

# Using USB Devices for Online Document Storage in Worcester Business School

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## Abstract

The Worcester Business School (WBS) is migrating from paper-based assignment submission to electronic submission and feedback. Currently, no policies or procedures exist for staff and tutors to effectively manage the administration document storage for this process, thus creating confusion and lack of effectiveness among stakeholders. This project report suggests a method for managing the administration portion of the e-submission/feedback procedure using USB devices for online storage.

## Introduction

With the ever increasing use of technology in higher education institutions, the implementation of e-submission and feedback of student assignments is becoming more popular. According to Phipps (2010), this is an area that can help schools deliver higher student satisfaction, and also improve the effectiveness and efficiency of staff. The author explains that many Universities are working on this area and high gains are being made. A variety of procedures and methods can be implemented based on technical and organizational needs of the specific school. For example, the University of Athens successfully implemented an e-submission system tool and implemented new procedures successfully. The

authors suggested that tutorials should be given to staff, faculty and students to acclimatize them to new processes (Koulouris & Anagnostopoulos, 2010).

The Computing Group of the WBS had encountered several problems with the online electronic submission and feedback process regarding the storage of electronic documents. Currently, all e-feedback must be submitted to the students via SOLE, so a record of the student e-feedback is stored there. However, the WBS process is that student work, e-feedback, module documents (UMS grades, module outline and assignment specs) should be contained in a centralized area. This is required for access by External Examiners as well as a record of the documents in case they need to be reviewed in the future.

Each module leader used a variety of methods to store these documents: Blackboard, SOLE, physical CDs, USBs, etc. The diversity of storage options caused problems for External Examiners who found trying to access different areas very confusing. There was also an issue that even if feedback was accessible on SOLE, the actual student work was located in either Blackboard or CDs. Also, if a situation occurred where other Computing tutors needed access to the student work files, it was time-consuming to get Blackboard access or try to locate the physical CDs. The final issue was that the use of the UW 'O drive' for storage of electronic documents was limited by the amount of available space due to the large student file sizes (especially for Computing assignments).

During the 2011/12 Exam Boards, External Examiners commented on the issues of trying to get consistent access to required documents, as some tutors gave the Externals access to Blackboard, while other gave them CDs or even zip the student files into one zipped file for review. The Externals have asked for a consistent method of access.

## **WBS Pilot Project**

The Computing group of the WBS had decided to implement a pilot project in spring 2012 to use USB storage devices to hold electronic documents for modules that used electronic submission and feedback. Storage of documents on these devices would replace the current use of the physical module boxes.

For the first phase of the project, members of the WBS ASU staff and Computing lecturers met to discuss methods and procedures for storing electronic documents. Initially, they decided that the best method would be to store documents on both USB memory sticks as well as an external hard drive, and AQU staff would develop written procedures. For the second phase, ASU staff developed a preliminary memo (see Appendix 1) on possible process and procedures for a pilot run. This was distributed to the Computing lecturers with the invitation to run a pilot test for May 2012 submissions.

Next, several types of USB sticks were purchased and used for different purposes:

1. Several USB 4-GB drives
2. Two external hard drives (these were for a master and a backup, and would also be used by externals during Exam boards).

One USB stick was given to each module leader and they transferred all their student work and other documents on the USB. ASU staff then transferred folders from USB sticks onto the master/backup hard drives.

### **Benefits of the pilot project**

1. Externals found it much easier to access module documents on the external hard drive compared to trying to access modules documents within Blackboard or SOLE. They specifically asked that documents be included on the hard drive.
2. Because most lecturers have to put the student documents on their computer in order to electronically mark them, it was fairly easy to just copy over all these documents to a USB stick and give the stick to a member of the ASU

staff. ASU then copied information from each USB stick to an external hard drive (for the Externals) as well as a backup external hard drive.

3. The amount of time saved by ASU staff in not having to create photocopies for Externals was quite significant. This left time to accomplish other critical tasks when preparing for Exam Boards.
4. Although there are one-time costs with purchasing the USB sticks and external hard drives, this was offset by the photocopying and personnel costs.

### **Major Issues encountered**

1. Because we had purchased one external hard drive for two externals, they had to share the drive for the June Exam Board. They found this difficult with the short time constraints, and asked that we have duplicated external drives, one for each external.
2. During discussions in the spring, we realized that security of the documents was a concern for several reasons. First, the UK Data Protection Act does require that every organization have processes and procedures to protect data (Information Commissioner's Office, 2012). If information was sent to the External Examiners via post on regular USB devices, it could be conceivable that the devices could be intercepted and read by people outside UW. Therefore, a method was needed to ensure that data on USB devices posted to the Externals would be secure. For this test pilot, we just wanted to ensure the process would work and only tested with a limited number of modules, so we did not implement secured USB devices. However, several lecturers during this time reviewed methods for safely securing the data on the sticks. We tested two USB devices (Kingston and ScanDiskUltra). The latter had password and encryption options, but was very complicated and required software to be installed on any PC using the USB. Instead we decided that the Kingston USB met our needs by requiring password protection, but was easy for technically challenged people to use.

### **Future enhancements to the process**

1. After experimenting, we decided to slightly change the types and numbers of memory devices to meet the needs of lecturers and externals. Appendix 2 shows that we will purchase twelve 8-GB and four 4-GB sticks and several 1.5 TB external drives.
2. Starting in September 2012, we implemented the use of Kingston USB sticks with password protection. This will ensure that if the sticks are accidentally misplaced, anyone who finds them will not be able to access the data unless they know the password, thus complying with UK Data Protection law.
3. As this process was tested by Computing lecturers, we offered Business lecturers the opportunity to take part in this process in September 2012. Directions on the process and procedures were distributed to the entire WBS.
4. One USB was used for each module, and ASU staff created specific file folders indicating which documents should be placed in each folder (see Appendix 3). This will allow for consistency in the entire WBS, and make it easier for ASU staff and Externals to retrieve the documents.

## **Conclusion**

This pilot project aimed to develop some administrative procedures for effective storage of documents for electronic submission and feedback. Although the WBS did experience some issues with this pilot project, we felt it was an overall positive experience for both lecturers and externals. Through trial and error, we will be making some adjustments with our initial plan. Although our specific method of implementation involved using USB devices for document storage, this method is only one possible solution that could be implemented by other UW Institutes or even other Universities who are considering electronic submission management. However, it should be noted that because of the rapidly changing technological field, other technologies or processes may become more appropriate, or other more efficient options might be developed. It would be

worthwhile for collaboration among other UW Institutes and among External Examiners to review future options.

## References

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## **Appendix 1: Memo from ASU staff dated 13-March 2012 on Online Storage Procedures**

On-line submission requires the set up of an on-line module box. This has proved difficult especially in the case of computing due to the files in some cases being too large to save on the 'O drive', and has also generated a lot of confusion and various ways of capturing the information required for the externals and module box. To resolve this and bring everything into line, whether on-line submission uses SOLE or Blackboard, we have come up with the following suggestion.

### **Storage Device 1 - Master**

This will be a large capacity Storage Device and will be held at all times within the ASU Office attached to the relevant module box. This Storage Device will contain 5 years of module box/external work and will be the Master. Therefore

when this device is about to accept its 6<sup>th</sup> year of data, the 1<sup>st</sup> year will be removed.

## **Storage Device 2**

These will be signed out by the ASU office, to the lecturer who will save the module box information/external information to this Storage Device and return it to the ASU, who will then sign it back in and remove the folders from this Storage Device to the Master. Storage Device 2 can then be re-used.

The lecturer should save the work in the following format:-

1. A main Folder showing the Module Number\_Academic Year\_Semester\_Assignment Number, (semester 12 for modules over 2 semesters).

The folder should have the following inside it:-

1. A subfolder named External Folder containing:-
  - a. Module Outline and copy of the assignment paperwork used.
  - b. The results moderation form for the assignment.
  - c. Full list of ETM Marks/SOLE Grades for the assignment.
  - d. Any other items the lecturer wishes to send to the External.
  - e. A subfolder inside the External Folder (named Student Work for External) containing copies of the student assignments to be viewed by the External along with the relevant feedback forms for this work.
2. A 2<sup>nd</sup> subfolder containing moderated work (should this be required in addition to the external work) and the remainder of the student work and marker's comments.

The lecturer will be responsible for downloading their own modules onto the storage device in the folders/format above, and passing it to the ASU.

## **Storage Device 3**

This will be used to send the information to the Externals, should the requirement be there. ASU staff will copy the student work from the master onto the storage device for the External to view. The External will return it and ASU staff will wipe it clean for re-use. This could also be used when External Examiners look at student work when they visit Worcester, as it may be less effort than arranging access to Blackboard/SOLE etc.

### **ITB Hard Drive**

This will be used to back up the Master Storage Devices.

### **Benefits**

A procedure will be in place with everybody operating the same process. The Master Storage Device will have 5 years paperwork on it, which means less storage space required. Postage costs will be reduced. Paper and photocopy costs will be reduced. ASU time spent photocopying will be reduced.

### **Notes**

Software required to Encrypt Storage Devices or alternative at no cost may be zip files password protected. Storage Devices = pen drives at present. 32GB memory for Master storage device. 8GB memory for storage devices 1 & 2.

## **Appendix 2: Memo from ASU staff dated 04-July 2012 on Online Storage Procedures**

### **Computing On – Line Submission Procedures: Overview of Procedures**

On-line submission requires the 'set up' of electronic module boxes to store downloaded student work and external information. This has proved difficult in the case of computing due to the files on some modules being too large to save to the 'O drive'. It has also generated a lot of confusion and various ways of capturing the information required for the externals and the electronic module box. To resolve this and bring consistency to the process, whether on-line



submission uses SOLE or Blackboard, we have come up with the following procedure.

### **Storage Device Type A: Large Capacity (initially 1.5TB) Storage Devices**

Initially there will be three of these, which are held within the ASU Office at all times, replacing the hard copy module boxes. This Storage Device will contain 5 years of module box/external work. Therefore when this device is about to accept its 6<sup>th</sup> year of data, the 1<sup>st</sup> year will be deleted. One device will be kept as the Master Back Up and the other two will be used for the Externals to view the student work when they attend the University prior to the exam board. This will save lecturers having to organise SOLE and Blackboard access. All 3 devices will contain the same information and are solely for ASU and External Examiner use.

### **Storage Device Type B: Security Encrypted USB Drives**

The capacity of the first batch is 8GB each and several are available. The USB drive has a password that will be issued by the ASU with the USB. The USB is used to send out work for him/her to view should an External be unable to attend the University. Once the External has finished looking at the work, the USB is returned to the ASU, where it is wiped clean ready for re-use. This USB drive can also be used should a lecturer wish to download files onto it externally to transport to the ASU office for copying to Type A Storage Device. Once the files have been copied over to Type A storage device they are deleted from the USB ready for re-use. Again all devices are kept in the ASU office.

### **Storage Device Type C: Encrypted USB Drives**

The capacity of the first batch is 4GB each and several are available. This USB is used for the lecturer to transport information whilst on University premises to the ASU office to save on the Type A Storage Device. These USBs are again stored/issued by the ASU office and are issued to lecturers to save their module box information/external information to the Device and return it to the ASU, who

will copy the folders to Type A storage device, and then delete the files from it ready for re-use.

**Format/Procedure for Lecturers to submit their work to the ASU on the relevant storage device.**

Once issued with the relevant type B or C storage device, the lecturer must save their work in the following format on the device, before handing it into the ASU:-

One folder for each module named Module Number\_Academic Year\_Semester (semester 12 for modules over 2 semesters) – i.e. COMP2105\_2011\_S12.

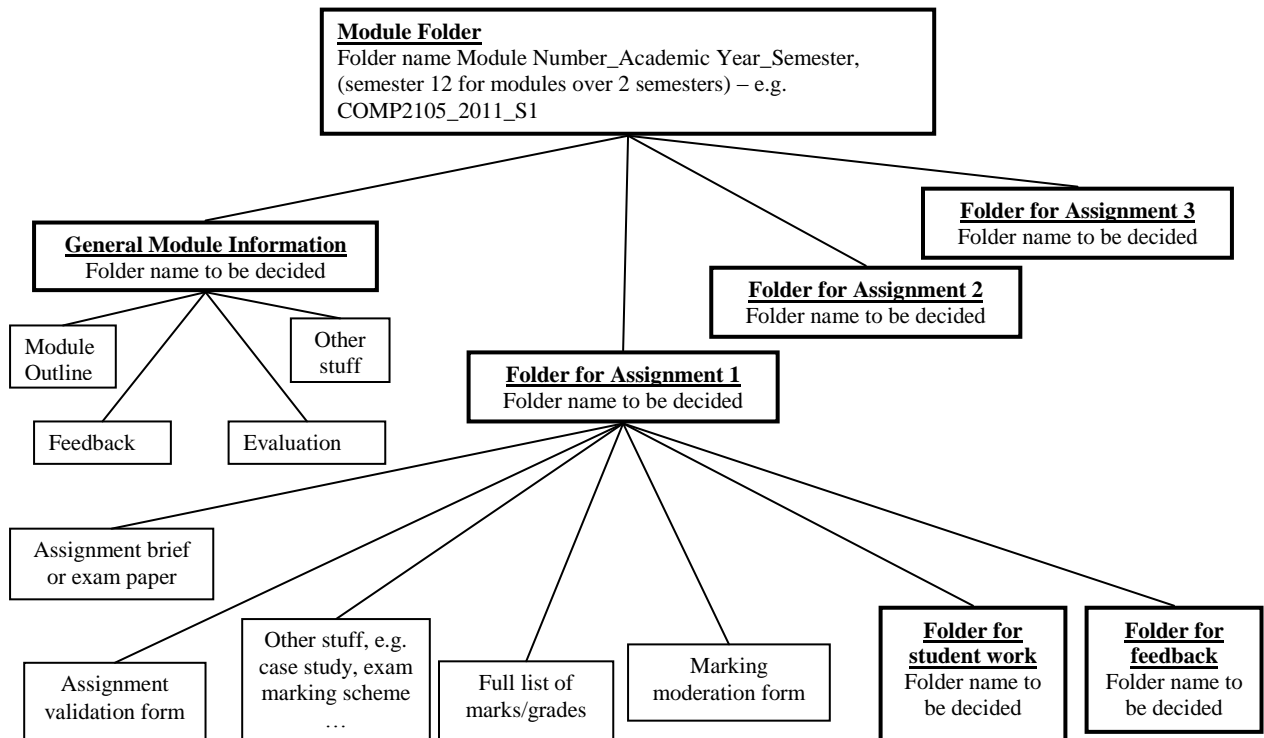
Within this:-

1. A general folder for information relating to the module as a whole, named Module Information, containing:-
  - a. Module Outline.
  - b. Feedback Information.
  - c. Module Evaluation.
  - d. Anything else the module leader deems relevant.
2. For each assignment a folder named Assignment1 (2 or 3) containing:-
  - a. Copy of the assignment brief or exam paper and any other associated paperwork e.g. validation form, case study, marking scheme).
  - b. The results moderation form for the assignment.
  - c. Full list of ETM Marks/SOLE Grades for the assignment.
  - d. Any other items the lecturer wishes to send to the external.
3. A subfolder inside the External Folder named Student\_Work\_for External containing:-
  - a. Student assignments for the external.
  - b. Marking feedback for these assignments.
4. A 2<sup>nd</sup> subfolder inside the External Folder named Remaining\_Student\_Work containing:-
  - a. The remaining student work.

- b. Marking feedback for these assignments.
- c. Any other items the module leaders' deem appropriate.

Module leaders are responsible for downloading their own modules using the format above, onto the storage device, and passing it to the ASU.

### Appendix 3: Folder Formats Process and Names for USB devices.



### Biographies:

**Joanne Kuzma** earned her PhD in Information Systems at Nova Southeastern University in Fort Lauderdale, Florida and has over 20 years of computer consulting background along with University teaching experience. Currently, she is a Senior Lecturer and Course Leader in Computing for the Worcester Business School at the University of Worcester. She specializes in e-business, multimedia, information systems, security and e-marketing.

**Christina Langfield** joined the University of Worcester from the private sector in 2006. She has worked in the Worcester Business School as an Administration Assistant in various roles, offering administrative support to the computing and business lecturers. In October 2012 Christina transferred to the Personnel Department.

**Peter Moody** was awarded a PhD in Atmospheric Physics by UMIST. He then taught 'A' levels in Physics and Mathematics for several years before moving to what was then Worcester College of Higher Education to teach Environmental Science. He later transferred to the Business School where he teaches Computing and has responsibilities in the areas of Quality, Assessment and Academic Integrity.