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Faculty of Engineering and Technology, Technological University of the Shannon: Midlands Midwest, Ireland
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BlueSky: https://bsky.app/profile/jeffbuckley92.bsky.social

ACADEMIC APPOINTMENTS AND EDUCATION

2026 - Present	Visiting Senior Lecturer in Technology Education, Linköping University, Sweden
2021 - Present	Lecturer in Research Pedagogy, Technological University of the Shannon: Midlands Midwest, Ireland
2020 - 2021	Assistant Lecturer in Research Pedagogy, Athlone Institute of Technology, Ireland
2018 - 2020	Postdoctoral Researcher in Engineering Education, joint appointment, KTH Royal Institute of Technology, Sweden and Athlone Institute of Technology, Ireland.
2017 - 2018	PhD Candidate, Sweden (transfer to and completion). View transcript. View doctoral thesis.
2014 - 2017	PhD Candidate, University of Limerick, Ireland (transfer from).
2014 - 2017	Teaching Assistant, University of Limerick, Ireland.
2010 - 2014	B.Tech. (Ed.) in Materials and Architectural Technology with Concurrent Teacher Education, University of Limerick, Ireland. View transcript. View European diploma supplement.

CERTIFICATES AND COURSEWORK

2021	SciVal Certification Programme. Elsevier. Click here for certificate.
2021	Scopus Certification Programme. Elsevier. Click here for certificate.
2020	Doctoral Supervision (3 ECTS credits). KTH Royal Institute of Technology. Click here for Official Transcript.
2020	Research Integrity: Social and Behavioral Sciences. Epigeum. Click here for certificate.

2020 Research Integrity: Concise (Core Course). Epigeum. Click here for certificate.
2020 Human Subjects Protections (Specialist Course). Epigeum. Click here for certificate.
2020 The Humane Use and Care of Animals in Research (Specialist Course). Epigeum. Click here for certificate.
2020 Conflict of Interest (Specialist Course). Epigeum. Click here for certificate.
2020 Intellectual Property (Specialist Course). Epigeum. Click here for certificate.
2020 Safety and Health (Specialist Course). Epigeum. Click here for certificate.
2019 Diversity and Inclusion in the Republic of Ireland Workplace. Legal Island. Click here for certificate.
2016 Certified SolidWorks Associate. SolidWorks. Click here for certificate.
2016 Visual Perception and the Brain. Duke University. Online Course Authorised through Coursera. Click here for certificate.
2016 The Brain and Space. Duke University. Online Course Authorised through Coursera. Click here for certificate.
2016 Serious Gaming. Erasmus University Rotterdam. Online Course Authorised through Coursera. Click here for certificate.

PUBLICATIONS

Click here for ResearchGate profile for full texts or email jeffrey.buckley@tus.ie
Click here for Google Scholar profile (Citations = 1505; h-index = 19; i10-index = 38)

Shiny Apps

2025

Buckley, J. (2025). OpenACJ v3: Mouse tracing.
https://jeffbuckley1992.shinyapps.io/OpenACJ_v3_Mouse_Tracing/.
This shiny app was developed to offer a free and open access educational and research tool for adaptive comparative judgement with mouse tracing for experimental research. It is a beta version for individual users.

Buckley, J. (2025). OpenACJ v2.
https://jeffbuckley1992.shinyapps.io/OpenACJ_v2/.
This shiny app was developed to offer a free and open access educational and research tool for adaptive comparative judgement. It is a beta version for multiple simultaneous users.

Buckley, J. (2025). OpenACJ v1.
https://jeffbuckley1992.shinyapps.io/OpenACJ_v1/.
This shiny app was developed to offer a free and open access educational and research tool for adaptive comparative judgement. It is a beta version for individual users.

2024

Buckley, J. (2024). Adaptive Comparative Judgement App.
https://jeffbuckley1992.shinyapps.io/comparative_judgement/.
This shiny app was developed to offer a free and open access educational and research tool for adaptive comparative judgement. It is an alpha version for individual users.

Buckley, J. (2024). Linkography App.

https://jeffbuckley1992.shinyapps.io/linkography/.
This shiny app was developed to offer a free and open access educational and research tool for linkography and archiography analysis.

Journal Articles

2025

Aczel, B., Szaszi, B., Clelland, H., Kovacs, M., … **Buckley, J.**, … Errington, T., & Nosek, B. (In Press). Investigating the analytical robustness of the social and behavioural sciences. *Nature*.

Zhu, C., **Buckley, J.**, Klapwijk, R., Spandaw, J., & de Vries, M. (2025). A holistic look at creativity: Evaluating pupils' creative design ideation and prototypes through comparative judgment. *International Journal of Technology and Design Education*.

Pantzos, P., Pears, A., & **Buckley, J**. (2025). Analysing student motivation in challenge-based Learning in higher engineering education using the self-determination theory. *Innovations in Pedagogy and Technology*, 1(1), 27-46. https://doi.org/10.63385/ipt.v1i1.45

Power, J., Tanner, D., Egan, V., Mooney Simmie, G, & **Buckley, J.** (2025). Engineering self-efficacy development in undergraduates: Evolving sources. *European Journal of Engineering Education*. https://doi.org/10.1080/03043797.2025.2468350

Power, J., Tanner, D., & **Buckley, J.** (2025). Self-efficacy development in undergraduate engineering education. *European Journal of Engineering Education*. 50(1), 1-25. https://doi.org/10.1080/03043797.2024.2368149

Lin, T. J., **Buckley, J.**, Gumaelius, L., & Ampadu, E. (2025). The potential for spatial ability development through the Swedish Technology and Craft compulsory curricula. *International Journal of Technology and Design Education*. 35(4), 1409–1427. https://doi.org/10.1007/s10798-024-09958-7

Power, J., & **Buckley, J.** (2025). The purpose of second level engineering education: An examination of curricular consistency and industry alignment. *Australasian Journal of Engineering Education*. 30(1), 37-48. https://doi.org/10.1080/22054952.2024.2430155

2024

Buckley, J. (2024). An open-source adaptive comparative judgement app for technology education research and practice: Alpha version. *Journal of Technology Education. 36*(1), 58-82. https://doi.org/10.21061/jte.v36i1.a.4

Lin, T. J., **Buckley, J.**, Gumaelius, L., & Ampadu, E. (2024). Locating the potential development of spatial ability in the Swedish national curriculum. *Heliyon*, e38356. https://doi.org/10.1016/j.heliyon.2024.e38356

Hyland, T., Seery, N., & **Buckley, J.** (2024). Spatial ability predicts short-term retention of declarative technical information in authentic engineering educational settings: An original study with two conceptual replications. *European Journal of Engineering Education*. 49(6), 1310-1332. https://doi.org/10.1080/03043797.2024.2405860. Preprint available at: https://osf.io/preprints/socarxiv/cdv63/

Buckley, J. (2024). Conducting power analyses to determine sample sizes in quantitative research: A primer for technology education researchers using common statistical tests. *Journal of Technology Education*. *35*(2), 81-109. https://doi.org/10.21061/jte.v35i2.a.5

Bufasi, E., Lin, T.J., Benedicic, U., Westerhof, M., Mishra, R., Namsone, D., Dudareva. I., Sorby, S., Gumaelius, L., Klapwijk, R., Spandaw, J., Bowe, B., O'Kane, C., Duffy, G., Pagkratidou, M., & **Buckley, J.** (2024). Addressing the complexity of spatial teaching: A narrative review of barriers and enablers. *Frontiers in Education*. *9*(1306189), 1-16. http://doi.org/10.3389/feduc.2024.1306189

2023

Schaerer, M., du Plessis, C., Nguyen, M., van Aert, R. C. M., Tiokhin, L., Lakens, D., Clemente, E., Pfeiffer, T., Dreber, A., Magnus Johannesson, M., Clark, C. J., **Gender Audits Forecasting Collaboration**, & Uhlmann, E. L. (2023). On the trajectory of discrimination: A meta-analysis and forecasting survey capturing 44 years of field experiments on gender and hiring decisions. *Organizational Behavior and Human Decision Processes*, 1–28. **(Member of Forecasting Collaboration).** https://doi.org/10.1016/j.obhdp.2023.104280

Kremer, T., Murray, N., **Buckley, J.**, & Rowan, N. (2023). Blending immersive and educational technologies to unlock appropriate training for effective cleaning and processing of reusable medical devices that safeguards patient health – Quo Vadis? *Science of the Total Environment. 20*(165673). https://doi.org/10.1016/j.scitotenv.2023.165673

Buckley, J., Araujo, J. A., Aribilola, I., Arshad, I., Azeem, M., Buckley, C., Fagan, A., Fitzpatrick, D. P., Garza Herrera, D. A., Hyland, T., Imtiaz, M. B., Khan, M. B., Lanzagorta Garcia, E., Moharana, B., Mohd Sufian, M. S. Z., Osterwald, K. M., Phelan, J., Platonava, A., Reid, C., Renard, M., Rogriguez Barroso, L. G., Scully, J., Silva Nunes Bezerra, G., Szank, T., Tahir, M., Teehan, M., Vijayakumar, S., & Zainol, I. (2023). How transparent are quantitative studies in contemporary technology education research? Instrument development and analysis. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-023-09827-9

Buckley, J., Gumaelius, L., Nyangweso, M., Hyland, T., Seery, N., & Pears, A. (2023). The impact of country of schooling and gender on secondary school pupils' conceptions of and interest in becoming an engineer in Ireland, Kenya and Sweden. *International Journal of STEM Education*. *10*(28), 1-25. https://doi.org/10.1186/s40594-023-00416-9

2022

Buckley, J., Hyland, T., & Seery, N. (2022). Estimating the replicability of technology education research. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-022-09787-6

Seery, N., Phelan, J., **Buckley, J.**, & Canty, D. (2022). Epistemological treatment of design in technology education. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-022-09781-y

Delios, A., Clemente, E., Wu, T., Tan, H., Wang, Y., Gordon, M., Viganola, D., Chen, Z., Dreber, A., Johannesson, M., Pfeiffer, T., **Generalizability Tests Forecasting Collaboration**, & Uhlmann, E.L. (2022). Examining the generalizability of research findings from archival data. *Proceedings of the National Academy of Sciences*, *119*(30), 1-9. **(Member of Forecasting Collaboration)**. https://doi.org/10.1073/pnas.2120377119

Panagiotis, P., Gumaelius, L., **Buckley, J.**, & Pears, A. (2022). Engineering students' perceptions of the role of work industry-related activities on their motivation for studying and learning in

higher education. *European Journal of Engineering Education*. https://doi.org/10.1080/03043797.2022.2093167

Seery, N., Kimbell, R., & **Buckley, J.** (2022). Using teachers' judgements of quality to establish performance standards across schools, communities, and nations. *Frontiers in Education*. *7*(806894), 1-8. https://doi.org/10.3389/feduc.2022.806894

Buckley, J., Seery, N., & Kimbell, R. (2022). A review of the valid methodological use of adaptive comparative judgement in technology education research. *Frontiers in Education*. *7*(787926), 1-6. https://doi.org/10.3389/feduc.2022.787926

Buckley, J., Trevelyan, J., & Winberg, C. (2022). Perspectives on engineering education from the world of practice. *European Journal of Engineering Education. 47*(1), 1-7. https://doi.org/10.1080/03043797.2021.2000694

Buckley, J. (2022). The need to consider the predictive capacity of intelligence and its malleability within design and technology education research. *International Journal of Technology and Design Education*, *32*(1), 1-15. https://doi.org/10.1007/s10798-020-09588-9

Buckley, J., Hyland, T., Gumaelius, L., Seery, N., and Pears, A. (2022) Exploring the prototypical definitions of intelligent engineers held by Irish and Swedish higher education engineering students. *Psychological Reports*, *125*(3), 1397-1437. https://doi.org/10.1177/00332941211000667

Buckley, J., Canty, D., & Seery, N. (2022). An exploration into the criteria used in assessing design activities with adaptive comparative judgment in technology education. *Irish Educational Studies*, *41*(2), 313-331. https://doi.org/10.1080/03323315.2020.1814838

2021

Buckley, J., Adams, L., Aribilola, I., Arshad, I., Azeem, M., Bracken, L., Breheny, C., Buckley, C., Chimello, I., Fagan, A., Fitzpatrick, D. P., Gomes, G. D., Garza Herrera, D., Grassick, S., Halligan, E., Hirway, A., Hyland, T., Imtiaz, M. B., Khan, M. B., Lanzagorta Garcia, E., Lennon, P., Manaf, E., Meng, J., Mohd Sufian, M. S. Z., Moraes, A., Osterwald, K. M., Platonava, A., Reid, C., Renard, M., Rodriguez Barroso, L. G., Simonassi-Paiva, B., Singh, M., Szank, T., Tahir, M., Vijayakumar, S., Ward, C., Yan, X., Zainol, I., & Zhang, L. (2021). An assessment of the transparency of contemporary technology education research employing interview-based methodologies. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-021-09695-1

Buckley, J., Hyland, T., & Seery, N. (2021). Examining the replicability of contemporary technology education research. *Techne Series: Research in Sloyd Education and Craft Sciences. 28*(2), 1-9. https://journals.oslomet.no/index.php/techneA/article/view/4264

Dunbar, R., Seery, N., & **Buckley, J.** (2021). The motivations and perceptions of practicing teachers undertaking technology education research: A work in progress report from an exploratory case study. *Techne Series: Research in Sloyd Education and Craft Sciences. 28*(2), 10-16. https://journals.oslomet.no/index.php/techneA/article/view/4335

Reid, C., **Buckley, J.**, & Dunbar, R. (2021). Investigating the effect of engineering student's spatial ability and expertise on general complex problem solving. *Techne Series: Research in Sloyd Education and Craft Sciences. 28*(2), 72-81. https://journals.oslomet.no/index.php/techneA/article/view/4283

Canty, D., Seery, N., **Buckley, J.**, & Dunbar, R. (2021). A conceptual framework for the assessment of learning in technology classroom based assessments. *Techne Series: Research in Sloyd*

Education and Craft Sciences. 28(2), 213-220. https://journals.oslomet.no/index.php/techneA/article/view/4334

Tierney, W., Hardy, J. H., III., Ebersole, C., Viganola, D., Clemente, E., Gordon, M., Hoogeveen, S., Haaf, J., Dreber, A.A., Johannesson, M., Pfeiffer, T., Chapman, H., Gantman, A., Vanaman, M., DeMarree, K., Igou, E., Wylie, J., Storbeck J., Andreychik, M.R., McPhetres, J., Vaughn, L.A., **Culture and Work Morality Forecasting Collaboration**, & Uhlmann, E. L. (2021). A creative destruction approach to replication: Implicit work and sex morality across cultures. *Journal of Experimental Social Psychology*, 93, 104060. **(Member of Forecasting Collaboration)**. https://doi.org/10.1016/j.jesp.2020.104060

Buckley, J., Seery, N., Gumaelius, L., Canty, D., Doyle, A., & Pears, A. (2021). Framing the constructive alignment of design within technology subjects in general education. *International Journal of Technology and Design Education. 31*(5), 867-883. https://doi.org/10.1007/s10798-020-09585-y

2020

Reid, C., Keighrey, C., Murray, N., Dunbar, R., & **Buckley J.** (2020). A novel mixed methods approach to synthesize EDA data with behavioral data to gain educational insight. *Sensors. 20*(23), 6857. https://doi.org/10.3390/s20236857

2019

Seery, N., Kimbell, R., **Buckley, J.**, & Phelan, J. (2019). Considering the relationship between research and practice in technology education: A perspective on future research endeavours. *Design and Technology Education: An International Journal, 24*(2), 163-174. https://ojs.lboro.ac.uk/DATE/article/view/2586

Buckley, J., Seery, N., & Canty, D. (2019). Investigating the use of spatial reasoning strategies in geometric problem solving. *International Journal of Technology and Design Education, 29*(2), 341-362. http://doi.org/10.1007/s10798-018-9446-3

Buckley, J., O'Connor, A., Seery, N., Hyland, T., & Canty, D. (2019). Implicit theories of intelligence in STEM education: Perspectives through the lens of technology education students. *International Journal of Technology and Design Education, 29*(1), 75-106. http://doi.org/10.1007/s10798-017-9438-8

Doyle, A., Seery, N., Canty, D., & **Buckley, J.** (2019). Agendas, influences, and capability: Perspectives on practice in design and technology education. *International Journal of Technology and Design Education, 29*(1), 143-159. http://doi.org/10.1007/s10798-017-9433-0

Buckley, J., Seery, N., & Canty, D. (2019). Spatial cognition in engineering education: Developing a spatial ability framework to support the translation of theory into practice. *European Journal of Engineering Education, 44*(1-2), 164-178. http://doi.org/10.1080/03043797.2017.1327944

Gumaelius, L., Hartell E., Svärdh, J., Skogh, I.B., & **Buckley, J.** (2019). Outcome analyses of educational interventions: A case study of the Swedish boost of technology intervention. *International Journal of Technology and Design Education*. *29*(4), 739-758. https://doi.org/10.1007/s10798-018-9470-3

Seery, N., **Buckley, J.**, Delahunty, T., & Canty, D. (2019). Integrating learners into the assessment process using adaptive comparative judgement with an ipsative approach to identifying

competence based gains relative to student ability levels. *International Journal of Technology and Design Education*. *29*(4), 701-715. https://doi.org/10.1007/s10798-018-9468-x

2018

Buckley, J., Canty, D., White, D., Seery, N., & Campbell, M. (2018). Spatial working memory and neural efficiency in mental rotations: An insight from pupillometry. *Engineering Design Graphics Journal, 82*(3), 20-32. http://www.edgj.org/index.php/EDGJ/article/view/703

Hyland, T., **Buckley, J.**, Seery, N., Gordon, S., & Canty, D. (2018). Integrating assessment and design activity in engineering education: A proposed synthesis of adaptive comparative judgement and the CDIO framework. *Engineering Design Graphics Journal, 82*(2), 1-16. http://www.edgj.org/index.php/EDGJ/article/view/683

Buckley, J., Seery, N., Canty, D., & Gumaelius, L. (2018). Visualization, inductive reasoning, and memory span as components of fluid intelligence: Implications for technology education. *International Journal of Educational Research, 90*(1), 64-77. https://doi.org/10.1016/j.ijer.2018.05.007

Buckley, J., Seery, N., Power, J., & Phelan, J. (2018). The importance of supporting technological knowledge in post-primary education: A cohort study. *Research in Science and Technological Education, 37*(1), 36-53. https://doi.org/10.1080/02635143.2018.1463981

Buckley, J., Seery, N., & Canty, D. (2018). A heuristic framework of spatial ability: A review and synthesis of spatial factor literature to support its translation into STEM education. *Educational Psychology Review, 30*(3), 947-972. http://doi.org/10.1007/s10648-018-9432-z

Buckley, J., & Seery, N. (2018). Balancing curriculum intent with expected student responses to designerly tasks. *Design and Technology Education: An International Journal, 23*(1), 26-39. https://ojs.lboro.ac.uk/DATE/article/view/2302

Buckley, J., Seery, N., & Canty, D. (2018). Heuristics and CAD modelling: An examination of student behaviour during problem solving episodes within CAD modelling activities. *International Journal of Technology and Design Education, 28*(4), 939-956. http://doi.org/10.1007/s10798-017-9423-2

Book Chapters

2025

Hartell, E., Ampadu, E., Lennholm, H., & **Buckley, J.** (2022). Status, trends and issues of education for sustainable development (ESD) in Sweden. In Y-F. Lee, & L-S. Lee (Ed.), *Status, Trends and Issues of Education for Sustainable Development (ESD) in Highly Competitive Countries: Country Reports and International Comparison* (pp. 367-414). Technological and Vocational Education Research Center (TVERC), National Taiwan Normal University, Taiwan.

2023

Buckley, J., Seery, N., Canty, D., & Dunbar, R. (2023). Features of Quality and Assessment Standards in Newly Reformed Irish Junior Cycle Technology Education. In S. Bartholomew, M. Hoepfl, & P. J. Williams (Eds.), *Standards-Based Technology and Engineering Education: 63rd*

Yearbook of the Council on Technology and Engineering Teacher Education (pp. 219–233). Springer Nature. https://doi.org/10.1007/978-981-99-5704-0_14

Buckley, J. (2023). Reflecting on maker education as a potential context for the development of spatial ability. In R. Klapwijk, J. Gu, Q. Yang, & M. de Vries (Eds.), *Maker Education Meets Technology Education: Reflections on Good Practice* (pp. 198-201). Brill. https://doi.org/10.1163/9789004681910_013

Buckley, J., Wallin, P., Matemba, E., Power., J., Mohanty, A. & Bombaerts, G. (2023). The future of engineering education research. In Johri, A. (Ed), *International Handbook of Engineering Education Research* (pp. 711-729). Routledge. https://doi.org/10.4324/9781003287483-38

Buckley, J. (2023). Historical and philosophical origins of technology education. In D. Gill, D. Irving-Bell, M. McLain, & D. Wooff (Eds.), *The Bloomsbury Handbook of Technology Education: Perspectives and Practice* (pp. 14-27). Bloomsbury. https://doi.org/10.5040/9781350238442.0010

2022

Hartell, E., & **Buckley, J.** (2022). Status and trends of STEM education in Sweden. In Y-F. Lee, & L-S. Lee (Ed.), *Status and Trends of STEM Education in Highly Competitive Countries: Country Reports and International Comparison* (pp. 305-359). Technological and Vocational Education Research Center (TVERC), National Taiwan Normal University, and K-12 Educational Administration (K12EA), Ministry of Education, Taiwan.

Buckley J., Seery N., Canty D., & Gumaelius L. (2022) The Importance of Spatial Ability Within Technology Education. In: P.J. Williams, & B. von Mengersen (eds), *Applications of Research in Technology Education* (pp. 165-182). Springer, Singapore. https://doi.org/10.1007/978-981-16-7885-1_11

2021

Hartell, E., & **Buckley, J.** (2021). Comparative judgement: An overview. In A. Marcus Quinn, &, T. Hourigan (Eds.), *Handbook for Online Learning Contexts: Digital, Mobile and Open* (pp. 289-307). Cham: Springer. https://doi.org/10.1007/978-3-030-67349-9_20

Peer Reviewed Conference Papers

2024

Buckley, J., & Lin, T-J. (2024). Simulating adaptive comparative judgement sessions to determine the effect of judge disagreement on reliability. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

Buckley, J., & Power, J. (2024). Multiverse analyses as a tool to support analytical robustness in technology education research. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

Hyland, T., Seery, N., & **Buckley, J.** (2024). The causal relationship between Spatial Ability and performance in technological education: A methodological approach. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

McDyer, M., **Buckley, J.**, Dunbar, R., & Seery, N. (2024). Design teaching in classroom practice: Phase 1 of a grounded theory study in technology education. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

Maquet, L., Dunbar, R., & **Buckley, J.** (2024). Does medium matter? Exploring validity in paper and digital spatial ability tests in secondary education. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

Blom, N., & **Buckley, J.** (2024). A primer on the use of R to analyse think aloud protocols through linkography. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

2023

Buckley, J., Seery, N., & Kimbell, R. (2023). Modelling approaches to combining and comparing independent adaptive comparative judgement ranks. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University. Retrieved from https://openjournals.ljmu.ac.uk/PATT40/article/view/1570

Buckley, J. (2023). Considering the credibility of technology education research: A discussion on empirical insights and possible next steps. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University. Retrieved from https://openjournals.ljmu.ac.uk/PATT40/article/view/1528

Lin, T.-J., **Buckley, J.**, Gumaelius, L., & Ampadu, E. (2023). Situating spatial ability development in the Craft and Technology curricula of Swedish compulsory education. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University. Retrieved from https://openjournals.ljmu.ac.uk/PATT40/article/view/1508

McDyer, M., **Buckley, J.**, Dunbar, R., Blom, N., & Seery, N. (2023). Problematising and unpacking the uncertainty of design within technology education. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University. Retrieved from https://openjournals.ljmu.ac.uk/PATT40/article/view/1531

Maquet, L., Benedičič, U., Dunbar, R., **Buckley, J.**, Duffy, G., & Sorby, S. (2023). The challenges of implementing a spatial ability intervention at secondary level. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University. Retrieved from https://openjournals.ljmu.ac.uk/PATT40/article/view/1534

Benedicic, U., Maquet, L., Duffy, G., Dunbar, R., **Buckley, J.**, & Sorby, S. (2023). Implementation and analysis of a spatial skills course for Secondary level STEM education. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University. Retrieved from https://openjournals.ljmu.ac.uk/PATT40/article/view/1533

Reid, C., Sorby, S.A., Raju, G., **Buckley, J.**, & Seery, N. (2023). Using adaptive comparative judgement to holistically assess creativity of design solutions: A comparison of first-year students and educators judgements. In *Proceedings of the 130th ASEE Annual Conference and Exposition*. Baltimore, Maryland: American Society for Engineering Education.

2022

Hartell, E., & **Buckley, J.** (2022). Unpacking decision making in comparative judgement: A stimulated think-aloud methodology to gain insight into young peoples' decision making. AEA - Europe 2022. Dublin, Ireland: Association for Educational Assessment - Europe.

Panagiotis, P., **Buckley, J.**, Gumaelius, L., & Rosen, A. (2022). Engineering students' motivation for learning on challenge driven project courses: A qualitative pilot study. *SEFI Annual Conference 2022*. Barcelona, Spain: Universitat Politècnica de Catalunya.

Buckley, J., & Canty, D. (2022). Assessing performance: The technical challenges in developing and validating "ACJ-Steady State". *PATT2022: PATT on the edge: Technology, innovation, and education*. Newfoundland & Labrador, Canada: Memorial University.

Reid, C., **Buckley, J.**, Dunbar, R., & Seery, N. (2022). Examining the relationship between spatial ability and cognitive load during complex problem solving. *PATT2022: PATT on the edge: Technology, innovation, and education*. Newfoundland & Labrador, Canada: Memorial University.

Canty, D., Blom, N., Seery, N., **Buckley, J.**, & Dunbar, R. (2022). Investigating student teacher assessment literacy development through an assessment as learning activity. *PATT2022: PATT on the edge: Technology, innovation, and education*. Newfoundland & Labrador, Canada: Memorial University.

Mc Dyer, M., **Buckley, J.**, Dunbar, R., Blom, N., & Seery, N. (2022). A categorisation of the aims of design-focused research in technology education. *PATT2022: PATT on the edge: Technology, innovation, and education*. Newfoundland & Labrador, Canada: Memorial University.

Maquet, L., Dunbar, R., **Buckley, J.**, Seery, N., & Sorby, S. (2022). A review of the literature to inform the efficacy of a spatial skills intervention for secondary level STEM education. *PATT2022: PATT on the edge: Technology, innovation, and education*. Newfoundland & Labrador, Canada: Memorial University.

Whittaker, D., Dunbar, R., & **Buckley, J.** (2022). An analysis of the Irish Junior Cycle Graphics specification to explore the treatment of spatial cognition. *PATT2022: PATT on the edge: Technology, innovation, and education*. Newfoundland & Labrador, Canada: Memorial University.

2021

Buckley, J., & Pears, A. (2021). A rapid review and qualitative synthesis of interpretations of digital competence in higher education research. *Proceedings of the 37th International Manufacturing Conference*. Athlone, Ireland: Athlone Institute of Technology.

Buckley, J., Hyland, T., & Seery, N. (2021). Examining the replicability of contemporary technology education research. *PATT2021:Technology in our hands. Creative pedagogy and ambitious teacher education.* Rauma, Finland: University of Turku.

Reid, C., **Buckley, J.**, & Dunbar, R. (2021). Investigating the effect of engineering student's spatial ability and expertise on general complex problem solving. *PATT2021:Technology in our hands. Creative pedagogy and ambitious teacher education.* Rauma, Finland: University of Turku.

Canty, D., Seery, N., **Buckley, J.**, & Dunbar, R. (2021). A conceptual framework for the assessment of learning in technology classroom based assessments. *PATT2021:Technology in our hands. Creative pedagogy and ambitious teacher education.* Rauma, Finland: University of Turku.

Dunbar, R., Seery, N., & **Buckley, J.** (2021). The motivations and perceptions of practicing teachers undertaking technology education research: A work in progress report from an exploratory case study. *PATT2021:Technology in our hands. Creative pedagogy and ambitious teacher education.* Rauma, Finland: University of Turku.

2020

Panagiotis, P., Gumaelius, L., **Buckley, J.**, & Pears, A. (2020). Considerations in the development of a follow-up exploratory quantitative design for student's motivation regarding to work industry-related activities in higher engineering education. In *Proceedings of the 2020 IEEE Frontiers in Education Conference*. Uppsala, Sweden: Frontiers in Education.

2019

Panagiotis, P., Gumaelius, L., **Buckley, J.**, & Pears, A. (2019). On the role of industry contact on the motivation and professional development of engineering students. In *Proceedings of the 2019 IEEE Frontiers in Education Conference*. Cincinnati, Ohio: Frontiers in Education.

Buckley, J., Gumaelius, L., Hyland, T., Seery, N., & Pears, A. (2019). A comparison of Swedish and Irish secondary students' conceptions of engineers and engineering using the Draw-an-Engineer Test. In *Proceedings of the 126th ASEE Annual Conference and Exposition*. Tampa, Florida: American Society for Engineering Education.

Buckley, J., Hyland, T., Seery, N., Gumaelius, L., & Pears, A. (2019). Investigating perceptions of intelligence as an approach to understanding female representation in technology and engineering education. In S. Pule (Ed.), *PATT2019: Developing a knowledge economy through technology and engineering education*. Msida, Malta: University of Malta.

Dunbar, R., **Buckley, J.**, & Seery, N. (2019). Curriculum development for technology teacher education: Integrating pedagogy, epistemology and capability. In S. Pule (Ed.), *PATT2019: Developing a knowledge economy through technology and engineering education*. Msida, Malta: University of Malta.

Hyland, T., **Buckley, J.**, Seery, N., & Gordon, S. (2019). The predictive capacity of spatial ability for knowledge retention in third level technology and engineering education. In S. Pule (Ed.), *PATT2019: Developing a knowledge economy through technology and engineering education*. Msida, Malta: University of Malta.

Reid, C., Dunbar, R., & **Buckley, J.** (2019). Developing a methodological approach to measure cognitive load during complex problem solving: Working to understand the role of spatial ability in problem solving. In S. Pule (Ed.), *PATT2019: Developing a knowledge economy through technology and engineering education*. Msida, Malta: University of Malta.

Canty, D., Seery, N., & **Buckley, J.** (2019). Inducting ITE students in assessment practices through the use of comparative judgement. In S. Pule (Ed.), *PATT2019: Developing a knowledge economy through technology and engineering education*. Msida, Malta: University of Malta.

2018

Buckley, J., Seery, N., Canty, D., & Gumaelius, L. (2018). On intelligence in technology education: Towards redefining technological capability. In N. Seery, J. Buckley, D. Canty, & J. Phelan (Eds.), *PATT2018: Research and Practice in Technology Education: Perspectives on Human Capacity and Development*. Westmeath, Ireland: Athlone Institute of Technology.

Hyland, T., **Buckley, J.**, Seery, N., Power, J., & Gordon, S. (2018). Investigating the relationships between spatial ability, interest, and task experience on knowledge retention in engineering education. In N. Seery, J. Buckley, D. Canty, & J. Phelan (Eds.), *PATT2018: Research and Practice in Technology Education: Perspectives on Human Capacity and Development*. Westmeath, Ireland: Athlone Institute of Technology.

Reid, C., Dunbar, R., & **Buckley, J.** (2018). A preliminary model of problem categorisation to explore the cognitive abilities required for problem solving in engineering education. In N. Seery, J. Buckley, D. Canty, & J. Phelan (Eds.), *PATT2018: Research and Practice in Technology Education: Perspectives on Human Capacity and Development*. Westmeath, Ireland: Athlone Institute of Technology.

Buckley, J., Seery, N., & Canty, D. (2018). Examining the components of fluid intelligence: Implications for STEM education. In S. Sorby, & M. Sadowski (Eds.), *Proceedings of the ASEE Engineering Design Graphics Division 72nd Mid-Year Conference*. Montego Bay, Jamaica: ASEE.

Buckley, J., Canty, D., & Seery, N. (2018). Spatial working memory in mental rotations: A case for exploring neural efficiency and cognitive strategies. In S. Sorby, & M. Sadowski (Eds.), *Proceedings of the ASEE Engineering Design Graphics Division 72nd Mid-Year Conference*. Montego Bay, Jamaica: ASEE.

Hyland, T., **Buckley, J.**, Seery, N., Gordon, S., & Canty, D. (2018). Assessing design activity in engineering education: A proposed synthesis of adaptive comparative judgement and the CDIO framework. *Proceedings of the ASEE Engineering Design Graphics Division 72nd Mid-Year Conference*. Montego Bay, Jamaica: ASEE.

2017

Buckley, J., Seery, N., & Canty, D. (2017). An exploratory analysis into the relationships between spatial factors, domain-free general capacities and general fluid intelligence. In M. de Vries, L. Litowitz, & S. Warner (Eds.), *PATT2017: Technology & Engineering Education – Fostering the Creativity of Youth Around The Globe.* Philadelphia, USA: Millersville University of Pennsylvania.

Phelan, J., **Buckley, J.,** Canty, D., & Seery, N. (2017). A proposed research agenda for investigating the nature of designerly thinking in action. In M. de Vries, L. Litowitz, & S. Warner (Eds.), *PATT2017: Technology & Engineering Education – Fostering the Creativity of Youth Around The Globe.* Philadelphia, USA: Millersville University of Pennsylvania.

Seery, N., Delahunty, T., Canty, D., & **Buckley, J.** (2017). Illustrating educational development through ipsative performance in design based education. In M. de Vries, L. Litowitz, & S. Warner (Eds.), *PATT2017: Technology & Engineering Education – Fostering the Creativity of Youth Around The Globe.* Philadelphia, USA: Millersville University of Pennsylvania.

2016

O'Connor, A., **Buckley, J.**, Seery, N., & Cleveland-Innes, M. (2016). Identifying, developing and grading "soft skills" in higher education: A technological approach. In B. Campbell, L. McNutt, & B. Hunter (Eds.), *Proceedings of Higher Education in Transformation Symposium*. Ontario, Canada: HEIT.

Buckley, J., Seery, N., & Canty, D. (2016). The validity and reliability of online testing for the assessment of spatial ability. In J. Birchman (Ed.), *Proceedings of the ASEE Engineering Design Graphics Division 71st Mid-Year Conference* (pp. 11–16). Nashua, New Hampshire: ASEE.

Buckley, J., & Seery, N. (2016). The potential bifurcation of static and dynamic spatial cognitive processes. In J. Birchman (Ed.), *Proceedings of the ASEE Engineering Design Graphics Division 71st Mid-Year Conference* (pp. 97–103). Nashua, New Hampshire: ASEE.

Seery, N., **Buckley, J.**, Doyle, A., & Canty, D. (2016). The validity and reliability of adaptive comparative judgements in the assessment of graphical capability. In J. Birchman (Ed.), *ASEE Engineering Design Graphics Division 71st Mid-Year Conference* (pp. 104–109). Nashua, New Hampshire: *Proceedings of* ASEE.

Buckley, J., Phelan, J., Seery, N., & Canty, D. (2016). Assessing visual perception in virtual reality environments. In P. Tiernan (Ed.), *Proceedings of the 33rd International Manufacturing Conference*. Limerick, Ireland: University of Limerick.

Buckley, J., Howley, U., & Seery, N. (2016). An exploratory study into the cognitive and behavioural influences on problem solving performance. In P. Tiernan (Ed.), *Proceedings of the 33rd International Manufacturing Conference*. Limerick, Ireland: University of Limerick.

Buckley, J., O'Neill, C., & Seery, N. (2016). Technology mediated assessment of dynamic spatial ability. In P. Tiernan (Ed.), *Proceedings of the 33rd International Manufacturing Conference*. Limerick, Ireland: University of Limerick.

Seery, N., **Buckley, J.**, Bowe, B., & Carthy, D. (2016). Spatial ability in education: A national study. In P. Tiernan (Ed.), *Proceedings of the 33rd International Manufacturing Conference. Limerick*, Ireland: University of Limerick.

Seery, N., **Buckley, J.**, Hyland, T., & Canty, D. (2016). MIND strengths: The unique cognitive architecture of engineering and technology students. In P. Tiernan (Ed.), *Proceedings of the 33rd International Manufacturing Conference*. Limerick, Ireland: University of Limerick.

Buckley, J., & Seery, N. (2016). An investigation into problem solving approaches adopted during graphical reasoning episodes. In M. de Vries, A. Bekker-Holtland, & G. van Dijk (Eds.), *Proceedings of PATT2016: Technology Education for 21st Century Skills* (pp. 118–128). Utrecht, Netherlands: PATT.

Seery, N., Canty, D., O'Connor, A., **Buckley, J.**, & Doyle, A. (2016). Identifying, developing and grading "soft skills" in design and technology education: A methodological approach. In M. de Vries, A. Bekker-Holtland, & G. van Dijk (Eds.), *Proceedings of PATT2016: Technology Education for 21st Century Skills* (pp. 419–428). Utrecht, Netherlands: PATT.

Power, J., **Buckley, J.**, Seery, N., & Canty, D. (2016). Investigating the factor structure of pupils attitudes towards technology. In M. de Vries, A. Bekker-Holtland, & G. van Dijk (Eds.), *Proceedings of PATT2016: Technology Education for 21st Century Skills* (pp. 391–399). Utrecht, Netherlands: PATT.

Buckley, J., & Seery, N. (2016). Framing spatial cognition: Establishing a research agenda. In L. Sun, H. Steinhauer, & D. Lane (Eds.), *Proceedings of the ASEE Engineering Design Graphics Division 70th Mid-Year Conference* (pp. 118–122). Daytona Beach, Florida: EDGD.

Power, J., **Buckley, J.**, & Seery, N. (2016). Visualizing success: Investigating the relationship between ability and self-efficacy in the domain of visual processing. In L. Sun, H. Steinhauer, & D. Lane (Eds.), *Proceedings of the ASEE Engineering Design Graphics Division 70th Mid-Year Conference* (pp. 73–79). Daytona Beach, Florida: EDGD.

2015

Seery, N., **Buckley, J.**, & Delahunty, T. (2015). Developing a spatial ability framework to support spatial ability research in engineering education. In B. Bowe (Ed.), *Proceedings of 6th Research in Engineering Education Symposium* (pp. 1–9). Dublin, Ireland: Dublin Institute of Technology.

Peer Reviewed Conference Presentations and Posters (Abstract Only)

McDyer, M., Morris, J., & **Buckley, J.** (2025). The position of social and emotional learning within current design practices in Irish STEAM education. *Education Research Summit*. Dublin, Ireland: Department of Education and Youth.

Rowan, N., McDonnell, G., **Buckley, J.**, & Kremer, T. (2024). Harnessing graphic medicine to unlock challenges in end-to-end processing, supply chain logistics and future design thinking for improved innovation and patient safety. *Graphic Medicine 2024*, Athlone, Ireland: Technological University of the Shannon: Midlands Midwest.

Maquet, L., **Buckley, J.**, Dunbar, R., Duffy, G., & Sorby, S. (2024). Spatial thinking and STEM: A study on the development and transfer of spatial skills in Irish education. *Spatial Cognition 2024*. Dublin, Ireland: TU Dublin.

Lin, T.J., **Buckley, J.**, & Gumaelius, L. (2024). How is spatial ability development represented in the national mathematics curriculum? A comparative study of Singapore, Ireland, and Sweden. *Spatial Cognition 2024*. Dublin, Ireland: TU Dublin.

Grant, K., Dunbar, R., & **Buckley, J.** (2021). Fostering metacognitive abilities for the development of the values of technological capability. *PATT2021:Technology in our hands. Creative pedagogy and ambitious teacher education.* Rauma, Finland: University of Turku.

Rowan, N., **Buckley, J.**, Seery, N., & Murray, N. (2019). Blending immersive and educational technologies to inform sustainability and diversification of workforce training through machine interface learning using sterilization technologies as model – quo vadis?. In *10th Kilmer Conference 2019*, Dublin, Ireland: Johnson & Johnson.

Buckley, J., Hyland, T., Gumaelius, L., Seery, N., & Pears, A. (2019). Engineering education research methods to determine conceptions of engineers and of engineering. In *2019 UK and Ireland Engineering Education Research Network Spring Colloquium*, Dublin, Ireland: Technological University Dublin.

Buckley, J., Canty, D., & Seery, N. (2019). The importance and usefulness of comparative judgement for educational assessment. In *ResearchED Leads Network Day*, Haninge, Stockholm, Sweden: ResearchED.

Buckley, J. (2018). Spatial ability and fluid intelligence. In *ResearchED Leads Network Day*, Haninge, Stockholm, Sweden: ResearchED.

Buckley, J., Doyle, A., Hartell, E., & Seery, N. (2017). Adaptive comparative judgement: A mechanism to enrich and enhance assessment practices to support teaching and learning. In *Lärarnas forskningskonferens 2017*, Stockholm, Sweden: Pedagog Stockholm.

Seery, N., O'Connor, A., Canty, D., & **Buckley, J.** (2015). Digital badges in initial technology teacher education: A method for grading explicit soft skills. In P. Gormley (Ed.), *Proceedings of EdTech 2015: Beyond the Horizon: Policy, Practice and Possibilities*. Limerick, Ireland: Irish Learning Technology Association.

Canty, D., **Buckley, J.**, Seery, N., O'Connor, A., & Kelly, M. (2015). The validity of digital badges as a currency for soft skill attainment. In P. Gormley (Ed.), *Proceedings of EdTech 2015: Beyond the Horizon: Policy, Practice and Possibilities*. Limerick, Ireland: Irish Learning Technology Association.

Technical Reports

Postgraduate Student Engagement Working Group. (2024). Postgraduate research student engagement in Ireland: A report on current practice. Report requested by the National Framework of Doctoral Education Advisory Forum.

Hyland, T., Dunbar, R., Murray, N., & **Buckley, J.** (2021). *Spatial skills development for industrial training.* Report commissioned by First Polymer Training Skillnet Ireland.

Canty, D., **Buckley, J.**, & Seery, N. (2019). *Research paper on features of skills development in technology education*. Report commissioned by the National Council for Curriculum and Assessment (NCCA) with respect to the reform of technology subjects in the Irish Junior Cycle.

Book Reviews

Buckley, J. (2025). Book Review: A collection of dreams about the future of technology education. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-025-09991-0

Buckley, J. (2018). [Review of the book *Design epistemology and curriculum planning*, by E. Norman & Baynes, K. (Eds.)]. *Design and Technology Education: An International Journal, 23*(1), 109-112. https://ojs.lboro.ac.uk/DATE/article/view/2357

Other Writing (Editorials/Newspaper Articles/Blogs)

Duffy, G., **Buckley, J.**, & Sorby, S. (2025). Editorial: Spatial ability in STEM learning. *Frontiers in Education*. https://doi.org/10.3389/feduc.2025.1602013

Buckley, J. (2025). New article types for the international journal of technology and design education: Expanding opportunities for scholarly contribution. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-025-09983-0

Buckley, J. (2025). Welcome editorial from the new Editor-in-Chief. *International Journal of Technology and Design Education*. https://doi.org/10.1007/s10798-025-09974-1

Buckley, J., & Hardy, A. (2024). Technology Education in Ireland. Mesh Guides - Design and Technology: Guide. https://www.meshguides.org/guides/node/2547?n=2550

Buckley, J., Hartell, E., & Blom, N. (2023). Editorial: Current Perspectives on the Value, Teaching, Learning, and Assessment of Design in STEM Education. *Frontiers in Education. 8*(1247618). https://doi.org/10.3389/feduc.2023.1247618

Buckley, J., & Power, J. (2022). The importance of socialisation and motivation in immersive work-based learning models in engineering education [Invited Editorial]. *SEFI Ethics Special*

Interest Group. https://www.sefi.be/2022/09/26/the-importance-of-socialisation-and-motivation-in-immersive-work-based-learning-models-in-engineering-education/

Hartell, E., **Buckley, J.**, Gumaelius, L., Doyle, A., & Seery, N. (2018). Arbeta med komparativ bedömning (Working with comparative assessment). *Skola & Samhälle*. http://www.skolaochsamhalle.se/flode/skola/eva-hartell-m-fl-arbeta-med-komparativ-bedomning/

Other Presentations (Workshops/Symposia/Seminars)

de Vries, M., Gu, J., Williams, J., Fowler, A., **Buckley, J.**, McLain, M., El Fadil, B., Kim, J., Ping., Y., Yun, W., Loong Kong, L., Kimseng, T., Guanghai, G, Yong, H., Lemon, R., Hyland, T., McDyer, M., Maquet, L., & Shanliang, H. (2024). How to view the connection and difference between technical education and engineering education. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

de Vries, M., Gu, J., Williams, J., Fowler, A., **Buckley, J.**, McLain, M., El Fadil, B., Kim, J., Ping., Y., Yun, W., Loong Kong, L., Kimseng, T., Guanghai, G, & Shanliang, H. (2024). International forum on the design and development of K-12 technical and engineering education textbooks. *The 41st International Pupils' Attitudes Towards Technology Conference Proceedings 2024*. Nanjing, China: Nanjing Normal University.

Williams, J., de Vries, M., Klapwijk, R., Fox-Turnbull, W., **Buckley, J.**, Beaumont, H., Westerhof, M., & Yang, Q. (2023). Maker Education Meets Technology Education: Reflections on Good Practices. *The 40th International Pupils' Attitudes Towards Technology Conference Proceedings 2023*. Liverpool, UK: Liverpool John Moores University.

Buckley, J., & Doyle, A. (2018). The Capacity of Adaptive Comparative Judgment as a Tool for Educational Assessment. *KTH Royal Institute of Technology Dept. of Learning Higher Seminar*. Stockholm, Sweden: KTH.

Hartell, E., Canty, D., Seery, N., Doyle, A., & **Buckley, J.** (2017). Bedömningsexempel och sambedömning med hög reliabilitet (Worked Examples and Collaborative Assessment with High Reliability). *Skolforum 2017*. Stockholm, Sweden: Skolforum.

Buckley, J., Seery, N., & Canty, D. (2017). Insights from eye-tracking and pupillometry in design education research. *Design Education Research Seminar*. Westmeath, Ireland: Athlone Institute of Technology.

Edited Books

Johri, A., **Buckley, J.**, Tang, X, & Celis, S. (Eds.). (In Progress). *International Handbook of Engineering Education Research Methods*. Routledge.

Conference Proceedings

de Vries, M., Williams, J., **Buckley, J.**, McLain, M., Dooley, K., Gu., J., Du, Y., Tao, Y., Yang, Q., & Zhu, W. (Eds.). (2024). *The 41st International Pupils' Attitudes Towards Technology Conference: K-12 Technology and Engineering Education and Student Development.* Nanjing, China: Nanjing Normal University.

Živković, M., **Buckley, J.**, Pagkratidou, M., & Duffy, G. (Eds.). (2024). *Spatial Cognition XIII, 13th International Conference, Spatial Cognition 2024*. Cham, Switzerland: Springer.

Seery, N., **Buckley, J.**, Canty, D., & Phelan, J. (Eds.). (2018).*The 36st International Pupils' Attitudes Towards Technology Conference: Research and Practice in Technology Education: Perspectives on Human Capacity and Development*. Athlone, Ireland: Athlone Institute of Technology.

INVITED TALKS

Developments in primary and secondary level technology education in Ireland. (2025). *UNESCO International Conference on K-12 Technology and Engineering Education Curricula in the Era of Artificial Intelligence: Conceptual Innovation and Content Development*.

Spatial ability and learning in Graphics. (2025). *University of Limerick*.

The future of technology education: Where are we heading?. (2025). *İbn Haldun University & Turkish Technology Team (T3 Foundation)*.

The current status of technology education in Ireland. (2024). *UNESCO International Conference on K-12 Technology and Engineering Education Schools in the Digital Age: Global Perspectives and Multiple Paths*.

Technology education in Ireland: Ongoing practice reforms & research initiatives. (2024). *Virginia Polytechnic Institute and State University*.

Teaching open science principles and practices to research students. (2024). *Regional University Network - European University*.

How can we increase the credibility of technology education research?. (2023). *KTH Royal Institute of Technology*.

Spatial ability in engineering and physics: Supporting students in learning about and working with free-body diagrams. (2023). *KTH Royal Institute of Technology*.

An immersive approach to teaching open science principles and practices to research students. (2023). *Regional University Network - European University*.

The role of research and an international journal for technology teacher education. (2023). *Keynote presentation at the ITEEA 85th Annual Conference*.

Theorising and investigating the causal mechanism between spatial ability and STEM education. (2022). *Linköping University*.

Using comparative judgement for educational assessment (with Dr Eva Hartell). (2022). *Memorial University of Newfoundland*.

Developments in Adaptive Comparative Judgement for Assessment in Technology Education in Ireland. (2022). *Keynote address at the Annual Swedish Technology Education Research Conference. Linköping University*.

An introduction to comparative judgement for educational assessment. (2022). *University of Sunderland*.

Comparative judgement: An overview (with Dr Eva Hartell). (2021). *Memorial University of Newfoundland*.

Academic perspective of life as a postgraduate (Invited panelist). (2021). *Shannon Region Postgraduate Research Conference*.

TEACHING

Lecturer

2024/2025 Technological University of the Shannon: Midlands Midwest

Postgraduate
RES09075: Research Methodology [Class size Autumn = 22, Spring = 49]
RES09074: Academic Writing [Class size Autumn = 31, Spring = 34]
RES09073: Research Ethics [Class size Autumn = 18, Spring = 56]

2023/2024 Technological University of the Shannon: Midlands Midwest

Postgraduate
RES09075: Research Methodology [Class size Spring = 12]
RES09074: Academic Writing [Class size Spring = 6]
RES09073: Research Ethics [Class size Spring = 4]
RES09032: Introduction to Research Paradigms [Class size Autumn = 11]
RES09031: Dissemination and Research Profile for Doctoral Researchers [Class size Autumn = 10]
RES09030: Advanced Writing for Graduate Students [Class size Autumn = 8]
RES09028: Writing Skills for Graduate Students [Class size Autumn = 10]
RES09027: Research Integrity Across the Disciplines [Class size Autumn = 15]
RES09026: Graduate Studies Pathway [Class size Autumn = 8]

Springboard
RES09038: Research Methods and Professional Practice [Class size Autumn = 242]

2022/2023 Technological University of the Shannon: Midlands Midwest

Postgraduate
RES09032: Introduction to Research Paradigms [Class size Autumn = 12, Spring = 21]
RES09031: Dissemination and Research Profile for Doctoral Researchers [Class size Autumn = 17, Spring = 29]
RES09030: Advanced Writing for Graduate Students [Class size Autumn = 19, Spring = 14]
RES09028: Writing Skills for Graduate Students [Class size Autumn = 16, Spring = 15]
RES09027: Research Integrity Across the Disciplines [Class size Autumn = 14, Spring = 16]
RES09026: Graduate Studies Pathway [Class size Autumn = 18, Spring = 15]

Springboard
RES09038: Research Methods and Professional Practice [Class size Autumn = 218, Spring = 46]

2021/2022 Technological University of the Shannon: Midlands Midwest

Postgraduate
RES09052: Introduction to Technology Education Research [Class size Autumn = 10]
RES09032: Introduction to Research Paradigms [Class size Autumn = 8, Spring = 14]
RES09031: Dissemination and Research Profile for Doctoral Researchers [Class size Autumn = 7, Spring = 17]

RES09030: Advanced Writing for Graduate Students [Class size Autumn = 30, Spring = 23]
RES09028: Writing Skills for Graduate Students [Class size Autumn = 36, Spring = 17]
RES09027: Research Integrity Across the Disciplines [Class size Autumn = 10, Spring = 13]
RES09026: Graduate Studies Pathway [Class size Autumn = 14, Spring = 13]

Springboard
RES09038: Research Methods and Professional Practice [Class size Autumn = 163, Spring = 89]

2021/2022 KTH Royal Institute of Technology, Sweden

Postgraduate
Literature Course on the Role of Spatial Ability in STEM education [Class size Autumn = 1]

2020/2021 Athlone Institute of Technology, Ireland

Postgraduate
RES09032: Introduction to Research Paradigms [Class size Autumn = 1, Spring = 113]
RES09031: Dissemination and Research Profile for Doctoral Researchers [Class size Autumn = 1, Spring = 53]
RES09030: Advanced Writing for Graduate Students [Class size Autumn = 57, Spring = 1]
RES09028: Writing Skills for Graduate Students [Class size Autumn = 87, Spring = 1]
RES09027: Research Integrity Across the Disciplines [Class size Autumn = 51, Spring = 20]
RES09026: Graduate Studies Pathway [Class size Autumn = 52, Spring = 18]

Springboard
RES09038: Research Methods and Professional Practice [Class size Autumn = 148, Spring = 39]

2019/2020 Athlone Institute of Technology, Ireland

Postgraduate
RES09027: Research Integrity Across the Disciplines [Class size Autumn = 53]
RES09026: Graduate Studies Pathway [Class size Autumn = 63]

Springboard
RES09038: Research Methods and Professional Practice [Class size Autumn = 41]

2018/2019 Athlone Institute of Technology, Ireland

Postgraduate
RES09011: Data Handling and Analysis [Class size Spring = 17]

2018/2019 KTH Royal Institute of Technology, Sweden

Undergraduate
Early Childhood Education Focusing on Science and Technology for Sustainability [Class size Spring = 13]

2017/2018 KTH Royal Institute of Technology, Sweden

Undergraduate
Early Childhood Education Focusing on Science and Technology for Sustainability [Class size Spring = 16]

Teaching Assistant

2016/2017 University of Limerick, Ireland

Professional Masters in Education
PN6001: Graphical Education for Technology Teachers [Class size Autumn = 10-20]

Undergraduate
PN4205: Design and Communication Graphics 4 [Class size Spring >100]
PN4308: Design and Communication Graphics 3 [Class size Autumn >100]

2015/2016 University of Limerick, Ireland

Professional Masters in Education
PN6001: Graphical Education for Technology Teachers [Class size Autumn = 10-20]

Undergraduate
PN4305: Design and Communication Graphics 1 [Class size Autumn >100]
PN4306: Design and Communication Graphics 2 [Class size Spring >100]

2014/2015 University of Limerick, Ireland

Undergraduate
PN4305: Design and Communication Graphics 1 [Class size Autumn >100]
PN4306: Design and Communication Graphics 2 [Class size Spring >100]
PN4011: Design and Communication Graphics 1 [Class size Autumn >100]
PN4012: Design and Communication Graphics 2 [Class size Spring >100]

SUPERVISION AND MENTORING

Postdoctoral

Past Mentees

Dr Clodagh Reid. Co-Mentor with Dr Niall Seery, Prof. Sheryl Sorby, and Dr Rónán Dunbar.

PhD

Past Students

Dr Tingjun Lin. Co-Supervisor with Dr. Lena Gumaelius and Dr. Ernest Ampadu. Conferred in 2025 from KTH Royal Institute of Technology. Thesis title: Bridging policy and practice in spatial ability development: A curriculum and teaching inquiry.

Dr Clodagh Reid. Co-Supervisor with Dr Rónán Dunbar and Dr Niall Seery. Conferred in 2022 from the Technological University of the Shannon: Midlands Midwest. Thesis title: An investigation of the role of spatial ability in problem solving in engineering education.

Current Students

Principal supervisor of PhD Candidate studying pedagogies for teaching about sustainability in Art and Design education, Technological University of the Shannon: Midlands Midwest, Ireland.

Principal supervisor of PhD Candidate studying the relationship between spatial ability and design in technology education, Technological University of the Shannon: Midlands Midwest, Ireland.

Co-supervisor of PhD Candidate studying research students experiences of social and intellectual isolation, Technological University of the Shannon: Midlands Midwest, Ireland.

Co-supervisor of PhD Candidate studying in the area of spatial ability training in STEM education, Technological University of the Shannon: Midlands Midwest, Ireland.

Co-supervisor of PhD Candidate studying in the area of spatial ability, cognitive load, and learning in engineering education, Technological University of the Shannon: Midlands Midwest, Ireland.

Co-supervisor of PhD Candidate studying in the area of spatial ability and embodied cognition in technology education, Technological University of the Shannon: Midlands Midwest, Ireland.

Masters by Research

Current Students

Principal supervisor of MSc in Engineering Education on the use of Adaptive Comparative Judgement as a tool for gaining insight into the alignment between teachers' and students' constructs of capability, Athlone Institute of Technology.

Principal supervisor of MSc in Engineering Education on the evidence-based use of innovative pedagogies for the teaching of graphical education concepts, Athlone Institute of Technology.

Co-supervisor of MSc in Engineering Education on design-based pedagogy, Athlone Institute of Technology.

Co-supervisor of MSc in Engineering Education investigating the quality of student experience resulting from the pedagogical use of immersive technologies, Athlone Institute of Technology.

Co-supervisor of MSc in Engineering Education examining the use of immersive technologies for the development of spatial ability, Athlone Institute of Technology.

Co-supervisor of MSc in Engineering Education exploring professional learning communities in technology education in Ireland, Athlone Institute of Technology.

Co-supervisor of MSc in Engineering Education exploring the capacity for metacognitive development through second level technology education in Ireland, Athlone Institute of Technology.

Co-supervisor of MSc in Engineering Education exploring the capacity of Adaptive Comparative Judgement for defining national standards in technology education, Athlone Institute of Technology.

Taught Masters

Past Students

Supervisor of MSc in Data Analytics on the use of natural language processing models to develop predictive models of accident severity, Technological University of the Shannon: Midlands Midwest, Ireland. Examined August 2023.

Supervisor of MSc in Data Analytics on evaluating recommendation models for the development of e-commerce backend systems, Technological University of the Shannon: Midlands Midwest, Ireland. Examined August 2023.

Supervisor of MSc in Data Analytics on using clustering and RFM analyses to develop a model to profile consumers based on purchasing habits, Technological University of the Shannon: Midlands Midwest, Ireland. Examined August 2022.

Supervisor of MSc in Data Analytics on the detection of suicidal ideation of social media users, Technological University of the Shannon: Midlands Midwest, Ireland. Examined August 2022.

Supervisor of MSc in Data Analytics on the relationship between big data and social media, Athlone Institute of Technology, Ireland. Examined August 2021.

Supervisor of MSc in Data Analytics on the use of data analytics by social media influencers, Athlone Institute of Technology, Ireland. Examined August 2021.

Supervisor of MSc in Data Analytics on opinion mining of user reviews of an online service, Athlone Institute of Technology, Ireland. Examined August 2021.

Supervisor of MSc in Data Analytics on the chef shortage in Ireland, Athlone Institute of Technology, Ireland. Examined August 2019.

Supervisor of MSc in Data Analytics on using machine learning to identify predictors of successful films, Athlone Institute of Technology, Ireland. Examined August 2019.

Supervisor of MSc in Data Analytics on using sentiment analysis to inform a business on tourists interests, Athlone Institute of Technology, Ireland. Examined August 2019.

Supervisor of MSc in Data Analytics on identifying indicators of depression on social media, Athlone Institute of Technology, Ireland. Examined August 2019.

ACADEMIC AWARDS AND FUNDING

Funding

2024 Strategic Alignment of Teaching and Learning Enhancement Funding for postgraduate research community of practice development. Technological University of the Shannon: Midlands Midwest. PI. (€5,000)

2024 Research and Societal Engagement Project funding. Project titled “Junior Engineer Development Initiative (JEDI)”. Taighde Éireann - Research Ireland Discover Programme. Co-PI. (Total budget: €273,633.84; Institutional budget: €12,000)

2021 President's Doctoral Scholarship funding for 1 postgraduate research student (fees, materials, travel and stipend). Project titled "Investigating the relationship between spatial ability and designerly ability". Athlone Institute of Technology. PI. (€77,000)

2021 President's Doctoral Scholarship funding for 1 postgraduate research student (fees, materials, travel and stipend). Project titled "Investigating the development of adolescent spatial skills for future success and participation in STEM disciplines". Athlone Institute of Technology. Co-PI. (€77,000)

2020 Spatial thinking in STEM learning: Training a new generation of researchers to increase enrolment and gender balance in STEM learning by addressing deficits in spatial ability among children in Europe (SellSTEM). Horizon 2020 Marie Skłodowska-Curie Actions Innovative Training Network. Co-author. (Total budget: €4,037,154.48; Institutional budget: €281,982.96)

2020 President's Doctoral Scholarship funding for 9 postgraduate research students in engineering education. (tuition fees and materials budgets). Athlone Institute of Technology. Co-PI. (€261,000)

2019 Spatial skills development for industrial training. First Polymer Training Skillnet. Co-author. (€50,000)

2017 Jubilee Appropriation Grant. Knut och Alice Wallenbergs Stiftelse. (9,000 SEK/€840)

2015 Schroff Participation Grant. Engineering Design Graphics Division. American Society for Engineering Education. ($500/€450)

2014 2nd UL40th Science and Engineering Summer Research Bursary. Faculty of Science and Engineering, University of Limerick. Click here for certificate of completion. (€2,000)

Awards

2025 Research Supervisor of the Year (Institutional). Technological University of the Shannon: Midlands Midwest.

2025 Research Supervisor of the Year (Faculty of Engineering and Technology). Technological University of the Shannon: Midlands Midwest.

2021 Best Paper presented at the PATT38 International Conference.

2019 Editors Award for recognition of the outstanding paper published in the 2018 Engineering Design Graphics Journal. Engineering Design Graphics Division. American Society for Engineering Education.

2016 Runner up for best presentation at the 33rd International Manufacturing Conference.

2014 Special Commendation Award for Research in a Final Year Project. Department of Design and Manufacturing Technology, University of Limerick.

SERVICE TO PROFESSION

Research Proposal Evaluations

2023 Acceptability, feasibility and cost of SKAN augmented reality headsets for remote training of laboratory staff and supervision of laboratory activities in Tanzania. Swiss Tropical and Public Health Institute. University of Basel. CHF 24,750/€25,500.

Researcher Evaluations

2023 Prof. Marien Graham. National Research Foundation (NRF) of South Africa.
2023 Emeritus Prof. Piet Ankiewicz. National Research Foundation (NRF) of South Africa.

Research Students Examined

2025 Dermot McMorrow. EngD examination. University of Limerick
2023 Vernon Candiotes. PhD examination. The University of Pretoria.
2022 Andreas Larsson. PhD 90% examination. Linköping University.
2022 Swathi Rangarajan. PhD examination. The University of Waikato.
2022 Caiwei Zhu. 1st year PhD progress meeting. Delft University of Technology.

Contribution to Policy

Co-author of report (Postgraduate Student Engagement Working Group, 2024) requested by the National Framework of Doctoral Education Advisory Forum on postgraduate research student engagement in Ireland.

Conduction of a rapid review on the international definition of digital competence to support and cited in the report of Gulliksen, Cajander, Pears, and Wiggberg (2020). Click here for report.

Co-author of a report (Canty, Buckley, & Seery, 2019) commissioned by the Irish National Council for Curriculum and Assessment (NCCA) to support the development of "Features of Quality" in the Junior Cycle assessment guidelines for technology education (Wood Technology, Applied Technology, Engineering, and Graphics).

Editorial Service

Current Roles

Editor in Chief for the *International Journal of Technology and Design Education* (Published by Springer, ISSN 0957-7572)

Series Editor for *Emergent Directions in Engineering Education* (Published by Springer, ISSN 3091-3144)

Associate Editor for the *European Journal of Engineering Education* (Published by Taylor & Francis, ISSN 0304-3797)

Advisory Board Member for *Educare* (Published by Malmö University Press, ISSN 2004-5190)

Member of the Editorial Board for *Educational Psychology Review* (Published by Springer, ISSN 1040-726X)

Member of the Editorial Board for *SN Social Sciences* (Published by Springer, ISSN 2662-9283)

Member of the Editorial Board for *The Educational and Developmental Psychologist* (Published by Taylor & Francis, ISSN 2059-0776)

Former Roles

Associate Editor for the *International Journal of Technology and Design Education* (Published by Springer, ISSN 0957-7572)

Member of the Editorial Board for *Humanities and Social Sciences Communications* (Published by Springer, ISSN 2662-9992)

Guest Associate Editor in STEM Education for a research topic of *Frontiers in Education* (Published by Frontiers, ISSN 2504-284X) on spatial ability in STEM learning available here.

Guest Associate Editor in STEM Education for a research topic of *Frontiers in Education* (Published by Frontiers, ISSN 2504-284X) on current perspectives on the value, teaching, learning, and assessment of design in STEM education available here.

Guest Editor for a special issue of the *European Journal of Engineering Education* (Published by Taylor & Francis, ISSN 0304-3797) on early career engineers and the development of engineering expertise available here.

Guest Editor for a special issue of *Educational Sciences* (Published by MDPI, ISSN 2227-7102) on contemporary trends and issues in engineering education available here.

Section Editor for the Technology Education in Early Childhood section of the *PATT38 International Conference* in 2021.

Peer Review Activity

Academic journal board membership

Member of Review Board for *Sensors* (Published by MDPI, ISSN 1424-8220)

Textbook reviews

Proposal reviewer for book project titled "Advancing engineering education in Africa: Pathways to innovation and sustainable development" submitted to Springer Nature.

Proposal reviewer for book project titled "BluePrints of integrity: Best practices for ethical education in engineering" submitted to Springer Nature.

Proposal reviewer for book project titled "Interdisciplinary engineering education for complex real-world challenges: Potentials, issues, and lessons learned" submitted to Springer Nature.

Reviewer for Bower, M., & Von Mengersen, B. (Eds.). (2025). *Creative Technologies Education, Students as Digital Designers*. Routledge.

Reviewer for Bartholomew, S., Hoepfl, M, & Williams, P. J. (Eds.) (2023). *Standards-Based Technology and Engineering Education: 63rd Yearbook of the Council on Technology and Engineering Teacher Education*. Springer Nature.

Reviewer for Leong, F. & Austin, J. (Eds.). (2023). *The Psychology Research Handbook: A Guide for Graduate Students and Research Assistants* (3rd ed.). SAGE.

Ad hoc academic journal reviews

Click here for Web of Science profile (190 verified reviews)

Access: Contemporary Issues in Education; Anatomical Sciences Education; Applied Measurement in Education; Applied Sciences; Assessment in Education: Principles, Policy & Practice; Behavioral Sciences; BMC Health Services Research; Brain Sciences; Buildings; Canadian Journal of Chemistry; Computers & Education; Current Oncology; Curriculum Journal; Design and Technology Education: An International Journal; Education Sciences; Educational Psychology Review; Electronics; European Journal of Engineering Education; European Journal of Psychology of Education; European Journal of STEM Education; Frontiers in Education; Humanities and Social Sciences Communications; IEEE Transactions on Education; International Journal of Educational Technology in Higher Education;

International Journal of Environmental Research and Public Health; International Journal of Research & Method in Education; International Journal of STEM Education; International Journal of Technology and Design Education; Irish Educational Studies; Journal for STEM Education Research; Journal of Engineering Education; Journal of Geography in Higher Education; Journal of Intelligence; Mathematics; Multimedia Systems; New Review of Hypermedia and Multimedia; PLOS ONE; Psych; Psychological Reports; Review of Educational Research; Science; Science of the Total Environment; Scientific Reports; Sensors; SN Social Sciences; Spatial Cognition and Computation: An International Journal; Sustainability

Conference review committees

Pupils Attitude Towards Technology (PATT) Scientific Committee Member for 2024 and 2025 international conferences.

Frontiers in Education (FIE) Reviewer for 2024 international conference.

Pupils Attitude Towards Technology (PATT) Review Board member for 2017, 2018, 2019, 2020/21, 2022, 2023, 2024, and 2025 international conferences.

American Society of Engineering Education (ASEE) Annual Conference & Exposition (74 paper reviews) for the Pre-College in Engineering Education Division, Women in Engineering Division, Design in Engineering Division, Engineering Design Graphics Division, and Educational Research Methods Division.
Click here for 2019 reviewer certificate.
Click here for 2018 reviewer certificate.
Click here for 2017 reviewer certificate.
Click here for 2016 reviewer certificate.
Click here for 2015 reviewer certificate.

American Society of Engineering Education (ASEE) Engineering Design Graphics Division reviewer for 2016 and 2018 mid-year conferences.

Committees

Member of the TUS Research Ethics Committee, 2024 - Present.

Member of the TUS Graduate School Board, 2024 - Present.

Member of TUS Research sub-committee of Academic Council, 2024 - Present.

Member of TUS Postgraduate Research Studies sub-committee of Academic Council, 2021 - Present.

Member of the RUN-EU Education and Social Sciences Research Working Group (Technological University of the Shannon, Athlone Campus Lead Contact), 2021 - Present.

Member of the TUS Athena Swan Working Group on Culture and Organisation, 2023 - 2024.

Member of the Irish National Postgraduate Student Engagement Working Group, 2022 - 2024.

Member of the TUS working group for the development of postgraduate research academic regulations, 2022.

Member of the TUS working group for the development of undergraduate academic regulations, 2022.

Member of TUS Teaching and Learning sub-committee of Academic Council, 2022.

Member of the AIT-LIT Consortium Technological University Research Working Group, 2021.

Member of the subgroup of the AIT-LIT Consortium Technological University Research Working Group focusing on postgraduate research supervision capacity, 2021.

Teaching Assistant Representative on the course board of the LM095 Materials and Engineering Technology with Concurrent Teacher Education programme at the University of Limerick, Ireland, 2016/2017.

REFERENCES (ALPHABETICAL)

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Professor of Technology Education, Linköping University, Sweden.
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Dean of Faculty of Engineering and Informatics, Technological University of the Shannon, Ireland.
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