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An innovative use of technology to aid the service teaching and assessment of statistics to a large cohort

Day 1 – Parallel I (11.30-12.00)

We report on our experiences of and innovations used in the teaching and assessing of statistics within a new Level 2 research skills module delivered to over 650 Business School students. The module contains a short course on statistics covering a challenging amount of material together with learning to use SPSS, and is designed to provide a solid foundation for students to undertake Level 3 project work. The statistics assessment comprised a contribution from each computer lab to a Learning Journal and two e-Assessments.

Lectures delivered the material in the provided notes but without reference to the sections containing use of SPSS to gain the presented output. Prior to the ensuing computer lab students performed preparation tasks requiring them to recreate the SPSS output for the examples in the notes. They were supported through access to a suite of videos, which enabled students to self learn SPSS output creation and allowed staff to concentrate in labs on giving statistical understanding and interpretation advice.

In each computer lab students were given a set of questions that covered various data outcome scenarios. The first question was designated for the student's Learning Journal.

For each Learning Journal question a pre-written complete analysis template was provided that had the SPSS output removed, numerical values blanked out and inserted multiple choice interpretation decisions to make. Setting it up in this way enabled students to concentrate on the mechanics of the creation of output and interpretation of results.

We present the first e-Assessment which concerns the data dependent choice of the application of either the oneway ANOVA or Kruskal-Wallis test. The e-Assessment system used was DEWIS as it can communicate with the R statistical package which was employed to generate bespoke student data and generate answers that would match SPSS screen output; implement continuation marking for a large number of inputs; run staged assessments; provide dynamic feedback specific to student inputs.

The e-Assessment is in three stages which relate to the three activities that are required when performing the analysis. Each student downloads their unique Excel data file via DEWIS that needs to be transferred and coded into the format required in SPSS; Stage 1 checks this has been achieved correctly. Students may enter this stage as many times as they like, but they will not be allowed to proceed to Stage 2 until they have successfully completed this task. Stage 2 involves exploratory data analysis including ANOVA assumption testing. At the end of this stage students are asked which test they should employ for the main analysis in Stage 3. If they choose the wrong test they are told so and the test continues requiring them to use the correct test in Stage 3.

Results have been excellent. Teaching and assessing in this way has made the challenging task of delivering and assessing this material in a short space of time

achievable. The fact that students can refer to their Learning Journals and access "how-to" SPSS videos will be beneficial to their further studies.