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Covering page

Project Title: Day time tutorials for apprentices – what is best practice in computing?
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Executive Summary

At the Open University (OU) we are still learning about the best way to support our apprentice learners in their academic study. Degree Apprentices are learners in full time employment with study funded through the apprenticeship levy and other government sources. Apprentices in undergraduate programmes in the school of Computing and Communications at the Open University study 90 credits a year in England and Wales and 120 credits a year in Scotland. They are provided with 20% of their paid time to study, about 1 working day a week. Many students use this time, during the working day as their main study time.

There were three research activities, in November 2020 a survey issued to 2/3^{rds} of the apprentices registered on two qualifications (R24 – Digital and Technology Solutions BSc, and R40 - Applied Software Engineering BSc), of which 25 responded. From these 25 responses 6 apprentices were invited for in depth interviews in March 2021. Lastly tutorial attendance of all 60 apprentices on TTXY284 starting in October 2020 were monitored and combined with feedback collected from the module tutor about the tutorials. The survey responses were analysed using thematic coding, the interviews via a case analysis, and tutorial attendance by descriptive statistics.
Five areas are identified where it may be possible to enhance student attendance and experience of tutorials. Improved communication of tutorial content could reduce student anxiety, and the focus on how to do better in assignments is a valuable draw. Communication is most effective when it comes from a student's own tutor. In terms of scheduling, a wide range of days and times is recommended, and if face to face learning is offered there needs to be an online equivalent for those who are not able to travel. Tutorial experience can be improved by encouraging microphone usage, whiteboards, polls and confidence building activities. Tutorials should normally be recorded, and if possible be indexed and appropriately named including a description.

Aim:

To provide a suitable pattern of tutorial provision to support apprentice students.

Objectives:

To understand the field and complete a literature survey of best practice in tutorial provision.
To devise instruments and survey students which include writing the survey and interview questions including seeking approval, and issuing the survey.
Interview apprentices to follow up on survey results.
To analyse results and publish by integrating attendance data, survey and interview results.

Introduction

In this research we investigated how apprentice learners engage with synchronous online tutorials and the barriers they face to participation. We investigated the tutorials they attend as well as their reasons for why they attend. This allowed us to not only look at motivations, but what actually works. The support model most often used at the OU assumes learners cant attend during the working day due to their normal hours of employment, this is changed for apprentices who are given support by their employer. However we find there are still demands on their time to carry out work duties which means that we cannot assume availability, and that individual circumstances differ.

Previous work

A pilot on the module TMXY130 (Introduction to Computing technologies) with the 2019 October cohort, which is one of the first modules apprentices' study, had interesting findings (Thomson et. al., 2020). 16% of tutorials (1 of every topic) were during work hours with the same tutor, with that tutor also providing a tutorial repeated identically in the evening of the same day. The initial findings were that workday tutorials were significantly better attended. We found that where this choice was given 63%-84% apprentices decided to attend during the day (Figure 1).

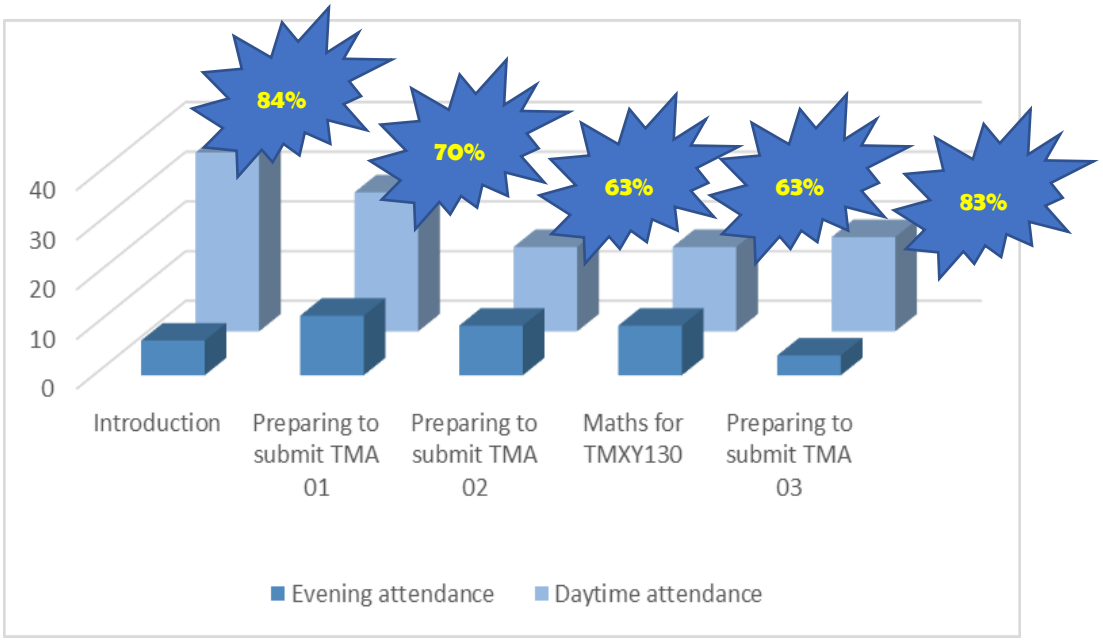

Figure 1. When do students attend tutorial repeats.

Whilst this time is clearly preferable to apprentices it is not clear if this is only because it is during the day, maybe the evening tutorials were too early. It is also unclear how effectively apprentices can participate, particularly if they are joining from a busy office. We also do not know if this is a response to the particular module and tutor involved.

Non apprentices have also shown preferences as seen in other projects. Maths and stats (Thomas, 2019 & Pawley, 2020) have provided weekday tutorials for non-apprentices, but the take up has been much less than the apprentices. Earlier work by Crisp et.al. (2019) supports the view students have varied preferences. Neither project was able to predict why students made their choices, highlighting the range of student feedback received.

Activities

The overall approach was to evaluate current practice to understand what was working and what was not working in order to propose tutorial principles to support apprentices effectively.

In order to achive this a survery and interview were completed and a detailed analysis of a single module's provision was completed where the proposed principles have been used. The research was disrupted by Covid-19 with the project authors suffering significant time pressure. The pandemic has also influenced the data collected with many of the apprentices working from home making the distinction between home and work life less defined. As a result conclusions have been passed to relevant stakeholders as conclusions have been reached, to allow decisions to be made in a timely way. It would also be beneficial to revisit this work once a steady state has been reached in terms of working arrangements in the UK.

The Survey

A survey instrument was created and distributed to apprentices, 178 on R24 (154) and R40 (24) with 91 excluded for various reasons. A complete set of questions can be found in Appendix 2, which includes questions which were used for a related research project. Twenty-five responses were received, and their answers are summarised in Appendix 1. The survey was sent by email and presented on the JISC online survey platform, the learners received two reminders to take part. The survey was distributed in November 2020.

We used a mixture of closed and open answer questions with a preference for open answer as we were not confident of the kind of answers we would get.

Questions 2-8 are demographic in nature, they identify where the apprentice is in their degree, the external commitments, employer sector and how their employer was supporting their apprenticeship. The respondents came from a range of situations but were biased towards those in years 1 or 2 of their study. We do not have a set of demographic information for our apprentices overall so we cannot confirm if those who responded are representative.

The questions were developed drawing on the previous work of Thomas (2019), Pawley (2020) and Crisp et al. (2019) which pointed towards the factors which determine interest in tutorials. This earlier work provided the key themes: timing around when students get home from work; length and style which were a concern for interruption and concentration; the technical issues covered; use of video which was preferred. Questions 9-17 focus on practice tutors and were used for a different research project Questions 18-25 focused on the respondents' experience of tutorials. We looked at three aspects, when tutorials should be, barriers to attending tutorials, and what the respondents valued about tutorials. We included open answers for the apprentices to use their own voice.

Question 26 allowed respondents to mention anything else they wanted us to know about and 8 gave further details.

For free text answers we followed the process of thematic coding as described by Braun and Clarke (2006). As there were relevantly few responses to the survey (25) and in each of the seven free text questions most responses were 1 to 2 sentences in length per respondant so the coding applied was simplistic in nature. The goal was to identify the unique explanations (themes) in each answer in order to get a feel for how many students had similar experiences.

The number of times a theme is mentioned cannot be treated in a qualitative way. The sample is not necessarily representative of apprentices studying the qualifications nor were the respondents focused on these issues which may or may not have resonated with more respondents had we asked them about them directly. What this does allow us to do is group unique themes and gain some insight into how widespread those themes are in the wider population.

Further details of the survey can be found in the deficated report (Thomson, Carter & McIntyre, 2022a).

The interviews

Six invited students were interviewed by telephone with interviews lasting between 36 minutes and 67 minutes with an average of 49 minutes. Eleven primary questions were asked (with some follow up questions where it seemed appropriate) and key points of student responses are collated below attributed to each question. Of the 6 respondents, 17% female, 83% male. 100% of the interviewees had previously participated in the survey. Eleven open ended questions were used to guide the discussion and structure the analysis. The analysis identified key parts of the responses in order to add depth to the survey findings.

Further details of the interviews can be found in the dedicated report (Thomson, Carter & McIntyre, 2022b).

Detailed module analysis

Building on the outcomes of the analysis of the survey and interviews it was clear that apprentices value a range of times for tutorials including weekday daytimes. A previous trial in an apprentice only module supported this (Thomson et. al., 2020) and showed a dramatic preference for weekday daytime tutorials over corresponding evening sessions. However this work extended this to a module where apprentices and non-apprentices were integrated into a cluster, as is the case for many of the apprenticeship modules in computing.

TT(XY)284 was chosen for this study because it has a substantial number of apprentices, 60 in the presentation where this approach was trialed. Being a nationally, rather than regionally, based module also meant that the apprentice students could be allocated to a single tutor (in practice 58 out of the 60 were able to be allocated to one tutor with 2 late registrations to another tutor in the same cluster). The cluster used had a total of approximately 320 students. All of the tutorials in the cluster were made available and advertised to all students in the cluster. Almost every tutorial was presented both on a weekday daytime and either a weekday evening or a Saturday. All sessions were recorded.

Further details of the intereviews can be found in the dedicated report (Carter, Thomson & McIntyre, 2022c).

Findings

Survey

The sample: The respondents were primarily studying R24, with only 2 studying R40, with the majority within their first 2 years of study. This reflected apprentice numbers as their were larger cohorts in years 1 and 2. 32% reported caring responsibilities within a young family, and 36% working in the service sector. The remaining industries were reflective of the wider apprentice body.

Availability: 52% of apprentices have flexible study time, with the reminder having set days for study, the most common day is Friday (30%). 40% of apprentices did not have issues studying during work hours. However, 32% reported that defined duties made study difficult and 20% unexpected duties made study difficult. When directly asked 25% of all the surveyed apprentices would attend weekday daytime tutorials, but 36% indicated having more daytime options would be helpful. The majority (92%) can attend evening tutorials, particularly on weekdays. The respondents indicated that the main benefits for choosing a tutorial were around managing their work/life balance (45%) and avoiding distractions (36%).

Location: Most apprentices (76%) would prefer to attend tutorials from home. This may have been reflective of the covid-19 restrictions with students also working from home. 44% of apprentices would be interested in attending face to face tutorials. The most common reasons for not attending tutorials are due to planned commitments.

Percived benefits: The most frequently perceived benefits were getting help with assignments (71%) and gaining a greater depth of understanding (21%).

Problems with tutorials: Learners were concerned with the differences between tutorials, and wanted to know what they will get if they invest time in tutorials.

Interviews

Employer support: All of the students interviewed said that they were well supported by employers, but even then, have a heavy workload in their own time. They often allow apprentices to attend tutorials during work hours, and this was appreciated by the apprentices. However students sought flexibility and choice in scheduling with as wide a range of times and days for tutorials as possible. It was excellent to hear that many employers are very supportive and a tribute to the commitment of employers.

Reasons for attendance: All of the students interviewed said that they did attend some tutorials (this could be verified from attendance records). Anxiety is a repeated factor deterring attendance. In general students favoured tutorials by their own tutor. In addition tutorial naming has a significant effect on attendance, avoid “introduction” as found in the survey. Tutors should consider whether any preparatory work should be sent, also make it clear what needs to be prepared (if anything).

Using the tools: Microphones should be enabled by default, even if not used. They can be disabled if necessary. This is an important point as it seems increasingly tutors are muting and being encouraged to mute due to previous bugs causing sound issues. Text chat, whiteboard annotation, screensharing and polling are all popular and should be continued. Several features were not mentioned and it was clear students had not (or had rarely) experienced breakout rooms, video (recorded or live) or audio clips, shared website tours and Q&A pods.

Face to face tutorials: There remains a very definite benefit to face-face over online communication and we should not lose sight of that despite the improvements to online provision made during the

pandemic. The geographical challenges are very real and will mean that it is impossible for some students to attend a face-face session.

Techological limitations: There was a clear desire to either enhance the player to incorporate more flexible playback options or permit download of the MP4 version of the recordings so that local players may be used. Students clearly wanted recordings. There was no evidence of any reluctance to be recorded by any student.

Detailed module analysis

The module trial focused on the tutorial time element identified in the previous analyses.

The introductory session was unusual in that it is the only session where students are encouraged to attend the version run by their own tutor, and 15 (out of a total of 60) attended the weekday afternoon session, with the remainder not attending a introductory tutorial. Eight non-apprentices did attend the weekday afternoon session, indicating that it is not only apprentices who benefit from this approach.

In the remaining tutorials the number of apprentices attending varied, with some tutorial topics attracting none of the cohort of 60, and as many as 18. An average of 17% of apprentices attended a live daytime tutorial, as contrasted to 3% of the non-apprentice cohort. An average of 5% of apprentice attended a evening or weekend tutorial, as compared to 6% of non apprentice learners. Indicating that apprentices have different needs to other learners.

Cluster attendance records show that students exhibit a strong preference to attend sessions run by their own tutor. In this study, the only two weekday daytime sessions held by tutors to whom the apprentices were not allocated both had lower apprentice attendance and so it is possible that the remaining attendance figures are distorted upwards because the daytime sessions were primarily hosted by the tutor to whom the majority of apprentices were allocated.

<u>Recommendations</u>

Five areas are identified where it may be possible to enhance student attendance and experience of tutorials.

Communication enhancements

- Inform students what to expect in a tutorial to reduce anxiety.
- Communicate the content of the tutorial in advance to align student expectations with reality
- Inform students what a session will entail allows them to use their time most effectively – attending sessions which will help them whilst avoiding those they do not need.
- Avoid “introductory” in session names as this may discourage attendance, increase the use of “assignment” as this encourages attendance and avoid vague names like “Block n” as this does not help students decide to attend (or not).
- Individual tutors should promote their own sessions to their own students as this is the path of least resistance.
- Tutors should either send preparatory work, or advise where it is best to be in study plan. This could be included in the session description.

Scheduling changes

- For face-face sessions (when they return) consider running dual online/face-face sessions. There has always been a dilemma about making a connection at the venue, but first that has become

easier and second, if we allocate two tutors to a session, one online and one face-face, then if the connection fails, the sessions can continue independently.

- Schedule as wide a range of days and times for tutorials, being mindful of the fact that learners are trying to achive an appropriate work/study/home life balance.
- They should be scheduled to maximised learning opportunity.

Improve tutorial experience

- Tutors should be encouraged to enable microphones despite their low usage.
- The use of whiteboard annotation, chat and screensharing seems well established and effective – that should all be encouraged.
- Polling seems less used, but popular and should be promoted.
- Tutors should be encouraged to build confidence with web tours, video and audio clips, live video and breakout rooms and to use these where appropriate. PALS offer regular refresher training in these.
- We should retain a desire to have interactivity. Chat is super, but quite limited, tutors should encourage other participation where practical.

Recording tutorials

- Record session wherever possible.
- Record the whole session including end questions.
- Consider some form of indexing sessions, possibly starting specific topics at specific times or breaking recordings into multiple parts.
- It would be good if the player were more flexible (it is understood a new player is due for release soon) or downloads of MP4 files permitted to allow local players to be used.
- Although not raised here, it has been mentioned many times by students that being able to take the recording offline (downloads of MP4 files) would be valuable. That is certainly essential for many of those in secure establishments, but also seafarers and some of those working overseas where data connections can be constrained to certain times.

The results of this research have been shared through an esteem conference presentation and school research meeting. The completed reports have been shared amongst staff tutors in the school of computing and communications, and with the Apprenticeship Change programne.

Future work

Further evaluation work should seek to confirm the findings around the use of tutorial naming conventions and the use of different tools in tutorials.

Anxiety is something which is commonly said by students and it may be worth while exploring why students feel anxiety about attending. Is their perception different to reality?

It would be valuable to repeat the survey with improved questions outside of the Covid-19 pandemic to better understand the relationship between learning in the office and at home.

<u>Impact</u>

a) Student experience

- Two modules now use tutorial scheduling that benefits apprentices.
- Ongoing discussion in the C&C staff tutor community about how this could be used more widely.

b) Teaching

- We are feeding back to tutors at staff development events about the need to clearly communicate what tutorials are going to cover, and add to plan where possible, or communicate via forums.

c) Strategic change and learning design

- Staff tutors in computing and communications are aware of the results and considering how this applies to their modules.
- We have shared in the wider university where apprentices use tutorials.

List of deliverables

Chris Thomson, Marina Carter and Dave McIntyre (2022a) Survey on tutorials attendance for apprentices.

Chris Thomson, Marina Carter and Dave McIntyre (2022b) Analysis of interview responses on apprentice engagement

Marina Carter, Chris Thomson and Dave McIntyre (2022c) TT284 Pilot: Supporting Apprentice Students by Evaluating their Study Needs

Thomson, C., Carter, M., McIntrye, D., "Supporting Apprentice Learners by Evaluating their Study Needs" The 10th eSTEeM Annual Conference, The Open University, June 30-July 1, (2021)

Carter M. & Thomson C. (2020) Day time tutorials for apprentices – what is best practice in computing? Available at: https://www.open.ac.uk/about/teaching-and-learning/esteem/sites/www.open.ac.uk.about.teaching-and-learning.esteem/files/files/2020-05-04-Chris-Thomson-Marina-Carter.pdf (Accessed 7th November 2021)

References

Braun, V., Clarke, V. (2006) Using thematic analysis in psychology, Qualitative Research in Psychology, 3:2, 77-101, DOI: 10.1191/1478088706qp063oa

Crisp, L., Smith, D., Smith, K., Bailey, M., Robson, J., (2019) The pedagogical implications of diversity, FASSTEST, The Open University. Available online: https://openuniv.sharepoint.com/sites/units/lds/scholarship-exchange/Lists/projects/DispForm.aspx?ID=440

Pawley, S. (2020) Maximising online tutorial attendance of a high population level 1 module. The 9th eSTEeM Annual Conference: Informing Student Success – From Scholarship to Practice, The Open University, 29-30 April.

Thomas, C.(2919) Maths & Stats Student Survey on the effective use of tuition time, The Open University, Available Online: https://openuniv.sharepoint.com/sites/units/lds/scholarship-exchange/documents/TuitionTimeSurveyFindings.pdf

Thomson, C., Carter, M., McIntrye, D., Wood, E., Leese, A. (2020) Day time tutorials for apprentices – what is best practice in computing? The 9th eSTEeM Annual Conference 2020, The Open University, 29-30 April 2020.

Thomson, C., (2021), When do learners attend online tutorials?, Computing and Communication School Seminar, The Open University, 24th June

University approval processes

If your project required specific approval from university committees, please provide the appropriate information below. This is a necessary requirement for future publication of outputs from your project.

- *SRPP – Approval from the Student Research Project Panel was obtained according to the Open University's code of practice and procedures before embarking on this project. Application number 2020-074 Chris Thomson*
- *Ethical review – An ethical review was obtained according to the Open University's code of practice and procedures before embarking on this project. Reference number HREC/3676/Thomson/Hollyhead*
- *Data Protection Impact Assessment/Compliance Check – A Data Protection Impact Assessment/Compliance Check was obtained according to the Open University's code of practice and procedures before embarking on this project. Data Protection registration number 48 (Research projects STEM)*