Enhancing students' learning experience in the online environment

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Abstract

In this report, we present the study of the effect of certain measures that were used in the module “Data Mining and Visualisation” delivered completely online in the second semester of the year 2020/2021 at the Department of Computer Science at the University of Liverpool.

The main aim of the taken measures was to enhance learning experience of the students in the online settings. This was planned to do by achieving the following two objectives:

1) Improve the level of communication in the module.
2) Improve students’ understanding of what they are expected to learn every week.

Based on the student responses to the end of module anonymous survey, among other findings, we can report that

1) the use of a Q&A dashboard with an option of anonymous questions positively contributed to the level of communication in the module;
2) the use of weekly Learning Objectives improved students’ understanding of what they are expected to learn every week.

Introduction & Preliminaries

This study was motivated by the abrupt move of teaching to the online environment due to the COVID pandemic. In the year 2020/2021, I was a module coordinator of the large module (250 students) "Data Mining and Visualisation" at the Department of Computer Science at the University of Liverpool.

The module was new to me, but it was already taught several years at the department, and I had teaching materials that could be re-used. Those materials were used for the delivery of the module in the face-to-face environment. The main challenge was to adapt the module to the online environment in such a way as to support students learning in the challenging and unexpected online setting.

Since the module was run in the second semester, there was an opportunity to learn from the experience of my colleagues who delivered their modules in the same environment in the first semester. I also had an opportunity to learn students' experience from one-to-one meetings with my tutees and from the pulse survey run by the department in the middle of the first semester.

Students' feedback

Among students' difficulties of learning in the online environment most frequently mentioned were:

1. **Lack of interaction and feel of isolation**. In normal years, students often get together to work on assignments and help each other to understand teaching materials. The restrictions of the academic year 2020/2021 made it impossible for many students to meet physically and therefore considerably limited social learning **(Stewart, 2012)**. This problem was voiced by many students.
2. **Problems with self-discipline**. Some students found it difficult to start working on teaching materials when there are no scheduled sessions. For example, in the year 2020/2021, 3 weekly face-to-face lectures were commonly replaced by 1-3 pre-recorded videos of the total duration of 1.5-2 hours. Students were supposed to watch these videos independently during the week. Since there were no centrally fixed time slots to watch the videos, each of the students needed to manage their own time individually and be sufficiently disciplined to work out all weekly materials for each of their modules. Quite a few students found this challenging.
3. **Problems with prioritisation**. Some students reported that it is not clear what to do and in which order. They complained that in some modules there are a lot of materials provided, but it is not clear what they should concentrate on in order to progress successfully with the module. No priorities were explicitly set by the module coordinators.

The module setting

In normal years, the module consisted of 30 lectures and 10 tutorials over 10 weeks. All teaching sessions were delivered face-to-face. In the year 2020/2021, due to the COVID pandemic, there were no face-to-face meetings and all teaching happened online. The teaching materials were organised in Canvas and consisted of pre-recorded video lectures, a

reading list, programming lab tasks, and problem sets. Every teaching week students were supposed to

1) watch pre-recorded videos and study the reading materials
2) work on the programming lab tasks,
3) work on the problem sets
4) attend a synchronous Q&A session led by the module coordinator, where solutions to the problems were discussed
5) attend synchronous programming labs led by demonstrators, where solutions to the lab tasks were discussed

In order to partially address the above-mentioned difficulties that students faced in the online environment, and after literature review, it was decided to focus on improving the level of communication in the module (to mitigate the lack of interaction and feel of isolation) and on students' understanding on what they are supposed to learn every week (to address the problems of self-discipline and prioritisation).

Communication

According to the massive statistical study **(Astin, 1993)** the two most influential factors on the students' college experience were

1. the quality of interactions between students and faculty,
2. the quality of interactions among students.

This was subsequently validated in several studies **Lowman (1995)**, **Hawk and Lyons (2008)**, and **Meyers (2009)**.

In order to improve the quality of interaction in the module, it was decided to introduce the following measures:

1. Use the Q&A dashboard Campuswire.com. The main reason for choosing an external Q&A dashboard instead of using the Discussions module of Canvas was that the former allowed anonymous questions and responses. This reason is justified by the study indicating that enabling anonymous postings on discussion boards increases student engagement **(Roberts & Rajah-Kanagasabai, 2013)**. The students were encouraged to use Campuswire to ask their questions personally or anonymously, reply to questions of others, 'Like' questions, and 'Endorse' answers. Nearly every module page in Canvas contained signposting to Campuswire (see Fig. 1).

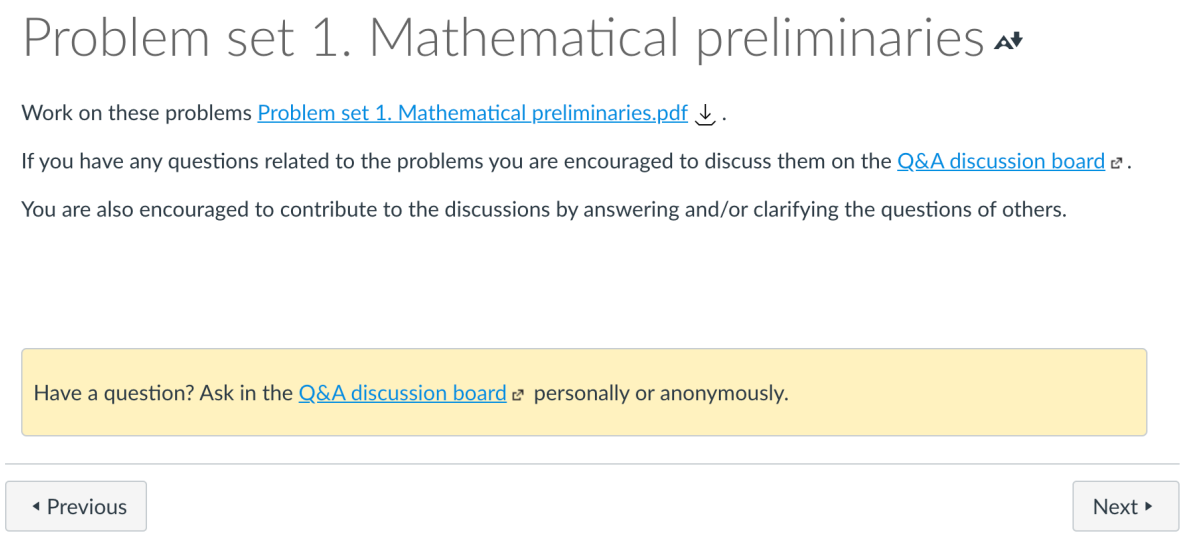


Figure 1. Signposting to Campuswire

2. Use breakout rooms during the lab sessions. It was supposed that during every lab session, in the first 10 min of the session a demonstrator would explain the tasks and answer questions, if any. Then the students will be invited to work on the tasks in groups of 5-7 students in breakout rooms for 30-35 min. During that time the demonstrator would join every group for up to 5 minutes to provide help and/or feedback. After the group work, students were invited to join the main room for a concluding discussion with the demonstrator. The main intention behind using breakout rooms was to provide an extra opportunity for social and active learning **(Stewart, 2012)**.

3. Lecturer presence on the screen in the pre-recorded videos. In this module, every video was recorded with the lecturer present on the screen (see Fig. 2).

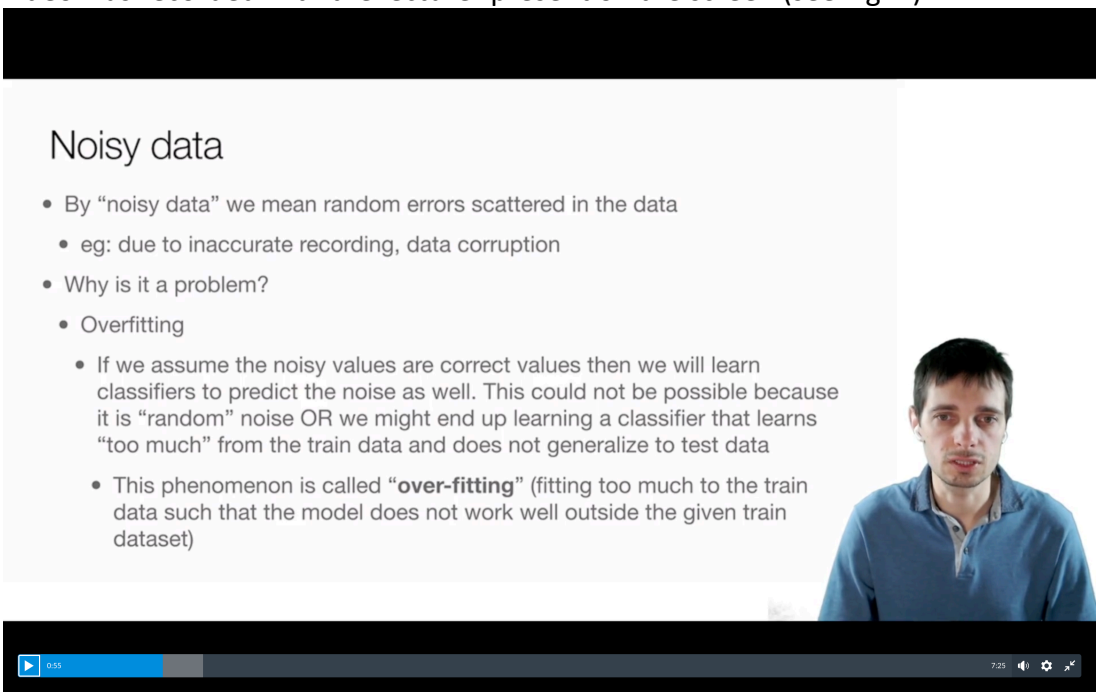


Figure 2. A typical picture in the pre-recorded videos with the lecturer present on the

screen

Existing studies indicate that videos with teacher presence can significantly improve academic achievements and increase intrinsic cognitive loads compared with those without the presence **(Chen & Wu, 2015; Yu, 2021)**. In our case, in addition to this clearly important advantage, we meant to create a positive impact on communication between the students and the lecturer.

Clear expectations

Studies show that the clearer lecturers are about their expectations, the more likely the students will be to meet those expectations **(Ambrose et al., 2010; Felder & Brent, 2005; Weimer, 2013)**. The main measure that we used to improve students' understanding of the expectations is weekly Learning Objectives.

Learning Objectives—explicit statements of the types of tasks the students should be able to complete if they learn what the teacher intends to teach them (**Mager, 1997; Felder & Brent, 2016**).

In our module, the introductory page of each week contained the week's Learning Objectives (see Fig. 3)

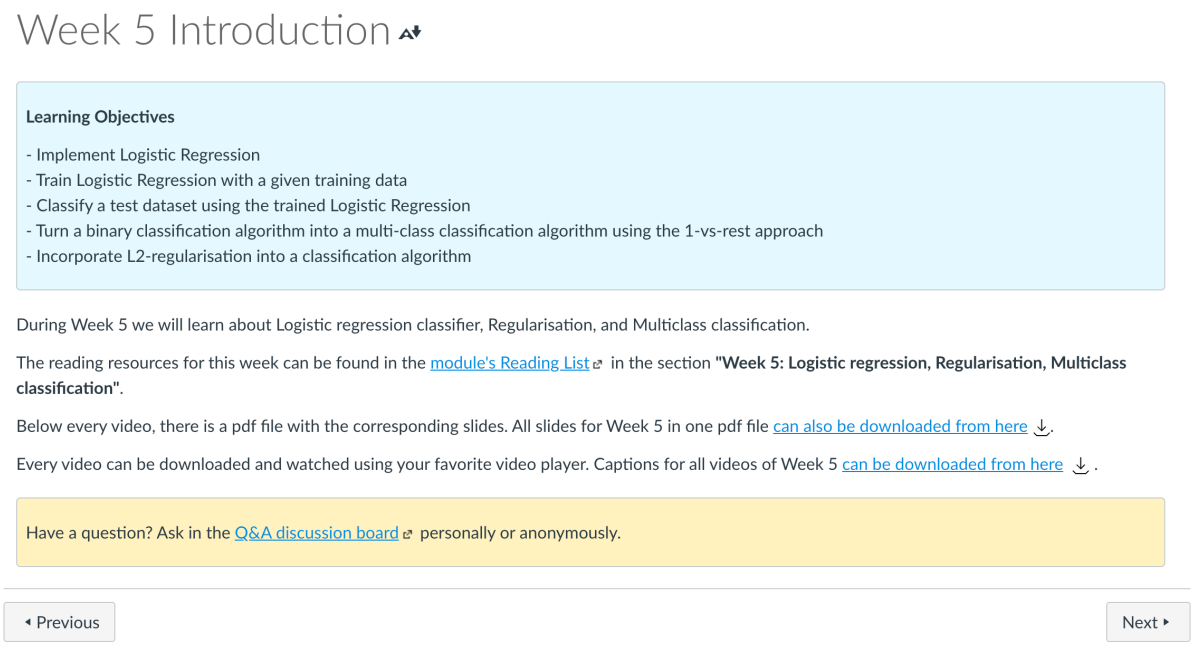


Figure 3. The list of Learning Objectives for Week 5.

The Learning Objectives were used to design lessons, class activities, lab sessions, assignments, and the exam. The purpose of the Learning Objectives was explained to the students at the first Q&A session and was regularly reminded afterward.

The aim of the study

The main aim of this study is to investigate the effect of the implemented measures on the level of communication in the module and students' understanding of what they are expected to learn.

We conducted our study using the anonymous end-of-module survey. In the subsequent sections, we present survey design, survey questions, and survey responses, followed by the discussion and conclusion. The two appendices contain the complete survey questions and all responses to the free text questions respectively.

Survey design

The students of the module were asked to complete an anonymous online survey consisting of 11 questions. Eight questions (Q1-Q8) are to measure and assess the quality of communication:

1. with the module coordinator (Q1 and Q2, multiple-choice questions (MCQ)),
2. with the demonstrators (Q3 and Q4, MCQ), and
3. among the students (Q5 and Q6, MCQ).

Q7 is a free text question to give the students an opportunity to describe what they liked/disliked about communication in the module.

Q8 is a free text question to ask students what they think about the value of a lecturer being present in pre-recorded videos.

Questions Q9-Q11 are to assess the effectiveness of the weekly Learning Objectives.

The survey was available for 17 days during the period between the last lecture and the final exam. 35 out of 250 students completed the survey.

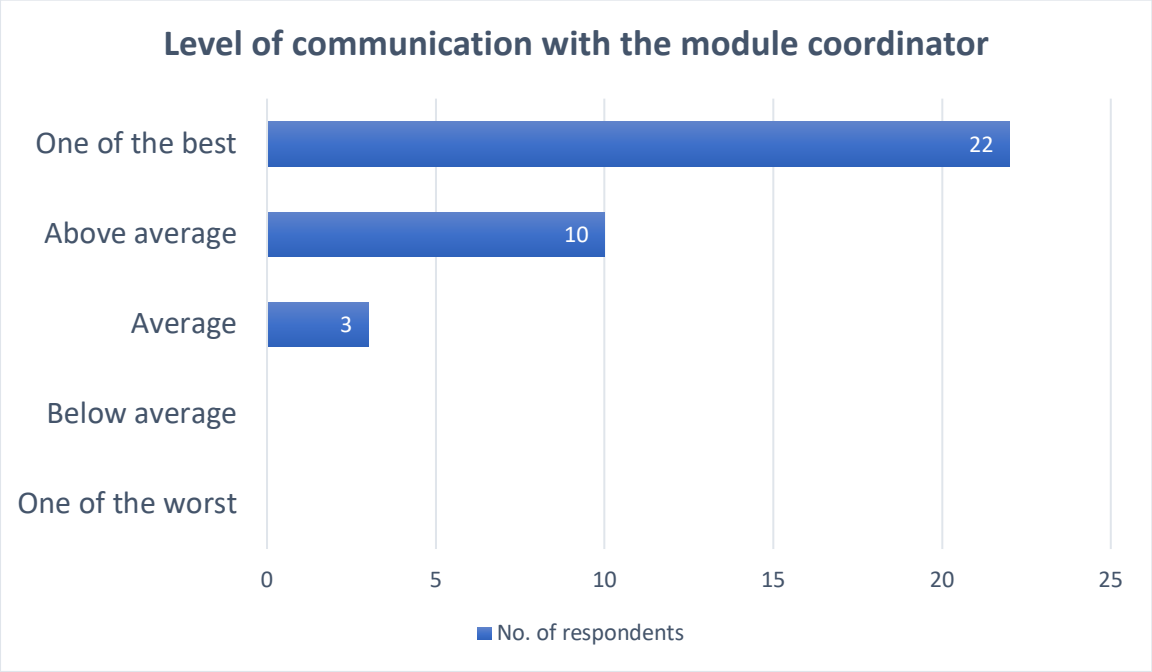
The next section presents the survey questions and the results based on the responses of the students who chose to take part in the study.

Survey questions and results

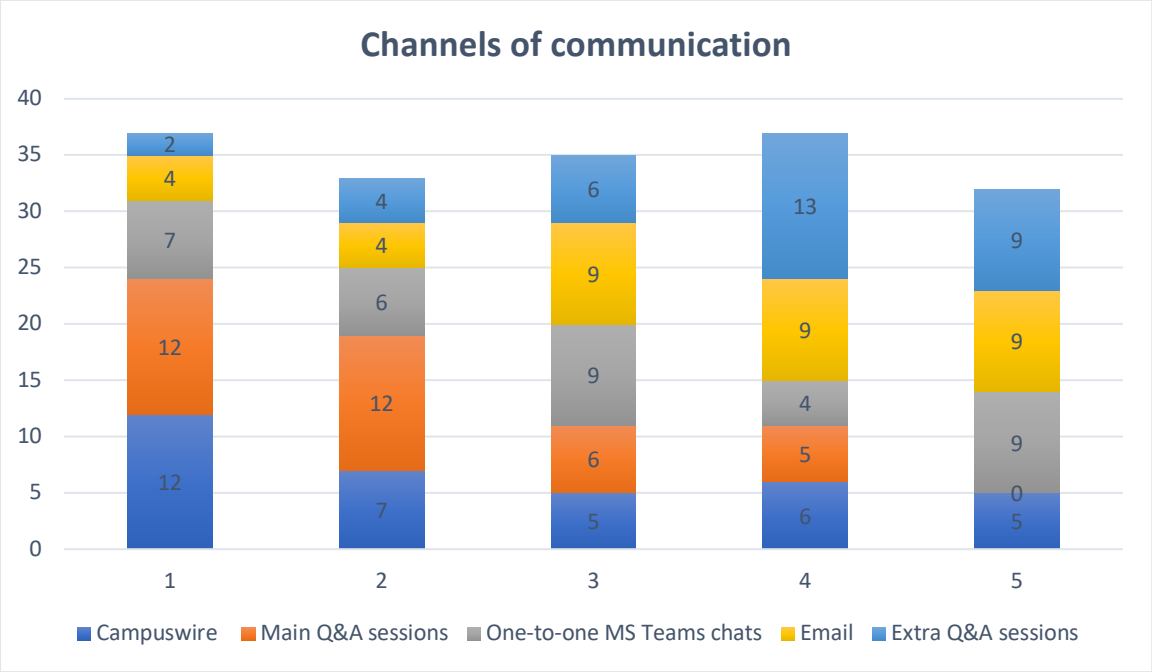
The complete survey questions and response options are given in Appendix A. Here we present compact versions of the survey questions along with the students' responses.

Communication with the module coordinator

Q1. How would you compare the level of communication with the module coordinator in the module with that in the other modules you had this year?



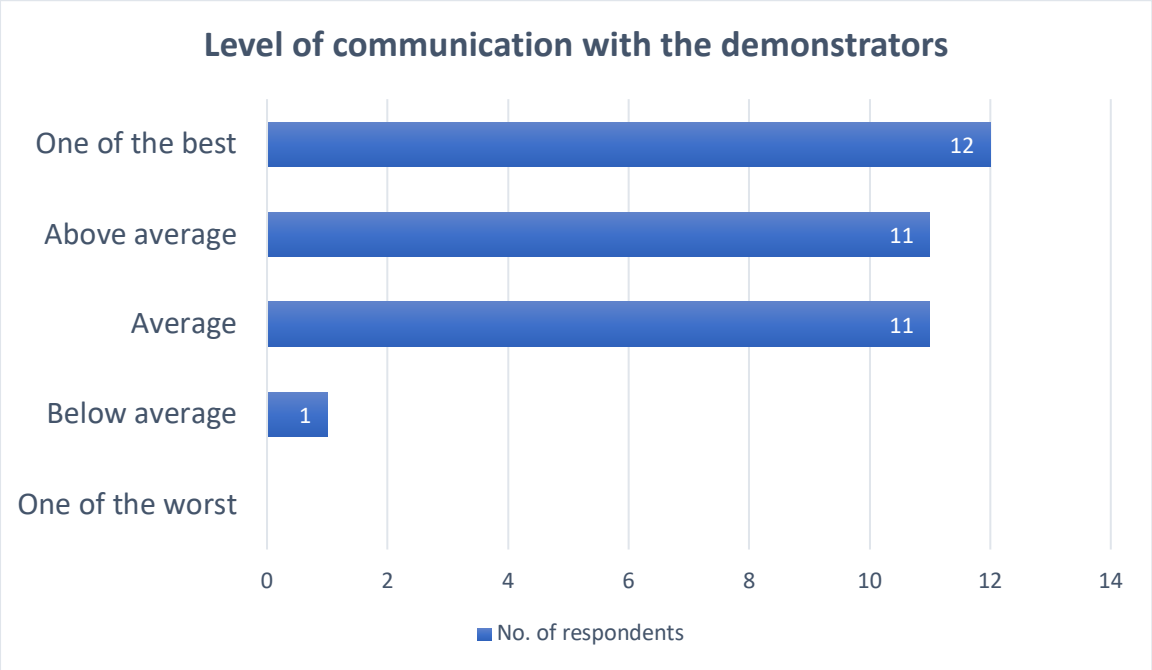
Q2. Please rank the following channels of communication with the module coordinator from most useful (1) to least useful (5).



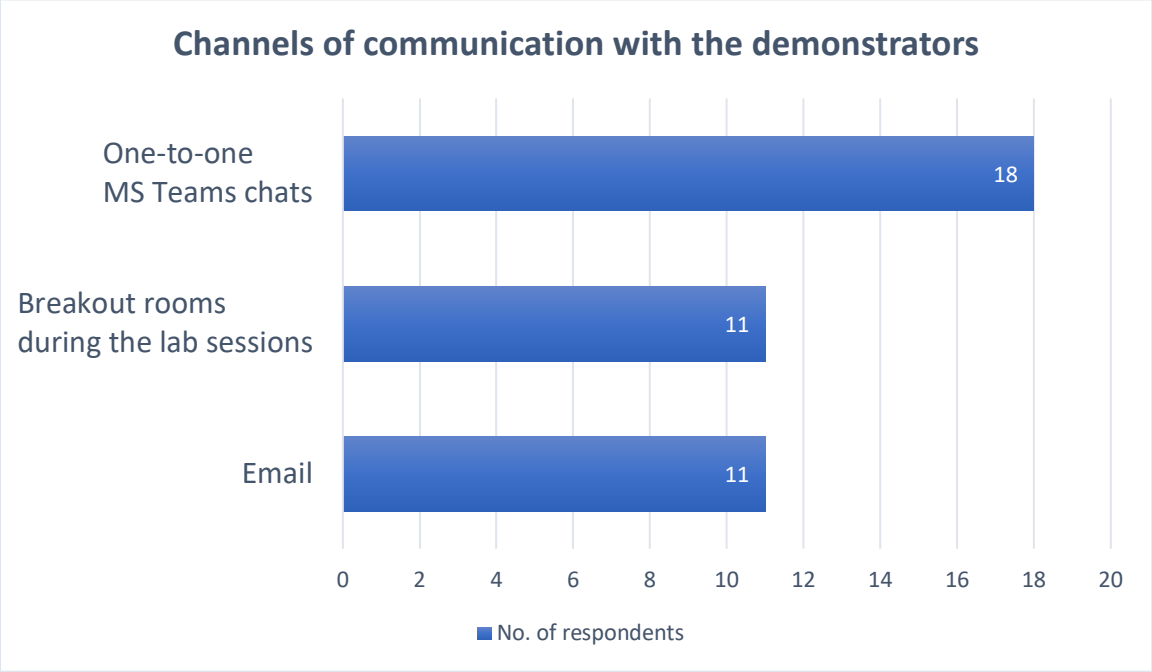
Each bar in the above chart shows how many times a certain channel was given a specific rank. For example, the second bar shows that Campuswire was given rank 2 seven times, the main Q&A sessions were given rank 2 twelve times, the one-to-one MS Teams chats were given rank 2 six times, and so on.

Communication with the demonstrators

Q3. How would you compare the level of communication with your demonstrator in the module with that in the other modules you had this year?

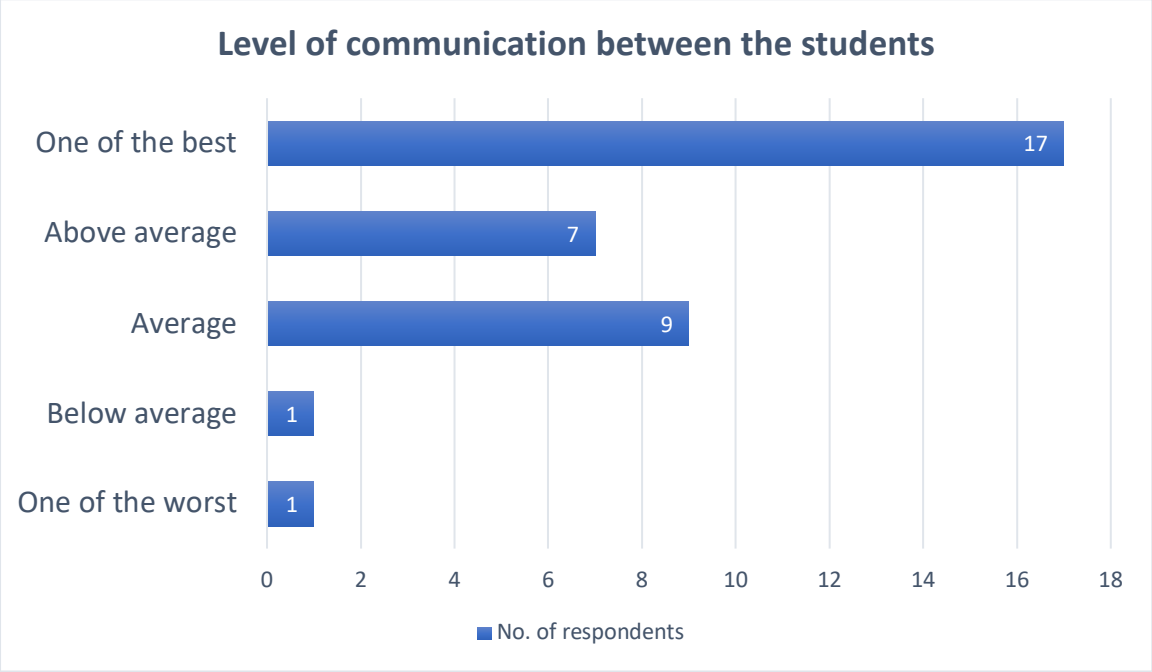


Q4. Which of the following channels of communication with your demonstrator were most useful?

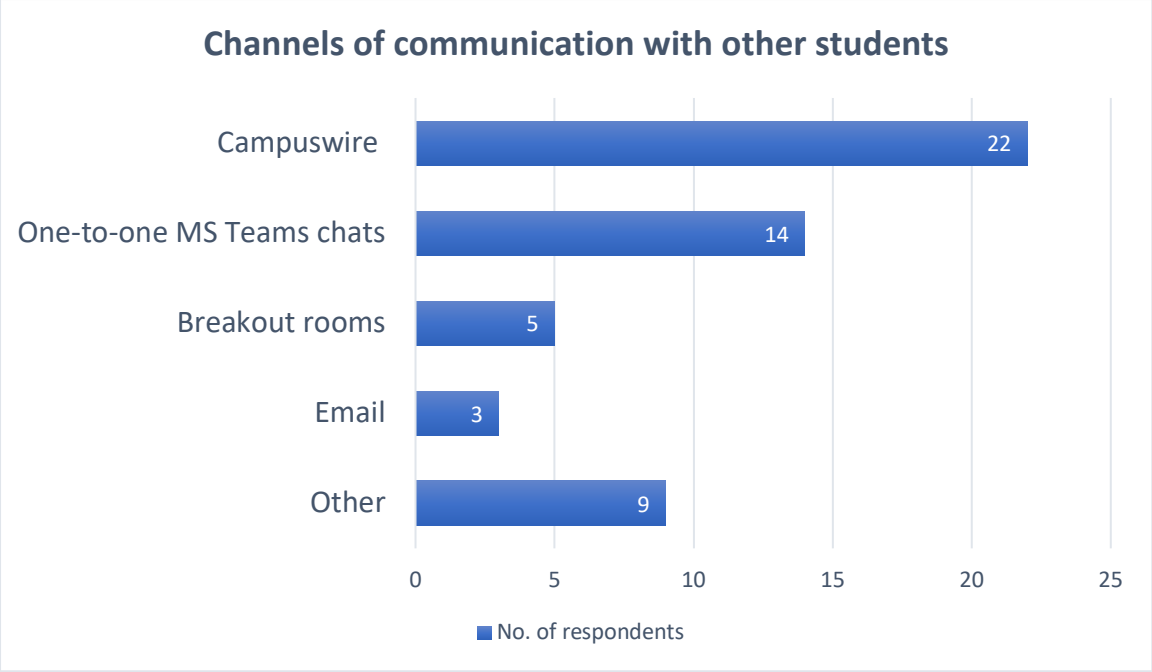


Communication among the students

Q5. How would you compare the level of communication among students in the module with that in the other modules you had this year?



Q6. Which of the following channels of communication with other students on the module were most useful?



Communication: other

Q7. Which things related to communication do you like or dislike in this module?

A complete list of all answers is given in Appendix B. Here we present only some aggregated information. Out of 20 responses to this question

1. 11 mentioned explicitly that they liked Campuswire
2. 3 mentioned explicitly that they liked the anonymity of Campuswire
3. 2 mentioned explicitly that they liked the pre-recorded videos
4. 2 mentioned explicitly that they liked the Main synchronous Q&A sessions
5. 2 mentioned explicitly that they liked the Extra synchronous Q&A sessions
6. 3 mentioned explicitly that they did not like break-out rooms during the lab sessions

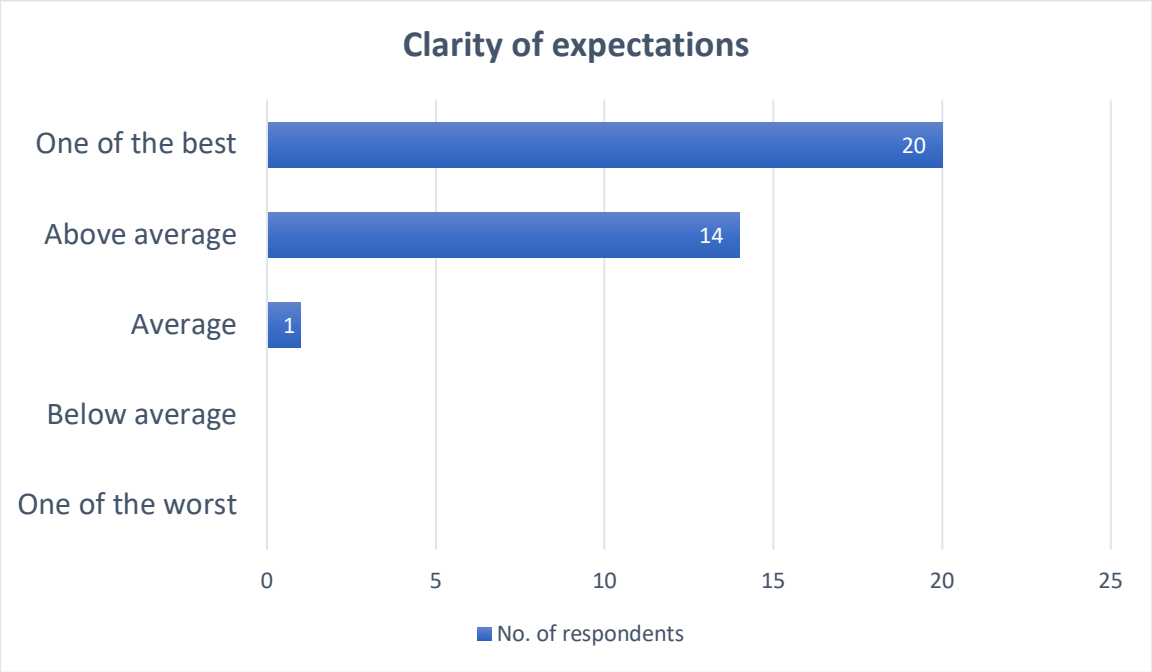
Q8. In the video lectures, I was present on the video. In your opinion, what is the main benefit of such recordings compared to video lectures where a lecturer is not present on the video?

A complete list of all answers is given in Appendix B. Here we present only some aggregated information. Out of 22 responses to this question

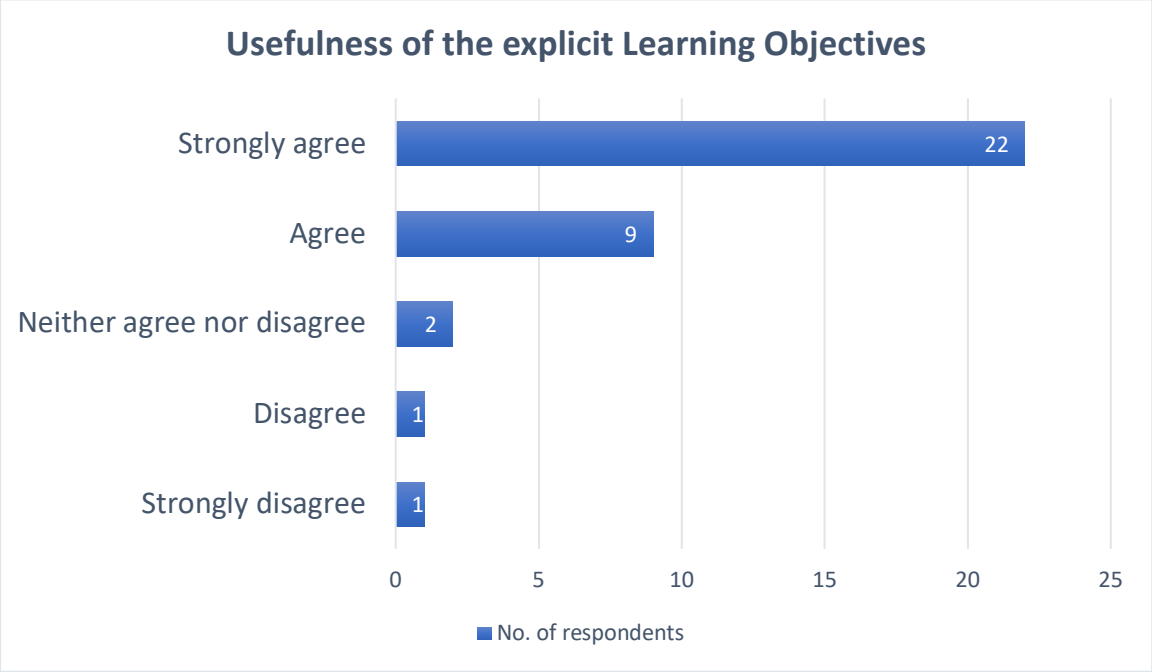
1. 9 mentioned better concentration and focus
2. 7 mentioned improved engagement
3. 4 mentioned no benefit in having the lecturer face on the screen

Learning Objectives

Q9. Compared to the other modules that you had this year, how clear was your understanding of what you are expected to learn every week in the module?



Q10. On the introduction page of every week, there was a list of the Week's Learning Objectives. What is your opinion about the following statement: "The Week's Learning Objectives helped me to clearly understand what I'm supposed to learn during the week"?



Q11. What were the most useful things that helped you to understand what you are expected to learn every week in the module?

A complete list of all answers is given in Appendix B. Here we present only some aggregated information. Out of 18 responses to this question

1. 8 mentioned weekly Learning Objectives
2. 5 mentioned titles of video lectures
3. 3 mentioned tutorials and lab exercises
4. 2 mentioned the reading list

Discussion

In this section, based on the survey responses, we first discuss a general assessment of the level of communication and clarity of expectations in the module. Next, we discuss contribution and students' perception of each of the introduced measures.

Before we proceed to the discussion, we observe that while the number of survey participants (35 students) is reasonable for this kind of study, those students are all students of the same module and they voluntarily agreed to take part in the study. Therefore, these students might be biased in their assessment, and any conclusions must be considered carefully and critically.

Communication. Most respondents assessed the level of communication in the module at least as high as above average compared to the other modules:

1. 92% of the participants assessed the level of communication with the module coordinator as one of the best or above average (**Q1**);
2. 65% of the participants assessed the level of communication with their demonstrators as one of the best or above average; 96% assessed as average or higher (**Q3**);
3. 69% of the participants assessed the level of communication with the other students as one of the best or above average; 95% assessed as average or higher (**Q5**).

Clarity of expectations. 57% of the respondents indicated that the level of clarity in what they are expected to learn every week is one of the best compared to the other modules, and 97% of the respondents assessed the level as one of the best or above average (**Q9**).

Campuswire

Campuswire was actively used by the students during the module: There were 203 discussion threads created by students. Campuswire provides several benefits that positively contributed to the level of communication in the module.

Streamlined communication. The three most useful channels of communication with the module coordinator were Campuswire, the main Q&A sessions, and one-to-one MS Teams chats (**Q2**). In 34% of the responses to **Q2**, Campuswire was ranked as the most useful channel, and in 68% of responses, it was among the top 3 most useful channels. In many cases, the module coordinator was able to answer email/chat questions of the students by directing them to an already answered question in Campuswire. Furthermore, some students checked existing Campuswire questions before contacting the module coordinator, as was mentioned in one of the responses to **Q7**

> *I did not post many questions campus wire because I had good contact with other students who I could ask questions too but it was still a useful resource to refer to before asking others/ reaching out to the module coordinator.*

All these greatly optimized the communication workload of the module coordinator while keeping the quality of communication between the students and the module coordinator at a very high level.

Anonymity. One of the advantages of Campuswire over the Canvas Discussions functionality is that Campuswire allows asking questions anonymously. This advantage seems to be important as 28% (57 out of 203) of all discussion threads were created anonymously. One of the students specifically mentioned this feature in their response to **Q7**

> *The ability to ask questions anonymously on Campuswire was very helpful, as was the ability to see other student's questions.*

Social aspect. Another benefit of Campuswire is an added element of social learning. In many cases, students answered the questions of their peers. Thus, in addition to the Q&A sessions, lab sessions, and direct contacts, Campuswire provided a place where students can get in touch with each other. In the responses to **Q6**, 62% of the participants indicated that Campuswire was one of the most useful channels of communication with other students. The fact that the students learn from each other via Campuswire was also mentioned in several responses to **Q7**, e.g.

> *I've found it useful many times to browse if somebody has already had a similar problem and asked the question, and to post it if not.*

> *Campuswire was a good platform to centralise the information from the module. I found that other students who are ahead on course material / assignments ask questions which I intended to ask or was struggling with and it really speeds up progress as well as other insightful questions which help enhance understanding. Furthermore, the sharing of resources and information was very useful.*

Breakout rooms

Campuswire contributed positively to the communication level between the module coordinator and the students, and among the students. Another introduced measure to improve communication among the students and with the demonstrators was the use of breakout rooms during the lab sessions.

Unfortunately, breakout rooms did not work very well as reflected in some responses to **Q7**

> *demonstrator-led lab sessions … lacked a sense of engagement between students and demonstrators, especially in breakout rooms, in which I found that I might be the only one with a microphone and/or camera turned on.*

> *I very much did not like the break-out rooms and avoided the lab sessions because of this. Bigger classes worked better because you could hear other student's questions.*

> *The breakout rooms were a waste of time and the lab felt useless to be honest, it was a waste of time there was no connection built there i had to seek help outside the lab from friends to understand the concept of the course*

The issue with the breakout rooms was revealed after the first 5 weeks of the module during the discussions with the demonstrators and from the students' feedback in the Mid

Term Survey. We also learned that many students regularly contacted their demonstrators directly via email or MS Teams to get help with the lab tasks.

Based on this information, we decided to change the format of the lab sessions in the second half of the module. Now instead of the breakout rooms part, the students were given 30-35 minutes to contact the demonstrator directly via MS Teams to ask their individual questions.

According to the survey results, MS Teams chats worked better for more students than the breakout rooms. In **Q4**, 51% of the respondents indicated that MS Teams chats were one of the most useful channels of communication with the demonstrators. On the other hand, the breakout rooms were indicated as one the most useful channels of communication only by 31% of the participants.

Based on the results, there seems to be no definite preference for one channel over the other. In fact, given the survey and module setup, it is hard to draw any plausible conclusion, as the student's preference may depend on a demonstrator (due to a large number of students, there were 5 demonstrators on the module) as well as on the personality of the student **(Cain, 2013)**.

Therefore, the question of effective channels of communication during lab sessions in the online setting requires further study.

Presence of the lecturer on the pre-recorded videos

This year, the lecture materials in the module were in the form of pre-recorded videos. This significantly reduced the amount of synchronous interaction between the students and the lecturer compared to 'normal' years. In order to partially compensate for this missed communication, the videos were recorded so that the lecturer is present on the videos and the students can clearly see the lecturer's facial expressions and body language.

81% of the respondents (18 out of 22) liked this format of the videos and saw the benefit of having the lecturer on the videos.

In particular, 31% of the students mentioned that this improved the level of engagement (**Q8**).

Also, a positively unexpected outcome of the video format was that 41% of the respondents indicated that it improves concentration and helps to focus (**Q8**).

However, there were 18% (4 out of 22) students who think that seeing the lecturer on the videos does not make a difference (**Q8**).

Weekly Learning Objectives

88% (62% strongly agree and 26% agree) of the students indicated that the weekly Learning Objectives helped them clearly understand what they are supposed to learn every week (**Q10**).

In the free text responses to **Q11**, 44% (8 out of 18) of the respondents mentioned the weekly Learning Objectives as one of the most useful things that helped them to understand what they are expected to learn every week. Some typical examples of the responses are as follows

> *Having the objectives clearly outlined was very useful as it provided a checklist of the concepts that should be understood.*
>
> *Knowing the full learning objectives of the week made understanding each topic easier, as it is easier to understand a topic when you know the full context.*

In addition, some students mentioned the weekly Learning Objectives as useful material for preparation for the final exam. As some students put it

> *The weekly learning objectives were particularly helpful as a checklist for measuring understanding during revision for the final exam.*
>
> *The weekly learning objectives have been really useful and I'll come back to those when revising for the exam.*

It was interesting to discover that splitting lectures into topic videos with clearly defined names was also helpful in the understanding of what the students are expected to learn. This was indicated by 27% of respondents in the responses to **Q11**.

Conclusion

This study investigated the effect of certain measures taken in the module "Data mining and Visualisation" that was delivered fully online during the second semester of the year 2020/2021. The main aim of the measures was to enhance online learning via improving two aspects: communication and clarity of what students are expected to learn.

The key conclusions of the study are as follows

3) The use of Q&A dashboard Campuswire with an option of anonymous questions positively contributed to the level of communication in the module.
4) The use of breakout rooms during the lab sessions worked for some students, but didn't work for others; more students preferred individual contacts with their demonstrator via MS Teams. However, no single channel of communication with the demonstrators was identified as best by most of the students, and therefore further investigation is required.
5) The presence of the lecturer on the pre-recorded videos improved engagement and concentration of the students.
6) The use of weekly Learning Objectives improved students' understanding of what they are expected to learn every week.
7) Some students considered Learning Objectives as a useful resource for preparation for the exam.
8) Some students indicated that splitting lecture material into topic videos with clearly defined names helped them to understand what they are expected to learn.

We see no reason to think that Campuswire and weekly Learning Objectives will have substantially different effect in hybrid or face-to-face teaching mode. We therefore plan to employ both tools in the coming years and repeat survey to confirm our expectations.

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Appendix A: Complete Survey Questions

Quiz instructions

For my MSc level teaching qualification, I am studying ways of enhancing learning in the online environment. I would very much appreciate it if you would help me in my research by filling in this survey on your learning experience in the "Data Mining and Visualisation" module.

The data collected in the survey will be used in my research and may be published. Participation in the survey is entirely voluntary. Responses to the survey will be automatically anonymized, so there will be no way for me to trace your response back to you, or even see whether you participated in the survey or not.

There will be no consequences for either participating or not participating in the survey, however, your participation will help me and my colleagues to improve our teaching.

Because the survey is anonymous, there is no way to rescind your participation in the survey, as I don't know which answers are yours and therefore, I can't delete your answers from the data set.

If you are willing to participate in this survey and consent to me using your anonymized answers in my research, please answer the following questions.

Survey questions

Communication with the module coordinator

1. How would you compare the level of communication with the module coordinator in the "Data Mining and Visualisation" module with that in the other modules you had this year?

   - one of the best
   - above average
   - average
   - below average
   - one of the worst

2. Please rank the following channels of communication with the module coordinator from most useful (1) to least useful (5).

   - Campuswire Q&A dashboard
   - One-to-one MS Teams chats
   - email
   - Q&A lectures on Tuesdays
   - Extra Q&A sessions on Fridays

Communication with the demonstrators

3. How would you compare the level of communication with your demonstrator in the "Data Mining and Visualisation" module with that in the other modules you had this year?

   - one of the best
   - above average
   - average
   - below average
   - one of the worst

4. Which of the following channels of communication with your demonstrator were most useful?

   - Breakout rooms during the lab sessions
   - One-to-one MS Teams chats/calls
   - Email
   - Other

Communication among students

5. How would you compare the level of communication among students in the "Data Mining and Visualisation" module with that in the other modules you had this year?

   - one of the best
   - above average
   - average
   - below average
   - one of the worst

6. Which of the following channels of communication with other students on the module were most useful?

   - Campuswire Q&A dashboard
   - One-to-one MS Teams (or other messengers) chats
   - Breakout rooms during the lab sessions
   - Email
   - Other

Communication: other

7. Which things related to communication (whether with the module coordinator, your demonstrator, or other students) do you like or dislike in this module? (Some of the answers to this question may be quoted in my report, so please only answer this question if you agree to be quoted)

8. In video lectures, I was present on the video. In your opinion, what is the main benefit of such recordings compared to video lectures where a lecturer is not present on the video? (Some of the answers to this question may be quoted in my report, so please only answer this question if you agree to be quoted)

Learning Objectives

9. Compared to the other modules that you had this year, how clear was your understanding of what you are expected to learn every week in the "Data Mining and Visualisation" module?

   - one of the best
   - above average
   - average
   - below average
   - one of the worst

10. On the introduction page of every week, there was a list of the Week's Learning Objectives. What is your opinion about the following statement: "The Week's Learning Objectives helped me clearly understand what I'm supposed to learn during the week"?

    - strongly agree
    - agree
    - neither agree nor disagree
    - disagree
    - strongly disagree

11. What were the most useful things that helped you to understand what you are expected to learn every week in the "Data Mining and Visualisation" module? (Some of the answers to this question may be quoted in my report, so please only answer this question if you agree to be quoted)

Appendix B: All responses to the free text questions

Question 7

Which things related to communication (whether with the module coordinator, your demonstrator, or other students) do you like or dislike in this module?

1	The "Q&A lectures" with the module coordinator were well planned to cover both the solutions to the problems of the previous week and any questions. Participation from students to provide answers to the problems was encouraged but never forced, and time was taken to address specific technical questions in detail. Personally, I found that due to the rigours of this module and others, I did not have the time to attend many of the demonstrator-led lab sessions. However, those that I did attend lacked a sense of engagement between students and demonstrators, especially in breakout rooms, in which I found that I might be the only one with a microphone and/or camera turned on. It is an unfortunate consequence of the pandemic that these lab sessions could not be held in person, where I believe engagement would be significantly better.
2	This module is the best module I ever take. Detailed materials and the use of campus wire is brilliant, really solve a lot of my questions on campus wire. the best module coordinator ever
3	I liked the Campuswire platform since it was quite active (maybe due to the possibility to post anonymously). I've found it useful many times to browse if somebody has already had a similar problem and asked the question, and to post it if not.
4	I liked the video sets and the Tuesday and Friday q&a sessions, although I did not attend them all live the option to listen back to Tuesdays session was helpful as often questions I would have asked came up anyway. I did not post many questions campus wire because I had good contact with other students who I could ask questions too but it was still a useful resource to refer to before asking others/ reaching out to the module coordinator. Finally when I had a big problem in coding the first assignment the module coordinator was very helpful via MS teams and helped my understanding of what was needed to implement the perceptron in python
5	Campuswire anonimity
6	Campuswire was a good platform to centralise the information from the module. I found that other students who are ahead on course material / assignments ask questions which I intended to ask or was struggling with and it really speeds up progress as well as other insightful questions which help enhance understanding. Furthermore, the sharing of resources and information was very useful. The pre-recorded lecture format was far more useful than live / in-person lectures. They're much more concise and easier to follow than lectures which are recorded live and uploaded, which often suffer in quality. Really appreciate the effort from module coordinators who took the time to do this. It's far easier to refer back to material this way and can see the content clearly.

	Having options to reach out and ask questions on various platforms as well as an shared forum has been great. I often hesitate to ask a question I deem to be simple or dumb and spend hours figuring it out. Although there is a lot of value in this experience, it is sometimes nice to just get the answer straight, as I can see others had the same issue, and I assume can save the module coordinators / demonstrators a lot repetitive emails.
7	The Tuesday Q and A sessions where the module coordinator used to work out the problem sets and answer questions from students was one of the main things I liked this module for. Moreover, the extra Q and A sessions arranged on Fridays were also very helpful and nice, as it was more of an in formal type of meeting.
8	The module coordinator has been very engaging. Despite the online learning environment due to COVID-19, the coordinator has always sought feedback. The feedback led to more personalised Q/A Microsoft Teams meetings and improvement in process places to ensure a more collaborative and engaging environment for the students. This is what I like in terms of module communication.
9	I like the Campuswire Q&A dashboard. It provides me a change to talk about specific problems in lectures and assignments. It's really very helpful.
10	The campuswire forum was really useful - it felt more informal than emailing the lecturer directly, and less intimidating than asking questions in the synchronous sessions. One of the modules I've had this semester had no synchronous sessions at all - no labs with demonstrators and no synchronous teaching. This was not good at all and made it very hard to engage with the module, and very hard to ask questions about the content. So this has made me realise how important it has been to have some synchronous teaching time. I didn't attend any of the additional Friday sessions but this was a nice touch, I'd say much more useful than having open office hours.
11	Campuswire is great, I wish more modules used it.
12	Using Campuswire Q&A dashboard is a very efficient way to communicate with demonstrator and other students.
13	The Campuswire Q&A dashboard was helpful as, unlike in other modules, there was a good formal way to ask questions that either the coordinator or other students could answer. Additionally anybody can see the response which could answer unasked questions.
14	Everything is fine
15	This module contains a lot of mathematics and machine learning content, this may be a complex course; but the teaching progress is still quite great.
16	all communicate with professor and demonstrator are good.
17	The low marks I gave in regards to demonstration are NOT criticisms towards you or the demonstrator, it is in fact to do with my own learning style. I felt better doing independent experiments with Python and maths using the curriculum taught in tutorials to broaden my knowledge, rather than attend tutorials.
18	The ability to ask questions anonymously on Campuswire was very helpful, as was the ability to see other student's questions. I very much did not like the break-out

	rooms and avoided the lab sessions because of this. Bigger classes worked better because you could hear other student's questions.
19	the lab demonstrator could help deliver the understanding i was looking for. The breakout rooms were a waste of time and the lab felt useless to be honest, it was a waste of time there was no connection built there i had to seek help outside the lab from friends to understand the concept of the course
20	Really liked campuswire, especially if a question I had was already answered. Otherwise response time was good from the lecturer!

Question 8

In video lectures, I was present on the video. In your opinion, what is the main benefit of such recordings compared to video lectures where a lecturer is not present on the video?

1	Having a lecturer present in the video recording helped with engagement with the video and to an extent my concentration on the topic. When slides are presented by a disembodied voice, I have felt that it can lead to the temptation to listen, but not watch the video - perhaps it feels less like a "real" lecture as well.
2	I like the lecturer present in the video, face to face will be even better.
3	I would say that it gave more "human" sense to the video and made it slightly easier to follow as I've found video lectures without the lecturer harder keep focused on.
4	It is more personable learning experience to see the lecturer in the video rather than just hear their voice
5	I don't feel there is much benefit to seeing who is talking in the video. I have spend countless hundreds of hours watching tutorials on YouTube and the person is very rarely there. I don't think it adds any value to knowing what they look like, but rather the information they are communicating. I think that the screen could be used more efficiently to demonstrate content, zoom in on the content being discussed, if it is just a screen recording.
6	Such recordings, aids to understand and grasp the contents that are being delivered more easily. In my opinion it is very important and all video recordings should be where the lecturer is present. It also enhances the required level of focus.
7	Having the lecture present in the video is simply way more engaging, for whatever reason, I suspect it's some evo biology reason. I love lectures, especially in person, so whatever recreates that to some degree is always going to be better.
8	The benefit of the lecturer being present in the video is that it replicates real-life class room environment, therefore making the recorded lectures seem more professional.
9	The presence of teacher in the video will give students a sense of being in class and interacting with the teacher
10	When I see you on the video, it gives me a feeling like we are in a real class. And it can help me focus attention.
11	Can be watched at any time, multiple times

12	Definitely beneficial to have the lecturer's face present in the videos. In another module I had this semester we never saw the lecturer's face as his camera was off in all synchronous and asynchronous sessions, and this was very weird! Having the lecturer in the videos helps to engage with the topic. Also I think (as we all lip-read more than we realise) it is easier to hear and understand the lecturer. In face to face sessions it is hard good to see the lecturer's face to see their facial expressions when the student asks questions - being able to see that the lecturer is not scowling or rolling their eyes makes it less daunting to ask questions!
13	It makes it easier to concentrate somehow. It's also easier to judge your tone when talking about a subject.
14	You feel involved in the class. People come to uni for the social aspect and I really really appreciated that you were always approachable and had your video on!
15	It helps me concentrate more on the video.
16	It is much more engaging to for a lecture to be delivered with the lecturer present. It is easier to focus on the video of the lecturer than just listening to their voice.
17	Videos of courses with lecturers present make it easier for me to focus on the class. This makes for a better online class experience.
18	This method is more flexible and I can allocate time more selectively.
19	I don't care lecturer whether on the video. The note is useful for me
20	Personally I do not care whether a face is seen or not on the recording, it makes absolutely no difference in the quality of information given (which is more apparent through voice and through worked examples via the likes of slide annotation and whiteboards).
21	It was easier to understand what you were saying, and it made it easier to watch for long periods of time as you were not just staring at a stationary block of text.
22	It was nice to see who my lecturer was, however I don’t think it will have made a difference if the lecturer wasn’t present

Question 11

What were the most useful things that helped you to understand what you are expected to learn every week in the "Data Mining and Visualisation" module?

1	The layout of the module materials on Canvas was organised and intuitive. Being able to see the topics of the lecture videos enabled me to look ahead at what I would be studying and plan my time. The weekly learning objectives were particularly helpful as a checklist for measuring understanding during revision for the final exam.
2	The weeks learning objectives
3	I felt that if I had completed the practical sessions then that would cover the majority of what was expected for me to have learnt and this was helpful when revising as once I had done the problem sets I could just cover the minority of learning objectives not met by the problem sets by looking at lecture notes/colab exercises

4	Having the objectives clearly outlined was very useful as it provided a checklist of the concepts that should be understood. Additionally, adding or wording the objectives with an end goals, "You should be able to implement a...." or "You should be able to compute the following..." would perhaps give a little extra direction as to the level of understanding that is "expected", as some weeks I feel were more theoretical, where as others can be more practically applied. A primary concern for most students, especially those how struggle to comprehend the material in it's entirety (like myself), is what material I should focus on for the final exam. Although I'd love to spend many hours / days experimenting and understanding the content in it's entirety, it can be difficult in final year with other modules / project demanding as much attention as well as retaining sanity, and stress levels can be a fine balancing act. Personally, I love CS, it's a broad and fascinating subject. Each module has introduced me to ideas, theories and concepts which I hope to make use of in my future career. But it contains a looming doom, which is the exams. A few module coordinators make it fairly obvious as to what should be expected in the exam, which alleviates a lot of concern and makes the module more enjoyable. Where as those who keep it a mystery often add a cloud of concern, which can create a hatred for the subject and it's unnecessary difficulty. Although I have not yet done the exam, I am hoping the exercises each week reflect the exam questions, and if so, more emphasis should be given throughout the year as to what should be expected in the exam. This is undoubtedly at the forefront of every students mind. Also think that COMP337 would be significantly better as a solely programmatic module. The learning experience in implementing these algorithms and the lab sessions are the best part of this module. By far the most interesting and useful tutorials out of ALL modules I've taken, and I did terribly in Assignment 1 (and 2 probably) , but can't be sour about it because I learnt a lot!
5	The problem set questions
6	You had a very explicit and clear list of learning objectives, which was great. Other modules have fairly vague learning objectives. Also the questions seem to explicitly ask us to apply the learning objectives, which is helps me a lot in reinforcing the learning objectives.
7	The most helpful method which helps me understand what I am expected to learn each week is the "Learning and Objective" section. Additionally, the introduction recorded video highlighting an overview of the current week's topic is the second most useful. Finally, the reading section is the third most helpful option because it is usually comprehensive and beneficial for the lab's worksheet and assignments.

8	Both lectures and labs are very important. Because in lectures we can learn the proved process and pseudo-code of some algorithms, and labs provide us a change to implement them by ourselves.
9	Recommended Books
10	The weekly learning objectives have been really useful and I'll come back to those when revising for the exam.
11	Clearly defined lecture names.
12	The tutorials, lab exercises for the week
13	Titles of every week's videos.
14	The introduction page for each week was very useful, as it helped me to understand what to expect in the upcoming week. Knowing the full learning objectives of the week made understanding each topic easier, as it is easier to understand a topic when you know the full context.
15	the note of the video lecture
16	The descriptions of the algorithms we are expected to learn and use were very well explained, and Viktor did an excellent job of providing practical applications of these. This is what I used to motivate my learning for the entire module.
17	Learning objectives, the clear separation of topics into different videos, and the programming and theoretical questions every week.
18	The videos titled as the topic they were about was really helpful.