

Unit 12 – Reflective Activity

During my time studying the Research Methods and Professional Practices module as part of my data science master's degree. I was tasked with discussing with peers on subjects such as research ethics, I was also tasked with developing a literature review as well as presenting a research proposal plan which was an evolution based on the gaps found within my literature review. During each unit I have kept a personal diary detailing my progress within the module, and to accompany this reflective essay a SWOT analysis as well as an action plan will be included as part of the reflection section of my E-portfolio. This essay will be following the structure of Rolfe, Freshwater and Jasper's (2001) reflective model of What? So What and Now What?

During units 1 to 3 myself and my peers on this course were encouraged to partake in a discussion on codes of ethics and professional conduct. Since this was the first time, I had looked into research-based ethics and professional conduct since my undergraduate degree several years ago, I felt as if I lacked confidence approaching the subject, especially when applying the theoretical stance of ethics to ACM's (2018) case study on medical implants. In order to tackle this issue, I took and categorised notes based on the code of ethics provided by (Association for Computing Machinery, 2018) and notes from (BCS, 2022) and aligned the points taken from both of these sources to the case study at hand to see if they were applicable. Categorising both sources to BCS's (2022) code of conduct of public interest, professional competence and integrity, duty to the profession and duty to the relevant authority helped provide relevant discussion responses to my peer's collaborative discussion posts. The result on this all allowed me to grasp a greater understanding of ethics and professional conduct within

research and the sector of computing. To improve upon this, I could look into the application of ethics to new technological sectors such as, cloud computing or the internet of things where there are ever evolving ethical dilemmas where ethical solutions need to be created in a way that is useful to practice (Lynn et al., 2021).

A literature review outline was a formative submission in order to prepare for the literature review due midway through the module. I decided to focus on a strength of mine which is data visualisation and at first, I wanted to apply this to financial forecasting, and how data visualisation can be used to predict financial crises. Based on the feedback received my literature would have to be a lot more focused than what was proposed, and after reviewing multiple sources related to data visualisation in forecasting financial crises. I decided to change my approach and structure my literature review on how data visualisation can be used to inform people on temperature and air quality within their local area. I found that this line of research was easier to focus on to one area and critically analyse. A way in which I managed to focus my literature review was by looking at examples online, but by also following University of Reading's (2019) structure of explaining broad issues briefly, narrowing my focus to deal with studies that overlap my research and then finally honing in on research directly related to my specific investigation. The result of this led to positive feedback with my actual literature review deliverable, where a high merit grade was achieved and positive feedback included the fact that the review was highly focused on a specific topic. One thing that I wish to improve upon is to use more diverse sources within my research assignments and I aim to do this during my capstone project.

Working through the modules, my research proposal was constantly being developed in the background. Unit 5 is where I was introduced to data collection methods in the form of interviews, surveys and questionnaires. Grasping an understanding of what I would be trying to achieve with a questionnaire was a factor that had to be focused on highly. Understanding that the objective of the questionnaire would be to collect data accurately too in order to contribute to findings of the study. Knowing that I would be using questionnaires to compliment secondary sourced data, I began establishing mock questions that could be used in my capstone project following the submission of my research proposal. Guidance from Brace (2013) was used where the principal information required would be defined, secondary information required for analysis would be determined and the flow of subject areas or sub-sections within the questionnaire would be mapped. Explaining this approach in my research proposal led to positive feedback. I now need to formulate questions for my capstone project to determine if they are effective enough at gathering data.

Throughout this module, my capstone project has always been in mind when participating in activities throughout each unit. Collaborating and discussion subject matters on research methods and professional practice is where I found that a lot of knowledge was attained, being able to receive feedback from peers and the tutor allowed me to approach matters from different angles that I previously would not have been able to perceive prior to feedback. Subjects like hypothesis testing and the interpretation of data through visualisation and analysis were challenging at first, but my approach is now more confident following the completion of the exercises assigned. Furthermore, in the run up to my capstone project I do have a lot more ethical

awareness regarding matters like interpretation of results, confidentiality, informed consent and the ethical treatment of participants. Ethical decisions will be kept in mind with the design and conduct of my research, ensuring integrity within my research. Upon approach to my capstone project, it would be best to retain and practice the skills learnt from this module and also build on them to ensure that my project is managed correctly and efficiently. The concept of project management can be applied to my capstone project where different functional areas that tend to be self-serving that work independently, must now work together in order to achieve an end goal within my line of research (Nicholas and Steyn, 2020).

Reference list:

ACM (2018). *Case: Medical Implant Risk Analysis, ACM Ethics - The Official Site of the Association for Computing Machinery's Committee on Professional Ethics*. [online] Available at: <https://ethics.acm.org/code-of-ethics/using-the-code/case-medical-implant-risk-analysis>.

Association for Computing Machinery (2018). *ACM Code of Ethics and Professional Conduct*. [online] Association for Computing Machinery. Available at: <https://www.acm.org/code-of-ethics>.

BCS (2022). *BCS, THE CHARTERED INSTITUTE FOR IT CODE OF CONDUCT FOR BCS MEMBERS*. [online] Available at: <https://www.bcs.org/media/2211/bcs-code-of-conduct.pdf>.

Brace, I. (2013). *Questionnaire design : how to plan, structure and write survey material for effective market research*. London: Kogan page.

Lynn, T., Mooney, J.G., Van, L. and Fox, G. (2021). *Data privacy and trust in cloud computing : building trust in the cloud through assurance and accountability*. Cham: Palgrave Macmillan.

Nicholas, J.M. and Steyn, H. (2020). *Project management for engineering, business and technology*. 5th ed. Abingdon, Oxon ; New York, Ny: Routledge, An Imprint Of The Taylor & Francis Group.

Rolfe, G., Freshwater, D. and Jasper, M. (2001). *Critical Reflection for Nursing and the Helping professions: a user's Guide*. Basingstoke: Palgrave Macmillan.

University of Reading (2019). *LibGuides: Literature reviews: Starting your literature review*. [online] Reading.ac.uk. Available at:

<https://libguides.reading.ac.uk/literaturereview/starting>.