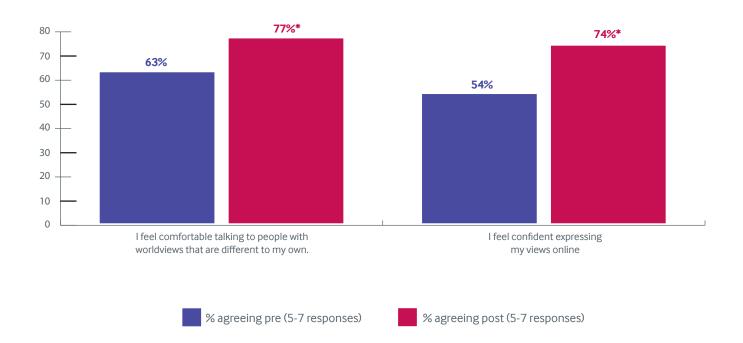


Figure 10 Impact Results Related to Confidence Online, Percentage Change Between Pre- and post-Surveys (n=330–334, * = significant at p <0.0001 level)

Potentially Negative Aspects of Online Behaviour

One activity within the workshops focused on "us and them" arguments and scapegoating as two rhetorical or argumentative devices used to encourage social division, drive extremist narratives and motivate negative action. Another focused on echo chambers and filter bubbles as social patterns encouraged or amplified online, which can have negative effects or encourage more extreme and unbalanced worldviews. In these two exercises participants were encouraged to be aware of echo chambers and the filter bubble and consider their effects, and to recognise "us and them" division and scapegoating.

These workshops had a particularly high impact. The especially large change in understanding of echo chambers and filter bubbles, at 57 and 56 percentage points respectively, demonstrates the extent to which participants were not generally aware of very important, basic ways in which internet communications shape and influence the information they consume and how they interact (Figure 11).

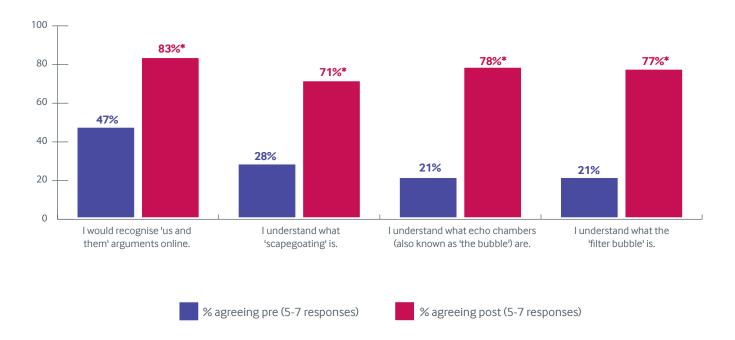


Figure 11 Impact Results Related to Potentially Negative Aspects of Online Behaviour, Percentage Change between Pre- and Post-Surveys (n=321–324, * = significant at p <0.0001 level)

Wellbeing Online

A major effort within the workshops was to develop among participants a sense of responsibility for their peers and other people generally within their social media networks, developing a consciousness of their own digital citizenship in the online space. This attitudinal development was threaded throughout the activities within the workshops.

Results were more mixed in this category of indicators. After the workshops there was an 18 percentage point increase in the portion of participants who reported feeling responsible for the wellbeing of people connected to them through social media, but only a 5 percentage point growth in the number who were confident they would help out a friend if they were in trouble online (Figure 12). The main cause for this small change is that this impact measure achieved a pre-survey average Likert-scale response of 5.79, the highest baseline of any impact measure, leaving little room for improvement. In other words, participants were already very likely to say they would help out a friend in such a situation before the workshop, though the slight increase remains noteworthy.

Our impact evaluation demonstrates the effect that Internet Citizens had on participants' self-assessed knowledge and confidence across the key learning outcomes the project sought to achieve. Additionally, participants – and youth workers – were asked a series of process evaluation questions in order to understand how relevant, useful, enjoyable and effective they found the workshops, and how they would like to see them improved. Most of this data is relevant primarily for internal planning and designing of the next phase of Internet Citizens. However, we present below some aspects of the results of the process evaluation we believe can be useful to policy makers and practitioners.

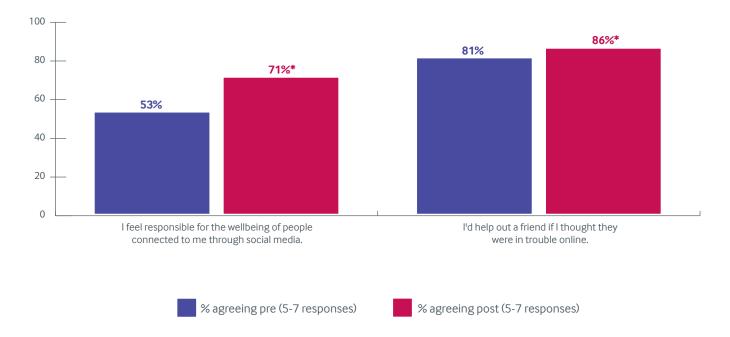


Figure 12 Impact Results Related to Wellbeing Online, Percentage Change Between Pre- and post-Surveys (n=313–319, * = significant at p <0.0001 level, ** = significant at p <0.005)

Enjoyment and Relevance

Participants overwhelmingly enjoyed the workshops, with 96 per cent of respondents reporting that they liked the workshop or liked them a lot, with only 1 per cent disliking the workshop or disliking it a lot. The quality of the hosts, the opportunity to mix with other young people from different backgrounds, the chance to get their opinions heard, and the chance to meet and film with a YouTube creator were all cited by participants:

I enjoyed the workshop and listening to other people's opinions, which helped shape my opinions in the future.

I loved the [host] who was talking to us, he kept it real and included everyone; the YouTuber was really nice and provided his experience which was interesting. The food was good!

I think it's really uplifting to participate in group projects – getting to know different kinds of people who share similar views as well as different views has made me appreciate such differences and similarities between people.

It was frickin' awesome and I've been crazy inspired to make a difference, try new things, like YouTube, and all that. (But IDK [I don't know], maybe.) Thanks to the workshop I'm more confident speaking my opinions and listening and understanding the opinions of others.

The youth workers attending the workshop were even more positive, with 99 per cent suggesting participants liked the workshops or liked them a lot, and with no negative responses.

A large majority (89 per cent) of participants felt that the workshop was relevant to them, with only 2 per cent of responses which were negative. Youth workers were again slightly more positive, with 97 per cent feeling the content was relevant to the participants' lives, and no negative responses:

I enjoyed the workshop and I think that it helped me understand how to act appropriately online.

It was informative and entertaining at the same time. I enjoyed working and connecting with different people. I found it really inspiring to meet [many] talented and passionate individuals. THANK YOU!

Perceptions of Knowledge and Skills Acquisition

In addition to asking questions about knowledge and skills learned, outlined above, we asked young people and the youth workers who participated about the extent to which they thought they or the participants gained new knowledge and skills, and how much impact they felt the workshop would have on their behaviour. Nearly all gave very positive responses: 97 per cent of participants felt that they gained new knowledge as a result of the workshop, while equally 97 per cent of participants felt they gained new skills (figures 13 and 14):

I really enjoyed it and I learnt so many skills, I met new people, they were nice and funny. The point in this workshop was to respect others' opinions, feel free to have your voice, recognise fake and true stories and be careful on social media.

It was fun, I learned what the Bubble [is]. I now know how to react to hate online.

Did You Gain New Knowledge?

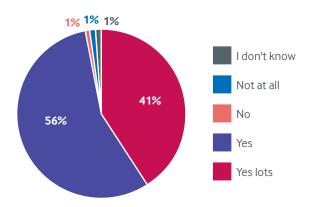


Figure 13 Participants' Answers to the Question 'Do You Feel Like You Gained New Knowledge?' (n=361)

Did You Gain New Skills?

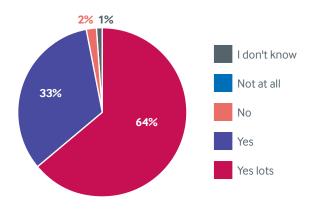


Figure 14 Participants' Answers to the Question "Do You Feel Like You Gained New Skills?" (n=366)

Perceptions of Potential Behavioural Change Impact

Neither participants' self-assessment of the extent to which the workshops might change their behaviours online, nor youth workers' perspectives, provide robust evidence of behavioural change: more detailed, longerterm evaluation is required to establish this successfully. However, the survey results do provide an additional insight into how useful the content of the workshops was, and the potential for Internet Citizens to change behaviours.

More than four in five (83 per cent) of participants felt that Internet Citizens would change their online behaviour, while 13 per cent thought it would not, an important outcome (Figure 15). Youth workers were more positive, with 97 per cent agreeing that the workshop would influence participants' behaviour online, and no negative responses (Figure 16).

Will Internet Citizens

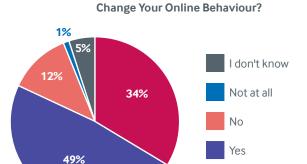


Figure 15 Participants' Answers to the Question "Will Internet Citizens Change Your Online Behaviour?" (n=362)

Do You Think The Workshop Will

Yes lots

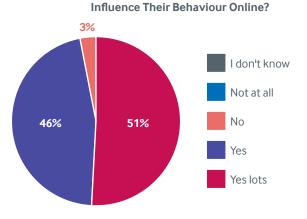


Figure 16 Youth Workers' Answers to the Question "Do You Think the Workshop Will Influence Their Behaviour Online?" (n=72)

Interviews with the young people involved provided some detail on how they thought the workshops affected their behaviour online; participants tended to focus on the situations they might most commonly face, perhaps unsurprisingly, describing their changed attitude towards the news they consume and awareness of echo chambers:

I do now think differently [in] certain situations that occurs on the internet/social media (I take everything I read... with a grain of salt, and research more into it if it needs [it]).

We did a bit about fake news and stuff like that, so now I won't believe anything I see online unless I know it's been fact checked or it's from a credible site.

The workshop has definitely changed some of the ways that I act online, even though I came to it with a strong mind of most of the topics that were taught [and] shown, as I'm now more aware of the difficult situations that may arise, [such as] opinion bubbles, fake news...

In interviews, youth workers confirmed their opinion that the workshops would affect the online behaviour of the young people involved, often tying this judgement to the fact that the young people discussed the content among themselves after the workshops:

I know the young people talked about the content afterwards with some of the other youth workers, which I think shows it stuck.

5. A Call to Action: What Next?

The evaluation of this first phase of the Internet Citizens project demonstrates how digital citizenship, taught in informal educational settings, can build the resilience of young people to hate and extremism online successfully. In the next phase of Internet Citizens, our programme will move into larger scale delivery, covering both youth centres and schools and aiming to reach 20,000 young people across the UK in 2018.

The need for the more intensive delivery of digital citizenship education is now recognised by international organisations, governments and policy makers, from UNESCO to the House of Lords. 11 At the same time, the body of evidence supporting the efficacy of digital citizenship in general has been steadily building and improving for years.

Our evaluation of Internet Citizens is a transparent and robust contribution to this evidence base. ISD will soon be further adding to this evidence by presenting impact results from our Digital Resilience Programme in schools in the Netherlands, which is currently being piloted in six Dutch vocational colleges, among other digital citizenship programmes.

ISD has identified a series of pressing needs related to digital citizenship in the UK, which are explained below Through further development to and the expansion of Internet Citizens as a flagship digital citizenship project, we want to help address these needs.

However, our efforts alone will not be enough to create the radical changes to education that are required, and broader changes in approaches to digital citizenship need to take place. We recommend the following next steps to government, civil society organisations and other key stakeholders in 2018:

- Move beyond pilot programmes and deliver digital citizenship at scale.
- Create sustainable digital citizenship delivery models for non-formal education.
- Take the first steps towards embedding digital citizenship into the National Curriculum.

Move Beyond Pilot Programmes and Deliver Digital Citizenship at Scale

Despite increased attention and a growing number of smaller scale pilot efforts, there have been too few efforts to develop and deliver digital citizenship education at scale. Building on the current evidence base, we need to deliver and evaluate effective digital citizenship programming at scale, in both formal and non-formal education settings. By delivering programmes at greater scale – with tens of thousands of young people, as opposed to hundreds – we can begin to build a much stronger evidence base for measuring impact.

In addition to conducting evaluation at greater scale, further efforts are needed to improve evaluation approaches beyond short-term self-assessment measures to the deployment of more medium to longterm impact measures that can provide a clearer picture of actual knowledge and skills acquisition. This type of evaluation can be extremely difficult and presents some additional costs, but can have a significant impact on curriculum delivery and provide highly valuable insights.

Government, grant makers and civil society organisations need to work together to support this kind of more detailed evaluation, and oversee this effort to raise the standard of evidence supporting digital citizenship urgently, as the basis for more rapid and large-scale implementation. With relatively limited investment, the UK would be well positioned to be a world leader on this issue.

Create Sustainable Digital Citizenship Delivery Models for Non-Formal Education

The interviews and focus groups we conducted with youth workers and young people as part of this evaluation supported and confirmed that there is particular value in delivering digital citizenship education in youth centres to compliment delivery in schools, with these settings providing a valuable alternative to formal educational environments and allowing delivery to otherwise hard to reach groups.

Many youth workers were keen to be able to provide digital citizenship education themselves, and to be able to effectively engage young people in sensitive conversations on online issues. In order to achieve greater flexibility and more sustainable scale, train-thetrainer approaches should play a significant role in nonformal delivery. Our qualitative research also suggested that ideally, these approaches should also be supported on a continuous basis, for example through the provision of funds to cater youth centre workshops effectively and ensure that young people who otherwise wouldn't be able to afford the travel costs can attend. The scale and efficacy of delivery in nonformal environments could also be enhanced through partnerships with existing youth organisations such as National Citizen Service, The Scouts and Girlguiding.

We encourage civil society groups, grant funders and government stakeholders to prioritise the development of these partnerships and other models of non-formal digital citizenship delivery.

Take the First Steps Towards Embedding **Digital Citizenship into National Curriculum**

Currently a number of digital citizenship initiatives operate in UK schools, but too many young people go entirely without digital citizenship education. In the UK – and internationally – education systems have been too slow to react to new technologies and the changing reality of our everyday lives. When the online world plays such a huge role in our political, social and cultural lives, defining how young people consume information, explore the world around them and represent themselves as positive citizens, the current neglect of digital citizenship in formal education borders on negligence. This need has been recognised in parliament, with the House of Lord's Communication Select Committee's 2017 report Growing Up With the Internet arguing that "digital literacy should sit alongside reading, writing and arithmetic as the fourth pillar of a child's education".12

We need to safeguard a tolerant and pluralistic future by investing in universal digital citizenship education in the UK, embedded as far as possible within National Curriculum, now, Government should work with civil society organisations and educators at a high level to explore how this can best be achieved.

6. Technical Appendix

This appendix provides additional information on how we selected participants and the evaluation methods of the project.

Workshop Locations

Workshops for Internet Citizens took place at 17 venues over the course of the spring, summer and autumn of 2017. Table 1 lists the locations and dates.

Table 1 Workshop Locations and Month of 2017

WORKSHOP LOCATION	MONTH OF 2017
Manchester	March
London	March
Newcastle	April
Liverpool	April
Luton	April
Cardiff	May
Newcastle	May
Kent	June
London	June
Blackburn	June
Glasgow	July
Leeds	July
Rochdale	July
Sheffield	July
Birmingham	July
London	July
London	July

Participants

Participants for the workshops were selected through a mixture of active recruitment and advertising. UK Youth's network of youth workers across the UK recruited youth workers interested in being a part of each workshop, who in turn recruited the young people to attend those workshops. In some cases young people were persuaded to attend, in others promotional material such as posters attracted participants, providing a mixture of motivations for attendance. There were no formal criteria for participation, in order to make the workshop as accessible as possible. For the same reasons, the travel and subsistence costs associated with the participants' and youth workers' participation were paid for.

All 500 of the participants at the workshops were presented with a pre- and a post-survey. Some failed to complete one or both of them, though overall attrition rates were relatively low, with 441 instances where both pre- and post-surveys were completed, at least in part and largely in full. The samples sizes for each question can be found beneath the figures presented in this report.

The pre-surveys were presented to participants directly before the start of the workshops, before any activities had taken place, by evaluation staff who were otherwise not involved in the running of the workshop. These staff members also collected the surveys once they were completed. The post-surveys were presented to participants at the close of the workshop as the final activity, again by the evaluation staff, who also collected them upon completion.

Evaluation staff and workshop facilitators were available to assist any young people who did not understand specific questions or words.

In addition to questions designed to test the impact of the intervention, specifically its effect on the confidence and attitudes of the participants in relation to its subject matter (media literacy, critical thinking and digital citizenship), the surveys requested basic demographic information about participants (tables

Table 2 Gender of Participants

GENDER	NUMBER	PERCENT
Male	221	50%
Female	185	42%
Other	5	1%
Not stated	30	7%
Total	441	

Table 3 Religious Background of Participants

RELIGION	NUMBER	PERCENT
None/non-religious	207	47%
Christian	103	23%
Hindu	1	0%
Jewish	1	0%
Muslim	92	21%
Other	3	1%
Wiccan	1	0%
Not stated	33	7%
Total	441	

Table 4 Ethnic Background of Participants

ETHNIC BACKGROUND	NUMBER	PERCENT
White	284	64%
Irish traveller	1	0%
White and Black Caribbean	17	4%
White and Black African	6	1%
Any other mixed or multiple ethnic background	19	4%
Indian	15	3%
Pakistani	13	3%
Bangladeshi	33	7%
Chinese	1	0%
Any other Asian Background	2	0%
African	10	2%
Carribean	6	1%
Any other Black, African or Caribbean background	1	0%
Arab	2	0%
Any other ethnic group	1	0%
Not stated	30	7%
Total	441	

Table 5 Age of Participants

AGE	NUMBER	PERCENT
15 or under	167	38%
16	77	17%
17	84	19%
18	47	11%
19 or over	36	8%
Not stated	30	7%
Total	441	

Table 6 Educational Status of Participants

EDUCATIONAL STATUS	NUMBER	PERCENT
Full-time education	312	71%
Part-time education	21	5%
Full-time employment or apprenticeship	13	3%
Part-time employment or apprenticeship	8	2%
Formal training course	9	2%
None of the above	42	10%
Not stated	36	8%
Total	441	

Table 7 Participants' Place of Birth

PLACE OF BIRTH	NUMBER	PERCENT
UK	382	87%
Non-UK	25	6%
Not stated/don't know	34	8%
Total	441	

Table 8 Place of Birth of Participants' Parents

PARENTS' PLACE OF BIRTH	NUMBER	PERCENT
UK	309	70%
Non-UK	75	17%
Not stated/don't know	57	13%
Total	441	

Table 9 Languages spoken at participants' home

LANGUAGE	NUMBER	PERCENT
English only	365	83%
English and another language	14	3%
Other	28	6%
Not stated	34	8%
Total	441	

Youth Survey

Figure 17 presents the questions asked in the participant pre- and post-surveys. All demographic questions were asked in the pre-survey, while all process-related questions were asked in the post-survey.

Figure 17

What is your gender?	What is your ethnicity?
□ Male	White
☐ Female	White
□ Other	☐ Irish Traveller
What is your religion?	Mixed
□ None/non-religious	☐ White and Black Caribbean
□ Christian	☐ White and Black African
☐ Buddhist	☐ Any other Mixed/Multiple ethnic background
☐ Hindu	Asian/Asian British
☐ Jewish	□ Indian
☐ Muslim	□ Pakistani
□ Sikh	☐ Bangladeshi
☐ Other (please tell us):	☐ Chinese
	☐ Any other Asian background
	Black/Caribbean/Black British
	☐ African
	☐ Caribbean
	☐ Any other Black/African/Caribbean background
	Other
	□ Arab
	☐ Any other ethnic group

Figure 17 (continued)

How old are you?	"Please tell us how much you agree with		
□ 15 or under	the following statements. There are seven options, from 1 which is most 'Strongly		
□ 16	Disagree' to 7, which is most 'Strongly		
□ 17	Agree'. Tick only once box in each line."		
□ 18	I feel comfortable talking to people from		
☐ 19 or over	backgrounds different to my own.		
Tick as many of the following entions which	 I feel confident expressing my views online. 		
Tick as many of the following options which apply to you:	 I feel responsible for the wellbeing of people connected to me through social media. 		
☐ Full-time education	 If I wasn't sure a story was true, and I wanted to shar 		
☐ Part-time education	it, I'd fact check it first.		
☐ Full-time employment / apprenticeship	• I consider the motivations behind why people post		
☐ Part-time employment / apprenticeship	things online.		
☐ Formal training course	 I'd help out a friend if I thought they were in trouble 		
□ None of the above	online.		
Where were you born?	 I'm motivated to seek out views and opinions that differ to my own online. 		
□ UK	 I would know what to do if I came across hate speed 		
☐ Not in the UK (Please tell us):	online.		
☐ Don't know	 I know how and why to "flag" social media content. 		
Where were your parents born?	 I would recognise "us and them" arguments online. 		
□ UK	I would recognise when a social media post, article		
□ Not in the UK (Please tell us):	or website is designed to emotionally manipulate people.		
□ Don't know	 I understand the differences between hate speech 		
	and free speech.		
What language do you speak at home?	I understand what echo chambers (also known as		
□ English	"the Bubble") are.		
Other (Please tell us):	I understand what the "filter bubble" is.		
What is your home postcode (we use this to find	 I would be able to identify "fake news". 		
out more about the area you come from)?	 I understand what 'scapegoating' is. 		
	Tick only once box for each question.		

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Did you enjoy the workshop? ☐ I liked it a lot	Do you think that you'll behave differently online as a result?
☐ I liked it	☐ Yes, lots
☐ I neither liked it nor disliked it	☐ Yes
☐ I disliked it	□ No
☐ I disliked it a lot	☐ No not at all
☐ I don't know	☐ I don't know
How relevant do you feel the content of the workshop was to you/your life?	Do you feel like the workshop was appropriate for your age?
☐ Highly relevant	Yes, I think it was appropriate for my age group.
☐ Quite relevant	☐ No, I think it was more appropriate for younger people.
☐ It was neither relevant nor irrelevant	☐ No, I think it was more appropriate for older people.
☐ Quite irrelevant	☐ I don't know
☐ Highly irrelevant	Do you think the booklet you were given is useful?
☐ I don't know	☐ Highly useful
Do you feel like you understood the subject	☐ Quite useful
matter by the end of the workshop?	☐ In was neither useful nor useless
☐ Understood everything	☐ Not very useful
☐ Understood some of it	☐ Not useful at all
☐ Understood little	☐ I don't know
☐ Understood nothing.	Would you be interested in being part of any
□ I don't know	Would you be interested in being part of any future workshops or training sessions that build on the one you did today?
Do you feel like you learned new skills?	☐ Yes
☐ Yes, lots	□ No
☐ Yes	☐ I don't know
□ No	
□ No not at all	If you have any further comments about the workshops, please write them in the box below.
☐ I don't know	
Do you feel like you gained new knowledge?	
☐ Yes, lots	
☐ Yes	
□ No	
☐ No not at all	
□ I don't know	

Youth Worker Survey

Figure 18 presents the questions asked in the youth worker post-surveys.

Figure 18

Do you think the participants enjoyed the workshop?	Do you think the workshop will influence their behaviour online?
☐ They liked it a lot	☐ Yes, lots
☐ They liked it	☐ Yes
☐ They neither liked it nor disliked it	□ No
☐ They disliked it	☐ No not at all
☐ They disliked it a lot	☐ I don't know
☐ I don't know Do you think the content was relevant to the	Do you feel like the workshop was appropriate for their age group?
participants' lives?	☐ Yes, I think it was appropriate for their age group.
☐ Highly relevant	☐ No, I think it was more appropriate for younger
☐ Quite relevant	people.
☐ It was neither relevant nor irrelevant	☐ No, I think it was more appropriate for older people.
☐ Quite irrelevant	☐ I don't know
☐ Highly irrelevant	Would you be interested in being part of any future
☐ I don't know	workshops sessions like the one you did today?
Do you feel like the participants understood the subject matter by the end of the workshop?	☐ Yes ☐ No
☐ Understood everything	☐ I don't know
☐ Understood some of it	Did you receive enough information about the
☐ Understood little	workshop and your role prior to the workshop?
☐ Understood nothing	$\hfill \square$ Yes, I received enough information and felt prepared
□ I don't know	☐ No, I did not receive enough information and did not feel prepared

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Summary Statistics and Significance Testing

The most commonly used form of significance testing for pre- and post-intervention evaluations is the paired samples T test. This tests the probability that, on a given measure, the true mean difference between a population before and after an intervention is 0. However, measures using Likert items such as those employed in this study violate two assumptions behind the paired T test: that the dependent variable is interval data, and that the distribution of pre-post differences is approximately normal. On the other hand, numerous studies have shown that the T test is robust to violations of these assumptions, particularly with large sample sizes.¹⁴ A common non-parametric alternative, the Wilcoxon Signed Rank (WSR) test, is most often used for repeated-measures experiments with ordinal dependent variables, although the pre-post differences should still be symmetrically distributed.

Given that the data reveals low to moderate levels of skewness, but higher levels of kurtosis, this study uses the WSR test as the primary measure of significance, and the sole measure of significance for the impact of the intervention on smaller sub-samples. For the sake of comparability with similar studies, results for the paired T test conducted for the full sample are also shown below. This also allows an effect size to be calculated. This is reported as a variants of Hedges' g, a variant of the more commonly Cohen's d, using Lakens' method. 15

In a repeated-measures study such as this one, Lakens recommends using slightly different formulae to calculate effect size depending on which gives a result most comparable to Cohen's d in a between-subjects design (e.g. with a control group). The formulae are as follows, where Mdiff is the difference between paired

means, r is the correlation coefficient, SD1 is the standard deviation among pre-programme responses, and SD2 is the standard deviation among postprogramme responses:

$$d_{av} = \sqrt{\frac{SD_1^2 + SD_2^2}{2}}$$

$$d_{rm} = \frac{M_{diff}}{\int SD_1^2 + SD_2^2 - 2 \times r \times SD_1 \times SD_2} \times \sqrt{2(1-r)}$$

Hedges' correction applies as follows (where n is the sample size of matched pairs):

$$g = d \left(1 - \left(\frac{3}{(4(n-1)-1)} \right) \right)$$

For the sake of completeness, a full set of effect sizes is shown in Table 10.

Comparisons between sub-samples were also conducted where the samples were large enough, using the Wilcoxon-Mann-Whitney test of significance.

Full results are set out in tables 10–12. P-values accompanied by an asterisk indicate significance at the 95% confidence level. There are some slight differences in mean before, mean after and difference figures as a result of rounding.

Table 10 Summary statistics, all paired responses

QUESTION	Q1	Q2	Q3	Q4	Q5	Q6	Q 7	Q8
Mean before	5.16	4.66	4.59	4.93	4.72	5.79	4.65	4.77
Mean after	5.60	5.47	5.31	5.79	5.63	5.98	5.56	5.94
Difference	0.45	0.82	0.72	0.86	0.91	0.19	0.92	1.17
% agreeing pre (5–7 responses)	63%	54%	53%	60%	60%	81%	52%	56%
% agreeing post (5–7 responses)	77%	74%	71%	83%	80%	86%	79%	84%
Percentage point increase in agreement	13%	20%	18%	23%	20%	5%	27%	27%
% positive change	37%	52%	48%	50%	55%	28%	53%	58%
% negative change	17%	13%	17%	15%	14%	19%	15%	10%
% no change	46%	35%	34%	35%	31%	53%	32%	32%
Sample size	333	329	318	321	318	312	320	313
Effect size	0.26	0.49	0.43	0.53	0.59	0.13	0.57	0.73
Question	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Mean before	4.80	4.28	5.02	4.98	2.94	2.89	4.42	3.28
Mean after	5.99	5.77	5.88	5.91	5.64	5.58	5.80	5.37
Difference	1.20	1.49	0.87	0.93	2.70	2.68	1.38	2.09
% agreeing pre (5–7 responses)	59%	47%	64%	65%	21%	21%	48%	28%
% agreeing post (5–7 responses)	87%	83%	86%	83%	78%	77%	82%	71%
Percentage point increase in agreement	27%	37%	22%	18%	57%	56%	34%	43%
% positive change	57%	64%	51%	54%	80%	81%	64%	68%
% negative change	12%	12%	14%	15%	9%	7%	12%	9%
% no change	31%	24%	35%	31%	11%	11%	24%	23%
Sample size	314	313	320	319	321	323	320	323
Effect size	0.71	0.89	0.58	0.59	1.53	1.57	0.82	1.04

Table 11 Results from T Test and WSR Test, All Matched Pairs (asterisk indicates significance at 95% confidence level)

QUESTION	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
T-statistic	5.0717	9.3927	7.455	8.5578	9.6282	2.5305	9.7699	11.5752
P-value (T test)	<0.0001*	<0.0001*	<0.0001*	<0.0001*	<0.0001*	0.0119*	<0.0001*	<0.0001*
WSR test z-statistic	5.164	8.98	7.194	8.148	9.035	2.391	8.837	10.271
P-value (WSR test)	<0.0001*	<0.0001*	<0.0001*	<0.0001*	<0.0001*	0.0168*	<0.0001*	<0.0001*
Sample size	334	330	319	322	319	313	321	314
QUESTION	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
QUESTION T-statistic	Q9 11.4759	Q10 13.0198	Q11 9.4254	Q12 9.5257	Q13 19.755	Q14 21.159	Q15 12.7528	Q16 15.8492
•					-	-		
T-statistic	11.4759	13.0198	9.4254	9.5257	19.755	21.159	12.7528	15.8492
T-statistic P-value (T test)	11.4759	13.0198	9.4254	9.5257	19.755	21.159	12.7528	15.8492

Table 12 All effect sizes (using Lakens' method)¹⁶

	COHEN'S DZ	COHEN'S DRM	HEDGES GRM	COHEN'S DAV	HEDGES GAV	RECOMMENDED	REPORTED EFFECT SIZE
Q1	0.28	0.26	0.26	0.26	0.26	gav	0.26
Q2	0.52	0.49	0.49	0.49	0.49	gav	0.49
Q3	0.42	0.43	0.43	0.43	0.43	gav	0.43
Q4	0.48	0.53	0.53	0.53	0.53	gav	0.53
Q5	0.54	0.59	0.59	0.59	0.59	gav	0.59
Q6	0.14	0.13	0.13	0.13	0.13	gav	0.13
Q7	0.55	0.57	0.57	0.57	0.57	gav	0.57
Q8	0.65	0.72	0.72	0.73	0.73	gav	0.73
Q9	0.65	0.70	0.70	0.71	0.71	gav	0.71
Q10	0.73	0.89	0.89	0.90	0.90	grm	0.89
Q11	0.53	0.57	0.57	0.58	0.58	gav	0.58
Q12	0.53	0.58	0.58	0.59	0.59	gav	0.59
Q13	1.10	1.53	1.53	1.54	1.53	grm	1.53
Q14	1.18	1.57	1.57	1.58	1.58	grm	1.57
Q15	0.71	0.81	0.81	0.82	0.82	gav	0.82
Q16	0.88	1.04	1.04	1.04	1.04	grm	1.04

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