CASE STUDY: MADELEINE

Madeleine was studying for an MSc within the Medical Sciences Division. She is in her early 20s and had previously studied Mathematics and Computer Science in her native Germany. After graduating with her bachelor's degree she took several months out, first as an intern in the USA and then as an aid worker in Africa.

Madeleine was motivated to study on the course through an interest in carrying out research into the brain, and she wanted to acquire a rounded knowledge of the subject before undertaking doctoral studies. An active learner ("Doing things myself is what I memorise best"), she chose Oxford because of the breadth of the course and its practical focus. Summing up her experiences towards the end of the course, Madeleine wrote: "academic life went well, was busy, challenging but insightful, fruitful and very interesting - social life was amazing, great, good friend, good fun, sometimes not enough time for friends because of academic requirements, but all in all, good balance."

An adept user of technology, Madeleine recognises the value of a blended approach, choosing "traditional" paper-and-pencil tools where these accord with her personal preference or, simply, are more suited to the task at hand.

The experience of learning

All of the students on Madeleine's course followed the same classes during the first term, which culminated in the qualifying exam. In the second term, students worked on the first of their two projects and attended lectures in advanced elective modules. Each module was assessed by an extended essay, and the project was assessed by a 10,000-word dissertation. From April to August students worked on their second project and wrote another dissertation.

The course attracts students from a range of disciplines and so people tended to learn from each other: "I think we learnt the most by actually forming groups of people to study together, and other people would explain things or kind of fishing into other people." Madeleine felt that this peer support was particularly valuable in a course where so much material had to be covered:

> "We would discuss with other people 'what do you think is important?' and then we would all read up the same thing and discuss it and talk about it. And some people understood more of some parts of the material and then we would explain to each other as well and take notes."

Later in the first term Madeleine formed a study group with three other students on the course, ostensibly to revise for the exam; however, it turned into a close-knit social group as well:

> "It was really amazing in all aspects, it helped to discuss things that were important for the exam, but [it] was also socially very "connecting" and hanging out with each other for hours (and entire nights!) was a lot of fun; friendships with people in the course became much closer like that!"

The four students met to work on each of the five modules covered during the first term:

> "…you would sort of go through the lectures and cover all the extra material that you thought was not covered in the lecture that would belong to that module. And everyone had prepared in a different style, one of… like the people that always came had like read the textbook on that part. And then other people had looked up a few things online that they didn't know and so everyone could contribute some of the knowledge that they had acquired."

This voluntary study group was based on an experience of peer learning which Madeleine encountered during her undergraduate studies in Germany, the difference being that the previous experience had been compulsory and not everyone had been equally motivated.

Although Madeleine appreciated the need for everyone to get a grasp of the basics in the first term, by Christmas she was very keen to get on with research:

> "…it makes sense that the program is structured this way, I would not want to change it. It is important that everyone acquires the same level of background knowledge in the first term, and then goes into research… But I still missed actual research a little bit."

For her first project, Madeleine looked at how two areas of the brain communicate with each other. For her second, she joined an investigation already being undertaken by a DPhil student into how the brain changes when individuals learn a new skill over a six-week period. Her choice of topic in both cases was motivated by interest, by the opportunities that they offered for learning new methods, and by the opportunity to work with specific experts.

Madeleine recognised the value of the learning to be gained from practical research like this:

> "for scientific research my friends have said you only really learn it by doing something. The theory is good to have but it's always possible to read up things like that. […] just acquiring the skill to do methods, [...] that's the most important skill I think to acquire in research. And so like just these two projects or like short projects are very good because it's a very intense way of learning one method."

Use of technology…

Madeleine is receptive to new tools, taking them up if she enters an environment where they are already in use. However, she doesn't spend a lot of time looking for new tools herself; rather, when she recognises a need for a tool for a specific task she asks around: "if there's something I know that would be really, really useful then I might talk to people or… and more like, more specific people for a specific thing." By the end of the first term, she was using a wide array of other tools and technologies to organise her academic and social life.

…for studying

Madeleine's native language is German, and although her command of English is impressive, she occasionally had recourse to Leo, an online German-English dictionary and which "I might use in class from time to time to help me understand a word that the lecturer uses and that I might not know." She also had a portable electronic dictionary, but it was less suitable for looking up specialised vocabulary.

For keeping up to date with the literature on her subject Madeleine's principal online sources were PubMed (for peer-reviewed articles), Google and Wikipedia. The second and third were treated with caution:

> "I kind of trust Wikipedia when the article is not a stub, and as regards Google, it depends on the results I am given, of course. If the websites look too personal and not trustworthy and scientific enough, I try to find a better source or at least another source which supports the facts provided by the non-reviewed resource."

She also used newsfeeds to receive regular updates of published papers.

 Madeleine used the university's libraries, but kept her visits to them short by consulting the online catalogue first: "it's really just a question of minutes, I have the reference telling me where to find the book written down, get the book, have a quick look through it to determine its relevance, take it or not, and then leave the library again."

To keep track of her references, Madeleine experimented with EndNote, but eventually opted for Zotero, which has a plug-in to Firefox:

> "I can sort references in folders/collections of specific topics, but one reference can belong to several categories which is very useful. It has a good search tool and can directly convert certain collections of references or the whole library or just one reference into a Word reference section or a LaTEX bibliography file (I do the latter), which is really handy."

The practical work which Madeleine undertook for her two research projects involved the use of specialist hardware and software. In the first project she was carrying out transcranial magnetic stimulation (TMS), which involves applying short magnetic pulses to the head. Data were analysed using, inter alia, standard packages such as Matlab and SPSS. She and her colleagues also used Yahoo's online calendar for booking the use of the laboratory for the TMS sessions (her first experience of such a tool). In the second project, Madeleine had the thrill of operating the MRI scanner at the University's teaching hospital and using specialist apparatus to track participants' movements as they practised the motor skill that she was investigating. In both projects she made use of her programming skills to write code in Pascal and Python.

At the end of the year, Madeleine reflected: "I'm maybe combining the course with more technology" and felt that the teaching staff might perhaps collect a list of tools used by previous students and recommend them to future cohorts: "I think the course could definitely have an extract like kind of information just from previous years to say, well I used this plug in or whatever, it's really useful for writing your essays, something like that they could offer in addition."

…by teachers

Madeleine's thoughts on lecturers' use of PowerPoint to convey new concepts could be summarised as "less is more." She recognised that it takes time to develop an effective presentation but stressed that words, pictures and animations should all be used only where they contribute to students' understanding (and can be read in the time for which they are displayed), and that everything on each slide should be explained. Indeed, she felt that, for introducing a new concept, the blackboard still works best: "I generally think, for explaining concepts, developing them on the blackboard is still the BEST and most memorable way to do it." Indeed, one of her most memorable learning experiences was a series of lectures by a Canadian professor who "used the really old-fashioned blackboard drawing simplified but really great diagrams and he guided us through every single train of thought."

Managing learning: a blended approach

Madeleine found the workload a little heavier than she had expected and adopted a number of strategies to cope with it, including going without sleep: "considering how much I worked during the day already, that was the only efficient one I came up with in addition to previous strategies I had." She also found herself having to rein back a little on important areas of her personal life: "i.e. emailing and phoning friends and family, going running, going to a Bible Study and church, spending time the people from my college's MCR etc."

Despite these admissions, however, Madeleine is by nature a highly organised person and planned her work carefully to ensure that she met her academic commitments:

> "I've always been really organised, even in school […] I just like to like have colours and underline things and just everything very structured. It helps me a lot to like have an overview of what I need to know and to have a kind of visual picture of what has got to be done."

Pencil-and-paper tools as well as software helped Madeleine to keep track of her work during the two projects:

> "I write every idea that comes to mind down in a booklet and I organise scheduled times for experimental sessions in an Excel spreadsheet and write them down in my calendar as well. I have a 'to-do' list that I update almost every day and when I think of other things I have to do, I write them down and sort them by priority/urgency."

Discussing her use of pencil and paper versus digital tools, she explained:

> "it's just better to have it in my hands compared to always needing to start the computer or always needing to check online on the calendar. […] The same with reading a book, I can't read a paper or a book in the same way online as I can if I can just underline things and write up things in the margin."

However, now that more and more activities and resources are being shifted online, she recognised the increasing need to organise herself in a digital environment: "I didn't use any online calendar previously before this year. Now I kind of do both, so I still have my normal calendar and then I also use [an online calendar]."

Use of social software (Web 2.0)

Madeleine has a large family and kept in touch once or twice a week via Skype. In addition, she would exchange a brief daily email with her brother. She also occasionally wrote in a blog, which she had previously used as a form of correspondence to keep her friends and family up to date with her activities in Africa. The blog was open to anyone who found it – in part because her circle of friends tended to change and she didn't want to have to keep track of who had access. In any case, "I don't think anyone who doesn't know me would be interested in what I write, it's just so random."

Madeleine started using YouTube during the year, but only to look at clips recommended by others or to search for a favourite song that she couldn't find on CD:

> "I would never just search around for anything, just because it takes so much time. […] just the music I like, or I just felt like, oh I really want to listen to this piece that I played on the piano two years ago or something, and I just look at that if someone has played it on You Tube and usually it's there."

However, she had actively searched in YouTube as part of her second project, in order to find instructional videos for her participants: "You can find instructions on how to learn certain skills and so if people needed more instruction then I could send them a link to You Tube."

Madeleine used Facebook in connection with church and social activities, but not as part of her studies "which is probably due to the fact that Germans don't use Facebook that much.)" She had an account in the German equivalent, StudiVZ: "it's similar but it's not as nice." She kept her use of Facebook firmly under control, recognising the potential consequences for her studies if she did not.

Madeleine was perfectly comfortable with the idea that teaching staff might have accounts on Facebook, but did not consider that it should be used for academic purposes as not everyone wants to use it: "it would not be fair if they miss some important contents just because they don't have a Facebook account." She felt that WebLearn was more appropriate for this purpose at Master's level. For an undergraduate tutor with a small group of students, however, the situation might be different. She also believed that formal University announcements should not be made through Facebook: "I think out of principle, these types of free online-services should be kept separate from "serious" university-related things."