**BTEC Assignment Brief**

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| **Qualification** | | Pearson BTEC Level 3 National Certificate in Information Technology  Pearson BTEC Level 3 National Extended Certificate in Information Technology  Pearson BTEC Level 3 National Foundation Diploma in Information Technology |
| **Unit number and title** | | **Unit 9: The Impact of Computing** |
| **Learning aim(s)** (For NQF only) | | **C: Develop a Plan to implement a computing technology development in an organisation**  **D: Review a plan to implement a computing technology development in an organisation** |
| **Assignment title** | | Planning implementation of a new development for an organisation |
| **Assessor** | | A Hicks |
| **Issue date** | | 8/2/21 |
| **Hand in deadline** | | tbc |
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| **Vocational Scenario or Context** | | A local college have asked the IT department to look at the possibility of implementing remote working for their students and staff. As second year Computing students you have been tasked with finding out as much as you can about the impact of this development and then to plan and design an approach to its implementation. |
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| **Task 1** | | **P5** Produce information from a variety of stakeholders to explain the potential impact of a suggested computing technology development implementation on an identified organisation.  (Identify suitable sources of information. • Use of information gathering techniques, e.g., interviews, meetings, data analysis and observation for collecting information from various stakeholders, e.g., employees, suppliers, customer, general public) |
| **Task 2** | | **P6** Develop a plan to implement a technology development within an identified organisation and to manage the associated risks  (What the new or updated product is intended to achieve. • Identifying the scope of the implementation. • Boundaries and constraints (cost, timescales, hardware platform, compatibility with existing systems). • Identifying the system’s basic inputs, outputs, and processes. • Considering alternative solutions. • Creating an outline implementation plan, with tasks and milestones. • Methods of monitoring progress.) |
| **Task 3** | | **P7** Review a plan to implement a computing technology development in an organisation, considering feedback from others and identifying possible improvements.  (Reviewing feedback collected and drawing conclusions. Suggesting improvements and further development. • Reviewing ethical impacts on environment, employment, and wider society. • Privacy issues: o compliance with legal requirements of Data Protection legislation on whether security measures are sufficient to protect personal data on whether there are sufficient measures in place to ensure personal data is accurate and up to date. • Impact assessment – carrying out assessment of the potential impact of the implementation on health and safety, environment, security. • Risk assessment – vulnerability of system to attack, attractiveness to criminals or terrorists, health, and safety issues) |
| **Task 4** | | **P8** Review the potential social impacts of a plan to implement a computing technology development in an organisation. |
| **Task 5** | | **M3** Analyse the scope, boundaries, and constraints of a computing technology development implementation plan for an identified organisation.  (• Identifying the scope of the implementation. • Boundaries and constraints (cost, timescales, hardware platform, compatibility with existing systems). • Identifying the system’s basic inputs, outputs, and processes. • Considering alternative solutions.) |
| **Task 6** | | **M4** Justify the choices made to manage the risks associated with a computing technology development implementation within an organisation.  (Training of users and support staff. • Support mechanisms, e.g., online support, helplines, and outsourcing support. • Quality assurance procedures, e.g., project and technical reviews, module, and integration testing. • Disaster recovery planning and procedures) |
| **Task 7** | | **D3** Use feedback to evaluate the plan to implement a computing technology development in an identified organisation and the suggested improvements. |
| **Task 8** | | **D4** Demonstrate individual responsibility and effective self-management in the development and review of a plan to implement a computing technology development. |
| **Checklist of evidence required.** | |  |
| **Criteria covered by this task:** | | |
| Unit/Criteria reference | To achieve the criteria, you must show that you are able to: | |
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| **Sources of information to support you with this Assignment.** | |  |
| **Other assessment materials attached to this Assignment Brief.** | |  |

**By Husnain Ahmed**

**P5 Produce information from a variety of stakeholders to explain the potential impact of a suggested computing technology development implementation on an identified organisation (Task 1)**

The stakeholders in this system are: Senior managers who will provide funding for the changes in the system such as paying for the use of a streaming and file sharing platform to host online lessons and to send work files over the cloud.

Teachers who will need to re-evaluate their teaching methods and ensure that they send the work resources to a shared cloud storage platform for students to access and work on, they will also need to set up a place to receive classwork and send it back to students after marking. Teachers have also been able to host their lessons from the comfort of their own home which allows them to have a more flexible timetable and they can manage their time better than they could in college where they would have other responsibilities than hosting lessons and marking classwork.

Students will be affected the most as they will not have to come into the college every day, this will mostly affect the students who live far away from the premises as they will not need to make use of public transport or vehicles which will allow them to save time, they will also not need to prepare for college early and can wake up just shortly before lessons start. This extra time can be used to study, complete classwork or to rest.

Students will also have to overcome the problems that come with distanced learning as they will not be able to meet up with their peers and socialise, this will be a huge change as they are used to being in close proximity with their classmates and teacher. They will also be inconvenienced as online lessons being taught through a voice or video call with their teacher are not as thorough as lessons in person, the feedback and help given is also not as useful as it would be in person which makes it harder for them to complete their work.

IT support staff have needed to distribute laptops to some students who do not have the required devices to complete their classwork at their home.

Other staff such as canteen workers, janitors and security guards have either been laid off their jobs or granted furlough as there is no point in them maintaining an empty college campus without any students or teachers there.

Parents / carers may be inconvenienced as they will have to leave their children at home by themselves whilst they are at work, this. Some parents will benefit from this as they will not have to pay for their children to use public transport on a regular basis and will save money or will not have to waste their time driving them to the campus when they could be doing more productive things.

The Head of college will have to make decisions about how lessons will work for all staff and students.

Software suppliers will have to maintain their software and sell more licences as more people will use their software. The increased traffic will need more staff to maintain the servers as they could go down or be targeted by hackers.

Exam boards will be affected as they may not need to set exams for students and will not need to mark them.

The government will be affected as they need to consider the mental state of the populace and the effects that social impacts of remote learning will have on them. They will also need to deal with the population being upset due to the new rules being enforced.

Ofsted will be affected as they cannot do their jobs in testing the teaching standards and ensuring that students are being taught properly if they are at home.

Questionnaire:

[1] Do you prefer working from home to working on the college campus?

College Tutor1 response – I have less travel but more preparation to do so my time is not much different. Space away from my children is difficult after and before their school times.

College Tutor2 response – I live near college, so I hardly travel. I save no time but more preparation to do so my time working is much more. My spouse looks after my young children at home so getting away from the noise is difficult. A work provided creche or similar support would help me.

[2] Is it easier or harder to teach students online?

College Tutor Response – It is currently more difficult as gestures and body language are not visible and students don’t normally display their work on screen. If it was policy that they did share, then things would be easier.

[3] Would it be better if lessons went completely remote?

College Tutor Response – It is currently less effective to deliver lessons remotely.

[4] Have you come across any problems with remote working?

College Tutor Response – Yes, Internet problems, hardware problems, Students not having full access, VLE resources sometimes not being accessible.

[5] What social impacts has remote working had?

College Quality Response – Different impacts are too many to list. A few students have made better progress but many more have been working at a reduced level and making less progress. Parents have expressed worry. The recent working meant that rail, tram, and buses were quieter and there was discomfort at home for some. Not having buildings full of people has reduced costs in some cases and some staff related to maintenance and services have not been needed for the time being.

[6] How would you improve the current remote working circumstances?

College Quality Response – Better and clearer policies about acceptable interaction and progress. Better provision of infrastructure and systems. Better

[7] What benefits does remote working have?

College Tutor Response - More time at home

[8] What downsides does remote working have?

College Tutor Response - More difficult to deliver materials. More difficult to assess student progress in sessions. Less opportunity to collaborate with colleagues.

[9] How could funding be spent better to improve remote working and online lessons?

- Already covered above

[10] Do you think that student's education has been affected positively or negatively due to remote working? Explain why.

-Negatively – reasons above

Summary: Remote working is not very good for students as the lessons are less effective than if they were in person. It is also not particularly good for teachers as the lessons are less effective and harder to teach as well as requiring a lot more preparation in advance, it is also harder to assess student’s work.

The benefits to remote working are that there will be less travel time for both students and teachers and that there is more time for students to do work. But there is a problem for parents/carers as they will have to take care of their children in college times as they are home instead of at the college campus.

There can be problems with remote workings such as internet being inaccessible, hardware errors or not being in possession of a device that can be used to work from and software failures.

It could be improved if it had a clearer policy to work by which would make it as effective as regular lessons and work in person. It would improve the progress in lessons and interactions between students and teachers as well as with students among their peers.

The social impacts that remote working has had on students have worried many parents as their children have been cooped up at home all day which has a negative effect on their mental health, this is magnified by the lack of social interactions with their peers that they have due to lockdown. Many students have also been doing less work or not completing work at all due to a lack of motivation.

As many people are working and learning from home there is less people making use of public transport and that there may be discomfort at home due to rising tensions as families will not be used to being together at all times and parents will not be able to take care of their children whilst working.

There is a lack of grounds people and maintenance staff in many organisations due to there not being any need for them since the buildings are not staffed. This could result in many people being fired as there is no need to employ them.

**P6 Develop a plan to implement a technology development within an identified organisation and to manage the associated risks (Task2)**

When implementing a new technology within an organisation such as Bury college there are many risks that can occur that need to be managed.

I will demonstrate some risks to do with remote working and remote learning.

One of these risks is the need for devices (hardware) that can be used to work from remotely from within the confines of your own home. Without these devices you will not have access to the college network to work or learn from which will allow you access lessons or the shared college drive. This can be handled by the IT staff of college lending students' laptops to do their work from or arranging times for them to come in and make use of the college computers to work from, this would require a restricted access pass that would allow them to enter college at various times. Another way that this could be done is by using a public computer or laptop in an internet café or a library to work from.

Another risk is the need for a stable internet connection to work remotely as it is needed to access the college network and do work online. The consequences of this for teachers would be that they cannot host their lessons which would disrupt their students’ learning experience due to not being taught anything. While for students the consequences would be that they cannot access their lessons and classwork due to them using online applications such as office 365 to do their work on. This issue could be handled by the teacher sending links to the students for lesson resources or recording the online lesson for them to view at a further time, the issue of the students not being able to work at home can be mitigated by them using another device in a public area like a library or by using a college computer on campus.

Another risk is the negative impact on the students and teacher's mental health that remote working can have. This will happen due to them being isolated within the confines of their home without time to socialise with their peers, being locked at home all the time can get stuffy and cause claustrophobia and other things that will have an adverse effect on their mentality. This can be circumvented by restructuring the working times for lessons so that there are more gaps in the timeframe for people to rest and get some fresh air.

Another risk is the need for training to be given to the students and staff who will be working remotely on the new system. If the people using the new system are not trained on how to use it properly their learning and teaching experiences will suffer greatly. This can be solved by giving them training on how to effectively use the system so that they can learn and teach properly.

Other risks can be solved by interacting with the IT staff who will instruct you on how to fix the issues. Staff meetings could be used to give advice to students who are struggling with working remotely and need help with acclimating it.

Changing over to this new system of working remotely as opposed to working locally on college campus would take around 1 month. This changeover will be accomplished in 6 stages that I have loosely based off the waterfall methodology.

Risk assessment: This stage will take 2-3 days. This is where the IT staff will research the possible risks that could come with implementing this new system of working and the impacts they could have as well as finding ways to circumvent these impacts or at least minimise the effect that they would have.

Planning: This stage will take another 2-3 days. This is where they will browse through the many options of different software that could be used to host remote lessons and to work remotely from. After choosing from a range of applications you will determine the overall costs for their licenses and choose the most suitable ones. You will then plan out how they will be used by both the students and teachers. There is also a need to restructure the lesson timetable as it should be more flexible and contain more rest periods so that the students and staff do not get worn down by it and to protect their mental health.

The software that will be primarily used for assigning work and lessons on will be ‘Microsoft Teams’, students will be able to interact with their teacher during lessons through their microphones and ask for help if they have any issues with the work. The applications that students will work from will be ‘Office 365’ for apps such as ‘Microsoft Word’ and ‘PowerPoint’ and ‘Remote portal’ for them to access the college network.

Setup: This stage will take around a week. This is where they will set up the software so that it can be used, you will create accounts for students and teachers to access the software and create groups for separate classes so that the students can be assigned work and lessons as a whole instead of separately to increase efficiency on the teachers end. There may also be the need to set up a remote working portal that will allow students to access the college network from their own devices and use apps and data that are on the college storage that they might not have at home such as ‘Adobe photoshop’.

The IT staff will need to set up different channels on ‘Microsoft Teams’ for different lessons and give access to classes of students that have those lessons. They will also need to set up designated areas and devices for students who cannot access the network at home on their own devices for whatever reason. This will allow them to come into college and work there.

Training: This will take around a week. In this stage all the students and staff will be trained on how to use the new remote working software so that they do not have any issues with it and can continue their learning / teaching experience unhindered by any issues. The staff will need to be taught how to assign work and create video calls for lessons and the students will need to learn how to access lessons and how to access their work resources on the college drives.

Testing: This stage will take a week. This will be a trial period that a small number of students will go through instead of traditional lessons so that the staff can know if the new system is feasible for large-scale implementation, it will also help catch some errors in the new system that can be fixed before more students are taught this way.

Implementation: This will take a single day. This is where the software for remote working will be finalised and set up for proper use. After this point the changeover will be completed, and the students could do their work without issues.

These stages can be used to create a Gantt chart that outlines the different milestones in the implementation of this new system as well as create a concrete timeline for it. This will be used by the IT staff as a deadline when they decide to implement the system. It will also ensure that they do not go over budget on paying for the required software.

**P7 Review a plan to implement a computing technology development in an organisation, considering feedback from others and identifying possible improvements (Task 3)**

I will now review my plan that I have made in the previous task. I have received feedback on the timeline and will identify some possible improvements that could be made.

One improvement that could be made is increasing the amount of time that is allocated to the training and testing stage. They said that it may have been better to train a small number of students and staff at first and then have them test the new system for a period of time

(1 week) and then implement it in a large-scale fashion before testing it again to see if it is feasible and testing for more errors before finally implementing it. This would help solve a lot of errors that may have been missed in the initial set up and implementation of this new system.

Another improvement that could be made is to add another stage in between the testing and implementation stage that would be used to receive feedback from students and staff on their experiences with the system. This feedback would be used to inform the IT staff on any issues that may have occurred and any potential improvements that they could make to the new system. One of the improvements that could be made is allowing teachers to modify the groups for different units / lessons so that they can be more effective as learning resources for students to use. This, however, would take more than the allocated 1-month overall time for the entire systems implementation.

As well as increasing the allocated time for the making of this new system the plan could be improved if it were more detailed so that the IT staff had more to go off when developing the system. With more detailed instructions the system would cover a multitude of different functions and points that would be extremely helpful for anyone who is working remotely.

It would be great if the teachers were given a greater degree of flexibility on how they want to arrange their lessons and could choose their timetables themselves due to the increasing amount of time that they will have on hand. This would allow for them to also change how they will interact with their students, whether that be over voice chat or messaging.

The different roles on ‘Microsoft Teams’ would need to be elaborated on to make sure that the people working remotely will understand them. The ‘Organiser’ is the person who sets up the meeting for lessons and invite people to join them, they also have complete control over them and can remove people from them if needed. The ‘attendees’ are the people who can view the meeting and join it, they can also talk in different channels and through voice chat. There are also ‘Presenters’ who can share their screens to everyone in the meeting. This role is granted to attendees by the organiser.

Another possible improvement that could wait is adding the ability to share multiple screens at the same time, this would allow the teacher to help more than one student at once if they have the same issue or view many different issues. However, this can distract the teacher from helping a single student at a time and will make it so that they cannot effectively help them.

There could also be ways to improve the privacy of remote working by only allowing a set number of people (the max number of students in the class) to enter the call so that other people do not join the call and disturb their learning experience, higher levels of security could be implemented by making sure that all students have secure passwords with 2 factor authentications on them to make them more secure.

Another improvement that may not be possible is a timeline extension to cater to any issues that may arise such as extra training needed or more functions being added or unforeseen circumstances occurring such as holidays or sicknesses. This is not feasible because a deadline must be met within a month and the timeline cannot exceed that month.

**P8 Review the potential social impacts of a plan to implement a computing technology development in an organisation (Task 4)**

Implementing a new technological development such as remote working in an organisation can have many potential social impacts. These impacts can affect anyone involved due to their immense reach and even others that are not involved such as friends and family of the people who are working remotely.

One of the ways that remote working can have a social impact is on the levels of interactions between work colleagues and peers. This level is significantly reduced as you will only meet your colleagues and peers withing lessons and meetings whereas normally you would see them on breaks and outside of college hours. This has the effect of making people feel lonely and isolated due to the lack of social interaction with other people. Informal talk with colleagues that is unrelated to work or education is completely removed due to only meeting at set times for predetermined reasons and for nothing else which, while efficient for work is not particularly good for social interaction and mental health.

Another social impact of remote working is the lack of need for commuting to college campus on the regular, this can save a lot of money for people who use vehicles or public transport and can reduce the negative impact travelling can have on the environment such as noise and air pollution. This also allows for a more flexible timetable as staff and students can save time on travelling which can be used for extra work or rest before work.

Classes that do not have practical work and mainly consist of theory lessons such as computing courses and maths / science courses will be able to still complete their lessons but hey will be greatly affected as they will be manly studying remotely from within the confines of their own home which will change the way their work is being done and handed in, especially for classes that do not use computers a lot and write their work on paper. They will instead do work online and submit it over the cloud which will be a huge change for them.

Another social impact that remote working can have is reducing the stress levels of all parties involved which can result in increased productivity in their work. This is due to the more flexible timetable which allows them to better control the balance between their work and life, they will also have less distractions on their work which can allow them to finish quicker and use their spare time for other things such as social meetings and calls. It is also less stressful as you do not need to pick out an outfit for work every day and make yourself presentable which takes time and effort as well as causes you fatigue if you get stuck between what outfit to wear.

There will be certain non-teacher staff at college that will be unneeded at times where no students or teachers are on campus such as janitors, security guards, cafeteria workers and student guidance workers. These staff members will be laid off or put on furlough as their services will not be needed for the foreseen future while college is completely working remotely, or a small number of them will be kept maintaining the college if students need to come in to use computers due to their own devices not being usable at the moment.

Janitors would not be needed as much as there will be less people making mess in the college, but they will still be needed to keep the campus maintained and clean.

Security guards and maintenance staff will have a largely reduced workload due to only a fraction of both students and staff member being on campus regularly, this will make their job less taxing but no less important as they must ensure the safety of the small number of students that will come in to use the college computers for remote working.

Cafeteria workers may not be needed as only a fraction of the students will be on campus for remote lessons on the computers, these students will not be in for a full day so they may not require food from the college and can eat at home or outside. However, students on bursary may not have that luxury and need to rely on college provided food. Therefore, some staff should be kept working even at times when remote working is more predominant.

Student guidance services staff are needed to check up on vulnerable students who may not have the most optimal mental health conditions or may have problems with college or at home and could be significantly impacted by the changes to their work style going remote. However, due to the reduced number of students being on campus not as many of them will be required to cater to the students and can be laid off or put on furlough.

The staff members that work in the library and other rooms with computers will have to change their way of working as a lot more students will be working on the computers than usual, the way books are loaned out will also have to be changed as students may not return them due to being at home most of the time, this can be fixed by having shorter loans or longer loans that will end on the students' days off from college work (if they have any).

IT staff will be the most impacted as their workload will increase tremendously as they do not only need to worry about courses who regularly use computers but the entire Bury college student population who will be working remotely. They will need to maintain the remote working applications and ensure that no errors or bugs arise, they will especially need to be on guard against any crashes or cyber-attacks to the college systems as that could ruin all students learning experience due to them not being able to access their lessons.

**M3 Analyse the scope, boundaries, and constraints of a computing technology development implementation plan for an identified organisation (Task 5)**

The scope of the new system will affect many areas of the college and will need to incorporate many new functions, as most of lessons will move to being online rather than in person which will affect many areas of the organisation there is a need to change how working is done remotely to make it more efficient. These functions will include full usability of Microsoft Teams allowing teachers to set work and lessons and allowing students to properly interact with them to ensure that they have an excellent learning experience. There is the need for students to be able to submit work and for teachers to set deadlines. Students should be able to interact with their teachers during lesson through voice chat and through a text chat, this would help with individual help for the students if they do not properly understand the work.

The main area that will be affected will be courses that require practical lessons and equipment that can only be provided on campus such as engineering and sports courses. Engineering classes will not have access to the correct equipment needed to do their lessons and manufacturing products. Sports classes may be able to do their lessons at home such as a football course doing 100 kick ups as homework, but it will still be affected as teamwork and sportsmanship is especially important in sports and cannot be fostered over an internet connection. This is a severe limitation and can damage the sports course students learning experience.

The staff such as janitors, security guards and cafeteria workers will be affected as their workload will be significantly decreased due to the lack of students on the campus.

The IT staff will be affected as their workload will increase tremendously as they do not only need to worry about courses who regularly use computers but the entire Bury college student population who will be working remotely, they will also need to help these people acclimate to changes in the style of working and provide sufficient training for them to be able to properly work remotely without any issues so that they do not have any disadvantages as compared to working locally.

The staff members that work in the library and other rooms with computers will have to change their way of working as a lot more students will be working on the computers than usual, the way books are loaned out will also have to be changed as students may not return them due to being at home most of the time, this can be fixed by having shorter loans or longer loans that will end on the students' days off from college work (if they have any).

Homework will be affected as it will all be completed digitally and submitted online, this will not be that big of a change for computing course students but for other classes such as English and maths that are used to working on paper and writing down their homework this is a rather substantial change that they will have to acclimate to.

The overall scope of the college will be affected by remote working due to most of the students learning remotely instead of locally with a few exceptions such as classes that require practical equipment like engineering and carpentry.

The changeover to a remote working system can bring many constraints with it such as, the allocated budget, allocated time, the reliability of the new system, ease of access and the security of the new system.

Budget: The allocated budget of the new system will designate what quality software will be bought and used by the students and teachers, as well as the equipment to run it and the staff needed to run the new system and maintain it. If the budget is too low, it will limit the quality of the system as the IT staff will have to skimp out on purchases and cut corners on certain things such as buying a lower quality software that is cheaper or being understaffed / under skilled to handle the maintenance of the system due to their lower wages.

Time: Time is a constraint as it adds a deadline / limit to the project. This deadline specifies that the developers must finish the project within a month as that is the changeover time that was specified in the plan and is the time that the client expects the system to be ready for use.

Reliability: The system must be reliable and have no issues with how it works, it must be stable and usable so that it does not negatively impact a student's learning experience and overall grades. The IT staff who will perform regular maintenance on the system must ensure that there are no issues with it and prevent any bugs that could harm users from occurring. If the software is reliable the user will be able to use it without problem assuming that they do not have any issues with their device or internet connection.

Ease of access: The system should be easy to use and not be too confusing for users. On the first boot up it should explain a set of instructions on how to navigate the system to the user, this would ensure that they do not have any issues with using it. If they can use the system properly, they should not have any issues with doing their work. A simplistic, user friendly design would be optimal to reduce the user's confusion and stress when working.

Security: This is a constraint as if the system is not secure it can be taken down and disabled which would negatively impact both students and teachers which would have severe implications. Cyber-attacks and other hacks to the system could cause problems in the stability and reliability of the system.

**M4 Justify the choices made to manage the risks associated with a computing technology development implementation within an organisation (Task 6)**

To manage the risks that will come with the implementation of remote working within Bury college the staff and students who will be using the new system will need to be adequately trained to use it. If they are professionally trained in how to use the remote working system, they will encounter less issues when working. This will reduce the risk of human error which could cause issues and will allow them to use the system efficiently in a way that will boost their productivity once the changeover happens.

There needs to be a method or set of methods that will be used to check the quality of the system such as ISO/IEC 25010:2011, this will make sure that the system is of satisfactory quality assurance and control and is used for acceptance testing. This will make sure that the system is of sufficient quality and does not have any glaring errors or bugs.

Another way to test the quality of the system will be through feedback from the testers, they can give this feedback in the forms of complaints or reviews that they can email to the IT staff that is setting up the system. This will help provide some insights into how the remote system works and if it is suitable for large scale implementation and if it can be further improved.

Additional testing should also be done to test the integration of the system and to ensure that it works as it is expected to, this can be done to mitigate any errors and make the users experience with the system be as smooth as possible so that they can do their work to their utmost capabilities without being limited in any regards by the system.

There should also be a section of the IT staff who specialise in supporting people who use remote working with any issues that they will encounter and do not know how to fix themselves. This will ensure that their teaching / learning experience is not ruined. The support staff could do this through screen sharing to help the person with the issue and tell them how to fix the error or they could do it through something like a customer support hotline where the customer can call up and explain their issue with the system and they can be given a set of instructions to follow that will fix their issue. If this is implemented, it will ensure that the maintenance of the system will go smoothly and any errors with it can be mitigated.

There should be a backup of the system in place in preparation for a disaster or other event that would cause the system to go down such as a DDOS attack. Preparing for this will help set up the system again and recover any lost data and work in the case of it actually occurring.

**D3 Use feedback to evaluate the plan to implement a computing technology development in an identified organisation and the suggested improvements (Task 7)**

The system testers have given feedback on their experience with using the system and I will use this feedback to evaluate the system and improve it where possible or add any recommended functions that they thought would be useful to their experiences when learning or teaching remotely. Not all of the improvements that have been recommended by the testers will be implemented, reasons for this will be given.

The suggestion of increasing the amount of time that is allocated to the training and testing stage was given as the tester thought that it may have been better to train a small number of students and staff at first and then have them test the new system for a period of time (1 week) and then implement it in a large-scale fashion before testing it again to see if it is feasible and testing for more errors before finally implementing the system. This can be done to solve all the lingering bugs and errors that are in the system before rolling it out for use.

The suggestion of adding a dedicated feedback stage after the testing stage is unneeded as there is enough time allocated to the testing stage to receive feedback.

The suggestion of increasing the 1-month timeline is not possible as the deadline must be met and cannot be increased as the system is expected at that time. The intention of this improvement was for the IT staff to have more time to develop the system and test it to get rid of all the bugs. If the deadline is increased the client will not be happy as the system will be late and for this reason it cannot happen.

Another suggested improvement was to increase the amount of detail in the instructions that are given during training. With more detailed instructions the system would cover a multitude of different functions and points that would be extremely helpful for anyone who is working remotely. To improve on this suggestion the entire plan could be more detailed as well to provide mor information for the IT staff to go off when they are creating the system. This will make their path clearer and reduce the amount of miscommunication between them and the client, this will ensure that the final iteration of the system will be up to the client's expectation and can be used perfectly. It would also reduce delays and be more efficient, saving time since the IT staff will not have to backtrack when they make errors and add wrong functions that are not needed.

Giving teachers increased flexibility on how they want to arrange their lessons and timetables would be possible and could be extremely useful as they can arrange their lessons around their own hours which could allow them to add more breaks between lessons and will stop lesson being held at inconvenient times. This will be a good outcome for both students and teachers and can be used to improve the productivity of their work.

Another suggestion was the ability for the presenters of video calls (teachers) to share multiple screens at the same time, this would allow the teacher to help more than one student at once if they have the same issue or view many different issues. However, this can distract the teacher from helping a single student at a time and will make it so that they cannot effectively help them. This is not a promising idea and should not be implemented as if helping students one by one is more effective and if more than one student has the same issue the advice to one student will be helpful to the other.

The suggestion to increase the security of the new system should be considered as there is an increased security risk due to lessons being online, multiple ways for this to happen were suggested by the tester.

One way to increase security is by setting a maximum number of people that are allowed to join a call at once, this number should be the total number of students in that specific class so that others do not join and disturb their learning experience. Roles should be set to only allow people who are in that class to join the call as well for extra precaution, these roles will also restrict their access to specific message channels that they can use for help on their work and will determine if they can send images and attach files to messaging channels. This should be set by the teacher of the class.

Another way to increase the security of the new system is by ensuring that all students have secure passwords with 2 factor authentications on them to make them more secure. This is more secure as it requires multiple accounts to sign in and verify that the user is who they say they are, this added level of complexity can make it harder for hackers to steal your details and get into the system. However, it may not be practical as it can cause delays and disturbances to users due to the increased time it will take to access the system which could make them late to their scheduled lessons.

The final way that the security of the new system could be improved is by ensuring that all data protection laws are followed to a tee and that the privacy of the users are kept to the levels that are stated legally. This will keep the data of the students and staff confidential and private so that it is harder to find by hackers.

There could also be an impact assessment at the end of the testing stage that should be filled out directly after the feedback is considered. This impact assessment will detail how the system impacts different students and members of staff, this will be considered by the IT staff and they will make the required changes needed to accommodate for any issues that they may have and will allow them to set up support networks if needed.

**D4 Demonstrate individual responsibility and effective self-management in the development and review of a plan to implement a computing technology development (Task 8)**

I have demonstrated individual responsibility and effective self-management skills in the development and review of the plan to implement remote working into Bury college by setting up a concrete timeline that will be followed to complete the remote working system before the deadline of 1 month. I agreed upon a set number of days for each stage in the development of this program such as 7 days for the training of staff and students to use the new system. This will allow for the changeover of the new system to be completed effectively as the involved parties are trained and know what they will have to do.

I also demonstrated individual responsibility in organising and creating a questionnaire targeted at the stakeholders of this project. In doing this I independently thought of questions that were targeted at the involved parties of the new system that would shed some light on some possible risks that could come with remote working. The information on these risks was used further on to develop countermeasures to them and ensure that the new system ran smoothly and risk-free.

I have also shown effective self-management skills in acting upon feedback from stakeholders and testers by summarising their answers to my questionnaire and taking into account their reactions to the new system when they used it. I used their suggestions to design some new improvements for the system to make it better and more functional so that it can allow for a better teaching / learning experience.

The act of reviewing my plan also demonstrated effective self-management skills as I personally thought improved the timeline to make it more efficient and productive so that the deadlines could be met, and the system was completed to the standards that the client was expecting instead of possibly cutting corners due to insufficient levels of time allocated to each stage.

Reviewing the feedback from testers has also allowed me to find some risks in the system which I improved upon to mitigate these issues. This demonstrates individual responsibility as I took it upon myself to make these improvements independently.

The questionnaire for the stakeholders was sent and completed professionally through email which also shows a degree of individual responsibility as I had opened up a line of communication between myself and the stakeholders for any future concerns about the new system that they may have.

I showed individual responsibility by reviewing the potential social impacts of remote working and how it could affect the stakeholders who are involved in the new remote working system. In doing this I identified potential risks and thought of ways to solve them. I also identified potential benefits that the system could have such as allowing for more flexible timetables for students and teachers.