Professional Skills Reflection and Development Plan

The Research Methods module has significantly enhanced my understanding of academic research and helped me feel prepared to undertake a dissertation for the first time. As my undergraduate degree did not include a dissertation component, this module has filled important gaps in my knowledge and given me a clear structure for approaching independent research.

Professional Skills Matrix

The Research Methods module has supported the development of a broad range of academic and professional skills that are directly relevant to both postgraduate study and professional contexts. One of the first areas in which I progressed was research design. I gained a clearer understanding of qualitative, quantitative and mixed methods approaches, and became more confident in identifying when each is appropriate. This was reinforced through the readings and practical activities, especially the proposal draft, where I was required to justify my methodological choices. While I can now make informed decisions about method selection, I still need to build confidence in designing tools for data collection such as interview schedules or structured feedback forms for use beyond academic environments.

My ability to define research questions and align them with appropriate aims has improved. Using the SMART framework provided a practical structure and helped me to narrow the focus of my topic. I found this process valuable for planning, and I intend to apply it in non-academic settings as well. However, I still need to practise using these frameworks more intuitively, particularly in workplace scenarios that require quick decision-making or flexible planning.

Critical engagement with literature is another area where I made noticeable progress. The module encouraged a shift from descriptive summaries to analytical comparisons. I now evaluate the relevance and reliability of sources more effectively, and I have started to question underlying assumptions in academic texts. Nevertheless, I still need to improve my ability to synthesise multiple arguments in a cohesive and well-structured manner, especially when working under time constraints.

Ethical understanding was a core element of the module. The activities helped me appreciate the importance of consent, confidentiality and the potential impact of research outcomes. I now feel more aware of the responsibilities associated with conducting research, particularly when it involves human participants. While I have

gained confidence in applying ethical principles within an academic context, I need to consider how to apply them consistently in professional environments, where expectations may not always be clearly defined.

Quantitative data analysis was initially one of the most challenging areas. Through the structured Excel tasks and hypothesis testing exercises, I became more comfortable interpreting numerical results and identifying patterns in data. I developed skills in calculating means, standard deviations and evaluating significance through p-values. These are transferable skills that I have already begun applying in a professional context. Recently, I started working with analytics at my workplace, particularly in analysing railway track failure data. This experience has reinforced the practical value of the skills gained during the module, especially in identifying patterns and interpreting numerical results. I would like to continue developing my confidence by applying these techniques to more complex datasets and exploring methods for clearer visualisation and reporting.

Finally, the module helped me develop reflective thinking. Although this did not come naturally at first, I have started to see the benefit of reflecting on progress in order to make better-informed decisions. I aim to make reflection a regular part of my learning and professional development, particularly as I approach the dissertation and look ahead to long-term career planning.

SWOT Analysis

Strengths

- The module improved overall research literacy, giving me a stronger sense of structure when planning analytical tasks.
- Applying statistical understanding at work (e.g. analysing railway track failures) helped reinforce core concepts in a non-academic environment.
- I feel more comfortable discussing methodological choices, which increases my confidence ahead of writing a full dissertation.

Weaknesses

- I lack experience with carrying out primary research in real conditions, such as conducting interviews or distributing surveys.
- While I can apply basic statistical techniques, I remain hesitant when faced with advanced analysis or interpreting subtle results.

- The absence of a dissertation during my undergraduate studies means I am only now developing long-form academic research skills.

Opportunities

- My current work responsibilities involve operational analytics, which offers a perfect environment to test and grow the skills acquired during the module.
- The dissertation project presents an opportunity to design and deliver an entire research process for the first time.
- Access to academic resources and tutor feedback can help refine areas I find less intuitive, especially reflective writing and methodology articulation.

Threats

- Balancing the demands of work, dissertation, and self-directed learning may create time management challenges.
- Without regular use, some of the more technical skills (e.g. hypothesis testing or data visualisation) could fade.
- Overreliance on Excel might limit my ability to engage with more advanced or industry-standard analytical tools if needed.

Action Plan

Strengthen Primary Research Design for AI Contexts

- Action: Draft a survey or interview guide tailored to AI adoption, perception, or ethical use in a professional setting.
- When: By mid-August 2025
- Why: To build experience applying research tools to contemporary, real-world topics relevant to your dissertation.
- Resources: Review qualitative methods materials; consult academic literature on AI in society; get feedback from tutor.

Deepen Understanding of Quantitative Analysis in AI Research

- Action: Practise hypothesis testing and basic modelling using openly available AI datasets (e.g. public sentiment on ChatGPT or automation impact).
- When: Weekly sessions through September

- Why: To sharpen analytical skills in preparation for your own AI-related data analysis.
- Resources: UCI Machine Learning Repository, Kaggle datasets, previous coursework templates.

Refine Data Visualisation and Interpretation Skills in R

- Action: Apply R to explore and visualise AI-related datasets (e.g. algorithm outputs, survey responses on AI adoption) using ggplot2, tidyverse, or shiny.
- When: Bi-weekly practice sessions from August to November 2025
- Why: To maintain and enhance fluency in R by using it for real datasets that align with your dissertation, ensuring your analysis is both rigorous and presentation-ready.
- Resources: RStudio tutorials, Tidy Tuesday datasets, or AI-related data from Kaggle or academic repositories.