

# Annual Research Review | 2024/2025

RESEARCH OFFICE

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## RESEARCH AT WREXHAM UNIVERSITY



As Pro Vice-Chancellor, I am pleased to introduce this year's Annual Research Review, which captures a snapshot of the energy, creativity, and impact of research at Wrexham University over the past year.

Our researchers continue to shape knowledge and practice through work that responds directly to local and global challenges. Highlights from 2024–25 include a landmark collaboration with Wrexham Football Club, the development of a public mapping platform celebrating the heritage of Anglesey, and the completion of the new Engineering, Enterprise, and Optics Centre – a major investment in our research capacity.

Research across the University remains grounded in real-world application, aligned with the UN Sustainable Development Goals and the Wellbeing of Future Generations Act, and supported by funding from national research councils and government partners.

I invite you to explore this Review and discover some of the many ways our research community is making a difference.

### **Professor Richard Day – Pro Vice Chancellor for Research**

A key focus this year has been to foster an inclusive and collaborative research culture where both staff and students are empowered to excel. We aim to provide an environment that encourages the development and sharing of research ideas. Our expanding portfolio of collaborative research seeks to strengthen partnerships and broaden the impact of our research.



This annual review provides us with the opportunity to celebrate the remarkable successes and achievements of our researchers at Wrexham University. This year marks an exciting and ambitious chapter for us, as we continue to work towards the delivery of our new Vision and Strategy. Our goal is to be recognised for excellence in the quality, relevance, and impacts of our inter-disciplinary research and enterprise - delivering successful innovation and transformation that benefits both industry and society. We look forward to delivering this goal with researchers and continuing to create the space and culture necessary for our researchers to produce impactful and transformative work.

### **Frances Thomason – Head of Research Services**

## MINIMUM PRICING FOR ALCOHOL IN WALES: IMPACT ON SERVICES AND SERVICE USERS, FINAL REPORT



Prof. Wulf Livingston

Prof. Wulf Livingston and colleagues' final report for five years' worth of work on Minimum Pricing for Alcohol came out in January, alongside a piece for The Conversation.

This report shares the final findings of a study that looked at how **Minimum Pricing for Alcohol (MPA)** has affected people and services across Wales, four years after the law was introduced.

The research is part of a wider evaluation commissioned by the Welsh Government. This report focuses on people using alcohol treatment services and those who support them. It is the second report in this series looking specifically at how MPA has affected people who drink at harmful or dependent levels and who are receiving support. The first report was published in June 2023, two years after MPA came into effect.

The research was carried out by a team from Figure 8 Consultancy (Dundee), the University of South Wales, and Wrexham University.

### What This Study Looked At

The aim was to understand how MPA has impacted:

- **Service users:** people receiving help for harmful, hazardous, or dependent drinking
- **Service providers:** professionals who work in alcohol support services

The research explored:

- How MPA has affected alcohol use and behaviour
- Whether people have switched to other substances (like drugs) as a result
- How MPA has affected household budgets
- How support services have adapted to these changes

The findings will help inform future decisions about alcohol policy and support services in Wales.

## YOUTH WORK FUNDING REVIEW IN WALES



In 2022, the Youth Work Strategy Implementation Board was set up to build on the work of the Interim Youth Work Board. Its final report, *Time to Deliver for Young People in Wales*, made 14 recommendations. One key recommendation was that the Welsh Government should carry out an independent review of how youth work is funded and how effective that

funding is.

The review looks at funding from:

- Welsh Government
- Local authorities
- Voluntary organisations

It aims to understand how this funding supports young people, how accessible services are, and whether the money is being used effectively.

Prof. Mandy Robbins, Dr Robert Leigh, and Alex Drury were involved in the three phases alongside colleagues from University of Wales, Trinity St David.

### **Phase 1: Laying the Groundwork**

This phase created a plan for the research. It included:

- Setting up a steering group
- Reviewing existing research and data
- Running a feasibility study (by University of Wales Trinity Saint David) to see what data is available and how useful it is for the next steps

### **Phase 2: Exploring the Funding System**

This phase looked at where youth work funding comes from, how it is used, and the challenges involved. It focused on:

- How funding is accessed and spent across Wales
- Differences between local authority areas
- Barriers to funding, especially in the voluntary sector
- Whether young people are involved in funding decisions
- How services are governed and monitored
- Partnerships between the voluntary and maintained (statutory) sectors
- Laying the foundations for analysing value for money in the next phase

### **Phase 3: Understanding the Impact**

This phase assessed the social and economic value of youth work in Wales. It presents:

- Findings from interviews and other qualitative research
- Limitations of the available data
- Recommendations for future research and how to better assess the impact of youth work

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## **FOOD FOR THOUGHT: YOUNG PEOPLE AND YOUTH WORKERS' PERCEPTIONS OF FOOD INSECURITY AND THE YOUTH WORK RESPONSE**

The youth and community work team (Dr Hayley Douglas and Jess Achilleos) have published research in collaboration with a master's student, Sarah O'Mahoney, exploring how young people and youth workers experience and respond to food insecurity.

While food insecurity is widely researched, there is less focus on how it affects young people directly — or how youth work helps address it. This small UK-based study set out to explore both perspectives.

Using focus groups, the researchers asked young people and youth workers about their views on food insecurity. They found that food insecurity is deeply connected to wider issues like poverty and inequality. Participants talked about how these issues are experienced personally, shaped by culture, and influenced by broader systems in society. The study also considered the global context of food insecurity.

Five key themes were found in how youth work responds to food insecurity:

- **Togetherness** – creating a sense of belonging
- **Relationship** – building trust and support
- **Otherness** – recognising difference and marginalisation
- **Disempowerment** – the loss of control young people feel
- **Learning** – helping young people understand and navigate their situation

The report makes several recommendations, including recognising the vital role youth work plays in supporting young people facing food insecurity. The youth work approach, with its focus on care, community, and empowerment, offers valuable insights for any profession tackling social injustice.

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## EVALUATION OF THE WHO/EU EVIDENCE INTO ACTION ALCOHOL PROJECT (EVID-ACTION)

In July 2023, Figure 8 Consultancy (Dundee, Scotland), alongside Prof. Wulf Livingston was commissioned by the World Health Organisation (WHO) Regional Office for Europe to conduct a 40-month evaluation of the EVID-ACTION programme, funded by the European Commission. The evaluation runs from July 2023 to October 2026.

The initial report provided:

- Context and background of the EVID-ACTION programme.
- An early assessment of progress against agreed indicators and deliverables (as set out in Annex 1 of the grant agreement).
- Initial commentary, acknowledging that the evaluators had only recently commenced work.

### Year 2 Interim Report (September 2023 – August 2024)

The second report:

- Offers detailed insights into evaluation activities undertaken to date.
- Builds on the progress assessment against the programme's Specific Objectives.
- Begins to explore early indications of impact and areas for future development in years 3 and 4.
- Identifies next steps, particularly regarding sustainability planning beyond the current funding period.

### Evaluation Methodology

The evaluation is grounded in **Contribution Analysis**, which examines the relationship between project inputs, outputs, outcomes, and contextual factors. This method helps assess the programme's added value and potential impact on alcohol policy implementation at both national and population levels. It also tests key assumptions and captures external influences that may affect outcomes.

The team is using a **convergent mixed methods design** (Creswell, 2018), where qualitative and quantitative data are collected separately and integrated during analysis to form a comprehensive understanding of progress and emerging impact.

The evaluation is structured around a theory of change and synthesised through three overlapping phases, considering:

1. Delivery of planned activities.
2. Added value to interested parties.
3. Potential long-term impact and sustainability.

This approach supports a robust evaluation framework suited to the complex, cross-jurisdictional nature of the EVID-ACTION project.

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## PUBLIC HEALTH SCOTLAND FAMILIES: EVOLVING SUPPORT AMID SCOTLAND'S DRUG DEATHS MISSION

This project, Deputy-Led by Prof. Wulf Livingston, aims to assess whether family support for individuals affected by someone else's drug use has improved since the launch of the Scottish Government's National Drug Deaths Mission in 2021. It focuses on whether support has become more effective or accessible and how well service providers feel equipped to deliver it. Feedback will be gathered from both affected families and support providers, contributing to Public Health Scotland's evaluation of the Mission's impact on families and informing future service improvements.



### Research Questions

1. How have family support services changed in accessibility, availability, and quality since 2021?
2. What factors have driven improvements or gaps in support?
3. Have there been any unintended consequences of the National Mission on family support?
4. How do service providers perceive their capacity to support families since the Mission began?

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## DRUG AND ALCOHOL NEEDS ASSESSMENT IN FALKIRK

This project aims to conduct a comprehensive needs assessment of the Falkirk population affected by alcohol and drug use. The assessment will map existing services, identify gaps, and inform future commissioning decisions to strengthen and enhance substance use services across the region.

### Objectives:

This project aims to assess the prevalence and impact of alcohol and drug use in Falkirk by analysing current services, treatment pathways, and recovery resources. It will gather perspectives from service users and key parties across health, social care, and criminal justice to identify priorities and explore

good practice models from other areas. The project includes a formal gap analysis of existing provisions versus local needs, with a focus on supporting families and carers affected by substance use. Ultimately, it will provide evidence-based recommendations for future commissioning through a collaborative, co-produced approach.

### **Project Delivery and Role of Wrexham**

The project is led by Figure 8 Consultancy, with Wrexham University's Prof. Wulf Livingston named as the ethics lead, quality assurer, and research supervisor. Wulf is aiding with collecting and analysing data (e.g. interviews and focus groups).

The findings from this work will provide a strong evidence base to support the redesign and development of effective, locally responsive substance use services in Falkirk.

## **CRIMINOLOGY**

### **PEER SUPERVISION AND VICARIOUS TRAUMA: EXTENDING IMPACT FROM POLICING TO SUPPORTED LIVING**

This project builds on earlier work by Drs Tegan Brierley-Sollis and Sarah Dubberly, Nick Hoose, and Andy Crawford piloting a peer-to-peer reflective supervision model with police officers to address vicarious trauma and improve staff wellbeing. Following the success and interest generated by that initiative, housing association Clwyd Alyn commissioned the research team to adapt and trial the same model within two of their Supported Living Provisions (SLPs) and awarded them £15,000 in funding.

The aim is to explore whether structured peer support can reduce burnout, strengthen relational culture, and support the wellbeing of staff working in homelessness and supported living services—an area with limited research despite high exposure to secondary traumatic stress.

Key objectives include:

- Increasing understanding of vicarious trauma and its impact on SLP staff.
- Adapting the peer supervision model to the SLP context.
- Piloting the model over a 12-week period in two Clwyd Alyn services.
- Evaluating staff experiences through qualitative interviews and thematic analysis.

The project begins with a staff workshop to map current wellbeing support and inform model adaptation. Participants will then receive training and apply the model in peer pairs, with experiences captured before and after the pilot phase.

This work contributes to Clwyd Alyn's broader ambition to become a trauma-informed organisation. Findings will support the development of good practice, potentially reducing burnout and sickness absence, and influencing policy across the wider supported living and homelessness sectors in Wales and beyond. The project may also lead to further research and funding opportunities, including potential for a longitudinal study.



## **CENTRE FOR PEOPLE'S JUSTICE**

Wrexham University is a partner in the newly established **Centre for People's Justice**, a £5.8 million UK-wide initiative funded by the Arts and Humanities Research Council (AHRC) and led by the University of



Centre for People's Justice Logo

Liverpool. The Centre brings together universities (including Glasgow, Sheffield, Swansea, Ulster, and London SAS), grassroots organisations, and sectors spanning law, government, arts, and civil society to develop innovative, interdisciplinary approaches to social justice.

Wrexham University will lead work on **trauma-informed practice** and **arts and creativity** within the Centre, including Drs Tegan Brierley-Sollis, Caroline Hughes, and Karen Heald. Key areas of focus include:

- Children and childhood
- Work, welfare, and care
- Violence and conflict
- The role of corporations in communities

The Centre will develop a pioneering **social justice research methodology**, a new **education and training programme**, and support creative, community-driven projects.

Wrexham staff have contributed to early scoping research, co-led **eight workshops over 18 months**, and helped shape **three thematic research workstreams**. The Centre's core values are *inspire change, empower people, show care, mobilise action, and build trust*.

## EDUCATION

### COMMUNITY FOCUSED SCHOOLS: AN INVESTIGATION INTO SCHOOL PRACTISES

In 2023, Dr Sue Horder, Tomos Gwydion ap Sion, Dr Karen Rhys Jones, Lisa Formby and Gillian Danby, along with colleagues from Bangor University, Cardiff Metropolitan University, Swansea University, and the University of Wales Trinity Saint David (UWTSD) were commissioned by Welsh Government to investigate how schools in Wales currently compare to the practices, beliefs, and attitudes of community schools.

All maintained schools in Wales were invited to take part in an online survey to investigate how schools in Wales understand Community Schools and the strategies they use. Two journal articles scheduled for publication in early 2026 will present the findings from this study and the education team at Wrexham will also be presenting this work at this year's British Educational Research Association (BERA) conference.

This initial study paved the way for further pockets of research initiated with the award of a Learned Society of Wales Research Workshop Grant to further explore Community Schools in Wales, the conceptual understanding, current deployment, and future development.

This workshop delivered by Lisa Formby, Tomos Gwydion ap Sion, Dr Karen Rhys Jones, Nikki Ewing and Gillian Danby brought together a range of multi-agency professionals including family engagement workers, teachers, youth workers, community focused school managers and voluntary agencies to explore ideas and to ensure a grass roots approach to future funding proposals.

Further research is now underway, including:

## Family and Community Engagement in a Primary School in Wales

This mixed method study conducted by Lisa Formby aims to capture a range of perspectives, views and experiences of children, parents, staff, multi-agency professionals and community representatives centred around a primary school in Wales. It seeks to understand current practises in the school, and how schools can develop their approaches to family and community engagement with the aim of strengthening relationships to support effective community focused schools.

## Exploring the approaches, barriers and facilitators of Community Focused School Managers in Wales.

This qualitative research study led by Lisa Formby, Dr Sue Horder and Nikki Ewing aims to deepen our understanding of the important role played by Community Focused School Managers (CFSMs) and their teams in Wales, and how this work can support children, young people, families, and communities.

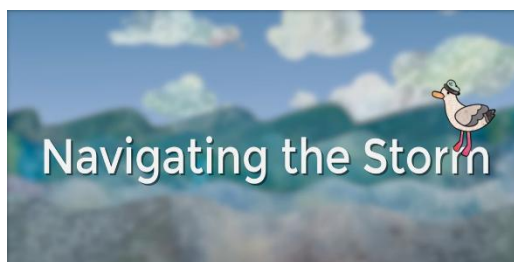
## TALK PEDAGOGY

### Year 3 - 2024-2025

This year, Dr Sue Horder, Dr Karen Rhys Jones, Lisa Formby and Tomos Gwydion ap Sion, along with a collaborative team of HEIs and GwE regional consortia have conducted a further Welsh Government funded research study. Supported by Welsh Government advisor Mark Ford, the team have investigated the approaches (beliefs, values, and practices) school leaders have used to help teachers reflect, review, and adjust their pedagogical understanding and practice corresponding with the Curriculum for Wales.

This mixed methods study comprised an online survey sent to senior leadership teams (SLTs) in schools in Wales, interviews with SLTs, and focus groups with teachers and SLTs. The results of this work are currently being written up into a report for Welsh Government with further plans for dissemination to a wider audience.

## EVALUATION PILOT OF 'NAVIGATING THE STORM', A TRAUMA-INFORMED PROGRAMME HELPING DEVELOP EMOTIONAL REGULATION FOR CHILDREN IN PRIMARY SCHOOLS.



Screenshot from Navigating the Storm YouTube Video

This evaluation pilot is a multi-disciplinary research team within the wider Faculty of Social and Life Sciences department in which Dr Tegan Brierley Sollis and Lisa Formby are co-Principal Investigators, along with Dr Karen Rhys Jones, Deborah Robert, Catherine Simon, Paula Wood from Civic Mission and Karen Tilby from Marketing and Student Recruitment.

The central aim of this project is to evaluate the Navigating the Storm programme when used with key stage 2 children in primary schools and to establish whether the workbook has the desired outcome of enhancing wellbeing and supporting emotional regulation amongst children. This qualitative study is now in the writing-up stage; due to positive results, plans are in place to expand the evaluation into a large-scale longitudinal study.

## ACADEMIC INTRAPRENEURSHIP IN A MARKET DRIVEN LANDSCAPE

Building on the findings from last year's study, *Moving Beyond the Reluctant Academic Intrapreneur*, Dr David Crighton is leading a Society of Education Studies (SES)-funded project alongside Dr Will Shepherd

(University of the West of Scotland). The study examines the extent to which academics in England experience institutional expectations around intrapreneurial behaviour.

As part of the project, David will present a paper at the Society for Educational Studies 2025 Colloquium: *Higher Education – (Re)Shaping the Future*, held at Oriel College, Oxford. The presentation will critique the approach and findings of an earlier study and outline the methodological framework for the current project.



Dr David Crighton

An interim report is scheduled for publication by SES in November 2025, with the full project expected to conclude in April 2026.

## EXPLORING EDUCATOR PERSPECTIVES ON IMMERSIVE TECHNOLOGY IN EDUCATION

This multi-phase study by Monty Kennard, Research Associate in the Project Learning Lab, examines university educators' experiences and views on immersive technologies. Currently in the data collection phase, it aims to provide a foundation for the university's immersive technology team.

The first phase involves a detailed questionnaire exploring educators' current use, perceived benefits and challenges, and support needs related to immersive tech. Findings will guide teaching strategies, training, and support development, establishing a baseline for measuring future progress in educators' confidence and innovation. Later phases will include a learning lab, focus groups, and follow-up surveys to track changes over time.

## UNDERSTANDING HOW RACE AND ETHNICITY AFFECT THE EXPERIENCES OF STAFF AND STUDENTS AT WREXHAM UNIVERSITY

This research project, led by Yasmin Washbrook (Equality, Diversity, and Inclusion Project Lead) and the HR Organisation Development & Diversity team, supported Wrexham University's successful submission to the Race Equality Charter (REC). Its core aim is to understand how race and ethnicity influence the experiences of staff and students, with a view to identifying areas for organisational improvement and promoting race equality.

The research adopts a mixed-methods approach, combining quantitative data from structured surveys with qualitative insights from focus groups. The project has two main components: (1) anonymous online surveys for staff and students using Advance HE-recommended questions to assess perceptions and experiences of race, ethnicity, and discrimination; and (2) follow-up focus groups with volunteers from the survey participants to explore these experiences in greater depth. These focus groups will be conducted separately for staff and students.

The initial phase ran across October–November 2024 for surveys and January–February 2025 for focus groups. Annual iterations of the survey will support ongoing REC work, with ethics reviews updated as needed through 2029.

Findings informed Wrexham University's Race Equality Charter submission, the Strategic Equality Plan, and broader institutional policies, the former of which Wrexham University successfully gained Bronze status. Insights will also contribute to the Welsh Government's Anti-Racist Wales Action Plan (2022) and may inform practice across the UK higher education sector. The project encourages reflection on individual and institutional practices and aims to drive sustainable change toward racial equity within the university and beyond.

## CYMBROGI TOMORROW'S CHANGEMAKERS: CAREER-CONNECTED PROJECT BASED LEARNING PILOT

Wrexham University's Civic Mission team, with Paula Wood leading on the research, is supporting the delivery and research of the Cymbrogi Tomorrow's Changemakers pilot project, which is being trialled with Year 8 pupils (2024–25) and will continue through to their GCSE option choices in Year 9 (2025–26).

This study aims to explore the impact of career-connected Project Based Learning (PBL) on pupil engagement and future GCSE and career decisions. To do this, researchers are working closely with teachers involved in delivering the Cymbrogi pilot across four secondary schools in North Wales—two English-medium and two Welsh-medium.

Through focus groups and semi-structured interviews, teachers will share their reflections on practice and evaluate pupil engagement and project outcomes. This data will help assess whether connecting learning to real-world economic contexts through PBL influences how engaged pupils are in the classroom, and whether it shapes their aspirations and choices for the future.

The research has four key objectives:

Pilot a career-connected PBL approach with Year 8 pupils in four North Wales secondary schools (two English-medium, two Welsh-medium).

Evaluate teachers' experiences of delivering PBL with a focus on economic relevance.

Build understanding of how PBL influences classroom engagement and practice.

Assess the impact of economically connected learning on pupils' engagement and their GCSE/career decision-making.

## CIVIC MISSION

### TRAUMA-INFORMED DESIGN EVALUATION TOOL FOR WREXHAM UNIVERSITY

This project was initiated by the Civic Mission team at Wrexham University, inspired by the work of the Trauma Informed Design Society (TiDS) in the United States. TiDS developed a Trauma-Informed Design Evaluation Tool for use in secondary schools, based on research conducted by academics, architects, and designers. Their findings highlighted specific features in school environments that contributed to students feeling more—or less—comfortable.

Recognising the potential to apply these insights in higher education, Wrexham University is now exploring how trauma-informed design principles could enhance the student and staff experience on its main campus. The research element of the project is led by Dr Chris White.

The aim of this study is to better understand how staff and students experience the current campus environment. Insights from this research will inform practical recommendations for the University and contribute to the development of a design evaluation tool that may be useful across other higher education institutions.

The first phase of data collection will involve an online survey open to both staff and students. Survey participants will also be invited to take part in small focus groups, with around 10 students and 10 staff members expected to join. The research will centre on the three campus spaces most used by each participant, with questions designed to explore comfort, wellbeing, and functionality in those settings.

### UNMET NEEDS IN RURAL FLINTSHIRE IN THE CONTEXT OF PERSISTENT AUSTERITY

Commissioned by Flintshire County Council, this research explores rural vulnerability and service gaps across the county, with a focus on communities most affected by persistent austerity. The project is funded through a £25,000 award from the Council and is being delivered over two phases using qualitative methods by Puala Wood, Dr Chris White, and Prof. Iolo Madoc-Jones.

**Phase One** involves semi-structured interviews with key professional interested parties to understand unmet needs in rural Flintshire and identify examples of effective practice. The research aims to:

1. Map rural vulnerabilities and highlight areas most impacted by austerity.
2. Explore how socio-economic, demographic, and geographic factors intersect to shape vulnerability.
3. Capture perceptions of service gaps and local innovations.
4. Identify a best-practice case study area for further research.

Insights from Phase One will inform the selection of three case study areas for in-depth exploration in Phase Two.

**Phase Two** focuses on communities identified as having effectively mitigated austerity's impact on wellbeing:

- Halkyn Mountain (Rhes y Cae and Halkyn)
- Hope Mountain (Cymau, Treuddyn, and Leeswood)
- North-West Flintshire (Gronant, Trelawnyd, and Gwaenysgor)

Through community focus groups, the research team will explore the actions and initiatives that have supported wellbeing in these areas, assess their effectiveness, and consider how these approaches could be adapted in other rural settings.

The project will conclude with a report offering practical recommendations for local authorities and partners, supported by an interested-parties event to share findings and promote the scaling of successful strategies.

## CIVIC MISSION AT WESTMINSTER



UK Gov APPG Education 2025 Inquiry into the Loss of Love of Learning (Paula Wood, right seated)

Findings from the Children's University project report have been shared with national and regional audiences by Paula Wood and Nina Ruddle. The report was presented to the UK Government's All-Party Parliamentary Group (APPG) for Education as part of the 2025 Inquiry into the Loss of the Love of Learning, with a paper submitted and discussed at the expert panel event in Westminster.

It was also showcased at the Child Poverty Conference in Llandudno (May 2025) and at the UK Implementation Society's pre-conference event in Newcastle (June 2025), contributing to wider discussions on engagement, equity, and educational change.

## APPLIED SCIENCE

### WATER SOLUBLE POLYMERS

The research collaboration on water-soluble polymers and food hydrocolloids between the Applied Science team, led by Dr Jixin Yang, and a group of researchers at Dalian Minzu University, China, has continued to strengthen, delivering an impressive record of joint achievements.

In 2024, the partnership produced seven co-authored research articles in peer-reviewed journals, followed by another seven publications in the first seven months of 2025. Several of these were also co-authored by Professor Pete Williams and PhD student Kev Jones from Applied Science, highlighting the breadth of engagement within the team.



Dr Jixin Yang

In January 2025, Dr Yang visited Dalian with the support of SLS Staff Research Funding, engaging in in-depth discussions with collaborators on future research directions in materials, green chemistry, and sustainability. This thriving international partnership continues to advance knowledge and drive innovation in sustainable material science.

### KNOWLEDGE TRANSFER VOUCHER PROJECT WITH PLANTSEA LTD.

The Knowledge Transfer Voucher Project with PlantSea Ltd., led by Dr Jixin Yang, was successfully completed in April 2025, delivering valuable insights into sustainable material innovation. Through this collaboration, the team conducted a systematic analysis of the composition, and the physical and chemical properties, of seaweed extracts. This in-depth understanding has informed their potential as viable substitutes for conventional plastics. The findings directly support the development of functional, seaweed-based materials that offer both environmental and commercial advantages. Building on this success, the project has laid the groundwork for a Welsh Government SMART Partnership-funded initiative, set to begin in September 2025, to accelerate the creation of next-generation, sustainable plastic alternatives.

### KNOWLEDGE TRANSFER VOUCHER PROJECT WITH FANCI LTD.

The Knowledge Transfer Voucher Project with Fanci Ltd., led by Dr Jixin Yang, reached a successful conclusion in March 2025, delivering significant advances in material selection for high-performance sanitary absorbent mats. Through this industrial collaboration, a range of candidate materials was carefully selected, processed, and rigorously tested. The research provided clear evidence to guide the choice of the most suitable materials for large-scale production.

Detailed investigations into water absorption, desorption, colour fastness, and stain removal—carried out under simulated real-world conditions—demonstrated the exceptional performance potential of the chosen materials. These outcomes position Fanci Ltd. to accelerate the commercial development of next-generation sanitary absorbent mats with superior functionality and durability.

### PINT OF SCIENCE

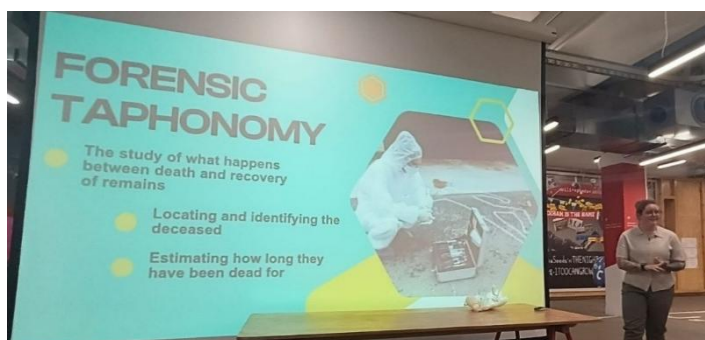
In May, Amy Rattenbury and Dr Paige Tynan from Applied Sciences participated in Wrexham's first Pint of Science festival. Amy wrote a blog about the experience,

“This May, Wrexham proudly hosted its inaugural Pint of Science festival, joining a global initiative that brings researchers into pubs, cafes, and public spaces to share their work with local communities in an

open, informal way. Over two evenings, the festival offered a diverse mix of scientific stories, hands-on ideas, and enthusiastic audiences. I was delighted to be asked to get involved as a speaker, alongside my colleague Dr Paige Tynan from the Applied Science team here at the University. It was an exciting opportunity to connect with people outside of academia and highlight just how relevant and fascinating science is to everyday life.

The second evening, hosted at Tŷ Pawb, focused on a very different side of science. Paige and I delivered a joint session exploring what happens to the body after death and how we use that information in forensic investigations. We covered the chemical and biological processes involved in decomposition and the information bones can give us about

someone's life and identity. Our aim was to lift the lid on the science behind real forensic cases, going beyond the TV dramas to show what really happens when scientists are tasked with speaking for the dead. The audience asked thoughtful, challenging questions and were clearly fascinated by the realities of our subject. It was fantastic to see so much interest in the science behind human biology and crime scene investigation."



Dr Paige Tynan presenting at Pint of Science

## EXPLORING 3D MODELLING OF THERMAL IMAGES TO ANALYSE DECOMPOSITION DYNAMICS

This research project sits within the field of forensic taphonomy, which studies what happens to a body between death and discovery. It investigates whether thermal imaging combined with photogrammetry—a 3D modelling technique—can offer new insights into the decomposition process, particularly in the early stages. The central aim is to determine whether 3D thermal models can reveal patterns of heat distribution that might help estimate the postmortem interval (PMI), or time since death.

Using a FLIR CX5 infrared thermal camera, Dr Paige Tynan will monitor up to three ethically sourced pig carcasses, commonly used as human analogues in forensic studies. Over a period of up to four months, thermal images will be captured regularly and processed using Agisoft Metashape to create detailed 3D models. These reconstructions will allow researchers to visualise and analyse how heat patterns shift during decomposition.

This is a validation study, assessing whether the integration of thermal imaging into 3D modelling can become a reliable forensic tool. If successful, the method could provide an objective and non-invasive way to estimate time since death—critical in forensic casework for identifying victims and suspects.

Beyond its immediate forensic applications, the study also lays the groundwork for further research into how emerging imaging technologies can enhance our understanding of decomposition dynamics. It may eventually contribute to developing standard protocols for thermal-based PMI estimation, supporting investigations and offering closure to families of the deceased.

## CADAVER WATER DOGS: APPLICATION OF HUMAN REMAINS DETECTION DOG TEAMS IN THE SEARCH FOR SUBMERGED REMAINS

This study, led by Amy Rattenbury, explores the application of cadaver dogs in detecting submerged remains, focusing on how environmental conditions influence scent availability and detection outcomes.

The work is being undertaken with a team of external researchers in collaboration with UK-K9, a National Association of Specialist Dog Users (NASDU) accredited training provider.

Over the last several months, observational data has been collected during routine water-based training sessions using porcine remains as scent sources. These sessions have allowed for the systematic recording of environmental variables (e.g. water and air temperature, wind speed, submersion duration) alongside search outcomes, including detection accuracy, time to alert, and handler-dog interaction. All data collection is non-invasive and takes place in real-world conditions with no alteration to existing training activities.

Preliminary analysis suggests detection success may be highly context-dependent, particularly in relation to environmental volatility and water type. These early observations reinforce the need for further research into scent dispersal dynamics in aquatic contexts, as well as the implications for search protocols and training methods. A poster presenting initial findings has been accepted for presentation at the Chartered Society of Forensic Sciences (CSFS) Autumn Conference in Leeds this November, with further data collection and analysis scheduled into the autumn term.

## SPORT AND EXERCISE SCIENCES

### GOALS BEYOND THE GAME: AN EXPLORATION OF HOW FOOTBALL CAN PROMOTE WELSH LANGUAGE CONFIDENCE IN PRIMARY SCHOOL CHILDREN

This project, led by Sara Hilton, explores how Welsh language fun football sessions can build confidence in primary school children learning Welsh as a second language. As Welsh language use continues to decline among young people, informal and engaging environments like sports offer an innovative way to promote everyday use of the language.

The study focuses on children aged 8–11 years, attending two schools where Welsh-language football sessions are offered as part of their extracurricular activities. By observing how children interact in these non-academic settings, the research will assess whether their confidence and willingness to speak Welsh improves both during and outside of the sessions.

Using a qualitative approach, the study includes:

- Focus groups with the children to explore their attitudes and language use before and after participating.
- Interviews with teachers involved in delivering the sessions to gather insights on observed changes and potential barriers.

Data will be analysed through thematic analysis, identifying key trends in confidence, language use, and the social dynamics that influence learning.

This research aims to provide evidence for how play-based language learning can support Welsh language revitalisation efforts. The findings may help shape future extracurricular language initiatives, offering practical recommendations for teachers, coaches, and policymakers working toward the Welsh Government's goal of reaching one million Welsh speakers. By fostering early confidence in speaking Welsh, the study supports a culturally rich and linguistically inclusive future for Wales.



Sara Hilton

## EXPLORING THE ROLE OF SOCIAL CAPITAL IN ENHANCING MENTAL HEALTH AND WELL-BEING: A QUALITATIVE STUDY OF FEMALE MEMBERS IN A CROSSFIT CLUB

This project, also led by Sara Hilton, explores the mental health and well-being benefits of CrossFit for female participants, with a focus on the role of social capital—the networks, support, and community bonds that emerge through shared activity. While CrossFit is known for its intense physical training, it also fosters strong interpersonal connections that may support psychological resilience and emotional well-being.

The study aims to understand how social interactions within a CrossFit club contribute to the mental health of female members. It will explore the psychological impact of being part of a socially engaging fitness environment, identifying key mechanisms—such as emotional support, motivation, and belonging—that promote well-being.

Using a qualitative approach, the research will involve:

- Semi-structured interviews with 12–15 female CrossFit participants, selected based on their varying levels of community engagement.
- Reflective journals, completed over four weeks, where participants will share short entries about their social experiences, mood, and motivation related to CrossFit.

Data will be analysed thematically to uncover recurring patterns and deeper insights into the connection between fitness, community, and mental health.

The findings will offer valuable guidance for fitness professionals, mental health advocates, and policymakers, highlighting how structured social environments in exercise settings can be leveraged to support mental health. This research contributes to the growing recognition of physical activity as a holistic tool—not only for physical strength, but also for fostering emotional resilience and community-based well-being.

## BREAKING BOUNDARIES: EXPLORING THE MOTIVATIONS OF FEMALE YOUTH RUGBY PLAYERS IN NORTH EAST WALES THROUGH A QUALITATIVE LENS

Historically, rugby has been seen as a male-dominated sport, but female participation is rising—especially among young players. This research investigates the motivations, experiences, and challenges of female youth rugby players in North East Wales, a region seeing increased engagement in the sport. Despite this growth, little is known about what drives girls to take up rugby or how they navigate gender expectations in a traditionally male space.

This pilot study aims to explore the personal, social, and cultural factors influencing young women's participation in rugby. Using a qualitative survey approach, Sara Hilton will collect data from 20–30 female players aged 12–18 registered with the Valkyries Rugby Team. The survey will include both open- and closed-ended questions to capture demographic details, playing history, motivations, social influences, and perceived barriers.

Key research questions focus on:

- What motivates girls to play rugby?
- How do family, friends, and coaches influence participation?

- What gender-based challenges do they face, and how do they overcome them?

Findings will offer valuable insights for coaches, schools, sports organizations, and policymakers, highlighting ways to support and retain female athletes in contact sports. The research promotes gender equality and inclusion in sport, contributing to better-informed programs and strategies aimed at increasing female participation.

Ultimately, this study empowers young female athletes by validating their voices and may serve as a foundation for larger-scale studies on girls in contact sports across the UK and beyond.

## EVALUATION OF DIGITAL PREHAB FOR PATIENTS ENTERING EXERCISE-BASED CARDIAC REHABILITATION IN NORTH WALES



**Dr Chelsea Batty**

Over the past few years, Chelsea Batty has led a research project evaluating the impact of digital video resources in enhancing patient preparedness and outcomes in cardiac rehabilitation. The study, which is due to be published soon, responds to long-standing challenges in delivering full-dose cardiac rehabilitation in Wrexham and Flintshire, where patients are typically offered only 8 supervised exercise sessions instead of the nationally recommended 16.

Cardiac rehabilitation is a well-established intervention for those with cardiovascular disease, aiming to improve fitness, recovery, and long-term health. However, resource limitations often prevent the delivery of the full programme, potentially reducing its effectiveness. This project explores whether supplementing traditional rehabilitation with digital videos—viewed before the start of the programme—can help bridge this gap.

The videos are designed to educate patients on safe and effective exercise practices, including guidance on intensity, duration, and heart rate targets. A key goal is to reduce patient anxiety, increase confidence, and promote exercise outside of supervised sessions—particularly important given the emotional toll of cardiac events and disruptions caused by the COVID-19 pandemic.

By offloading some of the educational components traditionally delivered by staff during assessments, the videos may also help reduce pressure on clinical teams still recovering from pandemic-related service backlogs. The usefulness of the videos is being evaluated via patient surveys, distributed after participants complete four of their eight exercise sessions. Early findings are promising, with potential implications for improving accessibility and efficiency in cardiac rehabilitation delivery.

## PROJECT U - EVALUATION OF FREE GYM ACCESS ON MENTAL WELLBEING AND PHYSICAL ACTIVITY LEVELS.

Led by Chelsea Batty in collaboration with Richard Lewis, Kristian Weaver, and Shaun Thomas (owner of Fervid Fitness), *Project U* explores the impact of free gym access on mental wellbeing and physical activity levels in individuals with depression. The project partners with Fervid Fitness Gym, which offered 50 free three-month memberships to individuals who are physically inactive and experiencing symptoms of depression.

The study seeks to evaluate whether providing no-cost access to a gym environment can encourage increased physical activity and reduce depressive symptoms. It addresses four core research questions:

1. Do individuals in the target group take up the free gym membership offer?

2. Does participation in the scheme lead to increased physical activity?
3. Are there measurable reductions in depression following the intervention?
4. Is there a correlation between frequency/duration of gym attendance and improvements in physical and mental health?

Participants' activity levels and mental wellbeing will be assessed before and after the three-month intervention, with data collected on gym attendance and frequency.

This research has the potential to demonstrate the real-world impact of accessible, community-based exercise initiatives on mental health. It may also provide a scalable model for future health and wellbeing partnerships between academic institutions and private fitness providers. *Project U* could inform public health strategies that use physical activity as a low-cost, high-impact intervention for depression.

## ALLIED HEALTH AND WELLBEING

### AN EXPLORATION OF FINAL YEAR ALLIED HEALTH PROFESSIONAL (AHP) STUDENTS' PERCEPTIONS AND EXPERIENCES OF INTER-PROFESSIONAL EDUCATION (IPE) AND ITS IMPACT ON TEAMWORK AND PROFESSIONAL DEVELOPMENT

This research project, led by Lee Mutch, investigates the perceptions and experiences of final year Allied Health Professional (AHP) students regarding Inter-Professional Education (IPE) and its impact on their professional development and teamwork capabilities. The project seeks to understand how IPE contributes to the formation of key collaborative skills essential in modern healthcare environments.



Lee Mutch

The study aims to evaluate how students perceive the relevance and effectiveness of IPE in preparing them for professional practice. It will examine students' direct experiences with IPE activities, highlighting the benefits and challenges they encountered. A key focus will be on how IPE influences their ability to work effectively within multidisciplinary teams—specifically in areas such as communication, collaboration, and understanding of professional roles.

By gathering and analysing student feedback, this research offers valuable insights for curriculum developers and educators. Findings will help refine current IPE programs, ensuring they are better tailored to enhance learning outcomes and professional readiness. Additionally, the research supports the case for embedding more structured and meaningful IPE opportunities within health education curricula.

Ultimately, the project aims to contribute to the development of more competent, confident, and collaborative healthcare professionals. Improved inter-professional learning during training has the potential to enhance patient care outcomes by fostering better teamwork among future healthcare providers. This study also identifies potential barriers to effective IPE, providing guidance for institutions seeking to improve or expand their inter-professional learning frameworks.

### AN UNDERSTANDING OF THE 'PREPAREDNESS' OF PHYSIOTHERAPY GRADUATES IN WALES, A QUALITATIVE STUDY

This pilot study, conducted by Chris Bellis and funded through the RCBC Wales 'First in Research' Fellowship, explores how well new physiotherapy graduates in Wales are prepared for clinical practice. The research focused on the perspectives of experienced physiotherapists working within

musculoskeletal settings, offering insight into the transition of graduates into autonomous professional roles.

Following a scoping review of existing literature on graduate preparedness, participants were recruited via social media and the iCSP network. Although no recent graduates responded, three experienced physiotherapists, each with over five years of supervisory experience, were interviewed. Using reflexive thematic analysis, three key themes were identified: **‘Prepared for practice,’ ‘Bridging the gap,’ and ‘Welcome to the real world!’**



Chris Bellis

Findings indicated that new graduates are generally well prepared, particularly in communication, assessment, and adopting a biopsychosocial approach. However, they often face challenges related to autonomy, complexity, and decision-making in musculoskeletal environments. Areas for improvement include psychosocial management and exercise prescription. The development of resilience was highlighted as essential for managing real-world clinical uncertainty.

Student placements were identified as vital in building preparedness, with a recommendation for longer, high-support, and high-challenge placements. Support during the transition into professional practice was seen as critical, alongside attention to work conditions and personal attributes.

This pilot study provides valuable insight into the experiences of supervisors and lays the groundwork for broader research across various clinical settings and regions in Wales.

Chris will be presenting the work at the Chartered Society of Physiotherapy Conference.

#### DR LIZ CADE AWARDED PRESTIGIOUS ELIZABETH CASSON TRUST RESEARCH GRANT

ELIZABETH CASSON TRUST



We're delighted to share that Dr Liz Cade has been awarded a Pump Primer Research Grant from the Elizabeth Casson Trust. The funding will support a qualitative study titled:

*Volunteering with Marginalised Communities: The Impact on Students and Professional Development.*

Liz, a Principal Lecturer in Allied Health and researcher at Wrexham University, is thrilled to receive the award and looks forward to undertaking this work, which will explore the role of volunteering in shaping the professional identity of occupational therapy students — particularly when working with people at the margins of society.

The project builds on Liz's doctoral research, which explored the idea of “propensity to thrive” in role-emerging placements — a model where students step into non-traditional settings to establish their own occupational therapy role, applying theory to practice in innovative ways. Liz's earlier work suggested that while these experiences can be transformational, they're also demanding, and not every student has access to them.

As a result, Wrexham University introduced a new, inclusive approach through the *Complexity in Practice* module. Validated in 2022, the module embeds a three-week volunteering experience with community groups and services supporting those affected by occupational injustice — including asylum seekers, veterans, survivors of domestic abuse, and people living with mental illness or disability. Students

choose where to volunteer, guided by personal interest and motivation, which helps foster engagement, reflection, and deeper learning.

Anecdotal evidence and student feedback suggest the experience is not only empowering but can shift students' career aspirations and deepen their understanding of social justice, risk-taking, and entrepreneurship — key values in occupational therapy, and values that were at the heart of Dr Elizabeth Casson's own pioneering career.

## ULTRASOUND DATA AND RECORDINGS OF THE VOWELS OF NORTHERN AND SOUTHERN WELSH FOR LEARNING AND TEACHING

This project collected ultrasound data for the three corner vowel distinctions of Northern and Southern Welsh for the purpose of teaching Speech and Language Therapists (SLTs) and SLT students how to transcribe difficult to perceive Welsh vowels and better understand the Welsh vowel system.

This pilot study used a mixed methods approach to review the methods used in collecting large scale ultrasound data for Welsh Language speech analysis studies.

The learning and teaching tool could be vital in training SLTs and SLT students in analysing the speech of Welsh Language speakers. The database can also be used for further analysis of the Welsh phonological system so that a greater understanding of vowel development and variation in Welsh can be had. There is very little research into how the Welsh phonological system develops.

The equipment and the database of recordings can also be used for outreach purposes demonstrating how Ultrasound Tongue Imaging can be used. We plan to use the equipment to showcase Speech and Language Therapy at Wrexham in schools, at the "Xplore! Science Discovery Centre", "Healthcare Heroes" events, and Local community events e.g. in Ty Pawb. It could also be used to support and promote Welsh language learning at the university through Welsh at Work etc.

The team collected data at the recent National Eisteddfod in Wrexham, securing more participants than anticipated!

## PSYCHOLOGY

### MEANING IN LIFE - TRANSACTIONAL TO TRANSFORMATIONAL SUPPORT FOR ALCOHOL AND OTHER DRUG USE

Led by Dr Shubha Sreenivas with Prof. Wulf Livingston as co-investigator, this feasibility study explores how individuals navigating change in their alcohol and drug (AoD) use develop a sense of meaning in life, and how this may support their recovery journey. Recently updated following ethical feedback and reviewed by the Lived (and Living) Experience Expertise Panel (LEEP), this mixed-methods study is based in North Wales and aims to inform future interventions by highlighting the transformative role of meaning and purpose in recovery.



Dr Shubha Sreenivas

Grounded in the understanding that meaning in life contributes to intrinsic motivation, emotional stability, and psychological wellbeing, the study investigates whether the emergence of meaning can support sustained change in AoD use. A lack of purpose is often linked to hopelessness and distress, while a clear sense of meaning has been associated with better treatment outcomes.

The project recruited participants who have been actively reducing their substance use for one to four months. Data was collected through semi-structured interviews and validated

psychometric measures, including the Meaning in Life Questionnaire, the Short Warwick-Edinburgh Mental Wellbeing Scale, and the Short Depression-Happiness Scale. This mixed-method approach aims to triangulate qualitative insights with quantitative data to better understand individuals' internal drivers for change.

This study will contribute to both practice and policy by advocating for the integration of meaning-making into AoD interventions. Findings may support improved outcomes for individuals, inform professional practice, and reduce wider societal harm linked to substance use.

## PEER FEEDBACK ON THE PRACTICE OF USING EXPERIENTIAL RESEARCH IN ACTIVE LEARNING

This pedagogical research project, led by Dr Shubha Sreenivas, focuses on evaluating the impact and potential benefits of experiential learning in higher education. The study aims to explore how experiential approaches—where students learn through active, real-world engagement—enhance academic and personal development, critical thinking, and the application of theoretical knowledge in practice.

By examining the effectiveness of experiential learning across various subject areas, the research seeks to identify and share examples of good practice that can inform curriculum design and teaching strategies. Emphasising student-centred learning, the project supports the ongoing shift in higher education towards more inclusive, reflective, and impactful teaching methods.

The results of this research will be disseminated through academic conferences and publications, providing evidence of pedagogical impact and innovation. It is expected to contribute to the wider academic community by showcasing how experiential learning can foster deeper engagement and meaningful learning outcomes, while also equipping students with transferable skills for future employment and lifelong learning.

Ultimately, this study advocates for the broader adoption of experiential pedagogies, offering practical insights for educators and institutions aiming to enhance teaching quality and student experience.

### Other research activities

Dr Shubha Sreenivas is also currently engaged in a systematic review exploring the decolonisation of neuropsychological research. She is further co-authoring a paper on female jockeys and motherhood in collaboration with former student Ciara Losty. Lastly, she is progressing toward publication of her research on pet therapy and the impact of reading with dogs.

## PSYCHOLOGICAL TYPE AND SENSE OF DIRECTION



Dr Gwennan Barton

Dr Gwennan Barton is following up her PhD research by exploring psychological type with a slightly different variable. Gwennan has developed a proposal and written an ethics form for a new project that aims to examine whether psychological type (personality) influences individuals' sense of direction within a UK population. The study will employ a survey-based design using existing psychometric measures but will investigate novel differences and look at scales that have not been used in this way before.

## ATTENTION, MEMORY, AND PERSONALITY AMONGST FIRE SERVICE PERSONNEL

Dr Gwennan Barton is in the early stages of scoping out a collaborative project with colleagues at the University of Chester that will focus on aspects of cognition such as attention and memory, personality, and human-computer interaction. There have been some early discussions with Chester colleagues and

ex-fire service personnel about the specific research questions. Gwennan is currently engaged in a scoping exercise of the literature with a Chester colleague. The next steps involve meeting with those engaged in designing training programmes for Fire Service personnel. The role of attention and memory are vital in this high-stake career.

## NORTH WALES BUSINESS SCHOOL

### KNOWLEDGE TRANSFER PARTNERSHIPS

Staff in the Business School have collaborated across the university on several KTPs. In line with the university's Civic Mission, the Business School partnered with Wrexham Golf Club on a targeted Mini Knowledge Transfer Partnership (KTP) from September 2024 to April 2025. Supervised by Dr Ben Binsardi and Dr Rob Leigh, the project, titled "Commercialisation, Strategic Development and Member Engagement," saw two MSc Data Analytics students appointed as KTP Associates. They were tasked with implementing data-driven strategic initiatives to enhance the club's commercial operations, improve facilities, and deepen the overall member experience, directly translating academic expertise into a solution for a local community organisation.

The KTP project yielded significant results, leading to increased club's commercialisation and revenues, enhanced operational efficiency through cost reduction, and a marked rise in member satisfaction. Notably, the KTP successfully expanded community outreach by increasing the involvement of young golfers. This successful collaboration has fostered a lasting relationship, with Wrexham Golf Club now offering invaluable research opportunities for student final-year projects and dissertations. The partnership stands as a powerful case study on how transferring academic knowledge can generate sustainable economic and social impact for a local sport organisation.

### GRANT SUCCESSES

Dr Ben Binsardi has actively contributed to the school's success in securing internal research grants, under the Associate Dean of Research, which have resulted in the award of three significant research initiatives for the school. Ben's facilitation or mentoring in these research initiatives included facilitating the collaborative partnership with Leicester University on a project concerning "food management research" (Grant: £2,000 - Dr Sanar Muhyaddin – Principal Investigator or PI and Ben as Co-Investigator or Co-I). Ben was also a Co-I with Dr Rob Leigh (PI) to finalise a project that secured £2,000 and valuable STATA Statistical Software for the collective use in the school faculty. Further, Ben collaborating with the University of Sheffield and partnered with Mary Corcoran on a project exploring "Social Enterprise" (Grant: £2,000), which resulted in the acquisition of a laptop computer for shared use among colleagues in the school.

#### **Ongoing work**

ESRC Grant (Transport Modelling): A data-driven academic project with Dr Binsardi, Dr Leigh and the Research Office to prepare an ESRC Small Grant application. The proposed research will use secondary analysis of historical census data to model the dynamic patterns of transport inflow and outflow across North Wales.

ESRC Grant (Economic History): A historical research project with Dr Binsardi and Dr Leigh focused on an ESRC Small Grant application. The proposal seeks to analyse archival data to estimate the economic impact of the Pontcysyllte Aqueduct's construction in North Wales on the local economy during the 1890s.

Members of the team have either published over the last year, have papers currently under review, or book chapters in production on a variety of topics: cultural heritage in the hospitality industry, research methods in management, AI in the construction industry, social structural approach to Islamic banking, gendered intermediation in Islamic finance, and sustainable development goals.

## ART AND DESIGN

### PUBLIC MAP PLATFORM



The Public Map Platform (PMP) project is a collaborative research project between Cambridge, Cardiff, Wrexham and Bangor Universities. Professor Alec Shepley, Associate Dean for Research, is Co-Investigator on the project and heads up the Wrexham PMP research team. The project has a focus on implementation of the Well-being of Future Generations Act: providing a voice to children, young people and communities in the planning and design of their local areas.

The team is researching how local authorities can inform their planning systems and enhance the green transition on the Isle of Anglesey/Ynys Môn, and they have made great strides in the 2024/25 academic year.

Some key highlights include:

- The research team, community mappers, and a network of bards used existing data sources and newly collected data, captured using various creative methods, to create a mapping tool
- The team conducted their work with a trauma-informed awareness following a number of trauma-informed training sessions delivered by Wrexham University's Dr Tegan Brierley-Sollis and Deborah Robert
- Working on Civic and political engagement to access the right Members of Senedd via activities such as information drop-ins and working with advisory groups
- Being approached by the Children's Commissioner for Wales who wanted to highlight the work of PMP as good practice to the Cabinet Secretary for Economy, Energy, and Planning
- Attending the Civic Mission-focused research symposium held by Universities Wales and Medr at the end of 2024, and PMP work being shared during the event
- Hosting a stand at the Festival of Ideas for the Wellbeing Economy with the Future Generations Commissioner, Derek Walker, in attendance
- Attending the Y Farchnad at the Senedd and engaging in conversation with Assembly Members about the PMP project
- Establishing the first Regional Advisory Group in January 2025, bringing together representatives from different sectors and policy areas and showcasing the mapping platform.

There is still more to come from the project as the team has been awarded phase 2 funding, totalling £3.125m from October 2025 to March 2028, which is incredible news. Upcoming activities include an exhibition at the **International Architecture Exhibition of La Biennale di Venezia** and a **Project celebration** event in the Neuadd, Senedd, sponsored by Rhun ap Iorwerth MS for Ynys Môn and Leader of Plaid Cymru, where project impact and calls for action will be shared.



**Prof. Alec Shepley; Fliss Davies; Prof. Scott Orford; Aeronwy Williams; Hannah Blythyn MS; Dr Rachel Hughes at the Senedd April 2025**

## ECOLOGICAL CITIZEN(S)

The transdisciplinary research network continued its work in the sustainability space, researching how digital technologies can help address the climate crisis. The project is run in collaboration with the Royal College of Art and the Stockholm Environment Institute at the University of York, with the Wrexham team being headed up by Professor Alec Shepley, Associate Dean for Research.



Dr Tracy Simpson, Dr Rebecca Upton and Professor Alec Shepley had a paper titled **“Enriching understanding of ecological citizenship (for a sustainable digital society) through co-designed creative practices within the context of Wales, UK”** accepted to the Architecture Media Politics Society (AMPS) Conference.



**Dr Tracy Simpson, Joe Edwards and pupils from Victoria C.P School, Wrexham**

In collaboration with Joe Edwards, independent film maker, Tracy Simpson conducted a micro-project entitled ‘EC\_Short’s’. Year 4 school pupils were asked to create a one-minute film on what Ecological Citizenship meant to them, and the results were shared at a film Premiere at Tŷ Pawb in July 2025.

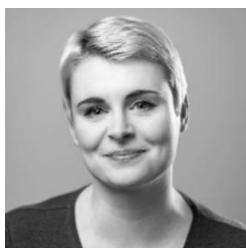
Daniel Knox, Tracy Simpson, Rebecca Upton and Alec Shepley had an article **“Ecological Citizenship and the Co-Design of Inclusive and Resilient Pathways for Sustainable Transitions”** published in the Sustainability journal as part of a special issue, Co-Design and Social Innovation for Climate Neutrality. The research explored how zero emissions and climate neutrality can be made a reality through

a ‘people-centred’ approach. It considered how a socially innovative, co-designed approach to facilitating ecological citizenship (EC) can play a part in bringing about the required changes.

The EC team has been working with the Permaculture Association (Great Britain) on an organisational review, including designing and delivering a series of in-person and online “futuring” exercises. These used the Three Horizons Model as a basis to plan for change and were delivered in Leeds and Lampeter. The Wrexham post-doctoral researchers hope to present some of their findings to the Welsh Permaculture Festival attendees in September. The Wrexham team has also co-authored a paper **“Fostering Ecological Citizenship through transformative educational approaches designed by the Permaculture Association in Current Research”**, focused on education’s role in sustainability transitions in the Environmental Sustainability journal.

The Ecological Citizens Festival being held in September at the Museum of Making in Derby is billed as “a creative, collaborative gathering for artists, scientists, designers, community leaders, researchers, activists and others who are asking: What does it mean to be an ecological citizen today?”. The day is sure to generate connections and encourage the exploration of new ideas.

## INVESTIGATING THE BARRIERS TO ARTS ENGAGEMENT FOR DISABLED PEOPLE IN WREXHAM



Dr Grace Thomas

In collaboration with the Wrexham Miner's Project and Emerge Arts Wales, Dr Grace Thomas, Senior Research Fellow in Arts Engagement, has been carrying out crucial research into accessibility to the arts for disabled people in Wrexham. Grounded in the principle that "art should be for all," the research examines barriers to participation and leverages creative practice to foster social justice.

The 2021 Time to Act report examined barriers impacting disabled artists in Europe, highlighting widespread inaccessibility and low confidence in arts' environment's accessibility measures. Building on this report, Grace conducted some initial research, which showed "there is an economic strain on the local organisations undertaking arts projects and facilitating arts provisions for disabled groups in the Wrexham community. There is also evidence of tensions and negative feeling from these organisations towards public sector bodies, with a need for substantial investment."

Grace then successfully secured funding to continue the research in this space, conducting a number of forums with disabled individuals and groups within Wrexham at the start of 2025, giving those with lived experience the opportunity and platform to share experiences and help shape much needed change.

The outcomes of the forums are being analysed and, subject to additional funding, will be used to formulate "a programme of arts events and workshops that have accessibility and inclusion at the forefront of their conceptualisation and planning". The aim is to present the findings to local arts venues in order to affect change in how accessibility is viewed, approached and integrated into the local arts. The project also aims to financially support existing organisations in enhancing facilities to ensure accessibility to the arts.



Grace Thomas' Visualising Research 2024/25 entry depicting the idea of representation vs the tangible changes needed.

## CO-PRODUCING COMMUNITY NARRATIVES: CREATIVE METHODS FOR SYSTEMS CHANGE IN WALES



Artistic output from the Co-producing Community Narratives project

The Co-producing Community Narratives (CpCN) project emerged from a critical limitation identified within the Well-being of Future Generations (Wales) Act 2015 framework. While Public Services Boards are

required to assess community well-being, traditional statistical geographies often fail to capture authentic community identity and lived experience. This project addressed the gap between data-driven assessments and genuine community understanding by employing creative methodologies to enable residents to define their own communities, share their stories, and articulate their aspirations for the future.

## CREATIVE PRACTITIONERS & APPROACH

Five interdisciplinary artists worked across six North Wales communities (2024-2025):

**Ffion Pritchard** (Porthmadog, Gwynedd & Bro Aberffraw, Ynys Môn) - Applied arts with focus on societal benefit

**Menai Rowland** (Pensarn, Conwy) - Mixed-media design and community workshops

**Emma-Jayne Holmes** (Bruton Park, Denbighshire) - Environmental observation through sketching and photography

**Dr Grace Thomas** (Yr Wyddgrug, Flintshire) - Interdisciplinary practice focusing on social justice

**Maria Hayes** (Wrexham) - Fine arts facilitation with health-focused applications

The project utilised diverse creative methods including storytelling, sculpture, drawing, photography, multimedia filmmaking, and performance, delivered through existing community infrastructures (food banks, youth groups, care facilities) to build on established trust relationships.

**Significance of Creative Methods for Systems Change:** Creative approaches proved transformative in revealing community needs that traditional consultation methods often miss.

**Authentic Voice Amplification:** Art-based activities created safe, non-judgmental spaces where participants felt confident sharing genuine concerns and aspirations, particularly benefiting marginalised groups including migrants, elderly residents, and vulnerable youth.

**Holistic Understanding:** Creative methods captured emotional, cultural, and experiential dimensions of community life that quantitative data cannot measure, providing Public Services Boards with richer intelligence for policy development.

**Democratic Participation:** By meeting communities within familiar spaces and using accessible creative mediums, the project demonstrated how arts-based engagement can democratise participation in civic processes, reaching demographics typically excluded from formal consultation.

**Relationship Building:** The collaborative nature of creative work fostered connections between generations, cultures, and social groups, addressing isolation while generating community solutions.

### Top Three Takeaways

#### Transport as Critical Infrastructure

Across all six communities, inadequate public transport emerged as the primary barrier to social connection, employment, healthcare access, and community participation. This finding demands urgent, coordinated investment in accessible transport solutions as fundamental community infrastructure.

#### Isolation as Public Health Crisis

Social isolation, particularly affecting elderly, disabled, and migrant populations, represents a significant threat to individual and community well-being. The project demonstrated how creative activities and community spaces serve as vital interventions, suggesting arts-based programming should be recognised as essential social infrastructure.

#### Creative Methods as Essential Democratic Tools

Traditional consultation methods systematically exclude many community voices. Creative approaches proved uniquely effective at engaging diverse demographics authentically, indicating that arts-based community engagement should be embedded as standard practice in public service planning and policy development across Wales.

This project demonstrates that achieving the Well-being of Future Generations Act's vision requires methods that honour community expertise, cultural expression, and creative potential as foundations for sustainable systems change.

## ARTS IN HEALTH RESEARCH GROUP

Borne from a serendipitous conversation during a Wrexham University Research Office Coffee Morning, the Arts in Health Research Group (AiH RG) was established in 2024. Led by Karen Heald, Professor in Interdisciplinary Arts Practice, the research group includes colleagues from the Faculty of Arts, Computing and Engineering, the Faculty of Social and Life Sciences, external collaborators, visiting professors, postgraduate researchers and, more recently, master's students.

Research interests and experiences within the group are varied and include Trauma Informed Practice, Dementia Care, Creative Approaches to Wellbeing, Sustainability and Mental Health Wellbeing. Some members of the group are currently working collaboratively on a new piece of research around Sustainable Education in Schools, which will encompass Arts in Health, Ecological Citizenship (EC), and EC in Education. Members are exploring funding options to support the mapping of research areas, methodologies, and research questions to enable connections to be fostered, resources to be shared and projects implemented, with the aim of advancing understanding and practice in the sustainable education space.



Karen Heald, Professor in Interdisciplinary Arts Practice

## COMPUTING

### CYBER & COMPUTING



Dr Adam Thomas Knowles

The end of the academic year saw Dr Adam T. Knowles join Wrexham University as a Senior Lecturer in Cyber & Computing within the Faculty of Arts, Computing and Engineering.

With a PhD in Astrophysics, Adam's research interests lie at the intersection of data science, machine learning (ML) and artificial intelligence (AI), with a particular focus on their development and application in astronomy and healthcare. His work centres on designing and implementing computational models of stars and stellar populations, ML architectures, explainable AI methods, and graph-based learning frameworks.

Recent work investigated the use of graph representation and learning to predict the risk of developing atrial fibrillation in stroke patients, looking for shared patterns and connections between patients that could improve the model learning process.

In parallel, his astronomy research is aimed at advancing, computing and deploying spectral models of stars and stellar populations, with particular emphasis on the effects of abundance patterns and the determination of chemical abundances. Adam is currently involved in several ongoing projects that make

use of his previously published model grids, including a recent collaboration resulting in a publication presenting an estimation of the [C/Fe] abundances of stars in the X-shooter spectral library (XSL).

Future research plans include exploring the intersection of his ML and astronomy work through the application of generative adversarial networks (GANs) for data imputation and generation. Leveraging methodologies developed for synthetic medical data generation, he aims to impute and generate stellar spectra from incomplete or sparsely sampled model grids. Stellar model generation usually requires full radiative transfer calculations through layers of stellar atmospheres - a computationally intensive task. GANs offer a novel solution to the limitations of traditional interpolation methods in high-dimensional parameter spaces, potentially reducing the demand on high-performance computing resources required to perform the full calculations.

Adam has also joined the cross-faculty collaborative research group, Arts in Health, to explore local health board collaboration opportunities.

## SOCIAL COMPUTING HUB



Social computing hub  
logo

January 2025 saw the launch of the Social Computing Hub for staff, researchers, students, and external business links. Co-founded by Dr Phoebe Teh, Reader in Social Computing and Dmitrii Iarovoi, PhD student and Digital Learning Facilitator Intern, the hub was created to support research growth within Computing with the aim of fostering innovation and collaboration to address complex societal challenges through the integration of computational, social, and interdisciplinary sciences.

Bi-weekly open-door meetings have proven fruitful, with several initiatives securing funding, and a number of publications and conference outputs having been generated. Research activities include:

- The impact of Artificial Intelligence (AI) generated advertisement images compared to traditional advertisement
- AI-powered system for automated litter detection
- Emotional and visual engagement with AI generated art
- Mapping NHS services.

Under the supervision of Dr Phoebe Teh, Dmitrii is conducting research into employing unbiased Large Language Models (LLM) for virtual assistant usage as part of his PhD.

Dr Phoebe Teh is currently exploring hosting a text analytics conference at Wrexham University in the summer of 2026 which would further enhance collaboration opportunities for the Social Computing Hub.

## ENGINEERING

### NOVEL FLAT FIBRE SENSORS

Work continues on the £2.2million Novel Flat Fibre Sensors project funded by the Engineering and Physical Sciences Research Council (EPSRC). Professor Richard Day, Pro Vice Chancellor for Research, is Co-Investigator on the project, alongside colleagues from the University of Southampton (lead

institution), the University of Bristol, University of Nottingham, University of Warwick, and University of Herefordshire.

This research explores the use of novel flat fibre sensors in the process control, evaluation and health monitoring of high value composite assets. The flat design optical fibre sensor would support sustainability goals by extending product lifespan and reducing wastage. Richard is investigating the use of the sensors during the composites curing processes and the Wrexham team is in the early stages of modelling. The team will soon commence machining the specialist glass mandrel and collating samples for dielectric property measurements, which will be aided by the opening of the Centre of Engineering and Innovation: CanfodAu, and the appointment of a new Research Assistant.

#### GROWING WELSH OPTICAL ENGINEERING SKILLS AND COMMUNITY



Prof. Anne Nortcliffe

Professor Anne Nortcliffe, Dean of Faculty, successfully secured a grant under the Royal Academy of Engineering Visiting Professor scheme enabling the commencement of a three-year Wrexham University project titled **‘Growing Welsh Optical Engineering Skills and Community’**. Commencing in September 2025, Dr James Monks will join the University as a Visiting Professor. Visiting Professor in ‘Growing Welsh optical engineering skills and community’ was supported by the Department for Science, Innovation and Technology (DSIT) and the Royal Academy of Engineering under the Visiting Professors FY2526 - Round 12 scheme.



Dr James Monks

North Wales is home to a number of optical engineering businesses, alongside the growing quantum computing sector. To help bridge the gap that has emerged in the region for skilled optical engineers, the Visiting Professor project will address the demand for skilled optical engineers in the region, strengthen industry partnerships, feed into the Welsh economy and enhance graduate employability.

#### CANFODAU – CENTRE OF ENGINEERING AND INNOVATION

Built as part of the North Wales Growth Deal, CanfodAu - Centre of Engineering and Innovation at Wrexham University will be home to research, innovation, and industry engagement across Engineering and Optics after opening in the summer.

Sustainability and renewable energy will form a key part of research being driven from CanfodAu, including research into composite materials as lightweight and robust solutions in manufacturing, the development and adoption of hydrogen technologies, and developments in optics and photonics. There will be a number of dedicated labs at the Plas Coch campus for Advanced Composites, Microwave Antenna Design, Power Electronics, Renewable Energies and Sustainability, Electrical Propulsion, and Robotics.



Wrexham University colleagues outside the new CanfodAu Centre

Two new research colleagues joined the university as part of the CanfodAu research team, Dr Meysam Anamagh, Research Fellow in Composite Materials Engineering and Barry Johnston, Research Associate in Hydrogen Engineering. Meysam’s current research is centred on novel designs for hydrogen composite

tanks used in automotive and aerospace applications, aiming to develop more sustainable hydrogen tanks for future use.

## HIGH-POWER LASER DAMAGE THRESHOLD TESTING FACILITY DEVELOPMENT

Professor Richard Day, Pro Vice Chancellor for Research is leading the research group at The OpTIC Centre in developing a high-power Laser Induced Damage Testing (LIDT) facility. It is intended to serve as a state-of-the-art facility for evaluating the resistance of optical components to laser-induced damage, facilitating research, development, and adherence to ISO 21254:1-4 international standards.



Wrexham University OpTIC Centre, St Asaph

It will cater to industries such as aerospace, defence, telecommunications and healthcare. This project was supported by SMART Flexible Innovation Support (FIS) to plan, develop and outline the facility layout, performance criteria, health and safety considerations and process requirements. Dr Chris Nyamayaro, Postdoctoral Research Assistant and Dr Yasir Joya, Senior optical metrologist are working on the LIDT facility to deliver both a commercial service and offer a research platform unique within the UK as it will be supported by the vacuum coating research facility established during the Centre for Photonics Expertise program (CPE).

Dr Omprakash Muthusamy, Postdoctoral Research Assistant, has developed high performance broadband antireflection thin film coating useful for solar cell and laser optics. The team will publish their research findings. This facility creates a robust innovation platform to facilitate advanced process and product development, thereby providing a substantial technical advantage for UK businesses in the photonics systems development sector.

## ANTENNAS FOR DIGITAL HEALTHCARE

Dr Mobayode Akinsolu, Reader in Electronic and Communication Engineering continues his cutting-edge research in antennas and wireless communication and applied artificial intelligence (AI). The 2024/25 academic year saw Mobayode undertake successful design and development of a graphical user interface-based (GUI) educational software for 5G end-to-end power modelling and estimation in collaboration with the University of Mauritius. A web page to disseminate the software is currently in production, alongside a research article showcasing the software which will be submitted for journal publication. The initial publication that led to this research was titled “**End-to-End Power Models for 5G Radio Access Network Architectures with a Perspective on 6G**”.



Dr Mobayode Akinsolu

Mobayode’s design and optimisation of wireless communication devices (antennas in particular) research is also progressing, with a number of papers being published in various journals throughout 2025 covering topics such as design and optimisation of stacked wideband on-body antennas, and an all-textile reflective metasurface for on-body smartphone radiation improvement. Mobayode’s research has also been published in two book chapters this year, with a third on the way. The published chapters cover software-defined networking in cyber-physical systems and selected applications of AI in pursuing the sustainable development goals.

## FAST-FAN PROJECT

The FAST Fan project, headed up by Rob Bolam, Professor in Aeronautical Engineering, continued its work in supporting the drive to reach Net Zero Wales. The patented prototype rim driven fan (RDF) has been designed for electrical propulsion for high-speed flight.

The team completed a Welsh Government SMART Flexible Innovation Support (SFIS) Level 1 “Next Steps” project to determine viable routes to product commercialisation. Work is now underway to secure the next stage, SFIS Level 2 funding, to enable the design of a small version of the fan for the lucrative remote controlled (RC) model jet aircraft sector. Other innovative developments of RDF technology are also being investigated, relating to powerful electrothermal jet engine technology and high strength composite fan and rim manufacturing techniques.



Innovative high-thrust electric fan

Rob coauthored a conference paper on the findings of the preliminary testing of the rim-driven fan for the Universities Power Engineering Conference in Cardiff and is currently exploring environmental collaborative projects such as large-scale seasonal energy storage methods and sustainable low-cost hot water generation for domestic, leisure and industrial purposes.

#### TEMPERATURE GRADIENT IMPROVEMENT OF POWER SEMICONDUCTOR MODULES MOUNTED ON A FORCED AIR HEAT SINK

Andrew Sharp, Senior Lecturer in Electrical Engineering is nearing the final stages of his PhD research into temperature gradient improvement of power semiconductor modules mounted on a forced air heat sink. Andrew successfully secured funding, which enabled him to purchase sensors, manufacture Printed Circuit Boards (PCBs), and enhance the design of the test-rig. The aim of the research is to propose a solution by making a simple modification to a standard heatsink to result in an even



Andrew Sharp

distribution of temperature across the heatsink, reducing the thermal-mechanical stress on the semiconductor components and thus preventing premature failure. Andrew’s research has received industry support, with Invertek Drives, located in Welshpool, having donated a selection of heatsinks for use in the study.

Andrew presented his co-authored paper “**Numerical optimisation of air-cooled heat sink geometry to improve temperature gradient of power semiconductor modules**” at the International Symposium on Industrial

Electronics and Applications at the end of 2024. He also presented his research at faculty seminars and at Open House for Research.

#### ELECTRICAL ENGINEERING

Yuriy Vagapov, Professor in Electrical Engineering, commenced the academic year presenting a co-authored paper at the 59th Institute of Electrical and Electronics Engineers International Universities Power Engineering Conference in Cardiff. Titled “**Prototype Testing of Rim Driven Fan Technology for High-Speed Aircraft Electrical Propulsion**”, the paper discussed findings of the initial feasibility, performance and mechanical integrity testing of the University’s rim-driven FAST Fan. Yuriy also presented a paper on the practical approach to learning the basic principles of control engineering using digital signal processor-based motor control at the conference.

Yuriy continued his research and co-authored a number of papers throughout the year including papers on the numerical investigation of the influence of the stacking sequence and fibre variation of the plies on the flexural properties of carbon fibre-reinforced polymer laminates, and a new hybrid swarm intelligence algorithm for improved searches through large sets of cluster data. Yuriy also presented some of his research at the University’s Open House for Research sessions.



A digital signal processor-based motor control

## BUILT ENVIRONMENT

Simon Everett, Senior Lecturer in the Built Environment, is currently pursuing a PhD that investigates the performance of fan technologies used in healthcare ventilation systems, with a particular focus on ultra-clean ventilation (UCV) operating theatres.



Simon Everett

Building on many years of experience in estates management and sustainability within the NHS, Simon’s research seeks to address key challenges faced by healthcare estates teams — improving energy efficiency, reducing noise, and enhancing the reliability of critical ventilation systems that support safe surgical environments. He shared his latest progress at the Postgraduate Researchers Day in May.

During the 2024/25 academic year, Simon also contributed to the Health Estate Journal with two articles. “**The case for an effective Operations Manual**” examined the management of critical ventilation systems in healthcare facilities, while “**Managing critical systems is often a challenging task**” explored the difficulties of maintaining ageing infrastructure across NHS estates. Together, these publications highlight Simon’s commitment to bridging academic research with the practical realities of healthcare engineering.

## BUILDING DEMOLITION WASTE



Professor Jim Hall (L) and Dr Augustine Blay-Armah (R)

Dr Augustine Blay-Armah, Lecturer in Quantity Surveying, was awarded the 2025 Telford Premium for his co-authored paper “**A life cycle assessment of building demolition waste: a comparison study**”. The Telford Premium is awarded annually to authors whose papers have made a significant contribution to civil engineering knowledge. It is an honour presented by the Institution of Civil Engineers (ICE) in recognition of outstanding work published in their journals. The paper, written by Dr Augustine Blay-Armah, Professor Ali Bahadori-Jahromi, Dr Anastasia Mylona and Mark Barthorpe, was published in the Waste and Resource Management journal and it considered the environmental implications of building demolition waste and how impact can be managed via waste treatment methods, with Dr Blay-Armah’s research focusing on the end-of-life of a supermarket building.



## PUBLICATIONS

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