# Debunked  #DiscussAI

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# Debunked:
# Data Literacy For Adults
# Evaluation Report 2021-22

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NALA
Webwise


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# Executive Summary

ADAPT is a world-leading Science Foundation Ireland Research Centre for AI-Driven Digital Content Technology. ADAPT has a dedicated team for Education and Public Engagement (EPE),  which aims to inspire the Irish public to learn about emerging technologies that enhance engagement in our digital world and to have a voice on the future of this vital area of research.

Data is at the heart of ADAPT's activities, and data literacy is paramount for citizens to critically engage with emerging technologies. The increasing pervasiveness of digital content and technology in our everyday lives means that young people and adults need to have the skills to think critically about data and make informed decisions, simply in order to thrive in our always-connected world.

In 2021 - 2022, ADAPT devised and delivered a series of one-off workshops for adults to promote awareness of the importance of the topic and an opportunity to improve their data literacy skills in an interactive, social space. Originally titled DALIDA, the series was launched publicly with the more memorable name 'Debunked'.

Data literacy is a broad term, encompassing media and social media literacy, as well as numerical literacy. Due to COVID-19 restrictions in 2021, Debunked ran as an online workshop series, rather than the in-person programme initially conceived. It was led by ADAPT researcher Dr Christophe Debruyne (who moved to University of Liége during the project) and the ADAPT EPE Team led by Laura Grehan and Project Manager Anne Kearns, with facilitation support from 23 other ADAPT researchers. Debunked also involved collaborators from Trinity College Dublin including Dr Ciarán O'Neill (Ussher Associate Professor in Nineteenth-Century History and former TCD Community Liaison Officer) and Ms. Mary Colclough (Community & Enterprise Engagement Manager). The primary aim of Debunkedwas to help people navigate misinformation, disinformation and malinformation online by improving their data literacy skills through these workshops.

This report presents a formative evaluation of the inaugural Debunked series. Data was collected through a pre- and post-survey of workshop attendees, as well as semi-structured interviews with participants, programme team and collaborators.

The results indicate that despite operational challenges encountered due to the move online as a result of Covid-19 public health restrictions, the ADAPT team were able to capitalise on strong workshop content developed in consultation with the public. Workshops made excellent use of narrative and storytelling that covered Irish history and memes, as well as print and online media, graphs and statistics. The resulting responses from participants covered a range of emotions, highlighting the strongly affective nature of practical and personal reflection on data literacy.

## Key Findings:

- Participants demonstrated high levels of satisfaction with the content, and the majority indicated that they did learn something new, and that they would like to learn more about the topic.
- The majority of attendees were already of the opinion that misinformation or misrepresentation of data are some of the greatest threats to society today, indicating that even those who are already interested in the subject can learn something new in these introductory workshops, likely due to Debunked's clever weaving of history, computer science and popular culture references.
- Increased engagement was attained when the programme team built strategic partnerships with other organisations with similar goals in relation to data literacy, an approach which would be beneficial to EPE professionals working on other topic-specific areas.

This evaluation report concludes with a number of recommendations for the ADAPT EPE team for future iterations of Debunked, for EPE professionals generally, and for data literacy EPE programmes, summarised below:

## Recommendations for ADAPT EPE Team

- Conduct regular reflective debriefs with facilitators and scribes.
- Future EPE design: structured workshops with time for presentation, discussion, reflection; bringing in expertise across disciplines; engaging speakers with clearly defined stories; locally and culturally relevant examples and reference points.
- Ensure collaboration commitments are clearly laid out in advance, while remaining flexible and responsive.
- Engage with collaborative partners early in the programme design stages.
- Develop multiple versions of workshops or events.
- Consider offering Debunked as an ongoing informal series.

## Recommendations for Researchers

- Utilise and leverage the expertise of EPE teams and science communicators to devise engaging formats and to support audience recruitment.
- Provide members of your audiences with pathways and resources to explore the topic in greater detail.

## Recommendations for Wider EPE Community

- Consult with adult education and adult literacy programmes in regards to potential collaborations.
- Engage with patient advocacy groups (e.g. via the PPI Ignite Network) on further data literacy programmes

# Table of Contents

# Introduction

This report contains an overview and evaluation of the Debunked data literacy discussion programme for adults (2021 - 2022), led by ADAPT, the world-leading SFI Research Centre for AI-Driven Digital Content Technology[1]. Debunked (originally entitled DALIDA) was supported by Science Foundation Ireland (SFI) via a Discover Award (20/DP/8155).

The introductory section of the report introduces the topic, the Debunked programme and its evolution during the lifetime of the award. The following sections outline the evaluation methodology and the findings, followed by a discussion of the implications. The final section contains recommendations relevant to the project, to public engagement with data literacy, and to science, technology, engineering and mathematics (STEM) education and public engagement (EPE) initiatives more broadly.

## Debunked Programme Overview

Data literacy is the ability to collect, manage, manipulate, understand and represent data. Training in data literacy skills is often limited to the knowledge workers who interpret and utilise data in their professional lives. However, these same skills are becoming increasingly important for citizens in everyday situations where they are expected to assess and comprehend information presented in various media, e.g. government portals, newspapers, social media, and research studies. Effective data literacy skills are key for a scientifically informed and engaged public.

A white paper published by the Data Pop Alliance in 2015[2] provides an expansive and inclusive definition of data literacy as the "*the desire and ability to constructively engage in society through or about data.*" The authors note the use of the terms "*desire and ability*" to highlight "*technology as a magnifier of human intent and capacity*". Data is understood broadly, not just as numerical statistics, but as "*individual facts, statistics, or items of information*". Finally, the term "*constructively engage in society*" implies that there is an active and human-centred purpose driving the desire and ability.

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[1] www.adaptcentre.ie

[2] Data Pop Alliance (2015) - Beyond Data Literacy: Reinventing Community Engagement and Empowerment in the Age of Data
https://datapopalliance.org/item/beyond-data-literacy-reinventing-community-engagement-and-empowerment-in-the-age-of-data/

Debunked was conceptualised as a series of workshops geared towards adults to build critical data literacy skills. The core Debunked project team was composed of the Principal Investigator (PI; a computer science researcher) and a Project Manager based in ADAPT's dedicated EPE team, with a background in learning and development, evaluation, and community co-creation. The team originally planned to co-create content with representatives of community organisations or voluntary groups based in the Dublin Docklands area, through two co-creation workshops. Following these sessions, the original aim was to then to run six in-person public workshops for the wider public, targeting communities in the Grand Canal Innovation District (GCID) of Dublin 2, an area earmarked for expansion by Trinity College Dublin (TCD). "Unit 18" is a community space in the GCID, which was launched by TCD in December 2019. The Unit 18 Community & Enterprise Engagement Manager and the then TCD Community Liaison Officer (who is also a historian and TCD academic) were collaborators on the Debunked project from its inception. The original plan had to be adapted due to public health restrictions related to Covid-19. The major adjustments were to move the programme online, to increase the number of iterations of the workshops, and to deliver a number of the workshops in partnership with other organisations, with these iterations offered only for members of the partner organisations in question. While limited due to the online nature of the interaction, co-creation was still a key feature of the workshop content design.

The primary aim of Debunked was to help people navigate misinformation, disinformation and malinformation online by improving their data literacy skills through these workshops.

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Definitions[3]
**Misinformation**: Unintentional mistakes such as inaccurate photo captions, dates, statistics, translations, or when satire is taken seriously.

**Disinformation**: Fabricated or deliberately manipulated audio/visual content. Intentionally created conspiracy theories or rumours.

**Malinformation**: Deliberate publication of private information for personal or corporate rather than public interest, such as revenge porn. Deliberate change of context, date or time of genuine content.

As you move through these three definitions you go from falseness to an intent to harm.

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[3] from First Draft: www.firstdraftnews.org

A secondary aim of the project was to engage members of the public from socially, economically, or educationally disadvantaged groups. The original target for each workshop was to reach up to 45 participants, with 20 spaces to be reserved for people from socially, economically, or educationally disadvantaged groups.

Debunked worked towards the primary aim by developing participatory activities to develop data literacy skills in adults using the lens of social history as a starting point to explore this far-reaching issue. The workshops used narrative and imagery discussing the representation of Irish history on social media, in particular, the misrepresentation of the Irish slave trade in the 17th century. This topic was chosen as the collaborating TCD historian had recently given online public lectures on the social history of Dublin hosted by Dublin City Libraries, which had attracted 750 registrations and 500 viewers. The social history element of the workshop was followed with activities and discussion relating to misleading or inaccurate presentation of numerical data on graphs and charts in advertising, media and public health.

The Debunked team worked with the co-creation workshop participants to ascertain whether this topic and the proposed stories, activities and tools resonated with them, and would be of value to the audiences they represent. Subsequently, the project team and collaborators worked together to refine the original idea, create content and shape the workshops for the wider public. Co-creation participants were given One4All vouchers as a token of gratitude for the contribution of their time and expertise.

The resultant public workshops aimed to provide informal educational experiences for members of the public that would incorporate examples, discussion, dialogue and deliberation around data literacy skills, and offer tools to embolden people to navigate mis/mal/dis-information online through improved data literacy. The final workshop format was structured to allow moments of personal reflection, as well as small and large group conversation and debate.

## Programme Evolution

Due to Covid-19, Debunked primarily shifted to an online format. By the end of the project lifetime, the Debunked team had delivered two co-creation workshops, one pilot workshop, and eight further workshops. Of the eight, one was in person, and one was hybrid - the remainder were delivered completely online using Zoom. Two of the online workshops were delivered as part of existing STEM EPE programmes or events - one as part of START 2021, TCD's edition of European Researchers' Night[4],

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[4] www.tcd.ie/research/start/

and one as part of the BIAS exhibition season at Science Gallery Dublin[5], which explored human-technology relationships. The wider ADAPT team collaborated on other elements of the BIAS exhibition season.

For an in-person workshop held in Unit 18, despite 14 registrations, only one person showed up. A second in-person workshop was planned and advertised in the same manner, but on the day before this was scheduled, registration numbers were at a similar level to the previous edition. Given the high likelihood of similarly low turnout, it was decided to cancel this session. These workshops were both scheduled during the last quarter of 2021. Although workshops were planned to adhere to public health guidelines of the time, the Covid-19 pandemic was ongoing, and this was a time at which the public were widely hesitant to gather indoors for events. While some may have returned to groups or clubs or events they attended regularly before the pandemic, it was a challenging time to offer new in-person events to new audiences with no prior link to ADAPT or to the subject matter.

Despite significant promotional efforts, there was a relatively low take-up for the Debunked workshops overall relative to the projected numbers (Table 2). In late 2021, the Debunked Project Manager made changes to the recruitment strategy, and began to approach organisations who were already working on the topic of data literacy with their target audiences. Through this approach, Debunked workshops were offered through partnership with the National Adult Literacy Agency (NALA), Webwise, Maynooth University Access Programme and the patient advocacy group Vasculitis Ireland. The organisers were also approached by Probus Dún Laoghaire Marine to hold workshops for their members; in the end these were not realised within the timeframe of the project.

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[5] www.dublin.sciencegallery.com/bias

# Evaluation

## Evaluation Scope

The Science & Society Research Group[6] in Trinity College Dublin were engaged to evaluate the Debunked programme. A key aspect of the evaluation was to examine the participatory approach to shaping the Debunked workshops, and to determine whether this was an effective method of enhancing learning in informal educational contexts. An evaluation approach was developed to examine the outcomes of the Debunked programme, as well as the various inputs and factors affecting these. The subsequent sections of this report present the findings, and make a number of recommendations.

A Logic Model Framework was developed by the evaluation team, and was referred to and adapted throughout as the project plans evolved.

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[6] www.tcd.ie/education/research/research-groups/science-and-society/

| Inputs | Activities | Outputs | Outcomes | Potential Impacts |
|---|---|---|---|---|
| Debunked PI

Debunked Project Manager & wider ADAPT EPE team

ADAPT researchers

ADAPT Marketing/Comms manager

TCD Unit 18 – Community Engagement Manager + TCD Community Liaison Officer who is also a TCD academic staff member (historian)

Funding - Science Foundation Ireland | Co-creation events (May 2021)

Pilot event (June 2021)

Main workshops (September 2021 – April 2022)

Dissemination activities - The Web Conference: paper & presentation April 2021 & 2022 External evaluation | Workshop materials to live on ADAPT website – videos, workshop outline, facilitator guideline, moderator guideline

Social media content

Website updates

Evaluation report

White Paper | Individual attendees increased awareness of data literacy skills, and changed attitudes and behaviours in relation to misinformation and data literacy.

Educators passing on the lessons & skills they have learned in relation to misinformation and data literacy to their students.

ADAPT researchers & EPE team having an increased understanding of the level of data literacy amongst the general public. | Conceptual impacts: changes in knowledge, understanding, attitude, or awareness of data literacy and mis/dis/malinformation

Instrumental impacts: changes to policies, behaviour or practices related to data literacy and mis/dis/malinformation - e.g. new school or university curricula or public campaigns.

Capacity building impacts: ongoing skills-development & training for data literacy EPE work for ADAPT researchers; teacher/educator professional development programmes. |

**Table 1: Logic Model Framework for Debunked.**

## Evaluation Methodology

This evaluation took a mixed-methods approach (Rallis & Rossman, 2003)[7]. In order to gather quantitative data, it was decided to administer a pre-event survey in real-time during the Zoom workshops using the private polling feature, which allows the organiser to save the results and export these to a spreadsheet. The private poll feature means that participants can not see the results from the other attendees on their screens. The reasoning for running this as a poll during the Zoom call was to get as many people as possible to complete it while already engaged with the workshop. However, this meant that the pre-event survey had to be relatively quick, so as not to

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[7] Rallis, S. F., & Rossman, G. B. (2003). Mixed methods in evaluation contexts: A pragmatic framework. *Handbook of mixed methods in social and behavioral research*, 491–512.

overly impose on the flow of the event. The dimensions covered in this six-item survey included participants' previous experience in online workshops; comfort level for sharing opinions online; understanding of the term "data literacy"; perception of the threat of misinformation; views on the role of the public in shaping science and technology research, and level of interest in science and technology in the media. Due to the nature of the Zoom polling feature, these were all closed-answer questions, on a 5-point Likert scale. A total of 65 participants across the workshop series answered these questions.

In order to capture open text responses as well as closed-answer questions, the post-event survey gathered quantitative and qualitative data using the web application Slido[8]. Participants were invited to complete this survey at the end of the workshop, and some time was allotted to this; however, as it was shared during the closing moments of the workshop, there was no impetus for participants to stay on the call to complete this survey, and as a result, the completion rate for this was much lower than that of the pre-event survey - 38 responses were received out of 96 total attendees. The post-event survey probed reactions to the workshop content and facilitation, and results from the closed-answer questions are presented in Figures 1 - 16.

To support the quantitative data gathered mainly through surveys, other programme metrics were gathered, namely workshop registrations, attendees, and the number of ADAPT researchers trained and engaged (Tables 1 & 2).

Qualitative data was gathered using interviews, evaluators' observational field notes, and document review. Semi-structured interviews were carried out with the following Debunked contributors and participants:

| Interviewees | Number interviewed |
|---|---|
| Co-creation workshop participants | 3 |
| Representatives of partnering/collaborating organisations (NALA & Webwise/PDST) | 3 |
| ADAPT researcher (PI) | 1 |
| TCD academic collaborator (historian) | 1 |
| ADAPT Project Manager | 1 |

**Table 1: Evaluation Interviews**

The documents reviewed were notes compiled by the ADAPT researchers who acted as scribes and co-facilitators during the workshops, and one ADAPT researcher

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[8] www.slido.com

provided additional reflection in the form of a short open-text response questionnaire. All data was collected between May 2021 and March 2022.

Quantitative and qualitative data were analysed using a combination of evaluation coding (Rallis & Rossman, 2003, p. 492)[9], which involved the application of codes to qualitative data to assign judgments about the merit, worth, or significance of the programme (Saldaña, 2013, p. 119)[10], and thematic analysis, following the steps outlined by Braun & Clark (2006)[11]. Initial codes were generated, and these were grouped into themes. The themes are discussed further below.

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[9] Rallis, S. F., & Rossman, G. B. (2003). Mixed methods in evaluation contexts: A pragmatic framework. *Handbook of mixed methods in social and behavioral research*, 491–512.

[10] Saldaña, J. (2013). *The coding manual for qualitative researchers+ qualitative data analysis: A methods sourcebook*. Sage Publications.

[11] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77–101.

# Findings

## Overall Metrics

| Debunked Workshop (invited/public) | Date | Time | Registered | Attended |
|---|---|---|---|---|
| Co-Creation #1 (invited) | 05.05.21 | 17.30 - 20.00 | 5 | 5 |
| Co-Creation #2 (invited) | 12.05.21 | 17.30 - 20.00 | 9 | 9 |
| Pilot (public) | 23.06.21 | 18.00 - 21.00 | 41 | 9 |
| European Researchers' Night (public) | 21.09.21 | 11.00 - 12.30 | 34 | 18 |
| Trinity College Dublin Unit 18 (public, in-person) | 13.10.21 | 11.00 - 12.30 | 10 | 1 |
| Science Gallery Dublin (public) | 19.10.21 | 18.30 - 20.00 | 9 | 4 |
| National Adult Literacy Agency (invited) | 3.11.21 | 13.00 - 14.30 | 22 | 8 |
| Maynooth University Access Programme (invited) | 17.11.21 | 12.00 -13.30 | 20 | 16 |
| Webwise (invited) | 24.11.21 | 19.00 - 20.30 | 38 | 23 |
| Vasculitis Ireland (invited) | 18.01.22 | 19.00 - 20.30 | | 3 |
| | | | TOTAL: | 96 |

**Table 2: Details of Debunked workshops**

While Debunked did not meet the original target of 270 adults attending workshops, they collaborated with one organisation representing teachers and instructors of adult education (NALA) meaning that the participants' learnings from the workshop may have later been applied in classrooms and teaching situations and thus disseminated more widely among adult learners.

The Debunked team did not gather socio-economic demographic data from attendees, so it is not possible to ascertain whether they reached their original numeric target of more than 40% of attendees from groups facing educational or socio-economic disadvantage. However, Debunked did collaborate with two organisations dealing with underserved groups in formal education: NALA and Maynooth University Access Programme. They also reached educators via Webwise; this may have included some teachers working with young people with data literacy issues. However, the aim of using community gatekeepers as an access point for wider groups of adults who may not have developed critical skills was not fully realised. The original intention was to attract participants from the GCID catchment area, and as the workshops moved online and did not have a physical location within the target community, it became less of a local event aimed solely at residents of the Dublin docklands area, and more of a series aimed at the general public.

A Debunked participant and interviewee who works with adults with low levels of education expressed her concerns about this section of society, saying that *"a lot of people are really misinformed"* and that it *"scares [her] at a cultural level"*. While she attended the Debunked workshop in an individual capacity, she recognised the potential for Debunked to be valuable to the groups that she works with, but her inclination when asked about this was that people would be unlikely to attend a data literacy workshop of their own accord if advertised as a standalone ADAPT workshop. Her recommended approach would be to work with the intermediary organisations, and to embed an appropriately modified version of the workshop into existing programmes that people attend anyway - e.g *"adults with literacy difficulties who would attend computer classes..the group is already there"*. This interviewee mentions the importance of *"building relationships with whoever is coordinating the course. And then a session will happen."*

Both the Project Manager and PI interviewed expressed disappointment that it was challenging to reach adults outside of education despite data literacy being mentioned frequently in the mainstream media in recent years. A number of those interviewed discussed the use of the phrase "data literacy". Questions were raised by these interviewees as to whether potential audiences may have been less keen to engage as they did not want to perceive themselves as someone who is "data illiterate". Debunked workshop discussions revealed that reflecting on sharing something that turned out to be false or not entirely true drives strong emotion, with differents participants mentioning that they felt *silly, stupid, ashamed, regretful, irresponsible* or *foolish*.

Twenty-three ADAPT researchers undertook science communication and facilitation training with external consultants Stickydot[12], as well as with the ADAPT EPE team, after which they

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[12] www.stickydot.eu

each co-facilitated at least one Debunked workshop, either moderating conversations in the breakout rooms, or acting as a scribe. The Project Manager interviewed mentioned a range of challenges in attracting researchers to participate, including the fact that ADAPT had recently moved from Phase 1 to Phase 2 of their funding cycle, meaning that a lot of new staff with less experience of EPE activities had joined the centre. It was suggested also that the lack of in-person interactions in the centre (given that the majority were working from home due to the pandemic) meant that newer staff did not have the benefit of meeting experienced researchers or the EPE team to develop the confidence to volunteer for the Debunked workshops. It was also suggested that the timing of the workshops, outside of work hours, would be a barrier to some researchers in participating.

## Survey Findings

### Pre-event survey

Most people had attended online workshops previously, but for 10 people it was their first experience.



**Figure 1: Pre-Event Survey - Have you participated in an online workshop previously?**
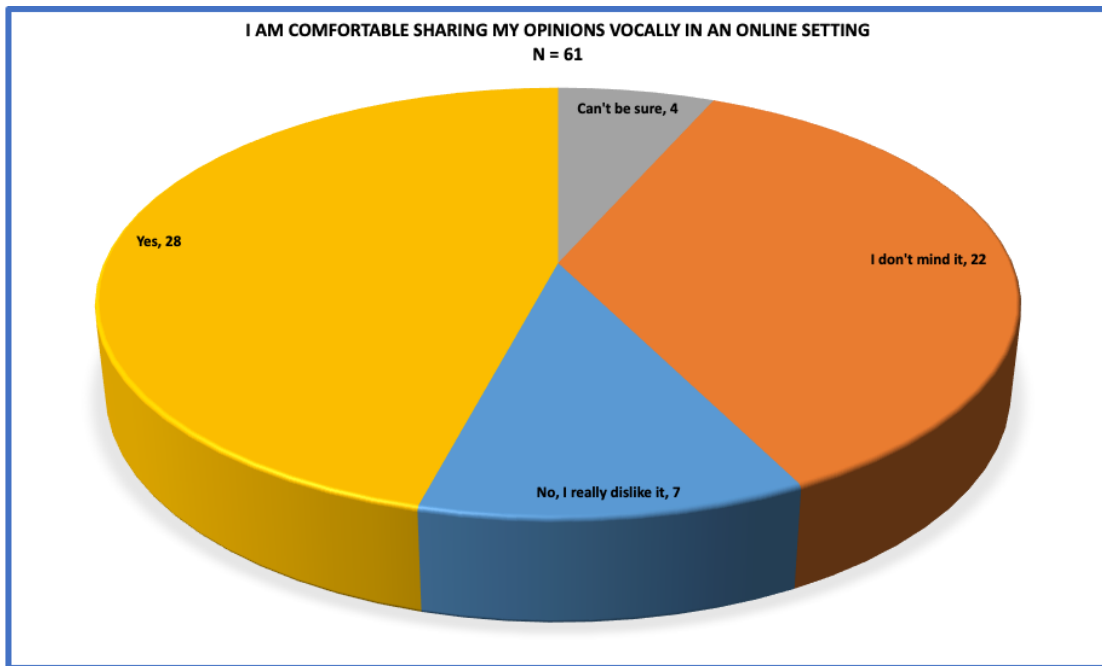
**I AM COMFORTABLE SHARING MY OPINIONS VOCALLY IN AN ONLINE SETTING**
**N = 61**

Can't be sure, 4
Yes, 28
I don't mind it, 22
No, I really dislike it, 7

**Figure 2: Pre-Event Survey - Level of agreement with the statement "I am comfortable sharing my opinions vocally in an online setting.**

The majority were comfortable sharing opinions in an online setting. Less than half of those surveyed were confident that they knew what the term "data literacy" meant in advance of the workshop, which implies that their motivation for attending was more related to the content or subject matter covered rather than the data literacy angle. However, the vast majority (63/65) of those surveyed agreed that "Misinformation and misrepresentation of data are one of the greatest threats to society today".
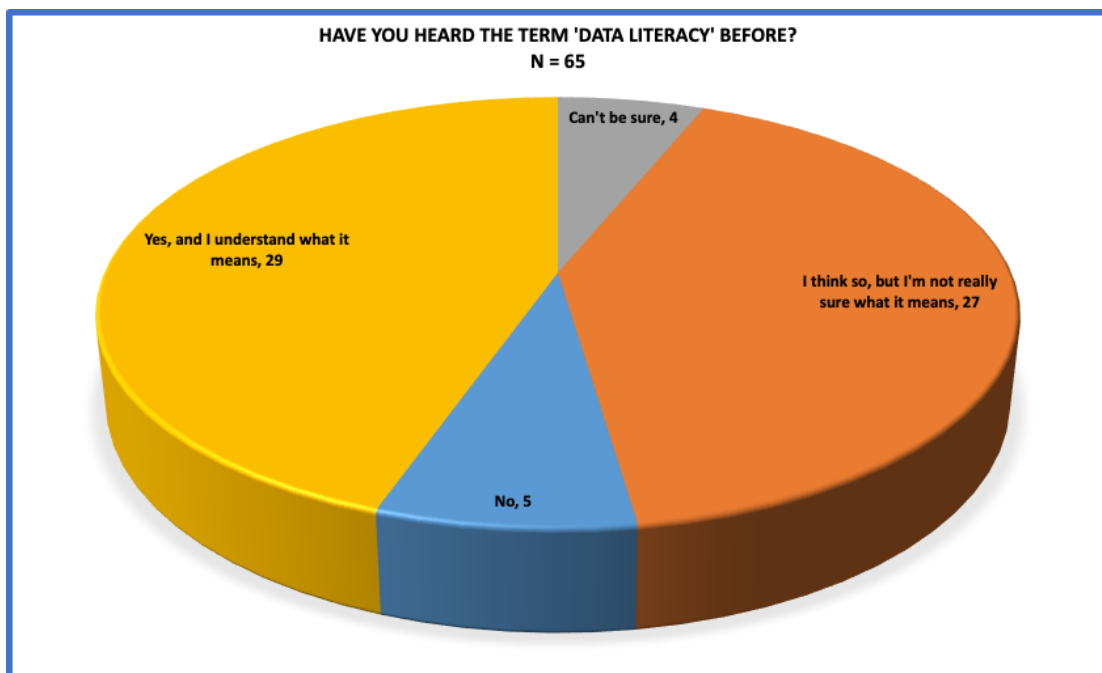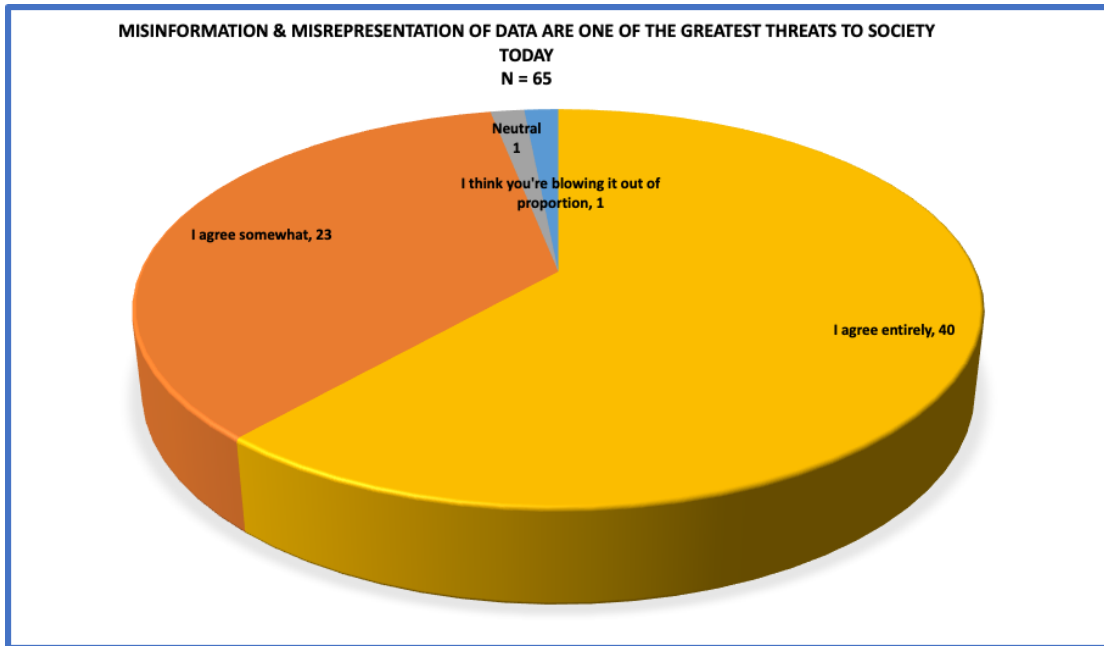


**HAVE YOU HEARD THE TERM 'DATA LITERACY' BEFORE?**
**N = 65**

Can't be sure, 4
Yes, and I understand what it means, 29
I think so, but I'm not really sure what it means, 27
No, 5

**Figure 3: Pre-Event Survey - Have you heard the term 'data literacy' before?**

**Figure 4: Pre-Event Survey - Level of agreement with the statement "Misinformation & misrepresentation of data are some of the greatest threats to society today."**

Three attendees claimed to be completely uninterested in science and technology stories in the media; however, all of these agreed somewhat or completely that the public and the people who will be affected by scientific research should have a say in how it develops. A further eight attendees have little interest in media stories relating to science and technology but recognise that they can be important from time to time, while the remaining fifty surveyed are interested, with fourteen of these struggling at times to understand the topics. Overall, the majority of respondents agree that the public and the people who will be affected by scientific research should have a say in how it develops.
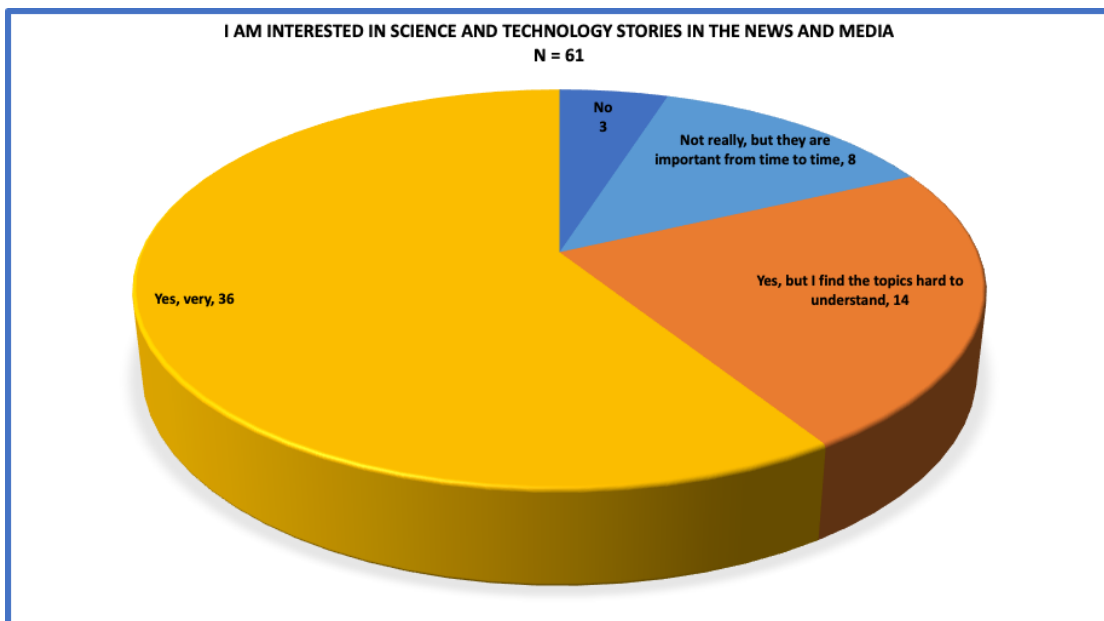


**Figure 5: Pre-Event Survey - Level of agreement with the statement "I am interested in science and technology stories in the news and media"**

THE PUBLIC AND THE PEOPLE WHO WILL BE AFFECTED BY SCIENTIFIC RESEARCH SHOULD HAVE A SAY IN
HOW IT DEVELOPS
N = 65

Not at all, leave it to the scientists, 2
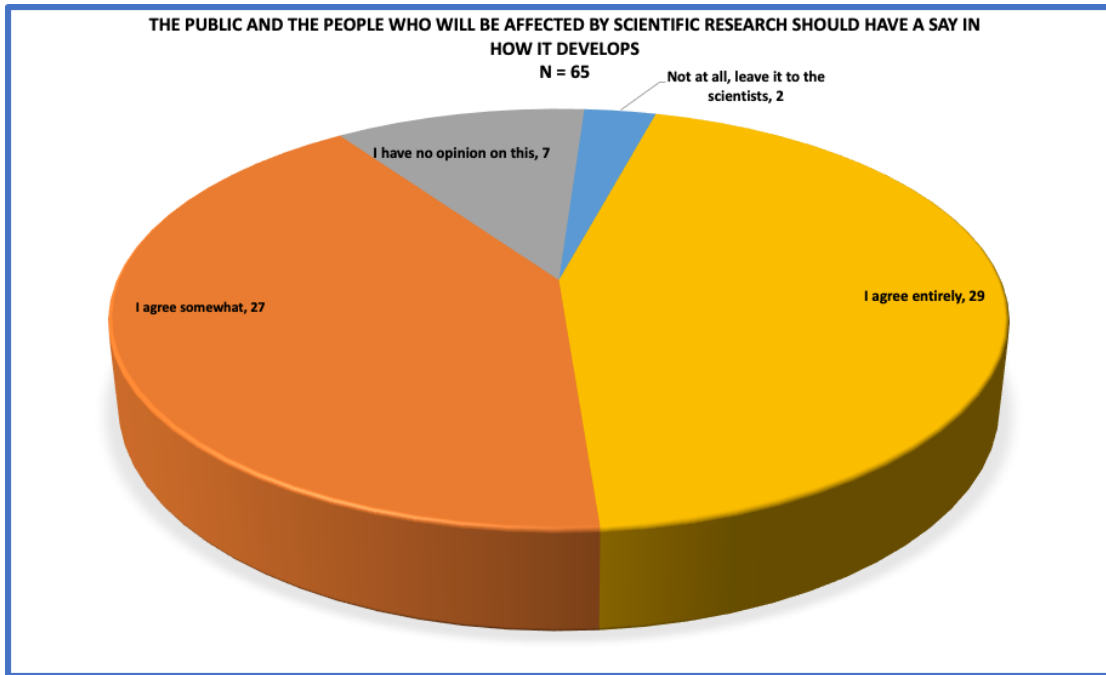I have no opinion on this, 7
I agree somewhat, 27
I agree entirely, 29

**Figure 6: Pre-Event Survey - Level of agreement with the statement "The public and the people who will be affected by scientific research should have a say in how it develops"**

## Post-event survey

Overall, the Debunked workshop series was a success in terms of delivery and quality of content. Of a sample of 38 attendees who completed evaluation surveys, there was an impressive 100% level of agreement with the statements that the workshop content was interesting and that the speakers were engaging, a very successful outcome. Open-text responses, as well as semi-structured interviews with six attendees reinforced this fact. One attendee noted: *"Wonderfully delivered, participant engagement was at the forefront and I felt very confident in adding my "two cents" "*
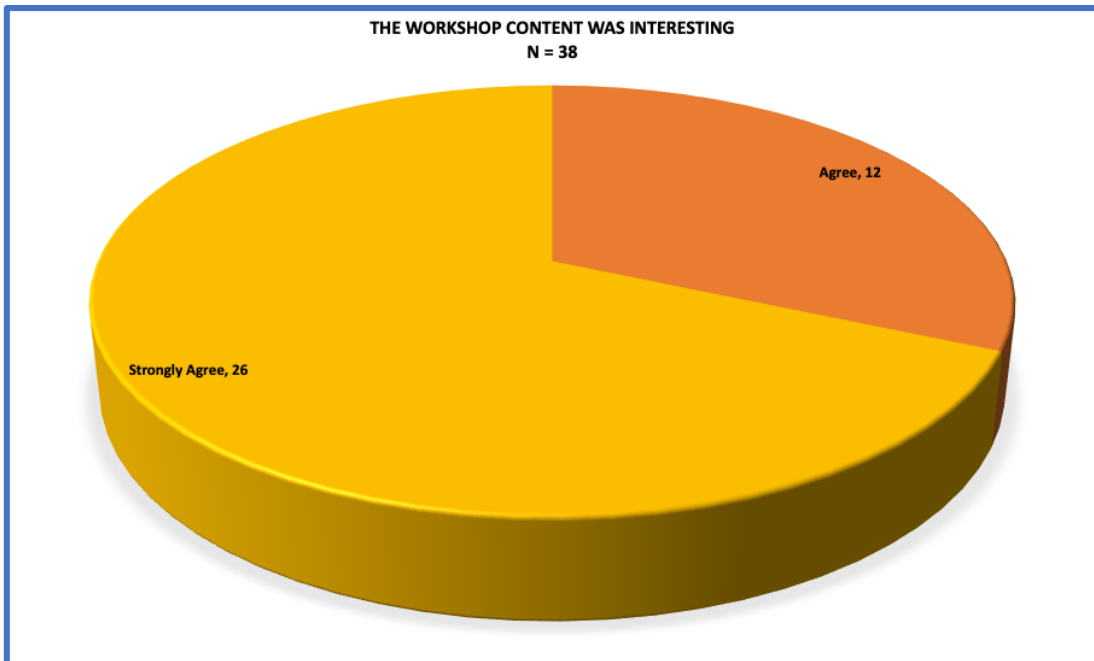


THE WORKSHOP CONTENT WAS INTERESTING
N = 38

Agree, 12
Strongly Agree, 26

**Figure 7: Post-Event Survey - Level of agreement with the statement "The workshop content was interesting."**

**THE SPEAKERS WERE ENGAGING**
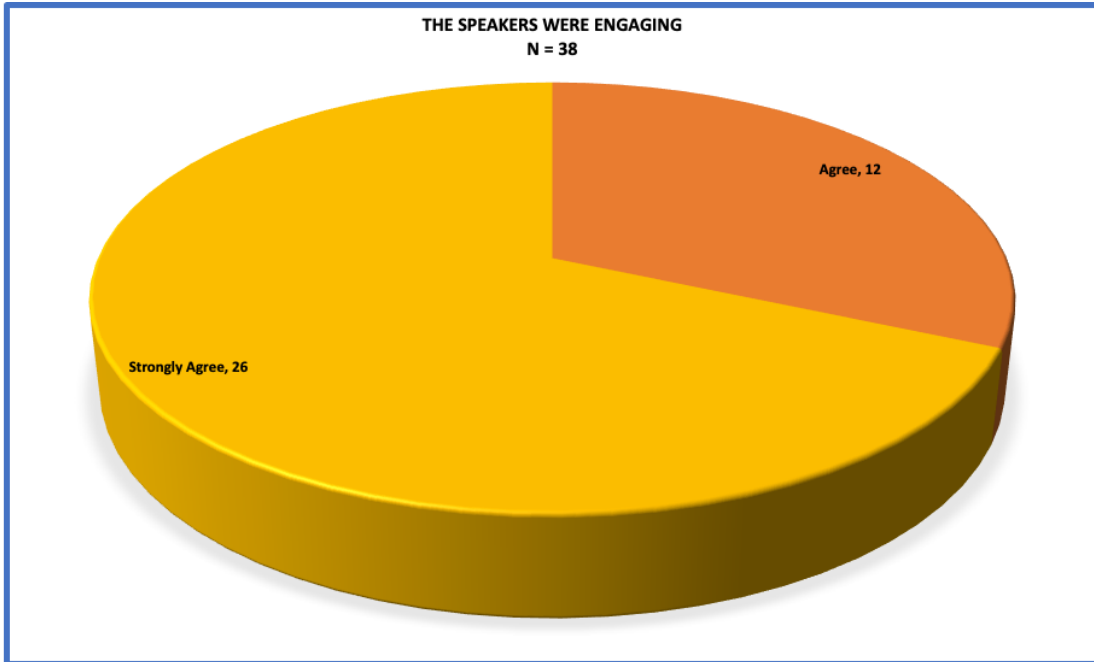**N = 38**

Agree, 12

Strongly Agree, 26

**Figure 8: Post-Event Survey - Level of agreement with the statement "The speakers were engaging."**

The majority agreed that breakout room conversations were well facilitated, that they would be interested in learning more about the topic, and that they thought other adults would be interested in the workshops.
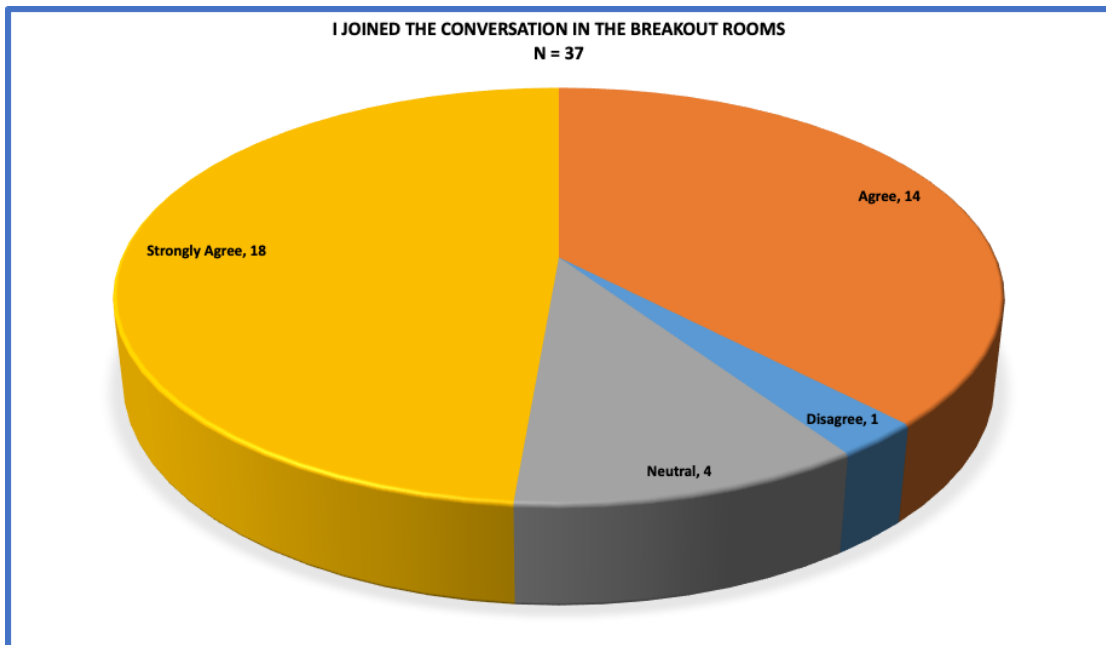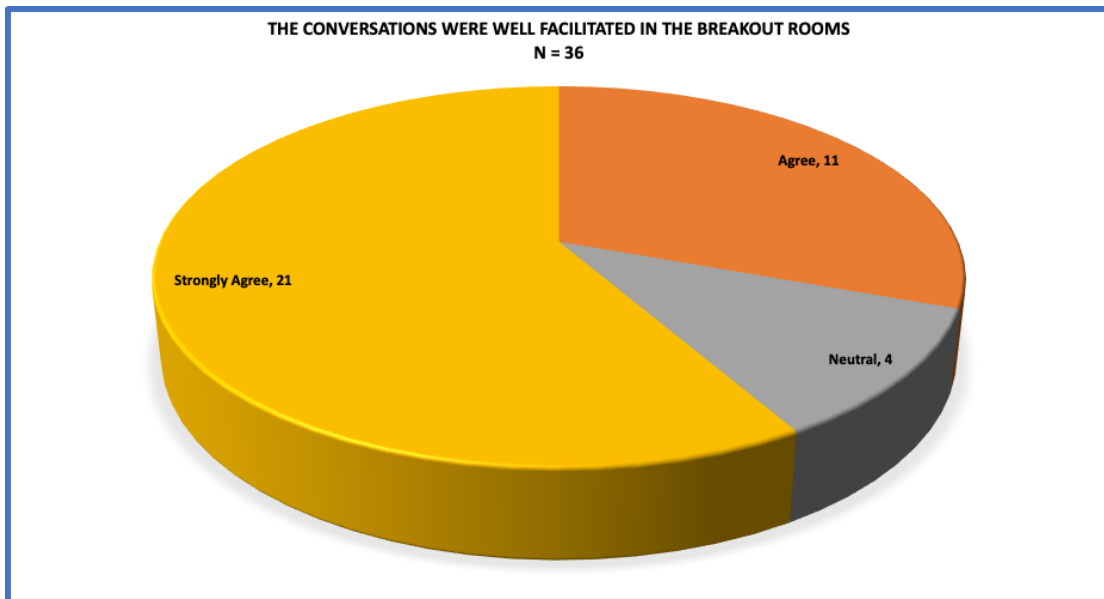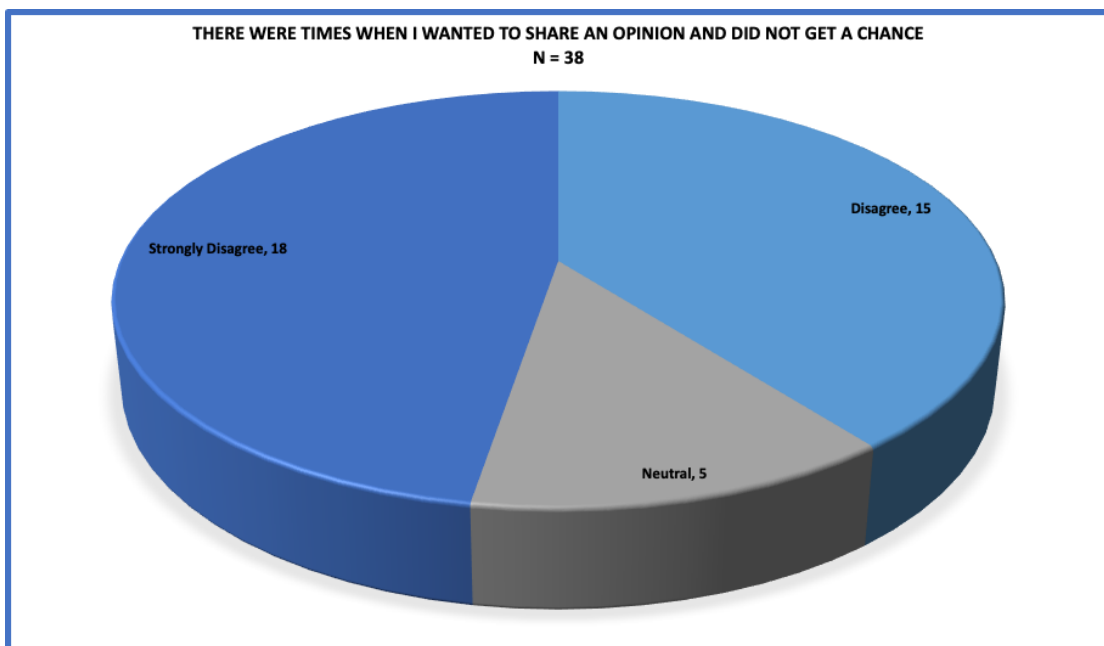


**I JOINED THE CONVERSATION IN THE BREAKOUT ROOMS**
**N = 37**

Agree, 14

Strongly Agree, 18

Disagree, 1

Neutral, 4

**Figure 9: Post-Event Survey - Level of agreement with the statement "I joined the conversation in the breakout rooms."**

THE CONVERSATIONS WERE WELL FACILITATED IN THE BREAKOUT ROOMS
N = 36

Agree, 11
Neutral, 4
Strongly Agree, 21

**Figure 10: Post-Event Survey - Level of agreement with the statement "The conversations were well facilitated in the breakout rooms."**



THERE WERE TIMES WHEN I WANTED TO SHARE AN OPINION AND DID NOT GET A CHANCE
N = 38

Disagree, 15
Strongly Disagree, 18
Neutral, 5

**Figure 11: Post-Event Survey - Level of agreement with the statement "The conversations were well facilitated in the breakout rooms."**

The space for interpersonal conversations was clearly a strength of the workshop format. The notes from the scribes and facilitators reveal rich discussions, and a number of respondents mention the breakout room chats with strangers as a highlight:
*"Engaging in interesting conversation and exchanging ideas.  There was a good balance of time between presentation and active participation. "*
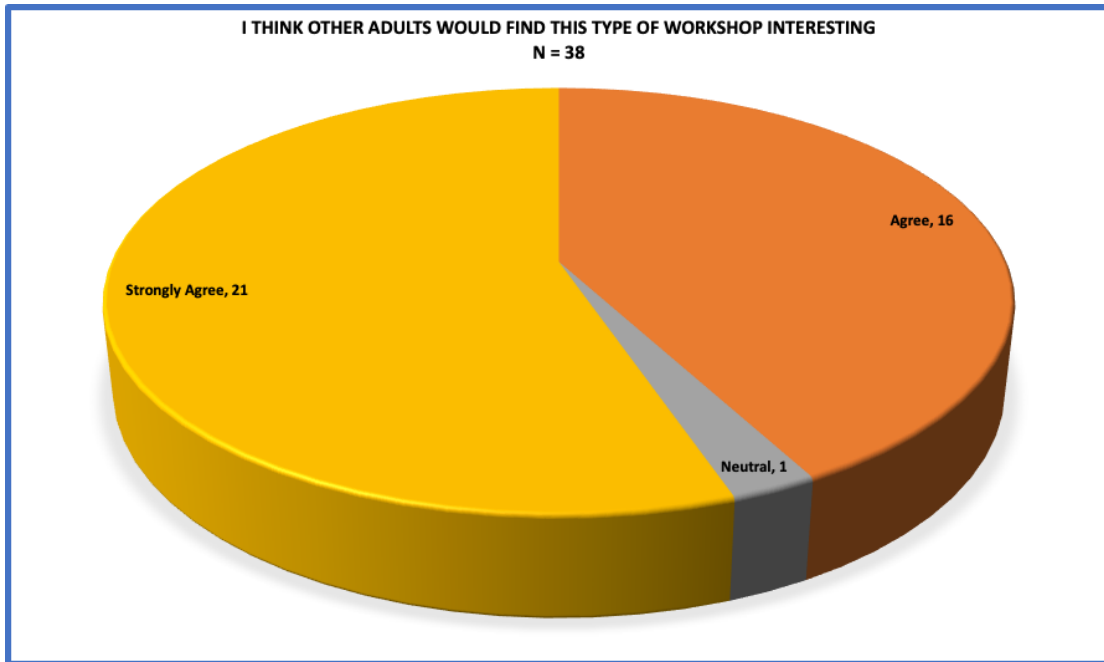
**I THINK OTHER ADULTS WOULD FIND THIS TYPE OF WORKSHOP INTERESTING**
**N = 38**

Agree, 16

Neutral, 1

Strongly Agree, 21

**Figure 12: Post-Event Survey - Level of agreement with the statement "I think other adults would find this type of workshop interesting."**



**I WOULD BE INTERESTED IN LEARNING MORE ABOUT THE TOPICS COVERED**
**N = 38**

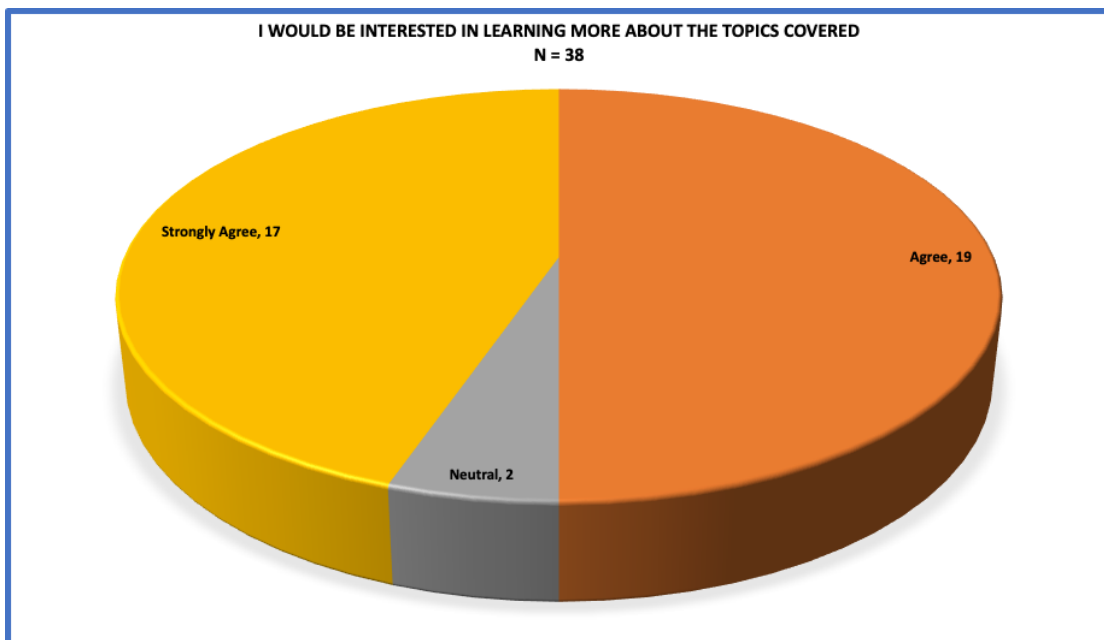Agree, 19

Neutral, 2

Strongly Agree, 17

**Figure 13: Post-Event Survey - Level of agreement with the statement "I would be interested in learning more about the topics covered."**

Four fifths of respondents learned something new, and a slightly higher percentage again reported that they felt that time passed quickly during the workshop. Feeling that time has passed quickly is indicative of a "flow state" – the subjective state in which a person functions at his or her fullest capacity with their attention so focused on a task, that factors

such as fatigue and boredom do not interfere (Csikszentmihalyi, 1990)[13]. Given that these were online workshops, this level of engagement from respondents is impressive, and is a testament to the well-planned and executed activities and workshop format. This high level of satisfaction overall from those in attendance indicates that irrespective of signups or attendance at the workshops, **Debunked achieved its aim to develop high-quality content and formats to engage adults with data literacy, which has proven to be effective in an online setting.**
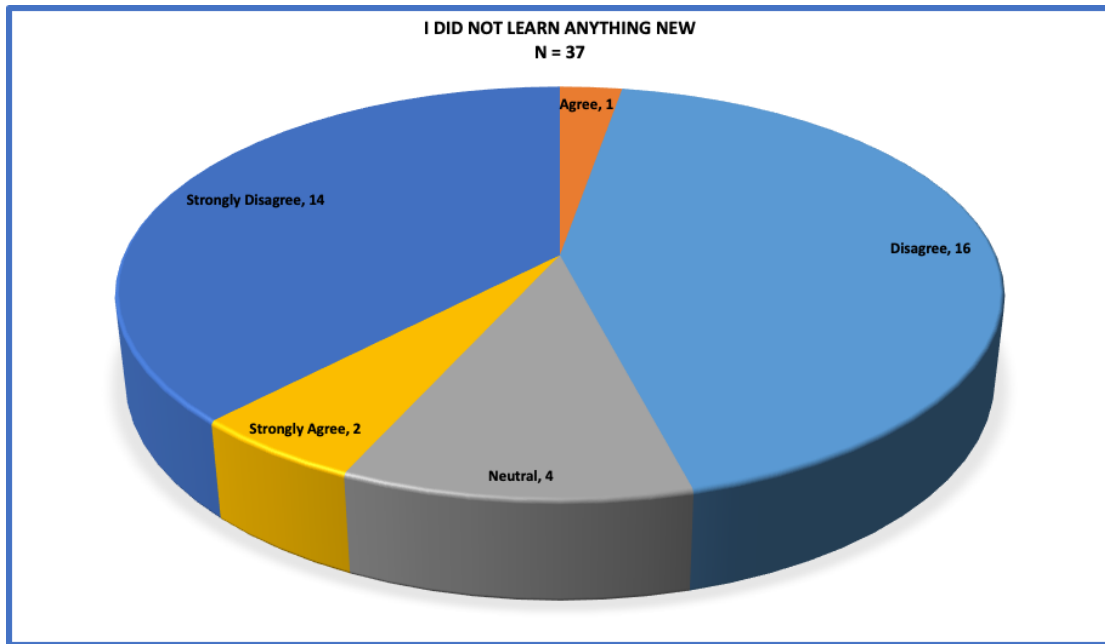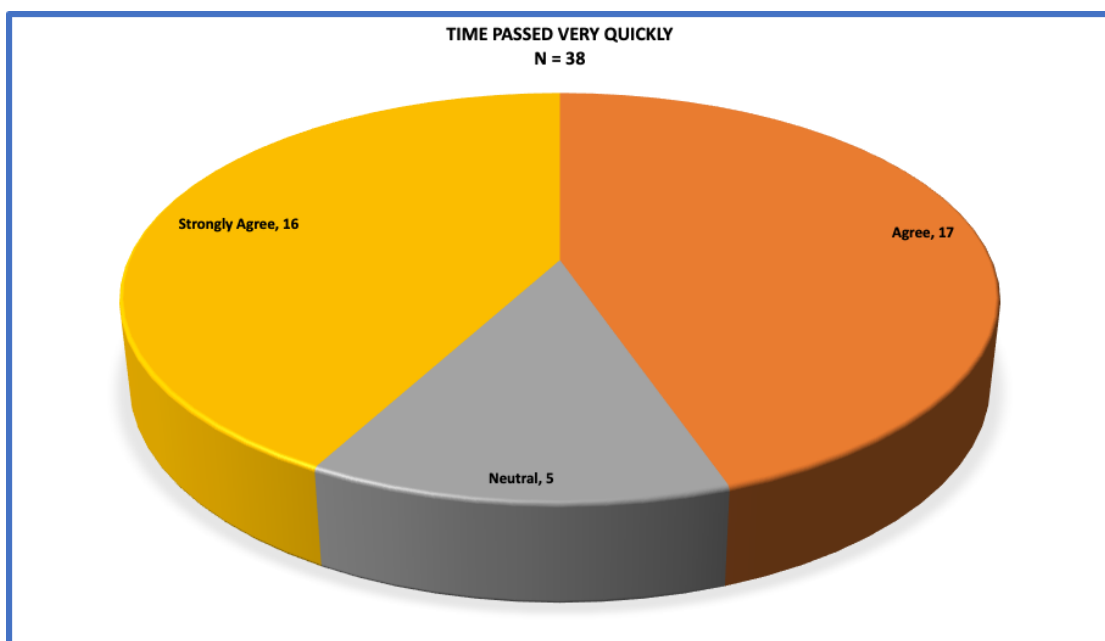


**Figure 14: Post-Event Survey - Level of agreement with the statement " I did NOT learn anything new"**

[13] Csikszentmihalyi, M., & Csikzentmihaly, M. (1990). *Flow: The psychology of optimal experience* (Vol. 1990). New York: Harper & Row.

Only 2 of the 30 respondents reported meeting participants with views that differed from their own, suggesting that the groups were relatively homogenous in their viewpoints. Whilst this is not surprising, the homogeneity of the audiences limits the scope for debate, dissent and increased awareness of diverse viewpoints, an issue critically entwined with data literacy and democracy.
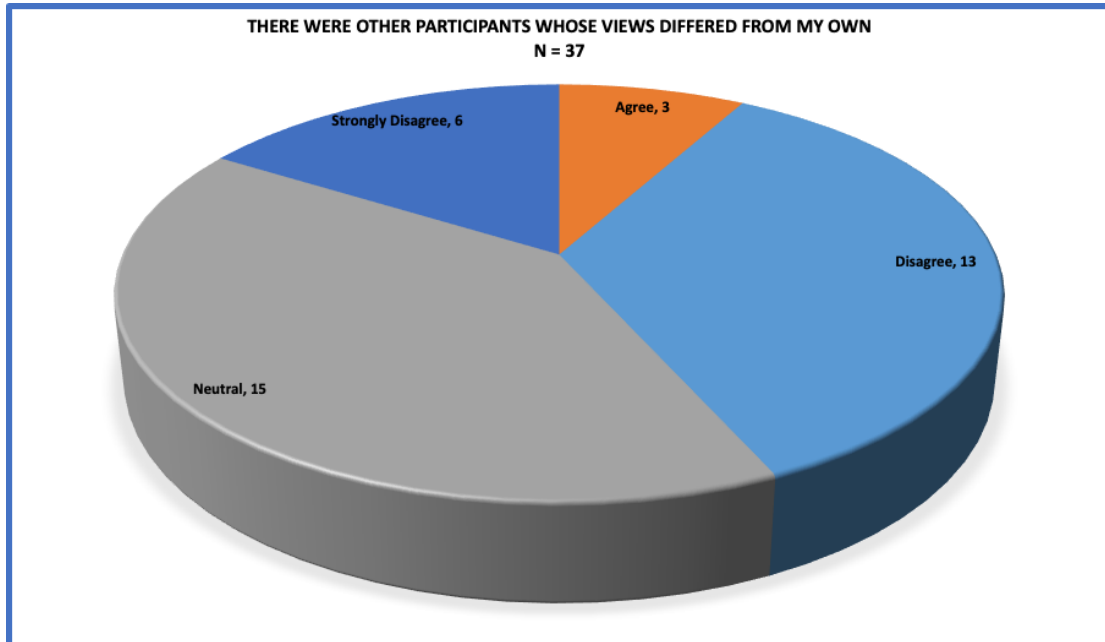


**Figure 16: Post-Event Survey - Level of agreement with the statement "There were other participants whose views differed from my own."**

## Themes

### Operational Challenges & Successes

An issue raised by a number of interviewees was the timing of the workshops (i.e. Summer - Autumn 2021). The ongoing Covid-19 pandemic meant that workshops were primarily held online, and the numbers attending were lower than anticipated, a source of disappointment to the Debunked team.

Respondents were divided as to whether the online format could work as well as an in-person event. In general those interviewed preferred in-person interactions, but for organisations with members around the country, providing an online workshop like this allows their dispersed network to come together to avail of this resource in a way that would be much more difficult in person, and almost all interviewed recognised that online has some benefit. However, it was widely suggested that the timing of the workshops (mid-late 2021) was unfortunate, as after two lockdowns due to Covid-19, public interest in online workshops may have waned. However, one of the organisations interviewed, who run webinars on a regular basis, stated that they saw similar levels of interest, as well as similar levels of drop-off between registered attendees and numbers actually showing up as they have done for other webinars, indicating that lower levels of engagement may be more to do

with "Zoom fatigue" and over-saturation of online trainings, workshops and webinars at this stage of the pandemic, as opposed to lack of interest in the Debunked topic or format.

According to one representative of a partnering organisation, Debunked was "*one of the most engaging webinars over the past two years*", while another noted "'*It was definitely one of the most interactive workshops that I've been in, you could really tell that a lot of thought was put into generating that interactivity....it was an inventive use of graphs, and encouraging or sparking conversation as well...I thought it was really really well done.*"

A further recurring theme in the interviews was the high level of satisfaction with the ADAPT EPE team coordinating and managing the Debunked project, praised by one respondent as "extremely professional". The ADAPT PI described the EPE team as being much more than support or management, but contributing greatly by bringing specific expertise in science communication and public engagement:
*"I wouldn't even consider [Project Manager] a support - [Project Manager] was a collaborator….which is for me, different than support, because support is there to support you - [Project Manager] obviously supported me, but she was so much more involved. She's driving the project."*

Participants' responses in terms of the duration of the workshop varied from one extreme to the other, with some feeling that the 90 minutes was too long, while others would have preferred longer:
*"While Zoom meetings can be tiring, I felt the workshop could be comfortably slightly longer to allow for longer breakout periods for further exchange of ideas. And a few more people to engage with."*

## Narrative & Storytelling

Many interviewees mentioned that they enjoyed the multi-disciplinary approach of the Debunked workshops, combining a story centred around misinformation in Irish history along with examples of misinformation or "cherry-picking" of data in numerical graphs. In the case of the statistics, the examples chosen were clearly related to understandable, topical themes (e.g. public health, Covid-19, climate change), or were connected to well-known brands (e.g. Yahoo, KFC).

For some, the historical element was more memorable, while for others, the graph examples were more powerful - clearly, the dual approach meant that the workshop was relevant and engaging for a range of participants with different interest areas and ways of learning. As one participant put it:
*"If I think about it, that's what I remember. I remember the story. Yeah. And the narrative, I suppose, for me is how I remember everything, you know? And I'm interested in stories and storytelling and people's stories. And, yeah, I think that's a really powerful, and maybe underused way for science to deliver its message."*

The resonance of the diverse examples was also highlighted in the responses to the survey item "What was the highlight of the workshop for you?":

- *"When [PI] confirmed that Yahoo were engaged in misinformation (rather than disinformation)"*
- *"The cumulative graph in Russian about misinformation and insights on Irish slavery."*

## Personal Relationships with Data and Misinformation

During the opening discussions of the Debunked workshops, participants were asked to reflect on times they might have shared misinformation online and to discuss within small groups - this led to many rich discussions and emotional responses. Examples of the topics which emerged through these discussion include the following:
- Public health - e.g. Covid related, including vaccination/anti-vaccination information
- Forwarding messages without thinking - e.g. during lockdown (army taking to the streets, martial law, suggestions of shortages of medical supplies, promoting stockpiling)
- Casual misreporting of scientific studies without having full details to back it up
- Fake news
- Conspiracy theorists
- Algorithms
- Scams relating to banking or credit card fraud, clicking on false links
- Topics relating to politics or democracy
- Censorship, freedom of speech, revisionism and "cancel culture"

When reflecting on a moment of sharing false or misleading information online, many discussants ascribed these behaviours being related to fear:
- "*when I was in panic mode at the start of Covid*"
- "*fear makes people susceptible to misinformation*"
- "*hysteria around certain things*"

Most described these actions as having occurred unintentionally, and many uttered sentiments of personal accountability, with feelings ranging from "*silly*", or "*foolish*" to "*angry*" and "*stupid*". However, one attendee at one workshop revealed that they on occasion share fake news, but "*it is for a joke, not serious*". A common theme within these discussions was the steps people took to correct what they had done - some apologising and correcting their mistakes, some blocking or unfollowing certain social media accounts, another donating to a particular charity related to the topic of the misinformation they had shared. Many mentioned learning from the situation. Interestingly, this is at odds with the reflection from one ADAPT researcher who believed some of the people participating in Debunked workshops *"just wanted to point out that they were not the kind of people who ever read disinformation".*

These discussions often led into conversations about the polarising nature of online interactions, with people talking about unpleasant online behaviour, "*keyboard warriors*", and the challenge of having conversations about mis-, dis- or malinformation with friends or family who have a different viewpoint to them. Some interesting socio-cultural reference points at the intersection of misinformation, data and democracy were raised during the

discussions. One attendee said that as a Muslim, they knew all about the public being misinformed, and another expressed the opinion that current racial tensions meant that sharing misinformation or other dangerous online behaviours could incite riot.

## Partnerships & Collaboration

Targeted partnerships were clearly an effective means for the Debunked project to reach its aims. Delivering education and public engagement interventions in partnership with other organisations can be mutually beneficial for ADAPT as well as for partnering organisations, as the collaboration with NALA and Webwise during the latter half of the Debunked project demonstrated.

For ADAPT, the benefit was in reaching increased numbers via access to partner organisation networks. For the partnering organisations, ADAPT and Debunked brought access to new knowledge from trusted research sources, which supports work they are already doing in the same space:
*"we are constantly looking for research on each of the areas of online safety and digital citizenship and to have up to date concrete examples or research is always really something that we're looking for and really important in our work."*

- *Webwise representative*

For wider audiences such as those who are already affiliated with these partner networks NALA and Webwise, their ongoing relationship with these organisations is what alerts them to events such as Debunked, which encourages exploration of new topics and increases ADAPT's profile. This is demonstrated in the following quote from a teacher who attended a Debunked workshop: *"Webwise is an amazing organisation and I use your resources all the time in class. I look forward to new resources covering data literacy. Thank you for the work you do and for introducing me to ADAPT."*

For NALA, the content was in line with the topics they were working on, but the timing and format may not have suited their regular webinar series. However, the NALA representative interviewed welcomed further collaboration with ADAPT and other organisations delivering EPE activities, mentioning that there are approximately 3,500 adult educators in Ireland, many of whom would benefit from access to, and engagement with cutting edge STEM research.

One interviewee who had links with both disability and patient advocacy groups as well as the public library system suggested these as potential access points for ADAPT to connect with broader networks of audiences who would benefit from the Debunked content.

# Discussion

## How well did the Debunked workshops meet their goals?

While the post-event surveys administered at the end of the workshops captured excellent feedback in terms of engagement and interest, it was not possible to capture longer-term changes in data literacy or awareness, given that these were one-off workshops. However, semi-structured interviews with three attendees conducted more than a month after their participation did reveal in all cases strong recall of the content, and reports of their application of the skills and awareness developed through the workshop. One interviewee stated *"I'm twice as cautious now, because of the way that it was explained in that workshop"*.

Debunked is an engaging format which was expertly developed to allow non-domain specific audiences to encounter mis, dis, and mal-information through meaningful examples and thought-provoking exercises and conversation. Many respondents and interviewees expressed a desire to go deeper into the topic, or to bring the workshop to other groups that they worked with, e.g. with Arts & Humanities undergraduate students, with other community or adult education groups, or with wider groups of teachers and educators.

A recent report from the Paris 21, an international body promoting responsible data production and use, entitled "Advancing data literacy in the post-pandemic world"[14] outlines the various methodologies for "doing" data literacy, originally described by the School of Data[15]. These efforts are categorised as short-term, medium-term, and long-term, with short-term interventions described as including "community events with a more informal or social dimension with peer-learnings". Debunked clearly falls into this category, and as such, achieved the goals set out to provide an entry-point to data literacy for adult participants. Within the realm of these short-term interventions to support data literacy, Debunked is a powerful public engagement format, and a valuable addition to the pool of available non-formal learning resources on the subject. The Paris 21 report indicates that data literacy initiatives should consider going beyond supporting individuals with data literacy and moving to community and organisational level. In its pilot year, Debunked laid some excellent groundwork in building relationships with relevant communities, and co-creating content with them. Future iterations of the programme will benefit from this strong foundation, and the legacy materials will be valuable for educators and community leaders.

Overall, the evaluation data indicates that there would be interest and appetite for a medium- or long-term version of  Debunked. The PI surmised that "*people were hungry for more*", and one attendee noted in a post-event survey that it "*seems like the tip of the iceberg. Follow ups would help*". Two of the participants interviewed mentioned they had hoped to hear more about follow-on opportunities to engage further with the team and the subject, and one of these suggested that if a format such as a publicly-available module on data literacy were to be offered by Trinity College Dublin, he would be keen to partake.

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[14] https://paris21.org/sites/default/files/inline-files/DataLiteracy_Primer_0.pdf
[15] www.schoolofdata.org

## Co-creation

Developing workshop content using a co-creational approach was central to the Debunked programme. The approach used was for the ADAPT team and core collaborators to develop a proposed workshop format, to invite non-affiliated individuals to join two pilot workshops as participants, and to elicit feedback from them on the effectiveness of the content and format. Based on this feedback, the content was adjusted for the main workshop series. The choice of Irish social history as a context was made before the co-creation phase, and was the result of the high interest in the topic when previously presented by the collaborating historian as a stand-alone lecture. While the topic no doubt played a large part in attracting around 500 viewers when this was presented live, there were myriad factors at play in its popularity, in particular the timing (January 2021, during full Level 5 restrictions and lockdown), and the fact that it was hosted by Dublin City Libraries as their Annual John. T. Gilbert Memorial Lecture. Dublin City Libraries has over eighteen thousand followers on Twitter, in comparison to the approximately five thousand following the ADAPT Centre.

The three interviewees who had volunteered to be involved in the co-creation phase, all mentioned that they appreciated their opinions being taken on board in the development of the workshop, although two mentioned that it was somewhat unclear to them what was going on in relation to co-creation. One of these stated that "it was quite a pleasant experience for me as a participant" and said that she didn't know that she was "specifically aware of the co-creation piece." The other would have liked to have been clearer on the "the purpose or the end goal".
The contributing academics reported adjusting the content and format in response to the participants' input during the co-creation phase. A major input from the participants was the preference for more Irish examples, rather than those from the US - highlighting the importance of using locally relevant contexts to engage audiences when developing EPE content. More practical feedback covered text size on slides, and levels of satisfaction with videos and breakout rooms.

Two different interviewees who had been part of the process worried that their voices were too loud or that they were too vocal - one noted that due to the small size of the group "it did feel like maybe my opinion had too much weight.", as well as noting that "we were quite different, which is really good. But we weren't really that diverse, either." The other worried that they might have been steering the conversation off-track, but also noted "I wasn't sure where the track was".

One co-creation participant interviewed pointed to the value of intergenerational dialogue which was a feature of the Debunked co-creation workshop:
"people in the older age groups are very important, and their experience and their knowledge is very, very valuable, valuable because they've lived through things now. And to have an older age group working together with a younger age, I think it can only benefit."

While the original idea for the workshop series was developed by the PI based on his research and teaching, the co-creational and storytelling element of the Debunked programme was introduced and guided by the EPE team. The PI reported initially feeling some discomfort in working in this way, and realising that the workshops needed to evolve from his original vision. However, he mentioned that he "made peace with it", recognising the significance of the science communication and public engagement expertise of the ADAPT EPE team.

EPE teams and science communicators can support researchers to find engaging, memorable stories to communicate their work, and this can be amplified by working with experts from other disciplines. One challenge, however, was for the ADAPT project team to comfortably respond to audience questions related to the historical example on occasions when the historian was not present at a Debunked workshop. It should be recognised that while collaborations across disciplinary boundaries can be a powerful pathway to engage diverse types of learners, it is challenging to build sustainable partnerships if and when one party is more invested than the other.

## Partnerships

It is challenging in a one-year programme to establish meaningful relationships with relevant partner organisations. In the case of Debunked, there was some misalignment between the expectations and the actual capabilities of the initial partners in terms of accessing community groups. In particular, TCD's Unit 18 acts as a broker working with a number of community groups in the Dublin Docklands area. While the reach of such a partner is potentially greater than one individual organisation, a more localised and better attended co-creation process for Debunked may have been possible if one of these local community groups had been a core part of the project from proposal stage.

Partnerships with organisations who already have specific goals may require extra efforts to adjust the project approach to match the needs of the audiences they serve. In the case of the Debunked workshop offered through NALA, the timing was longer than NALA's usual 45-minute lunchtime webinar series, and as a result, despite high initial registration numbers, relatively few attended the workshop. Webwise primarily serves teachers, and while their representatives were hugely complimentary of the Debunked workshop content and facilitation, the major change they would like to see in a similar workshop in the future would be to include specific discussion points around curricular links for teachers. They also suggest that their involvement early in the planning for a workshop like this would allow them to support the ADAPT programme developers to embed this.

It is important to note that educators like Webwise and NALA do not expect researchers and science communicators to be education experts - they value the knowledge they bring from their domain expertise. But if this knowledge exchange is to be embedded in the school day or is targeted at teachers as professional learning, it should be supported by pedagogical underpinnings and curricular links. Long-term trusted partnerships with educational organisations or educator advisory groups would be beneficial to support researchers and EPE teams in their planning and project delivery when working with schools or teachers.

Overall, the workshops delivered in cooperation with NALA and Webwise were a success from the viewpoint of the partnering organisations, providing the communities they serve (primarily educators) a deeper insight into the topic of data literacy, and an opportunity to discuss the thought-provoking content with one another and with disciplinary experts. However, it must be noted that working with a partner organisation meant that the audience was easier to access, but was quite homogenous, meaning that participants did not have a chance to come into contact and conversation with people with significantly different

world-views from their own. A challenge remains for STEM communicators to reach diverse audiences and to engage them in inclusive and meaningful ways. The aim of Debunked to bring multiple viewpoints together may have been overly ambitious for a one-year programme, but through building trusted relationships with partner organisations, and by growing Debunked from a series of short-term workshops into a programme of repeated engagement over multiple sessions, and by continuing to support the programme with expert EPE management, this ambition could be realisable in the medium to long-term.

# Recommendations

The following section contains eleven recommendations which may be useful for the future of the Debunked programme, the wider ADAPT EPE programme, or other organisers of EPE activities in Ireland.

## Recommendations for ADAPT EPE Team

- Organise a structured reflective debrief with facilitators and scribes using written notes and group discussion immediately following each workshop, for ongoing monitoring, to celebrate high points, as well as to examine what might be improved in the future.
- Embed the successful elements in future EPE design: structured workshops with time for presentation, discussion, reflection; bringing in expertise across disciplines; engaging speakers with clearly defined stories; locally and culturally relevant examples and reference points.
- When developing collaboration across disciplines or with external partners to deliver EPE activities, ensure commitments are clearly laid out in advance. Following commitments at proposal stage, finalise expectations for all partners in the early stages of the project.
- To reach audiences, continue the commendable approach used in Debunked and partner with relevant organisations whose efforts are complementary. Be flexible and responsive to their needs and standard practices.
- Engage with such partners earlier (either in proposal stage, or during workshop design process) to benefit from their insights into how to address specific needs their audiences/members may have, e.g. curricular links for educators, extra supports for disabled people, etc.
- Consider developing a few versions of workshops or events of different durations that may be offered, depending on the needs of a specific audience group or setting.
- Consider offering Debunked as an ongoing informal series, or develop into a module for accreditation within formal education - e.g. a micro-credential in a university for non-STEM students, a Junior Certificate short course, or an accredited professional learning module for educators.

## Recommendations for Researchers

- Utilise and leverage the expertise of EPE teams and science communicators to devise engaging formats and to support the recruitment of relevant partners and audiences for programmes.
- Provide members of your audiences with pathways and resources to explore your topic in greater detail, to take their interest to the next level beyond their initial engagement with your subject area.

## Recommendations for Wider EPE Community

- STEM EPE programmes in Ireland could consult with adult education and adult literacy programmes in regards to potential collaboration to reach audiences eager to engage with resources and training on offer from the STEM sector.
- Partnerships between certain STEM EPE efforts and patient advocacy groups (e.g. via the PPI Ignite Network) may be mutually beneficial. Data literacy is a cross-cutting

issue relevant to citizens across the board, but particularly for those who have to

make important decisions about their healthcare on a regular basis.

# Conclusion

**Data literacy is personal, and engaging with it leads to emotional responses.**

Discovering that we are susceptible to making mistakes, and that we can easily be drawn into undesirable behaviours can be a powerful, yet uncomfortable experience. Debunked created a safe space for participants to share their experiences of this discomfort with strangers - this is a powerful approach to data literacy engagement. Coupled with storytelling centred around history, as well as around statistics, Debunked offered an engaging and informative entry-level data literacy learning experience that catered to a broad range of audiences outside of a formal educational setting.

*"I enjoyed having the opportunity to hear from other participants as well as the facilitators. Great workshop - thank you!"*

Debunked #DiscussAI