e-portfolio link:
https://alex-vygodchikov.com/e-portfolio/research-methods

(*github repo:* https://github.com/MrAlevy/pet_e-portfolio/tree/main/content/06)

Reflection on the Module

Introduction

This module allowed me to explore many important topics in research and professional practice. I studied how to create research questions, design proposals, handle data ethically, and apply statistics. I also examined how ethical standards guide us when new technologies emerge, like artificial intelligence. Besides the academic focus, I had the chance to join group forums where I reviewed others' posts, shared my own insights, and learned how practical discussions can shape my understanding. This reflection describes how I felt during the module, which new skills and ideas I gained, and how I plan to use them in my future projects.

Main Learning

One of the main topics was understanding the scientific method and how to organize my research in a structured way. I learned the difference between inductive and deductive reasoning, which helped me see how to approach problems from different directions. Inductive reasoning allowed me to look at patterns in data first, then form ideas, while deductive reasoning helped me start from a hypothesis and test it with data.

I also explored the ethical side of research, especially in computing. Reading about the Cambridge Analytica case showed me that collecting and using data incorrectly can lead to big social and legal problems. It made me think about how vital it is to consider privacy and fairness when designing software and analyzing data. Correa et al. (2023) also mention how different countries have their own rules for AI and other technologies, so it is important to stay aware of the legal environment.

Another key part of the module was data analysis and statistics. I practiced calculating descriptive and inferential statistics, such as t-tests and confidence intervals, and I used Excel to visualize data with graphs and histograms. These exercises showed me how to transform raw numbers into meaningful insights. Before, I had only a basic idea of standard deviations and means, but now I feel more comfortable applying statistical methods. This knowledge is crucial because it helps me understand if differences between groups are real or just due to chance.

Finally, I saw how project management connects with research. In Unit 12, we looked at project lifecycles and how to handle risks. This gave me a more concrete view of how to plan tasks, set timelines, and look for potential problems early on. Combining research methods with project management methods makes me more organized and effective.

Self-Awareness

At the start, I was excited but a bit worried about learning statistics. I was an experienced Excel user, but I had never done any serious statistical analysis with it, which made me uncertain. However, as I did more exercises, I became more

comfortable. Each time I saw a p-value or made a bar chart, I realized I was getting better at interpreting results. That changed my worry into pride.

When I saw my grades for the statistical worksheets, I felt happy because the tutor said they were done to an excellent standard. This success inspired me to try more advanced techniques and to read more studies involving data analysis. It also showed me that I learn best by doing. Reading about t-tests helps, but running actual tests with real data helps me remember the process better.

Sometimes, I felt overwhelmed by ethical debates in computing. Learning about legal cases or data misuse made me question how to keep up with these issues, but I realized that feeling concerned is a good thing. It motivates me to learn guidelines (like the ACM or BCS codes) and stay updated on new laws. While technology evolves quickly, ethical principles remain essential.

During the module, we had group forums on two topics, Codes of Ethics and Professional Conduct and Accuracy of Information in Research. These forums were quite helpful because I could see how others approached problems and how their experiences differ from mine.

Through peer reviews, I discovered fresh perspectives on how important it is to follow ethical codes from organizations like the ACM and BCS. People mentioned how focusing on user-centered design aligns with user autonomy and dignity. It made me realize that ethical design is not just about being nice; it can also benefit a company’s reputation in the long run.

Another forum was about a case study on the accuracy of information, where a researcher named Abi faced ethical and professional challenges. Some peers

pointed out that changing or hiding bad results goes against research integrity (Miller & Mauthner, 2012). Others said that including both positive and negative data leads to more honest outcomes (Sim & Waterfield, 2019). I started thinking about how this relates to my own research. It might be tempting to show only the good results, but that can mislead readers or organizations. By reading and reviewing other people's posts, I strengthened my own belief that transparent, complete data is the most ethical path, even if it might not always please sponsors or managers.

Conclusion

I believe these learnings will help me see the bigger picture in my future work. If I manage a project, I can apply the risk management concepts I've learned to identify potential ethical or technical issues early on. Statistical tests can help me avoid relying on guesses when making decisions. For instance, if I need to compare user feedback on two software versions, I can use hypothesis testing to determine if differences in satisfaction scores are meaningful or just random.

Reflecting on ethics has also shown me the importance of designing and reviewing products to make them fairer and more transparent. I can advocate for accurate reporting, emphasizing that presenting both positive and negative test results builds trust with clients and users. While some colleagues might worry that honest reporting could impact marketing, I believe it leads to better decisions and long-term success.

This module covered a wide range of topics, from research design to data analysis, ethics, and group collaboration. Working through these areas step by step has helped me understand how they interconnect. Research isn't just about numbers or theories—it's about being responsible with data, respecting ethical guidelines, and

collaborating effectively with others. Although I started with some uncertainty about statistics and ethical debates, practice and group discussions have made me more confident.

Looking ahead, I plan to keep building on these methods, stay informed about changes in laws and ethical codes, and approach group discussions with an open mind. These steps will help me continue growing as a professional in the computing field.

words count: 1067

References

Cheryan, S. and Markus, H.R. (2020) ‘Masculine Defaults: Identifying and Mitigating Hidden Cultural Biases’, *Psychological Review*, 127(6), pp. 1022–1052.

Corrêa, N.K. et al. (2023) ‘Worldwide AI ethics: A review of 200 guidelines and recommendations for AI governance’, Patterns (New York, N.Y.), 4(10), p. 100857.

Luguri, J. and Strahilevitz, L.J. (2021) ‘Shining a Light on Dark Patterns’, *Journal of Legal Analysis*, 13(1), pp. 43–109.

Miller, T. and Mauthner, M.L. (2012) *Ethics in Qualitative Research*. Sage Publications.

Sim, J. and Waterfield, J. (2019) ‘Focus Group Methodology: Some Ethical Challenges in Quality & Quantity’, *Quality & Quantity*, 53(6), pp. 2279–2293.