

Blind and visually impaired (BVI) individuals face significant challenges in science due to the discipline's reliance on visual elements such as graphs, diagrams, and laboratory work. Traditional learning materials, such as Braille and large-print textbooks, are often scarce or delayed, while practical experiments are rarely adapted for accessibility. Additionally, mainstream educators lack the training to effectively support BVI students, and Teachers for the Visually Impaired (TVIs) often lack scientific expertise. As a result, BVI individuals remain underrepresented in scientific jobs, reinforcing a cycle of exclusion.

However, technological advancements and inclusive initiatives are opening new opportunities. Outreach programs, such as those led by French associations, aim to make science engaging and accessible for BVI individuals through multi-sensory learning experiences. Tactile models, 3D printing, and auditory representations help to understand scientific concepts, while BVI facilitators act as role models, demonstrating that scientific expertise is achievable. Hands-on involvement in these activities fosters confidence and interest in scientific careers.

Beyond sparking interest, equipping BVI students with the right tools and skills is crucial for their academic success and to become a student in astrophysics. Early exposure to assistive technologies such as command-line interfaces, LaTeX for mathematical notation, and programming languages like Python enables BVI students to navigate scientific studies independently. Artificial intelligence (AI) tools further enhance accessibility by converting visual data into descriptive text. A ythree-day summer school in 2024 demonstrated the effectiveness of these interventions, with participants successfully integrating into university-level science programs.

At the professional level, research careers offer promising opportunities for BVI scientists, especially in computational fields like bioinformatics and astrophysics. By leveraging coding, data analysis, and AI-driven tools, BVI researchers can conduct high-level scientific work without relying on direct visual observation. Additionally, alternative data-processing methods, such as sonification, can uncover new insights. The presence of BVI scientists enriches research environments by fostering clearer communication, stronger collaborations, and more inclusive practices.

Despite these progress, systemic barriers persist. The lack of accessible educational resources, teacher training, and institutional support continues to hinder BVI individuals' progress in science. Addressing these issues requires sustained efforts in mentorship, technological development, and educational policy reform. Ultimately, BVI individuals have the potential to make valuable contributions in Research. By fostering inclusive learning environments, providing tailored support, and advocating for greater accessibility, the scientific community can break down barriers and create a more diverse, innovative, and equitable field.