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## Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** A mixed method investigation into whether study habits and use of learning resources differ between medical students with regard to written examination grades

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### Project abstract:

There is currently a lack of literature around how medical students learn best, and very little published evidence on how study habits differ between medical students who excel academically to those who struggle (Bin Abdulrahman et al, 2021). Furthermore, there is little research that focuses on the UK medical school context. Current methods of teaching at medical school are somewhat lacking in innovation. This has led many medical students to find their own resources to help them understand medicine and pass exams (Richmond et al, 2019).

We will identify two separate groups of students from two UK medical schools; the University of Sheffield and the University of Cambridge. After surveying, we hope to carry out focus groups to talk with some of the students from both Universities to further explore their study habits and resources used. This can be done by sending a survey to all students via an announcement on the medical student portal, asking them about study techniques and resources used. The survey will be anonymous, and as part of the survey we will ask students to provide their most recent exam grades which they will access themselves via Minerva. We will then send a further announcement asking students for their email addresses if they would like to take part in the focus group.

Current literature on effective study techniques will be used as an initial prompt for students to select when enquiring about effective techniques (goal setting, number of hours spent studying daily etc.) (Bin Abdulrahman et al, 2021) as well as the use of spaced repetition techniques (Augustin, 2014), repeated testing (Larsen et al, 2009) and near-peer learning. We hope that the end result of this research will result in a publication about which study techniques are best correlated with academic success for Sheffield medical students, to inform how students who struggle academically can be best helped. The research may also investigate factors beyond study techniques which influence examination performance to help ensure Sheffield medical school is in the best position to help their medical students thrive.

### References:

Bin Abdulrahman, K.A., Khalaf, A.M., Bin Abbas, F.B. and Alanazi, O.T. (2021). Study Habits of

Highly Effective Medical Students. *Advances in Medical Education and Practice*, [online] Volume 12, pp.627-633..

Richmond, A., Cranfield, T. and Cooper, N. (2019). Study tips for medical students. *BMJ*, 365, p.k663.

Augustin, M. (2014). How to Learn Effectively in Medical School: Test Yourself, Learn Actively, and Repeat in Intervals. *The Yale Journal of Biology and Medicine* [online] 87(2), p.207.

Larsen, D.P., Butler, A.C. and Roediger III, H.L. (2009). Repeated testing improves long-term retention relative to repeated study: a randomised controlled trial. *Medical Education*, 43(12), pp.1174-1181.

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# A mixed method investigation into whether study habits and use of learning resources differ between medical students with regard to written examination grades

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## Defining your data

- What digital data (and physical data if applicable) will you collect or create during the project?
  - How will the data be collected or created, and over what time period?
  - What formats will your digital data be in? (E.g. .docx, .txt, .jpeg)
  - Approximately how much digital data (in GB, MB, etc) will be generated during the project?
  - Are you using pre-existing datasets? Give details if possible, including conditions of use.
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- We will collect digital data in the form of google forms that contain each students' anonymous survey response. We will ask students to provide their most recent exam results on the survey, which they will access themselves via Minerva. We will collect email addresses of students who wish to partake in focus groups. We will also host several focus groups via Google Meet with students online, where a video recording of the session will be made and stored for one week after the interview, until it is transcribed onto a word document. The transcription will be anonymised and will contain no personal identifiable information. No physical data will be collected.
  - The data will be collected by sending out a google form to each student via a link through a central distributor at each medical school. This data will be collected over a month period in 2026.
  - The digital data will be present in PDF form for the survey responses. The online recordings of focus groups will be stored as MP4 files.
  - There will be approximately 20.2 GB of data generated in total, but once the video recordings of focus groups are transcribed they will be deleted, meaning <2 GB of data will be stored for more than 1 week.

## Looking after data during your research

- Where will you store digital data during the project to ensure it is secure and backed up regularly? ([University research storage](#))
  - How will you name and organise your data files? (An example filename can help to illustrate this)
  - If you collect or create physical data, where will you store these securely?
  - How will you make data easier to understand and use? (E.g. include file structure and methodology in a README file)
  - Will you use extra security precautions for any of your digital or physical data? (E.g. for sensitive and/or personal data)
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- Digital data (survey data with no personal information and the anonymised transcriptions) will be stored on the University of Sheffield's X Drive
  - 'Student survey response (student no. XXXXXXXXXX) (DDMMYY)
  - We will not collect physical data

- We will make data easier to understand by using collection tools students are familiar with (google form), and by saving each document response with the a unique number.
- The data will be password protected under the primary investigators' staff account. This account has dual authentication. The account will be locked when not in use, and the data will be stored online, so there won't be any physical copies and therefore any chance of these being stolen or going missing. Laptops which have access to the digital data are password protected so will have a low risk of ceding the data if stolen.
- The emails of students who volunteer for focus groups will be stored separately so the emails and it will not be possible to link them with survey responses. The emails will be deleted within 2 weeks of the focus groups being held.

## Storing data after your research

- Which parts of your data will be stored on a long-term basis after the end of the project?
  - Where will the data be stored after the project? (E.g. University of Sheffield repository [ORDA](#), or a subject-specific repository)
  - How long will the data be stored for? (E.g. standard TUoS retention period of minimum 10 years after the project)
  - Who will place the data in a repository or other long-term storage? (E.g. you, or your supervisor)
  - If you plan to use long-term data storage other than a repository, who will be responsible for the data?
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- Survey responses from students will be stored for up to 18 months following collection, i.e. until August 2027, in the University repository ORDA. This is to allow time for publication of results. However all personal identifiable information will be removed within 2 weeks of the focus groups taking place.
  - The data will be collected on Sheffield University X Drive in Google Forms and stored as PDF files. The data will be stored on the primary researcher's University of Sheffield X Drive.
  - All data will be stored for no longer than 18 months following data collection (August 2027).
  - I will not place the data in a repository or other long term storage
  - I don't plan to use long-term data storage.

## Sharing data after your research

- How will you make data available outside of the research group after the project? (E.g. shared in a repository, either openly or with controlled access)
- Will you make all of your data available, or are there reasons you can't do this? (E.g. personal data, commercial or legal restrictions, very large datasets)
- If there are reasons you can't share all of your data, how might you make as much of it available as possible? (E.g. anonymisation, participant consent, sharing analysed data only)
- How will you make your data as widely accessible as possible? (E.g. include a data availability statement in publications, ensure published data has a DOI)
- What licence will you apply to your data to say how it can be reused and shared? (E.g. one of the [Creative Commons](#) licences)

- Once data has been anonymised and analysed, and a manuscript written, we will share collated anonymised personally non-identifiable data for publication. Whether or not the publication submission is successful, we will share our learnings with the relevant departments at the University of Sheffield and Cambridge (once anonymised).
- We will not make any personal identifiable information available, and this may include quotes during the transcription of focus groups if we feel there is a risk the quote could identify an individual we will remove these from any outcomes shared.
- We will ensure published data has a DOI and include a data availability statement in publications.
- We will apply for a CC-BY license for our data as it is the least restrictive so will allow for the most utility with the data.

## Putting your plan into practice

- Who is responsible for making sure your data management plan is followed? (E.g. you with the support of your supervisor)
  - How often will your data management plan be reviewed and updated? (E.g. yearly and if the project changes)
  - Are there any actions you need to take in order to put your data management plan into practice? (E.g. requesting [University research storage](#) via your supervisor.)
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- I am responsible for ensuring our data management plan is followed, under the supervision of Professor Pirashanthie Vivekananda-Schmidt
  - The data management plan will be reviewed throughout the project, and at the end of data collection to assess whether any changes need to be made. If they do, this will be discussed with my supervisor and implemented appropriately.
  - There are no additional actions that need to be taken to put this data management plan into practice. The X Drive and Google Forms are already securely available through Sheffield University via the MUSE portal, and this is already password protected.