

“ PhD researchers are now providing their expert knowledge within industry, supporting HR teams in fostering a more inclusive workplace for neurodiverse individuals. ”

Innovative neurodiversity research tackles productivity and skills challenges

Ground-breaking research into technology and neurodiversity by Made Smarter Innovation-backed academics has inspired a fresh approach to tackling industry's productivity and skills challenges.

The innovative study by the Centre for People-Led Digitalisation (P-LD) and BIM4Water, a cross industry group in the water sector, demonstrated the far-reaching benefits digital solutions can have for neurodivergent people, business and society.

The award-winning research delivered by the Made Smarter Innovation-funded research centre based in Bath, Nottingham and Loughborough universities, inspired additional research, new digital tools, and increased industry engagement and awareness.

Sherrie Rad, Innovation Lead for Made Smarter Innovation, said: *“The future of manufacturing might be driven by technology, but it will be powered by people.”*

“The P-LD has brought academia and industry together to generate and implement people-led solutions that enable UK manufacturers to embrace digitalisation with confidence. Its work on increasing equality, diversity and inclusion in the workplace is an exemplar of what can be achieved through collaboration.”

Prof Linda Newnes, Director of the Centre for People-Led Digitalisation, said: *“What emerged from our activities is a change in ethos across industry and the facilitation of open discussions on creating equitable workplaces.”*

“We have a valuable community that can help solve multiple challenges including the skills gap, labour force and productivity, which is good for the individual, society and UK PLC.”

THE INSPIRATION

Digital technologies have the potential to transform UK industry, but one of the biggest challenges is the 'human' element. For example, the digital skills gap, high vacancies rates across sectors, technology adoption that fails to support human capability, employee resistance, or a lack of leadership support or vision.

To realise the full potential of digitalisation, industry needs to create a digitally engaged workforce by unlocking the potential of what they have and those out in the labour market.

While progress has been made to create a more diverse workforce by addressing characteristics such as gender, ethnicity and age, the neurodivergent community - those conditions which include autism, ADHD and dyslexia - have emerged as an overlooked and untapped reservoir of talent.

Research has shown neurodivergent individuals possess workplace strengths that can result in being highly productive, creative and innovative, often with a focus in STEM subjects. However, up to 70% of neurodivergent people are unemployed, and those who are employed can often be underemployed¹.

Change is required, not only for the benefit of these individuals, but to address the challenges that the manufacturing sector faces.

THE INNOVATION

To explore how digital innovation could enable change, P-LD and BIM4Water embarked on research aimed at enhancing the employment prospects of neurodivergent individuals, enabling them to access and thrive in the workplace, raise sector awareness and equip them with the knowledge to recruit without boundaries and tackle the resource shortages head on.

The collaboration began with research on how digital technology and neurodivergence can co-create equitable workplaces. Undertaken by Sam Stephens, an undergraduate in the Department of Mechanical Engineering at the University of Bath (UoB), he designed digital solutions to assist neurodivergent individuals in the workplace. These included using AI tools to make emails more accessible and suitable for the intended audience, creating 'watchable' emails for those with ADHD

who prefer visual content, and gamifying tasks to enhance employee enjoyment and engagement.

These ideas, tested by people in industry to evaluate their usefulness and viability, were successful, and the research was published and presented at industry conferences such as Digital Construction Week, 2023. Sam subsequently won the Geoff Herrington Medal and Innovation Award.

This innovative research led to further opportunities among P-LD partners and in the appointment of two doctoral studentships to continue and further the research.

The UoB appointed two PhD psychology students, both of whom identify as neurodivergent. Matthew Punter is investigating how digital solutions can solve the autism employment gap, continuing the partnership with BIM4Water, and has presented the research at Digital Construction Week 2024. George Bentley's PhD, measuring digital burnout in the workplace, will initially be looking at the whole workforce and then focusing on autistic people.

Members of the P-LD from the Department of Mechanical Engineering, the UoB's School of Management and the Centre for Applied Autism Research in the Department of Psychology, also funded a student internship to work with economist Dr Aida Garcia Lazaro to analyse existing labour force and neurodiversity data. The revelation that 37% of the neurodivergent working population are employed, compared to 80% of the neurotypical working population, was a key finding in a paper² led by Dr Layla Branicki. The research, published in a high-ranking journal, explored the factors shaping the employment outcomes of neurodivergent and neurotypical people and the role of flexible and homeworking practices.

P-LD also supported the ongoing development of SOFA (Stories Online for Autism: SOFA-app.org), a free mobile app co-developed by the Centre for Applied Autism Research at the UoB to support autistic people with social situations. The initial app targeted support for autistic children to better understand the social



world using digitally presented social stories, and was presented at Smart Factory Expo, a major manufacturing conference. The next phase of the app is focussed on using stories to support autistic adults to access and thrive in the workplace, thereby moving the dial to increase the numbers of neurodivergent employees.

THE IMPACT

The key impact of this strand of the P-LD activity is an industry-led piece of innovative research which has demonstrated how technology and neurodivergent people can intersect to tackle the key challenges facing industry.

Sam Stephens, author of the research, found a key insight of the initial project was that digital solutions benefit not only neurodivergent individuals but everyone, underscoring the positive effects of creating more equitable workplaces. Instead of focusing on individual businesses, this co-created research produced evidence and new knowledge that can have a significant impact across multiple sectors.

The project led to new academic and PhD research, embedding industry

partnerships further, and educating new audiences at conferences such as Digital Construction Week.

Dr Susan Lattanzio, Deputy Director for the P-LD, said: *“Sam's project ignited a passion among participants and led to broad public and industry engagement to educate, raise awareness and provide the guidance for employers to broaden their recruitment horizons.”*

“PhD researchers are now providing their expert knowledge within industry, supporting HR teams in fostering a more inclusive workplace for neurodiverse individuals. By adopting more inclusive practices, we can work towards closing the employment gap.”

“P-LD's support is now fuelling the development of a new digital tool to support neurodivergent people and lead to equitable workplaces, closing the loop on that initial industry-driven research.”



¹ <https://www.autism.org.uk/what-we-do/news/the-bucland-review-of-autism-employment-is-publis>

² <https://onlinelibrary.wiley.com/doi/10.1002/hrm.22243>