

Research Centre  
Global Learning



## RMC 2024

# Research Methodology Conference

Advancing Research Methods and Methodologies:  
*Connecting Technology, Tradition, and Inclusivity Across Disciplines  
Towards the Future*

*organised by*

The London Institute of Social Studies, UK

*in partnership with*

Research Centre for Global Learning (GLEA), Coventry University, UK

# BOOK OF ABSTRACTS

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## RMC-2024 Research Methodology Conference

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### Keynote Speaker

Stephen Gibson

**Methods for studying methods: Using discourse analysis to explore the research process.**

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# ORGANISERS

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Working with partners, we strive to develop educational innovation and excellence, exploring under-exploited areas for development of new pedagogical insights and societal impact.

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- Global learning: education without boundaries
- Educational leadership and policy
- Gender, equality and diversity
- Development, engagement and attainment



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*Abridged Transcript of the Keynote Speech*

## **Methods for studying methods: Using discourse analysis to explore the research process**

*Prof Stephen Gibson*  
Bicentennial Chair in Research Methods  
Director of Doctoral Programmes  
*Heriot-Watt University*  
*School of Social Sciences*

### **Introduction**

Today, I'm going to talk to you about what you might call metamethods - methods for studying methods. In particular, I'm going to focus on discourse analysis, which is a research methodology that is very familiar to us in the social sciences.

### **Background: Social Studies of Science**

Let me start by situating this within some wider literature, in particular the tradition of work you might loosely call the social studies of science, the sociology of science, or sociology of scientific knowledge. This field encompasses a range of empirical studies of 'science in action', a term popularized by Bruno Latour in his 1987 book of the same name.

Typically, this consisted of sociologists going into laboratories and observing, recording, or interviewing scientists at work. The focus was often on natural scientists, as they presented a "hard case" for demonstrating the social side of scientific practice.

### **Discourse Analysis in Social Studies of Science**

One of the methods that was not only used but actually developed through this tradition of work was discourse analysis. The book by Nigel Gilbert and Mike Mulkay, "Opening Pandora's Box" (1984), is a great discourse analytic study of science and scientific practice.

In my field of social psychology, this approach to discourse analysis really took off from the late 1980s onwards. It's important to note that discourse analysis can mean slightly different things in different fields, and for my purposes I use it to encompass various related approaches such as conversation analysis, ethnomethodology, and discursive psychology.

### **Studying Social Science Methods in Action**

There's been quite a lot of research, particularly from around the turn of the millennium onwards, looking at social science methods in action and applying some form of discourse analysis. This includes studies on qualitative interviews, standardized survey interviews and focus groups. However, there's a notable absence in this body of work: experiments.

### **Case Study: Milgram's Obedience Experiments**

To illustrate the importance of studying experiments, I'll discuss Stanley Milgram's obedience experiments from the early 1960s. These experiments aimed to assess the extent to which ordinary members of the public would follow orders from an authority figure, even when those orders involved apparently harming another person.

Milgram set up a fake memory experiment where a genuine participant was supposedly teaching and then testing another person (actually a confederate) on their memory of a word list. When the learner made mistakes, the teacher was instructed to administer electric shocks, increasing in intensity up to 450 volts.

Through analysis of audio recordings from these experiments, we can see how the experimental procedure often deviated from the standardized protocol Milgram described in his publications. For example, experimenters often went beyond the scripted prompts, engaging in persuasion and reassurance to keep participants in the experiment.

This raises important questions about the nature of experimental practice and the role of language and interaction in shaping experimental outcomes.

### **Recent Work on Experimental Interaction**

While researchers such as Robin Wooffitt, David Edmonds and Matthew Hollander have also explored aspects of experimental interaction, examples of this sort of work are few and far between. Building on this tradition, Sadvansha Munshi, Marc Alexander and I have been conducting studies on modern-day psychology experiments. We've been working with colleagues at a psychology laboratory at another UK institution, recording ongoing experiments.

We've been looking at how experimenters manage their interactions with participants, particularly in the early stages of experiments when they're setting up equipment and explaining procedures. For example, we've observed how experimenters reassure participants when they struggle with tasks, using phrases like "Everybody forgets how to spell it" to normalize difficulties.

Our findings highlight the importance of what we call the "interactional basis of experimental progressivity" - how experiments get done depends on interaction and often hidden interpersonal work.

### **Implications for Research Practice and Training**

This work has important implications for how we train novice researchers and how we understand the nature of experimental practice. It's not something that's typically covered in textbooks or methods sections of journal articles, yet it's crucial for the successful conduct of experiments.

We're interested in how we can use this knowledge to help novice researchers develop and become good experimenters, given that these interpersonal skills aren't typically taught in formal research methods training.

### **Connecting to Open Science**

This approach also has implications for the open science movement. While many open science initiatives focus on things like the use of more sophisticated statistical techniques, more transparent reporting, and more replications, I argue that we need to fundamentally rethink how we understand the nature of research.

We're sketching out what we're calling "radically open science" or "radically open social science," which involves making visible the hidden work undertaken in the research process.

### **Conclusion and Questions for Reflection**

To conclude, I'd like to pose some questions for reflection:

1. Why isn't it more routine to record, share, and reflect upon the actual process of doing research and collecting data?
2. How can we make visible the hidden work undertaken by researchers, often junior and poorly paid ones?
3. How can we use the fruits of this work to train novice researchers?
4. How does this change our ideas about how methods work in practice and how research actually gets done?



# **ABSTRACTS**

## **Creating a library environment for teenagers in Denmark: exploration in inclusive and participatory design methods**

*Asa Jackson (Design School Kolding, Denmark)*

**Keywords:** participatory design, library design, design methodology, co-design, workshop design

Participatory design is an expanding design method centred on increasing its reliance on participants to shape solutions. Because of this inclusion, unique research practices must be created to respond to specific contexts and requirements. This study embraces workshops as a participatory design method to help explore practices that can tangibly reflect the needs and interests of teenagers in library environments, ultimately leading to both product and interior design proposals. Citizens and designers used these workshops to evolve a novel framework linking products, spaces and values. This framework can be used to address complex environments with various artefacts and citizens, leading to meaningful designs that foster positive emotional connections grounded in participatory methods.

## **Improving the quality of small urban wind turbines in urban scenarios: a review of scientific literature and technological solutions**

*Leire Bereziartua Gonzalez, Aiur Retegi Uria, Olatz Ukar Arrien (Deusto University, Spain)*

**Keywords:** climate change, small wind turbines, scientific literature, interdisciplinarity, urban climate solutions

In response to the current climate emergency, the urgent transformation of cities towards more sustainable models is imperative. Developing renewable energies adapted to urban environments, such as small wind turbines (SWT), is crucial to reducing dependence on fossil fuels and mitigating the effects of climate change. SWTs offer significant potential for implementation in diverse urban settings with specific energy needs.

Nowadays solution proposals vary in design and performance, with studies exploring different turbine designs, performance metrics, and safety considerations for urban applications. Successful implementation examples of SWT in diverse urban environments demonstrate the benefits of decentralized urban energy production and the potential for cities to become climate-neutral.

The scientific literature on SWT spans various disciplines, including engineering, physics, economics, urban planning, and environmental policy. Despite abundant research, the literature needs more cohesion, with studies dispersed across different publications and databases, and more interdisciplinarity. This fragmentation hinders a comprehensive understanding of the subject and limits knowledge transfer and the identification of potential synergies. One concerning aspect is the limited attention given to SWT's human and social dimensions. Most research predominantly focuses on the technical and economic aspects of the technology, overlooking the social and political dimensions crucial for successful implementation. To address this gap, it is essential to integrate human-centric considerations into research and development efforts related to SWTs.

This scientific communication shows where and what the focus of the research that has been carried out to date on urban SWTs and highlights how many of them mention the human variables to be defined, through a semi-systematic review of scientific literature, which can help to achieve comprehensive development and impacts of these technologies for urban areas.

## **Passion-driven statistics**

*Kristin Flaming, Lisa Dierker (Wesleyan University, United States of America)*

**Keywords:** passion-driven statistics, project-based learning, teaching statistics, flipped classrooms, multidisciplinary

### **CURRICULUM OVERVIEW**

Passion-Driven Statistics (<https://passiondrivenstatistics.com>) is an NSF-funded project-based, introductory statistics curriculum that supports students in conducting original research with real-world data from the very first day. Datasets are provided or an instructor can use one of their choosing. The curriculum is built around the Guidelines for Assessment and Instruction in Statistics Education. Traditional topics for an introductory statistics course are covered. Students work with descriptive and inferential statistics as well as basic statistical programming concepts and skills in the pursuit of managing and analyzing data. This original work is presented at a research poster session in which students have the opportunity to describe their process of inquiry, including the different decisions made along the way, their premises, conclusions and any barriers faced. Liberal arts colleges, large state universities, regional colleges/universities, medical schools, community colleges, and high schools have all successfully implemented the model. All resources, including student learning materials, are freely available to any instructor planning an authentic data-driven research curriculum for use across a variety of disciplines, and for engaging students at many different levels, including complete beginners. Resources include lecture videos, exams, assignments, etc. and current instructors using the model to offer their support. The model and resources are flexible and adaptable to meet your students' needs and your classroom goals, whether you use one assignment or the full turnkey model.

### **PUBLISHED RESULTS**

The project-based course enrolled higher numbers of underrepresented minority (URM) students than a traditional introductory statistics course (Dierker et al., 2015). Higher rates of female URM and a wider range of mathematical aptitude enrolled in the project-based course compared to both a general introductory programming course and an introductory course representing a gateway to the computer science major (Cooper & Dierker, 2017). Students enrolled in the course had more positive course experiences than those enrolled in a traditional course, including a better understanding of the information presented through one-on-one support, engaging in greater preparation for class, finding the course more useful and gauging its reward and feelings of accomplishment more highly (Dierker et al., 2018). Recent findings suggest the course may contribute to the decision for students to enroll in future courses in statistics and data analysis when compared to the psychology and mathematics department courses (Nazzaro et al., 2020).

## **Improving the reliability and validity of eyewitness memory research using virtual reality**

*Andrew Green (University of Bedfordshire, United Kingdom)*

**Keywords:** eyewitness memory, ecological validity, virtual reality, memory, presence

Experimental studies are often used to investigate eyewitness memory; however, the methodologies used are flawed. Participants may view the to-be-remembered crime event as a recorded video, though this lacks ecological validity. Researcher may opt to stage a live event, though these can lack experimental control. It has been proposed that virtual reality (VR) may offer a solution, as it offers high levels of control while eliciting real world responses.

A to-be-remembered event took place during a university lecture, and the students attending were asked to complete questionnaires about their sense of presence, emotions experienced and had their memory tested. This event was recorded with a 360-degree video camera. Additional participants were randomly allocated to a group who saw this same stimulus on video or in VR, and had the same measures taken as well as their heart rate. It was found that participants in the VR group had a very similar experience to the live group in terms of presence, emotion and recall. The video group reported a much lower sense of "being there" within the event and had a smaller change in heart rate. These findings suggest that VR may be a suitable alternative to traditional eyewitness memory research methods, as this technology provides an ecologically valid experience while maintaining experimental control.

## **Exploring futures through methodology: participatory speculative design in shaping connected**

*Nuri Kwon (ImaginationLancaster, Lancaster University, United Kingdom)*

**Keywords:** participatory speculative design, speculative design, connected place, the Fourth Industrial Revolution

Massive digital influences (so-called the Fourth Industrial Revolution), such as sensors, the Internet of Things, autonomous vehicles, drones, and artificial intelligence (AI), have shifted everyday lives and places (Schwab, 2017). The concept of connected places suggests a better quality of living for people in a place based on data-driven decision-making (NCSC, 2021). However, connected places are often designed without considering the values and needs of the dwellers (Dourish & Bell, 2011). In particular, policymakers' challenges have intensified due to the dynamic interactions between policymakers and local environments (Cairney, 2015).

In the meantime, design methodologies and practices have been utilised in the public sector (Bason, 2016; Kimbell & Vesnić-Alujević, 2020). Specifically, speculative design methodology has been recognised by policymakers as a future-oriented practice that foresees trends and reflects them (Sanders & Stappers, 2014). Dunne and Raby (2013) define speculative design as imagining alternative futures, demonstrating four spectrums of different futures (Hancock & Bezold, 1994). However, despite its capacity, speculative design practices are often criticised for their lack of diversity regarding ethnicity and social classes (Tonkinwise, 2014). Michael (2012) argues that the focus of speculative design is not on the urgent



technological and scientific controversy. Instead, it tends to create abstract objects embedded in complexity created by speculative designers (Michael, 2012).

Thus, this paper presents the research that adopted a combined methodology, a participatory speculative design approach (PSD), a combination of speculative design and a participatory approach (Farias et al., 2022). This approach invites non-experts in technology but experts in a place with their lived experience to create speculative prototypes to complement traditional speculative design methodology. The research was conducted in Lancaster, the United Kingdom. The research is conducted in three stages: two speculative prototyping workshops involving university students who are considered an invisible population in the city in Stage 1, two public exhibitions inviting the public to explore the prototypes and express their opinions in Stage 2, and a workshop with local policymakers to examine and evaluate PSD methods used in Stages 1 and 2.

As a result, this paper highlights opportunities and challenges of PSD in combining methods and opening the speculative design process more inclusive and approachable. First, integrating PSD with a place-based approach is beneficial to understanding a place more comprehensively, including current uses and emotions of a place and connecting the technological futures of the place. Second, PSD is a creative and playful approach that could enable policymakers and placemakers to engage with younger generations in decision-making. Lastly, this combined methodology helps understand and critically think about the possible technology implementations, including technology's positive and negative impacts. On the other hand, the challenges of employing PSD methodology are highlighted. This includes deciding who will be involved in the scope of the public engagements and multiple roles required for PSD, which could connect with the challenge of lack of budget and human resources in practice.

## **Positionality within non-participatory qualitative research methodologies and the relationship between author and reader**

*Catherine Wilkinson (Northumbria University, United Kingdom)*

**Keywords:** positionality, methodology, non-participatory, qualitative, reader, author, barthes, reflexivity, relationship

This paper explores through existing literature whether positionality statements in non-participatory qualitative research in the arts, humanities, and social sciences would benefit from adopting a longer, reflexive and embedded approach across methodological frameworks. It considers the adequacy of representing positionality as a statement when this can be utilised as part of the methodology to actively engage with social context as a dynamic, evolving and ongoing process of enquiry. It concludes that if positionality is, to some extent, to be understood as the rebirth of the presence of the author, then this should also be contingent on fostering an open and progressive relationship with the reader as part of the methodological framework.

## **How can basic income act as a trigger for self-organising a new resilient system of digital technology and health?**

*Mu-Jeong Kho (University College London, United Kingdom)*

**Keywords:** Veblen Polanyi, structuration, self-organisation, basic income, digital technology and health

In the current socioeconomic inequalities deepening in capitalism under Covid-19 and economic crises, major ‘adaptations’ are necessary. The fundamental challenge must be institutional: existing institutions are inadequate, and a greater period of experimentation such as basic income is necessary. This is why we should look at the basics of institutional economics in radical traditions such as Veblen and Polanyi, out of ruling neoliberal consensus. The literature, however, has weakly addressed the issue, how a basic income can truly act as a trigger for self-organising a new resilient system of digital technology and health. This question leads to sub-questions: how capitalist system of digital technology and health gets to organisation and structuration in real-world (objectivity); what its origin of disorder is; how (and whether truly) the basic income acts as a trigger for self-organising a new resilient system of digital technology and health; if untrue possibly in value and history, what the normative solution is, addressing the duality of possibilities, reformism versus radicalism. This paper, which defines (1) ‘order’ as structure, (2) ‘self-organisation’ as institutional process of change with struggles to reorganise-reconstitute-restructure an order out of disorder, (3) ‘capital’ as a result of law and institution deeply based on capitalist relations-of-production, and (4) ‘evolution’ as self-organising change for survival, seeks to answer the question with the institutional matrix of self-organisation full of variables by market versus non-market; pro-capital versus anti-capital, through a deeper understanding of institutional economics in radical traditions such as Veblen and Polanyi, and applies it to an empirical reality, particularly with a case study on Korea (with quantitative analysis) during the last decade. By doing so, this paper argues: beyond the superficial issues of private versus public, market versus state, and Keynesianism versus neoliberalism, institutional economics addresses the deeper ‘real-world’ issue ‘structuration’ in the capitalistic system of digital technology and health in Korea which acts as substances of long-term crisis. In the crisis, the basic income can act as a trigger for self-organisation but is only valid when connected to the radical theory of Veblen and Polanyi looking beyond such a capitalistic system.

## **The use of a critical realist intersectional approach informed by human computer interaction (HCI) methods to reveal racialised exclusions from digital healthcare services**

*Farjana Islam, Gina Netto (Heriot-Watt University, United Kingdom)*

**Keywords:** digital health, access to primary care, ethnic minority, intersectionality, critical realist, qualitative research, audio-visual interviews, Human-Computer Interaction (HCI) methods, racialised exclusion

Healthcare services are increasingly directing patients towards digital channels with a promise to provide better healthcare deliveries (Shaw & Donia, 2021; Greenhalgh et al., 2012), however, evidence demonstrates that digital technologies have played a role in

exacerbating health inequalities (Latulippe et al., 2017; Veinot et al., 2018). The widespread adoption of digital channels in primary care services in the UK entailed by national (macro) level policy initiatives (NHS England, 2019; Scottish Government, 2021) has put some sections of the UK population at risk because they have yet to adapt to the 'Digital First' healthcare approach.

Minoritised ethnic (ME) communities in the UK, such as the Bangladeshi, Pakistani, Indian, Chinese, Black African Caribbean communities which are the focus of our research, are known to face multiple challenges to access and engage with digital health services due to disproportionately high levels of poverty in some of these communities, the digital divide, language barriers and socio-spatial exclusions (Karlsen & Nelson, 2021; Topol, 2019). Moreover, facilities which could help overcome ethnicity-related constraints, such as interpreting support and culturally-competent healthcare professionals, are limited in some GP services (Greenhalgh et al., 2023; Greenhalgh et al., 2007; Lokugamage et al., 2023). These constraints within both households (micro) and GP services (meso) contribute to lower levels of satisfaction in GP services (England, 2023; Wise, 2022), and delays in diagnosis and referral to speciality care (Lokugamage et al., 2023; Sripa et al., 2019). At present, there is limited understanding of the extent to which individuals from ME communities with overlapping attributes of identity (e.g. ethnicity, class, language, gender, age etc) encounter socio-technical challenges in using digital healthcare services. The need to close this information gap compelled us to undertake interdisciplinary research by combining narrative interviews and human computer interaction (HCI)-prompted audio-visual interviews to explore the conditions under which some individuals from ME communities get by, while others remain completely excluded from digital healthcare services.

Underpinned by a critical realist intersectional approach (Netto et al., 2020; Rodriguez et al., 2016; Schlesinger et al., 2017), we applied a two-tier qualitative methodology combining 100 in-depth narrative interviews with 15 follow-up audio-visual interviews. The in-depth narrative interviews indicated how participants' ethnicity interacted with multiple dimensions of identity as well as language, (digital) literacy, levels of informal support and income to influence access and use of digitalised primary care services. Analysis of this data informed the design of the follow-up audio-visual interviews by enabling us to incorporate visual prompts such as examples of anonymised digital platforms which were currently being used in general practices in the UK. The use of such methods enabled us to capture more nuanced narratives of the barriers ME communities face in accessing digital healthcare, supported in some cases by visual evidence provided by participants of the experiences in the form of screenshots. Together both sets of interviews have enabled us to generate a rich and robust evidence base for proposing more ethnicity-inclusive, culturally-competent and user-friendly interface designs to ensure the effective delivery of 'Digital First' primary care services.

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## Experiential journey: navigating digital health technology with a different lens

*Sharifah Rose Ee (Monash University Malaysia, Malaysia)*

**Keywords:** ageing, older adults, interdisciplinary research, participatory design, immersive experience, experiential journey

The advancement in digital health technologies (DHTs) has the potential to revolutionise health management. However, DHTs that are not inclusive for populations experiencing disadvantage, such as older adults (OAs), can perpetuate the digital health divide. In pursuit to develop an inclusive and sustainable DHT that promotes optimal ageing and improves quality of life, this research engages OAs and other stakeholders in this participatory five-stage co-design thinking approach. It establishes social science as the pivotal intersection within this interdisciplinary research involving design technology and health science. Digital design ethnographic approach was used in Phase 1 of this three-part research project to

understand Malaysia's community-dwelling OAs' perceptions, motivations and expectations towards the use of DHTs. This entails 25 OAs (60 years and above) with chronic conditions being interviewed (audio recorded only) and video recorded as they show the researcher how they navigated through DHTs such as steps tracker, COVID19 contact tracing, hospital-based appointment apps, etc. The think-aloud technique was also deployed as studying the subtleties of human behaviour patterns is a powerful tool for designing user-friendly DHTs. However, Phase 2 requires the translation and transference of data from Phase 1 fieldwork for the use of anyone keen on the design and development of DHTs to better understand OAs' user-experience of DHTs. Similar to participatory design, this approach puts end-users as the source of information. While this approach empowers the end-users to give a voice in the co-design process, it still does not quite allow the other stakeholders to be in the shoes of these older end-users. The use of ageing suits is a common tool used especially in the health sciences to simulate the biological age-related conditions like deteriorating vision and arthritis (Bowden et al., 2021). However, such age-related physical limitations can be mitigated by technologies. The gap is in getting DHTs' designers and developers to fully immerse themselves in the experience of older end-users beyond physical limitations and tangible factors. This paper explores the proposed design of an immersive experiential journey to simulate the values, behaviour and motivations of these older end-users of DHTs, for participants to be in the shoes of an older person navigating DHT. These participants include, but not limited to, anyone in the field of app design and development, and/or human-computer interaction. Simulation experience, workshops and guided reflections are some of the tools used in this experiential journey. The resources used in designing this experiential journey stems from the social science ethnographic research in Phase 1. Through focusing on user-experiences and incorporating the voices of older DHTs end-users, valuable insights from this research can be used as informed guidelines to develop viable DHTs. This human-centricity way may offer new lens of seeing OAs as assets, enabling the community to optimally age in place as technology continues advancing.

## **Sexism and 'sexiness' in Victoria's Secret and agent provocateur: a case study research of the lingerie industry amid burgeoning societal emphasis on equality, diversity and inclusiveness**

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**Keywords:** inclusiveness and diversity in research, authenticity, ethical participatory and collaborative approach, case study research, minority and marginalised groups

Much has been written about the use and application of case study research including its differences among various foundational researchers of case study research (Yin, Merriam and Stake readily come to mind). However, what seems current and important is the urgent need to re-position and re-align its use in light of new and warranted developments such as the realisation that exclusion of minority and marginalised groups must be avoided, and a return with a clearer focus on equality and diversity in all walks of life. As such, we hope to incorporate these elements in an area within an industry that has been much debated, maligned, and even vilified: that of the lingerie industry or more explicitly 'night and underwear' garments as promoted by Victoria Secrets, Agent Provocateur, Savage X Fenty, among others.

Addressing this issue and taking a critical feminist position, we propose the interrogation and scrutiny of the highly visible, highly valuable lingerie industry (valued at USD 22 billion in 2022 for the US market alone) by advocating the use of what we have termed: a multi-faceted case study research. In this proposal, as the name suggests, what constitutes a boundary or boundedness for case study research will be expanded and re-delineated. Within this research of interrogation of the lingerie industry, notions such as authenticity and what is deemed 'experiential' of key parties are given equal importance. Despite limitations in capturing the complex experiences of marginalized communities, such factors must and will be taken into account.

More specifically, this type of research takes into consideration established frameworks and benchmarks such as Corporate Social Responsibility (CSR), Stakeholder Theory, and the Authenticity Framework. This multi-faceted critical and reflexive approach combines both primary sources and secondary data analysis. Participatory methodology insights such as how consumers perceive and respond to these brand narratives and examining secondary data sources (company reports, advertising campaigns, social media posts, etc.) to understand the strategies employed by lingerie brands – all these collectively can shed light on concepts of inclusion and authentic behaviour or their lack-of.

Accordingly, this also includes a systematic analysis of discursive and material practices: how brands construct and negotiate their authenticity via the lens of critical fashion studies and feminist theories of embodiment so as to better situate the analysis and evaluation within the broader cultural and political context of the lingerie industry. Only then will counter-narratives, resistances or agency, and experiential knowledge and perspectives or what was previously unknown, unlooked-for, and dismissed can become more apparent and emerge from marginalized communities in the research process.

This paper thus proposes a novel framework that is attentive to the specific challenges and opportunities of a particular industry i.e. the lingerie industry, and is able to offer an invaluable space for researchers to debate, discuss and interrogate controversial issues while offering an explanation (another facet) for the centrality of its consumption given lingerie's prevalence and visibility in contemporary culture amid associations of sexism and 'sexiness' alongside a greater emphasis of inclusiveness and diversity in society.

## **Walkthrough method: how digital sociology could understand everyday life**

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**Keywords:** sociology, digital sociology, new materialism, technology, interdisciplinary

With the rapid development of technology, digital applications have been widely applied in everyday life. Digital sociology, as a novel branch of sociology, it actively combines various disciplines together, forming a new understanding of modern society. This research aims to explore a novel digital observational method "the Walkthrough method" (Light, Burgess and Duguay, 2018). The method has been supported by new materialism, specifically the Actor-network Theory (ANT). The ANT here emphasises the significance of human and non-human actors in social interactions. The Walkthrough method inherited such philosophy and proposed to observe, document and analyse each step of users' experiences on digital

applications. This includes registration, logging in, daily usage (interactions), logging out, etc ((Light, Burgess and Duguay, 2018). The outstanding advantage of the Walkthrough method lies in its focus on the “flat ontology”. It allows researchers to understand human and non-human actors (or actants) in the same level of analysis. This research is an interdisciplinary method that combines technical walkthrough and sociology analysis actively. With further research, I argue that there will be more interdisciplinary methods could be proposed through the lenses of digital sociology.

## **Affective material connections and environmental ethics: transgender and gender diverse resistance to the culture of discarding**

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**Keywords:** gender diversity, transgender, sustainability, affect, materiality, fast fashion, object interviews, ethics of care, environmental ethics

In a culture characterised by discarding, wasting, and fast fashion, the environment is burdened with material objects accumulating at alarming rates. This paper explores how affective material connections among transgender and gender diverse individuals serve as a form of resistance to this culture of waste. By approaching material possessions with an affective and environmental ethic of care, transgender and gender diverse individuals challenge the prevailing norms of disposability and contribute to sustainability. The research found that these individuals frequently used material objects for self-expression, identity affirmation, and community building. This study employs the methodological practice of talking circle object interviews, rooted in Indigenous knowledge systems, to delve into how transgender and gender diverse people utilise materiality as a form of resistance and affirmation, fostering sustainable connections to objects that may not be as prevalent of a practice among cisgender individuals. Through thematic analysis of talking circle object data, the study uncovers themes of resistance, affirmation, and sustainability. This research highlights the unique environmental ethics of care practiced by transgender and gender diverse individuals, informing broader discussions on sustainable living and material consumption. By demonstrating the value of talking circle object interviews and emphasising an inclusive, participatory approach, this study contributes to a more nuanced understanding of materiality and sustainability, advocating for ethical and sustainable research practices and fostering dialogue among environmental scientists, policymakers, and communities for a more sustainable future.

## **Predicting solar energy generation with machine learning based on AQI and weather features**

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**Keywords:** solar power generation, zero inflated model, power transform, time series, LSTM, deep learning

This paper addresses the pressing need for an accurate solar energy prediction model, which is crucial for efficient grid integration. We explore the influence of the Air Quality

Index and weather features on solar energy generation, employing advanced Machine Learning and Deep Learning techniques. Our methodology uses time series modeling and makes novel use of power transform normalization and zero-inflated modeling. Various Machine Learning algorithms and Conv2D Long Short-Term Memory model based Deep Learning models are applied to these transformations for precise predictions. Results underscore the effectiveness of our approach, demonstrating enhanced prediction accuracy with Air Quality Index and weather features. We achieved a 0.9691 R2 Score, 0.18 MAE, 0.10 RMSE with Conv2D Long Short-Term Memory model, showcasing the power transform technique's innovation in enhancing time series forecasting for solar energy generation. Such results help our research contribute valuable insights to the synergy between Air Quality Index, weather features, and Deep Learning techniques for solar energy prediction.

### **Language learning models as intervention tools to support low-level EFL university students: a qualitative study of chatGPT within a task-based learning framework**

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**Keywords:** language learning models (LLMs), task-based learning (TBL), low-level university students, language practice opportunities, language anxiety, chatGPT integration

In universities, students arrive with varying levels of English proficiency, affecting their engagement in English-based instruction and interaction. This research addresses the challenges faced by low-proficiency students, who often struggle with limited practice opportunities and anxiety in real-world scenarios. With the growing influence of language learning models (LLMs) in education, this study explores the integration of ChatGPT as a solution to enhance language proficiency. The study investigates the feasibility and effectiveness of using ChatGPT as an intervention tool within a task-based learning (TBL) framework. The primary objective is to improve students' language skills, enabling them to effectively use English for knowledge acquisition, information sharing, and academic interaction. Research inquiries focus on the feasibility of chatbot integration in education, perceived effectiveness among EFL teachers and learners, and the potential for independent language development. The research methods involved collecting and analyzing data from students engaged in hands-on tasks with ChatGPT, focusing on key language skills: speaking, writing, reading, listening comprehension, vocabulary, and grammar. Additionally, students completed a self-report questionnaire to assess their perceptions, attitudes, experiences, and challenges related to language learning and ChatGPT integration. The preliminary findings suggest that while incorporating ChatGPT into TBL activities shows potential in addressing some challenges faced by low-level EFL students, the effectiveness of these tools remains inconclusive. The study highlights both the possibilities and limitations of using AI-powered tools like ChatGPT in enhancing English language proficiency in higher education. Further investigation is necessary to critically evaluate the impact and practicality of integrating such technology into language learning environments. This study provides a basis for further exploration and discussion on the use of AI-based language learning models in university settings.



## **Developing a collaborative tool to foster communication and understanding in sustainability**

*Nina Hunter, Martin Klepal (Munster Technological University, Ireland), Noëlle-Laetitia Perret (Institut Arthur Piaget (IAP), Switzerland)*

**Keywords:** collaborative, inclusive, interdisciplinary, participatory, sustainability science, transdisciplinary

The global climate change challenge is urgent and necessitates a response on the basis of the best available scientific knowledge. There is widespread agreement that such responses should be via transdisciplinary teams that include members of science and practice and transcend disciplinary and sectoral boundaries. Transdisciplinarity focuses on knowledge production, exchange, and support for decision making.

An important component of the European Coherent Acceptable Low Emission Cultural Heritage Efficient Renovation (CALECHE) study is the transdisciplinary composition of study partners and its advisory board. The study aims to support decisions on the sustainable renovation of heritage buildings, through the development of a decision-making tool and the application of three sustainable renovation techniques (photovoltaic modules, historic windows retrofit and bio-based insulation) across four use-case sites in France, Italy, Sweden and Switzerland.

Yet in a project such as CALECHE, with expert members from various professional backgrounds, and most participants not English first language speakers, despite this being the common study language, there are likely to be numerous interpretations of project terms and vocabulary, which could result in misunderstandings, and detract from the focus on finding solutions.

This paper describes the methodology used to facilitate climate change knowledge production, by fostering understanding among all stakeholders. We used an inclusive, participatory method to develop an interdisciplinary lexicon of project terms. From the CALECHE proposal we selected 35 terms, based on project relevance, assessed likelihood of requiring explanation, and frequency of mention. These included concepts, tools, methodologies, approaches, processes. Lexicon development was outlined at a workshop to CALECHE advisory board members, and some suggested consulting relevant European conservation glossaries. We used the definitions for the selected terms where they were found in these glossaries; for remaining terms we chose user-friendly definitions from online dictionaries; and where we could not find appropriate definitions, we formulated them. To enhance respondents' comprehension and facilitate their expression, the terms were then translated into the languages of the use-case sites (French, Italian, Swedish) using the translation platform DeepL, with translations checked and corrected by four first-language partners.

Study partners and interested advisory board members were asked to complete a survey in which they identified their 15 most important terms, with some terms accompanied by descriptions of professional application of the terms. If they did not consider the suggested definitions and applications acceptable, they were asked to describe more accurate ones.

The result is a co-constructed multiple-language lexicon to which study partners can refer for clarity. A central focus of the CALECHE study is engagement with stakeholders at the use-cases, since local participation in developing solutions is fundamental to addressing

global challenges. The lexicon is further planned as an engagement tool to introduce these local stakeholders to the study and facilitate their understanding and participation, since many are likely to be unfamiliar with the study terms.

This methodology therefore contributes to sustainability research efforts, and is an example of how future methodologies can be collaborative, fostering dialogue and understanding among researchers and communities, and innovatively bringing sustainability science closer to society.



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