

Accessibility is imperative for inclusion

Each year, scientists present their work at conferences and other public forums and use a range of illustrative materials to help communicate the science more effectively. Much of this accompanying material is then published or posted online. Improving communication is critical because it facilitates collaboration with colleagues, policy makers, and key stakeholders and helps us share our science with broader publics. However, in preparing these supporting materials, one audience group has consistently been forgotten: people with sensory disabilities. People with vision and hearing disabilities make up 19% of the US population but only 4.5% of all doctoral recipients in 2014 (the most recent reporting year from the NSF). Neglecting the needs of these individuals in public scientific presentations creates a considerable barrier to their participation in the sciences.

Many of the core principles of accessibility for presentations are about color choice, proper use of headings, and clearly labeled figures. These design elements improve experiences for all audiences but are of critical importance to people with sensory disabilities. Given the importance of public presentations for building professional networks and developing new contacts, accessibility benefits the entire scientific community. It removes barriers for presenters and audience members with disabilities, while facilitating communication and connections between scientific peers that last far beyond any single event.

Professional scientific societies have made considerable and intentional strides toward inclusivity. However, the primary methods of professional communication and socialization – conference talks, seminars, and poster sessions – often present barriers when steps are not taken to accommodate and engage individuals with sensory disabilities. Small changes, like making presentations and posters available online before talks, are within the purview of societies and conference organizers, and could make an important difference to users of assistive technology such as screen readers.

Increasing the engagement and participation of people with sensory disabilities is almost never mentioned in professional communication resources. Indeed, the advice they give sometimes contradicts established guidelines, encouraging presenters to eliminate captions and text on slides or making statements such as “audiences can read your slides too”, which fail to acknowledge the presence of scientists who cannot. These articles can give the impression that disabled scientists aren’t a part of the community, don’t attend public presentations, don’t present their own work, and aren’t reading research articles or consuming web resources. As both creators and consumers of presentations, the contributions and needs of scientists with disabilities deserve to be addressed.

The most important step that individuals can take is simple: “consider accessibility”. This can mean evaluating color choice and contrast, using headings and document markup, modifying graphic design choices, supporting graphic elements with text, and uploading presentations to open platforms before the presentation is given. Simple changes – for example, using “alt-text” (for HTML) or object description fields to describe images in presentations – will help ensure access to image content for people who use screen reading technology. Such changes can make a big difference in overall accessibility of documents and presentations, and often improve presentation quality for everyone.

Assistive technologies (hardware and software designed to reduce barriers in reading and writing documents) have improved substantially in recent years and provide innovative solutions that support the inclusion of people with disabilities. Most modern presentation software programs and applications, including PowerPoint, LibreOffice, and Keynote, have built-in tools that can help identify things like missing slide titles, low contrast images, and un-ordered text boxes, which make access difficult for many. These tools use standards developed for the World Wide Web (eg W3C Web Accessibility Initiative: <https://www.w3.org/WAI>), making it relatively straightforward to create documents and presentations that are suitable for use with screen reader technologies.

Accessible presentations are not a panacea. Papers and posters alone will not fix structural barriers to full inclusion and equity for people with disabilities in the sciences, but they are a concrete step in the right direction. We are seeing a sea change in the way we perceive and address representation in academia and society. Our biases, conscious and unconscious, must be constantly challenged if we are going to build an academic community that reflects the breadth of skill and ability within everyone. We have made great strides in understanding the role of diversity, stakeholder participation, and equity in undertaking science that will lead to sound policy decisions. Consciously choosing to design accessible scientific content can help ensure that *all* of our colleagues, students, and public outreach audiences can learn about the natural world together.

More information on accessible presentations is available as part of the preprint: Goring S, Stack Whitney K, Jacob A, et al. 2017. Making scientific content more accessible. *Authorea*; doi.org/10.22541/au.150844289.92609826.



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