EDEN 2022
Was our pilot study successful?
An approach when data are sparse

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With thanks to colleagues in OU’s Test and Learn team and Infosys partners

Institute of Educational Technology
Was our pilot study successful? An approach when data are sparse

Essays in assessment

- Very common at all levels and across subjects
- Challenge to teach students how to write, when focus is on teaching subject
- Feedback on students’ writing is often on work submitted for summative assessment, and is therefore provided after marks have been given
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IET has an institutional role in developing pedagogy, including approaches to assessment. Assessment projects include:

- **OpenMentor** – learning support tool to help tutors reflect on the quality of their feedback to students on assignments submitted electronically
- **OpenEssayist** – prototype web application that generates feedback for students. To aid objective reflection on their writing
- **Open Essay Optimiser** – development of OpenEssayist
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- Developed from OpenEssayist
- Stand-alone tool readily embedded in VLE
- Ability to save and edit different versions of essays within the tool
- Redesigned interface
- New and improved functionality and visualisation
- Tuned with 200 marked scripts
- Tool further refined through user testing

About Open Essay Optimiser
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User testing, questions to improve tool

- What are your initial impressions?
- How do you find the readability?
- How clearly do you understand the site?
- How well do you understand the purpose of analysis?
- How do you feel about the essay mapping process?
- What are your impressions of the Argument Coherence diagram?
- What’s is your opinion on Dispersion Graph?
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Existing features

Content Analysis

- key sentences
- key words / key phrases
- Positioning and frequency of words (dispersion chart)
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Enhanced features

Coherence analysis
- improved scaling of coherence diagram plus circle scale marker
- Different shaped nodes to indicate a correlation with the conclusion
- Magnified selected node and relevant sentence in pop-up window

User Interface
- Improved for all features
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**New features**

**Reference Analysis**
- Reference assessment (how does reference list compare with the average of 12)
- Feedback: show which of the module references were used

**Idea Development Analysis**
- Option to see how sentences links to the ones in the reference literature (similarity analysis)

**Essay text**
- Store and edit essays
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The coherence plot
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Interaction between coherence plot and text
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**Key words and phrases**

- study
- student
- module
- data
- query
- database
- qualification
- attempt
- model
- different
- institution
- university
- choice
- path
- year

**Significance Rank (Frequency)**

- study (41)
- student (24)
- module (22)
- data (22)
- query (15)
- database (11)
- qualification (14)
- attempt (10)
- model (11)
- different (10)
- institution (9)
- university (8)
- choice (6)
- path (12)
- year (7)

**Significance Rank (Frequency)**

- student (1)
- studying (1)
- studying/path (1)
- different (2)
- study/paths (1)
- student/paths (1)
- student/study choices (1)
- one study attempt (1)
- new student (1)
- new study attempt (1)
- study attempts (1)
- student attempts (1)
- support students (1)
- new data (10)
- data path (10)
- data model (1)
- data models (1)
- one module (12)
- one module (1)
- different one (1)
- different one (1)
- study attempt (1)
- study attempt (1)

**Dispersion**

- study
- path
- database
- query
- one
- module
- data
- student
- take
- therefore
- support
- year
- path
- readily
- analysis
- choice
- university
- institution
- way
- different
- attempt
- qualification
- database
- query
- one
- module
- data
- student
- study

**Fragmentation of cohort**

When considering student performance on almost any of the University’s modules, it is clear that the cohort is fragmented. Yet, we have struggled to find a way of dealing with this fragmentation in our analyses. This is actually the same challenge of analysing study pathway but from the module rather than student perspective. This fragmentation is created by several factors:

- The programme of study leading to a qualification offers choice at least at one point, where students can opt to study either module A or module B and still complete the qualification. One of the most constrained programmes of study, because of the requirements of

**Conclusion**

By responding to the long standing challenge of analysing student study paths within one institution through structuring data in a different way using database technologies that are still relatively new, we are finding that many questions that have long gone unanswered are finally yielding. We have also found that the model developed has potential to serve the Institution more widely through the development of a qualification dashboard. In addition, this restructuring of data will enable machine learning algorithms to work with the potential to reveal new insights. Other theories, like that of Markov Chains can also be tested against the data. These developments amount to a significant step forward for our Institution and its potential to support students. As noted in the abstract, many institutions are moving more of their teaching online and this data and processing therefore offers an enormous advantage.

**References**
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Key sentences

- The programme of study leading to a qualification offers choice at least at one point, where students can opt to study either module A or module B and still complete the qualification.

- However, by the time a student reaches their final module they could have taken one of sixty-four different study paths.

- This is simply because some will study three modules per year and others will choose to take either one a year, or to take a study gap between modules.

- The most obvious reason is that some students complete their study but do not pass the module.

- So, at any one time, Module A will be studied by students on different study paths to Qualification A and Qualification B, and so on.

- A student could choose to study Module A in 2020.

- If the student passes, they may go on to study Module B in 2021, creating a new data element.
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Suggestions of similar text in module references

NB: this is not a real example
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Module references and those used

Evidence shows that majority of the good essays have at least 12 references. You have used 5 resources. The list below represents recommended references for your module and shows which of these resources you have used from the list. You may want to consider using further references from this list.

References


Note: these references are not used within the module and are therefore marked with an ‘X’. Those that are are marked with a tick
Pilot study

- Students on the 2021 presentation of H817 Openness and innovation in elearning were invited to:
  - Complete preliminary questionnaire
  - Use Open Essay Optimiser for first two assignments
  - Complete post questionnaire
  - Agree to be interviewed on their experience
  - Continue to use the tool for the three remaining assignments
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Results: Participant involvement

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These were all login issues. 1 was properly fixed.
Results: demographics

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### Results: engagement

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Results: score v coherence

Note: In these results there appears no clear strong correlation between assessment score and the level of coherence measured within the Open Essay Optimiser. For the other assessments, numbers of OEO users were too low for this comparison.
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Notes: CAS is Continuous Assessment Score; The higher the rank the higher the score; only continuing students as new students had no previous score; Sum of all D is zero; 10.3 is mean D for shaded rows (the most engaged students); * user 20 did not engage with the tool
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Spearman’s rank correlation coefficient (rho)

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Notes: CAS is Continuous Assessment Score; Ranking is sub-divided. Top half and bottom halves ranked separately, as they are two distinct groups; * user 20 did not engage with the tool

rho for those engaging is very low 0.35 but greater than for those not engaging with the tool, 0.05. Significance is also very low
Was our pilot study successful? An approach when data are sparse

Summary

- Fewer students than expected fully engaged with the Open Essay Optimiser during the pilot study
  - likely factors include the pandemic and the final presentation of the module Openness and innovation in elearning
- The results for this small sample are inconclusive but encouraging
- and suggest a positive impact as evidenced for the previous iteration of the tool as the OpenEssayist.
Was our pilot study successful? An approach when data are sparse

next steps:

• Further trial:
  • large cohort
  • essay based module with
  • a focus on developing good essay writing
Was our pilot study successful? An approach when data are sparse

The website for the pilot study is available and contains some videos illustrating how to use the Open Essay Optimiser. These are located in the Support>Resources section:

https://sites.google.com/view/h817-oeo/support/resources
Thank you

Contact:

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Photograph: Feature in the Open University’s Legacy Garden. ‘A society grows great when we plant trees in whose shade we shall never sit.’ (Greek proverb)