

Co-Creating Meaningful HEI Work Experience Programmes Through Research Collaboration

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Funding: See Acknowledgements.

This article has been subject to an editorial review process.



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Abstract

With recent updates to the education requirement benchmarks used by the UK's Office for Standards in Education, Children's Services and Skills (Ofsted), there is a growing requirement work experience programmes in both higher education institutions (HEIs) and beyond to create meaningful experiences for students. This Critical Reflection discusses the aims and outcomes of a newly created network of HEIs in the Midlands collaborating to develop best practice for hosting work experience programmes. It demonstrates how a project-based delivery of work experience can provide an enriching experience for both participants and hosts, It discusses the use of work experience co-creation among institutions, describes how the network has delivered work experience within individual institutions, and discusses future plans for the network, describing how incorporating its learning outcomes can improve the overall delivery of work-experience placements in HEIs.

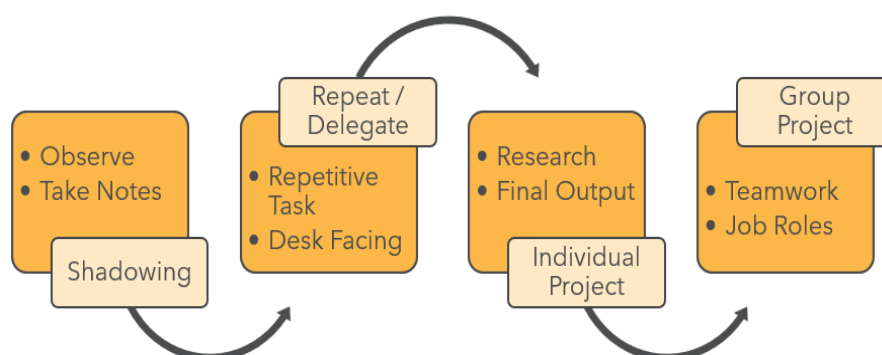
Keywords: work experience programmes; employability schemes; research co-creation; research culture; Gatsby Benchmarks

Introduction

In 2025, a national research culture development initiative, ‘Addressing social mobility issues in STEM’, funded through Research England, was introduced to build a collaborative network exploring various approaches to work-experience programme delivery in a HEI context. The key aspects of research culture being targeted by the network include open access to research, enabling leadership, and creating opportunities for more people to access education. This was particularly important because, as Shift (2024) highlights, the open sharing of knowledge empowers staff at all levels of the organisational structure and helps increase impact.

The initiative specifically grouped leadership partners across three universities, the University of Warwick, the University of Birmingham, and the University of Nottingham. By doing so, we, the affiliated researchers, were able to learn and implement modifications to our own individual programmes to provide the best possible work experience for young people at our respective institutions. The programmes are targeted at youth between the ages of 14 and 18, as they finish their compulsory education and move towards higher education. The catchment areas for the programmes are local to the institute hosting them; for example, the University of Birmingham provides the experience in partnership with a Birmingham-based school.

Figure 1: The progression of work experience models



Work experience programmes are offered all over the United Kingdom by a range of companies and organisations. The form these programmes take often depends on a few core specifications from the host, including allocated resources, allotted time, and available facilities. Figure 1 (above) shows the progression of work experience programme types, starting with the most common form, ‘work shadowing’ (where a participant observes someone’s working day), to other forms, which can include performing repetitive or non-critical tasks like data entry or photocopying and which

provide limited experience of the variable tasks a role typically requires. Alternatively, work experience programmes can be created using a *project-based approach* instead of being built around a specific role. These projects can be completed individually or by a group.

To aid with the sharing of work experience programme best practice, our network adopted a model of co-creation, enabling a more collaborative environment between our respective universities. All parties entered the network with a ready-made work experience structure that had been developed and delivered for multiple years. This created an opportunity to share experiences, resources, and understanding what could potentially be adapted to meet other institutions' needs.

Together, we created and published resources through the network 'W.E.Inspire' (2025), allowing others to follow and/or join. Each stakeholder learns from each another, contributing their own insights and suggestions. This is an important aspect of co-creation:

Co-creation ought to be viewed as a process that provides an opportunity for on-going interaction, where the organization is willing to share its world with external stakeholders and can generate in return the insight that can be derived from their engagement (Ind and Cotes, 2013).

Another type of co-creation is found in the relationship between educator and student during the work experience programme itself. We often discuss with students their personal experiences so that modifications can be made either in real time or for the next cohort. For example, we ask students about their interests and future career plans so that we can prioritise interactions with research groups or members of staff that have lived experience to share in that area.

Project-based learning

Our programmes are centred around project-based learning, with a core underlying topic or problem to be solved. Often these problems are based on relevant research activities that are taking place within the university. Bolick et al. (2024) emphasises the requirement for education to contain meaningful, contextually relevant curricula and how these are approached using project-based exercises and experiences. Using the seven project design elements introduced by the Buck Institute for Education (2022), they present the key elements of project-based learning. The first element they identify is 'authenticity', particularly its connection to place-based education. In this sense, a project that is assigned to a student should be realistically achievable and have the potential to make real-world impact and connect to the everyday experiences of students (Larmer and Mergendoller, 2015).

The work experience programmes are designed to provide a mix of hands-on research in a laboratory setting, independent research and group tasks, all of which culminates in a group presentation at the end of the programme. Learning outcomes (LOs) are not mandatory but can be defined by the HEI prior to the experience, based on the facilities and access to resources that they have. The programme at the University of Warwick was Engineering focussed, and would include LO's based on car design, materials knowledge and manufacturing. The programmes are delivered to young people from the local community, based on relationships established with local schools. The experience they gain and the research that they see and contribute to is based on work the HEI is doing with or for the local area. An example is the Coventry Light Rail project, an installation of a light rail system within the city of Coventry, for which a work experience at the University of Warwick was tailored to include research and design for this project, emphasising the level of impact our research can have.

The Programmes

The research group considered the following work experience programmes, which represent a range of cohorts and practices across all three participating universities. Figure 2 (next page) features key information for each, including procedures and impacts.

University of Warwick: Warwick Manufacturing Group

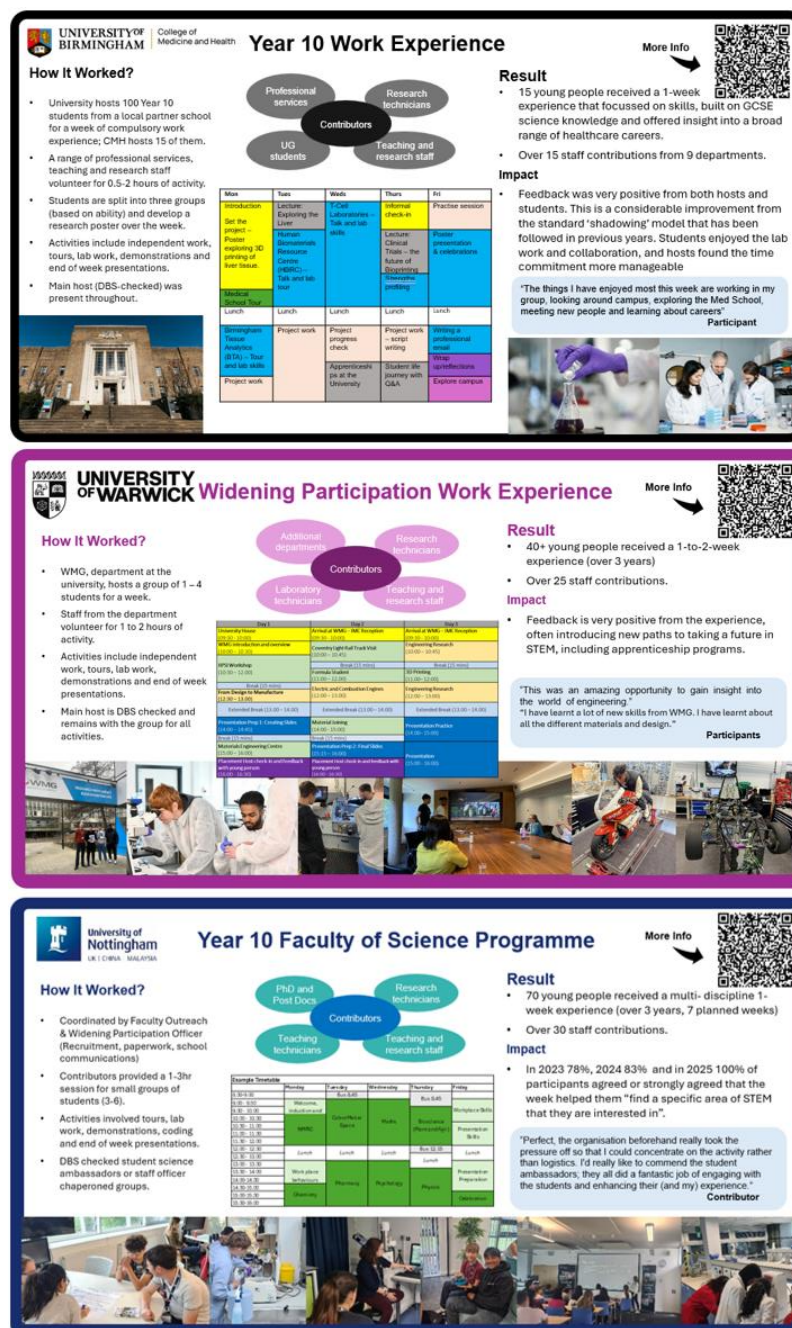
The University of Warwick's work experience programme, hosted by the university's Warwick Manufacturing Group (WMG), has been running since 2021. Students for this programme are all 16 to 18 years old and working through their GCSEs and A-levels; they are recruited through a national work experience scheme for young people from lower socio-economic backgrounds supported by STEM Learning.

The programme is designed so an individual host remains with a small group of students across a week's delivery. This allows staff members interested in hosting to plan, prepare and take part by delivering sessions of short activities or lectures. Before each week's programme begins, the individual work experience host undertakes the necessary training and certification for the role, and all teaching staff also undergo safeguarding training. Risk assessments are stored locally for all staff to access, especially important in the complex manufacturing environment of WMG.

Using project-based learning, each week's host assigns a 'real-world' relevant research topic to the group in the form of a 'leading' question. The

week is then split into short segments that begin to build up a new body of knowledge from and for the students. Students take on specific jobs and areas of focus across the group. At the end of the week, students present their findings as a group.

Figure 2: One-page information packs for each university's work experience programmes



University of Nottingham: Faculty of Science

The University of Nottingham Faculty of Science work experience programme started in 2022 and has run each year since, supporting

seventy local Year 10 students (aged 14 to 15) with an interest in science. The programme addresses many of the barriers to work-experience opportunities within the university, most significantly, a lack of staff confidence and knowledge required to organise and facilitate placements, poor connections between staff and suitable placement students, and hesitancy to take students under sixteen on placements.

Over the course of a week, students in small groups of three to six visit multiple departments in the Faculty of Science. During these visits, students are able to learn about science careers directly from technical, research, and academic staff and to engage in practical tasks relating to these roles. At the end of the week, each student gives a presentation on their specific area of interest, enabling them to demonstrate professional skills development.

This programme is run centrally via the faculty's Outreach and Widening Participation Officer, which enables the recruiting of students without links to the university. Specifically, it helps reach potential students in geographical areas where people are less likely to attend university, those who have received free school meals, have spent more than three months in local authority care, are estranged from their immediate family, or have refugee status. More than thirty staff members from schools and research centres in the Faculty of Science contributed to the programme, reducing the time and administrative burdens on staff through the sharing duties.

University of Birmingham: College of Medicine and Health

The College of Medicine and Health (CMH) hosts fifteen Year 10 students (aged 14 to 15) annually for a week-long work experience programme as part of the wider partnership between local secondary school the University of Birmingham School (UoBS) and University of Birmingham. This represents only a small proportion of the work experience activity taking place across the college as a whole; between October 2024 and August 2025, a further 85 students undertook work placements within the college, arranged through the professional development organisation In2Science's In2STEM programme or directly with members of staff.

Historically, work experience at the CMH was managed by the college's Outreach team, with a focus on safeguarding and ensuring hosts planned a timetable of activities for their students. Specific work placements varied depending on the host's experience and role but typically followed a traditional shadowing model involving performing administrative tasks, observing meetings, and gaining a general understanding of the university as a workplace.

The UoBS placement week also initially followed this approach, with students placed across professional services and research teams. While this helped students develop communication, time-management and organisational skills, it also presented challenges: student engagement varied, and some students felt isolated or unsure of what they were expected to take away from their time in the programme. Some hosts also encountered behavioural issues that they did not feel prepared to manage, leading to a reluctance to participate again.

Case Study: Developing the Birmingham programme

After initially connecting with eventual project co-founders from the University of Warwick and the University of Nottingham at the Midlands Innovation Talent Technical Managers strategy meeting in September 2024, the University of Birmingham chose to pilot a new approach to work experience programmes based on the recommendations from the WMG project report (**Carnegie & Ogunkola, 2023**). We selected the UoBS Year 10 work experience week in summer of 2025 as the testbed for this redesigned model.

The WMG report recommends structured project-based work experience models built around defined activity types and tailored to student ability and interest. Using this framework, the University of Birmingham's 2025 programme was redesigned around the 'guided' model recommended for mixed-ability cohorts, newly focusing on confidence-building and transferable skills. Students worked in small groups, with each group assigned a research question as the scaffolding for the week's activities. The activity timetable now balanced practical activities, independent work, lectures, tours and reflection.

We surveyed the students before and after the week, using a response scale from 'strongly agree' to 'strongly disagree', to measure the impact of the new model. Student responses showed overall improved scores across the metrics that we measured, with the largest improvement across the scale being in 'confidence presenting' (the mean score increased from 3.4/5 to 4.73/5) and 'carrying out independent research' (the mean score increased from 3.73/5 to 4.73/5). This was closely followed by 'confidence using digital tools' (mean score increased from 3.93/5 to 4.73/5) and 'talking to adults' (mean score increased from 3.93/5 to 4.67/5). The group were also asked what they enjoyed and what would have improved the week. Responses indicated they appreciated working in groups, hands-on learning in labs through experimentation, and learning about a variety of career opportunities within healthcare science. Overall, students wanted a greater emphasis on independence, exploration, and hands-on activities,

alongside a more relaxed and balanced schedule. Importantly, student feedback demonstrated far greater consistency of experience than under the previous work-shadowing model, where student-perceived quality varied significantly between placements.

After this successful pilot of the UoBS programme, the University of Birmingham would like to create guidance and resources to help roll out the programme more widely in the college and eventually the University as a whole. We also hope to create a set of clear learning objectives for Year 10 and Year 12 student groups to help our colleagues in work placement training focus their programmes and measure the impact of their placements. Finally, we plan to develop curriculum overview resources so that programmes can make clear connections to students' schoolwork to help support improved performance and attainment.

Beyond this, it is clear that the work being developed across all institutions needs to be backed up by the requirements of schools and their assessors. The Office for Standards in Education, Children's Services and Skills (Ofsted) use the Gatsby Benchmarks, published by the Gatsby Charitable Foundation in their 2015 Good Career Guidance Report (**Holman, 2015**). This provides as clear metrics for assessing an institution's ability to deliver career development programmes. Using these standards, we can tailor our work experience delivery accordingly.

Workshopping Work Experience Programmes at IRCC 2025

The collaborative research group delivered a series of ten-minute rotating workshops at the University of Warwick's 2025 International Research Culture Conference as part of research culture carousel sessions to attendees from a wide range of institutions, including other higher-education providers and representatives of industry organisations (**Carnegie et al., 2025**).

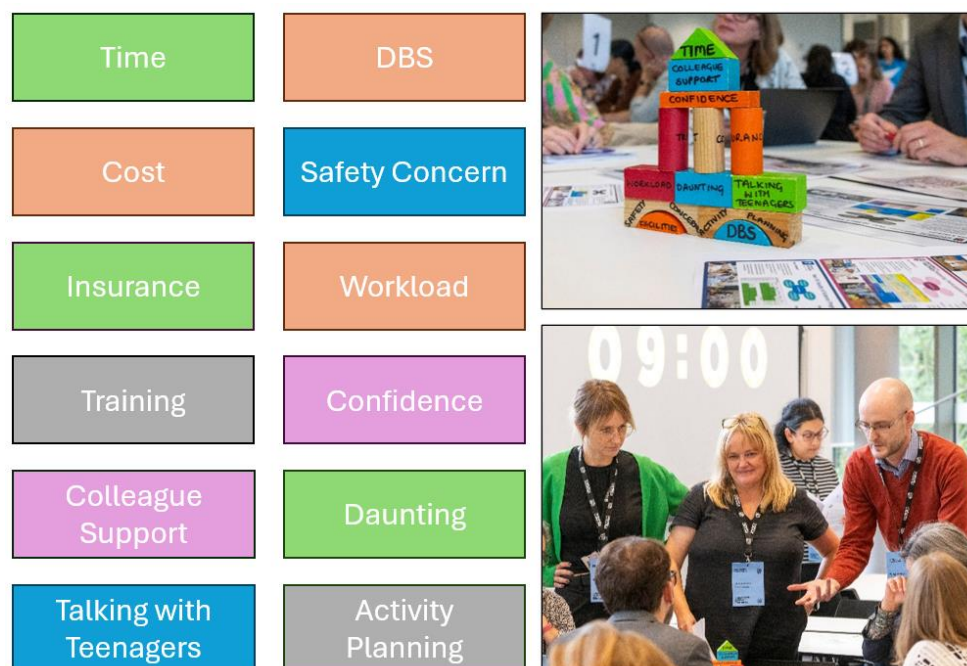
Although there is a national push for HEI engagement with meaningful work experience placement, it remains a struggle to achieve this benchmark for every student. To do so, more hosts must be identified and matched to students based on their needs and career plans. As a research group, we identified twelve key barriers that may prevent organisations from starting a work experience programme, shown in Figure 3 on the following page.

In each workshop rotation, we interacted with conference attendees to explore the barriers we collectively face when thinking about work experience, drawing on our own insights while also listening to others' experiences within their respective workplaces. Despite the diversity of

roles and institutions represented, clear and consistent themes emerged throughout the discussions, highlighting the shared challenges that we face. These include:

- a shortage of time for hosts to plan and deliver work experience placements, exacerbated by limited support from colleagues and individual workload challenges;
- concerns around legal requirements, including workplace insurance, DBS checks, safeguarding expectations and general safety;
- lack of budget to cover related costs such as DBS checks or additional resources;
- lack of confidence and limited knowledge of how to design an effective placement programme;
- concern at the prospect of working with teenagers.

*Figure 3: Discussing the barriers to meaningful work experience placement at IRCC 2025
(Photos: Hollis Photography, 2025)*



These discussions showed the value of collaboration and the importance of openly sharing our experiences. By using the examples of project-based work experience placements at our three institutions, we were able to show that building an experience where students work in groups is a great way of promoting collegiality. Working with students one on one also creates safeguarding issues and can make staff vulnerable to accusations of inappropriate behaviour. Group work also mimics most workplace

settings, where effectively working as part of a team is a crucial skill valued by employers.

Using resources such as WMG's timetable-building guidance (**Carnegie, 2025**) and adopting a clear theme can further increase confidence for those who may be unsure how to design an effective placement strategy. By sharing approaches across institutions, we have identified practical ways to distribute workload and streamline planning, making effective timetabling feel more achievable. For instance, setting a defined project also enables hosts to incorporate periods of independent work into the timetable. Although students still require supervision, this structure allows hosts to continue their own research alongside their placement activities and gives students experience in self-management, delivering a set task to deadline. Producing a timetable with clearly defined sessions and a coherent thematic focus also helps secure support from colleagues, as their contributions can be limited to specific, manageable, time-limited activities rather than planning and supporting an entire placement week.

Conclusion

The informal research network on work placement programmes formed by our three universities has shown the benefits of collaboration. While network participants work in different institutions and disparate departments and disciplines, we share similar experiences and challenges when supporting work-experience students and designing meaningful work placements. These challenges include a lack of specific expertise and a lack of time to devote to gaining it. Often work experience programme delivery functions as an add-on to the typical academic's workload and operates on individual goodwill alone, but the potential benefit of such programmes can be significant, increasing employability by 'building the skills of the future workforce' (**Department for Education, 2018**).

There is a range of different approaches deployed across our three institutions, and by working collaboratively, we have been able to benefit from the research and resources previously developed by one other, creating a positive and lasting impact on the research culture of each institution. For example, our case study identified how the University of Birmingham was able to tailor programmes created by the Warwick Manufacturing Group to their own university culture, creating a successful pilot programme.

Engagement with colleagues at other HEIs and beyond—most notably through attendance at the IRCC—has highlighted the broader transferability of these resources. Equally important has been the

opportunity to work with like-minded individuals who are passionate about improving work experience for students. This shared motivation acts as both a support network and a source of accountability when delivering these projects.

The coordination provided by the research network also supports the recruitment of a diverse group of students, not just those with links to current staff members. The programme structure supports continued growth and consistency that can be applied to other academic and university operational areas. Moving forward, our next steps include university-wide rollouts of our work experience programmes and improving the support available to widening-participation students. For instance, at the University of Birmingham, we hope to be able connect students with hosts they don't already know. We would also like to create clear differential learning outcomes for different age groups while continuing to improve links to relevant school curricula to enhance learning and support.

As government interest in both student career development and assessment benchmarks continues to grow, it is our hope that our collaborative research network will inspire new hosts to become work experience providers, growing the network to include other like-minded researchers running their own programmes across the UK and even internationally.

Acknowledgements

Funding from Research England helped facilitate research culture change for employability schemes at the University of Warwick.

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Figure 1: The progression of work experience models

Figure 2: One-page information packs for institute work experience programmes

Figure 3: Discussing barriers to work experience at IRCC 2025 (Photos: Hollis Photography, 2025)

Dr Craig Carnegie is an assistant professor in high-volume joining in the WMG department at the University of Warwick. As well as leading engineering projects on adhesives and mechanical joining, Craig created and heads up the department's Work Experience team. He founded the W.E.Inspire network, a national initiative to develop and support those delivering work experience programs across the UK.



Emily Birkett is the Outreach and Widening Participation Operations Manager in the College of Medicine and Health at the University of Birmingham. She supports the planning, delivery and operational oversight of outreach and widening participation activity with a focus on healthcare, supporting initiatives that broaden access to medical and health-related education and providing work-experience placement support for staff and students.



Helena Sidgwick is a science communicator, teacher and project manager with experience delivering and managing outreach programmes across England. She is the former Outreach and Widening Participation Officer for the Faculty of Science at the University of Nottingham, where she created the science work experience programme and other initiatives. She works as a science teacher in the Nottinghamshire area.



Dr Sarah Conner is Senior Lecturer in Reproductive Biology and Academic Lead for Outreach and Widening Participation at the University of Birmingham's College of Medicine and Health (CMH). She teaches across a range of healthcare-related programmes and supports students from less privileged backgrounds to achieve their full potential once at university.



References

- Allen, M. & Chant, A., 2024. 'Exploring key facilitating factors to achieving the eight Gatsby Benchmarks in secondary schools in Kent'. *Journal of the National Institute for Career Education and Counselling*. Vol. 47 No. 1. DOI: <https://doi.org/10.20856/jnicec.4704> (last accessed 12 April 2026).
- Bolick, M. A., et al., 2024. 'Project-Based Learning in Interdisciplinary Spaces: A Case Study in Norway and the United States'. *Education Sciences*, 14(8), 866. DOI: <https://doi.org/10.3390/educsci14080866> (last accessed 12 April 2026).
- Carnegie, C. & Ogunkola, N., 2023. 'Hosting a Work Experience Programme at the University of Warwick: A Case Study for Improving Research within WMG' report. *Warwick Manufacturing Group*. Available at: https://warwick.ac.uk/fac/sci/wmg/about/outreach/workexperience/employabilityprogramme/work_experience_programmes_at_wmg.pdf (last accessed 26 August 2026).
- Carnegie, C., 2025. 'Work Experience: Creating Your Timetable'. *Warwick Manufacturing Group*. Available at: https://warwick.ac.uk/fac/sci/wmg/about/outreach/workexperience/employabilityprogramme/6.timetable_building.pdf (last accessed 12 April 2026).
- Carnegie, C., et al., 2025. 'Encouraging the participation in outreach activities for all levels of staff: Sharing experiences across different university institutes'. [conference presentation]. International Research Culture Conference, 17 September.
- Department for Education, 2017. 'Careers strategy: making the most of everyone's skills and talents'. Available at: <https://www.gov.uk/government/publications/careers-strategy-making-the-most-of-everyones-skills-and-talents> (last accessed 26 August 2026).
- Department for Education, 2018. 'Work experience and related activities in schools and colleges'. Available at: (last accessed 21 August 2026).
- Gatsby Charitable Foundation, 2025. 'Gatsby Benchmarks: Good Career Guidance: The Next 10 Years'. Available at: <https://www.gatsby.org.uk/education/activity/good-career-guidance/> (last accessed 26 August 2026).
- Hanson, J. & Neary, S., 2020. The Gatsby Benchmarks and Social Mobility: Impacts to Date. *IAEVG Conference Proceedings: Career Guidance for Inclusive Society*. 11-13 September 2019. *IAEVG: Slovakia*, pp. 168–185. Available at: https://cica.org.au/wp-content/uploads/IAEVG-Conference-Proceedings-2019_FINAL.pdf (last accessed 12 April 2026).
- Hanson, J.M., et al., 2021. 'An evaluation of the North East of England pilot of the Gatsby Benchmarks of good career guidance'. *University of Derby*. Available at: <https://www.gatsby.org.uk/app/uploads/sites/2/2025/07/ne-pilot-evaluation-full-report.pdf> (last accessed 12 April 2026).

Holman, J., 2015. 'Good Career Guidance: Summary'. *The Gatsby Foundation*. Available at: www.gatsby.org.uk/education/activity/good-career-guidance/#reports-publications (last accessed 4 February 2026)

Ind N. & Coates N., 2013. 'The meanings of co-creation'. *European Business Review*, 25(1), pp. 86–95, DOI: <https://doi.org/10.1108/09555341311287754> (last accessed 12 April 2026).

Larmer, J. & Mergendoller, J.R., 2015. 'Gold Standard PBL: Essential Project Design Elements'. *Buck Institute for Education*, pp. 1–4. Available at: <https://cpb-us-w2.wpmucdn.com/wp.wpi.edu/dist/e/220/files/2018/06/Gold-Standard-PBL.pdf> (last accessed 12 April 2026).

PBL Works, 2022. 'Gold Standard PBL: The Essential Project Design Elements'. *Buck Institute for Education*. Available at: <https://www.pblworks.org/what-is-pbl/gold-standard-project-design> (last accessed 26 August 2026).

Percy, C. & Tanner, E., 2021. 'The benefits of Gatsby Benchmark achievement for post-16 destinations'. June. *The Careers & Enterprise Company*. Available at: https://www.careersandenterprise.co.uk/sites/cweb/files/zt0bgoa0/1488_destinations_report_v4.pdf (last accessed 12 April 2026).

Powell, J., et al., 2024. 'Independent report: Research culture initiatives in the UK'. *UK Research and Innovation*. 8 May. Available at: <https://www.ukri.org/publications/research-initiatives-in-the-uk-report/research-culture-initiatives-in-the-uk-report/> (last accessed 26 August 2026).

W.E.Inspire (2025). 'Employability Programme'. Warwick Manufacturing Group. Available at: <https://warwick.ac.uk/fac/sci/wmg/about/outreach/workexperience/employabilityprogramme/> (last accessed 5 February 2026).

To cite this article:

Carnegie, C. et al., 2026. 'Co-creating Meaningful HEI Work Experience Programmes Through Research Collaboration'. *Exchanges: The Interdisciplinary Research Journal*, 13(3), 96–109. Available at: <https://doi.org/10.31273/eirj.v13i3.2243>.