Case Study 15: Kingston University

Using AI to Support Students' Understanding of Statistical Applications in Research Methods

What issue were we trying to address and why?

Students often struggle with statistics: determining whether parametric assumptions are met, selecting appropriate statistical tests, and interpreting results accurately. Many also report feelings of dread and being overwhelmed by the volume of new terminology and unfamiliar analytical techniques. To tackle challenges in student engagement and understanding of statistical quantitative methods, this initiative was integrated into the teaching of a second-year Research Methods module for Sport and Nutrition students over a six-week period in 2024/2025 academic year.

What we did

Structured research scenarios were provided on the Virtual Learning Environment (VLE), reflecting contemporary topics students might investigate in their final-year projects. Each scenario included a research design, defined variables, and a clear research question. Students then used an AI tool of their choice to identify statistical tests. They were also encouraged to add any additional details that they thought might help the AI interpret the scenario.

Crucially, students were not passive recipients of AI-generated responses. They were required to critically evaluate the proposed output:

- How would the assumptions be met?
- Would the test answer the research question?
- What should they analyse in the output?
- How should results be interpreted and presented?

Their responses were discussed in class, and a Padlet board was collaboratively developed to document answers as a week-by-week reference for all students.

Who was involved

Dr Owen Spendiff, Head of Department of Applied & Human Sciences, School of Life Sciences, Pharmacy and Chemistry, Kingston University.

Measures of success

This activity simulated the reasoning process behind statistical analysis, provided immediate and interactive feedback, and enhanced fluency with research design terminology. It also increased students' confidence in using AI as a productive learning tool, emphasising the importance of critically evaluating methods and interpreting AI outputs rather than accepting them blindly without understanding their purpose and significance.

Ultimately, it also improved the teacher's understanding of what students learned and revealed where gaps remained.

Students responded positively, noting that using AI "made stats feel less overwhelming" and helped them "understand the reasoning behind choosing different tests." Several remarked that discussing AI-generated answers boosted their confidence for the assessment and improved their critical thinking.

How do you plan to develop the intervention/activity?

While multiple factors contributed to these improvements, including revisions to content structure and assessments, integrating AI as a formative tool supported greater student engagement and understanding. This approach will be refined and implemented during the next academic year.