

HOW DO MACROECONOMICS' STUDENTS ASSESS THE USE OF DIGITAL LEARNING RESOURCES? A POST-PANDEMIC ANALYSIS.

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Abstract: This study analyses student assessment outcomes on three types of Digital Learning Resources created for online teaching of Macroeconomics during the Covid-19 pandemic: digital teaching notes, digital PowerPoint presentations and short videos of complex graphics. Results indicate that all Digital Learning Resources offered to the students are positively assessed in terms of quality, use intensity, utility and general assessment. Digital notes are significantly the most highly rated, which seems to indicate a preference for traditional learning resources. Additionally, our analysis shows that the intensity of Internet use and study time constitute significant factors in explaining the students' higher perception of the teaching notes, compared to the other learning resources. Student gender is not a significant factor to explain the students' assessments.

1. Introduction

Knowing how these Digital Learning Resources (DLRs) could be useful post-pandemic, or how they could be improved in current teaching, is relevant. This study analysed the assessments made by second year students of the Degree in Economics course at the Faculty of Economics and Business Sciences (University of Seville). Various types of DLRs were made available to students during the Macroeconomics classes, taught in the first semester of the 2021-22 academic year.

2. Context of the study

For the subject of Macroeconomics I, during the 2021-2022 academic year, three different types of DLRs, which had been created during the Covid-19 teaching stage, were used: teaching notes, available electronically; PowerPoint presentations, used during online classes; and, short videos on the content of the subject, in which linked graphs were presented. The teaching notes consisted of pdf documents available, in online format, through the virtual educational platform which the University of Seville had for each subject. There was a pdf document for each module of the course (nine in total). These documents had written explanations for each subject. These included explanatory graphics of the models analysed, in the form of static drawings. According to some authors (Pablo-Romero et al., 2012), this can make these difficult to understand.

3. Methods and materials

A description of the variables used in the analysis is shown in Table 1.

Table 1. Description of variables.

| Name | Description |
|------------|---|
| Resource 1 | Teaching notes |
| Resource 2 | PowerPoint presentations |
| Resource 3 | Short videos |
| Item 1 | Content and quality of the DLR (1 to 10). |
| Item 2 | Intensity of use of the DLR in following the subject (1 to 10). |
| Item 3 | Utility of the DLR for personal work on the subject (1 to 10). |
| Item 4 | General assessment of the DLRs' impact on the learning process (1 to 10). |
| Gender | Whether the student is female (=1) or not. |
| Time | Number of hours of study. |
| Internet | Intensity of Internet use as a study tool (1 to 10). |

For the analysis of statistical differences in the students' assessments of the different DLRs, alternative inferential models were used. Specifically, ANOVA and MANOVA models have been used in the recent literature to carry out similar analyses (Expósito et al., 2020; among others).

4. Results

Table 3. Comparison (ANOVA) of Item by Resource

| Items / Resources | 1 vs 2 | 1 vs 3 | 2 vs 3 | F |
|-------------------|----------|----------|---------|----------|
| 1 | -.79*** | -1.77*** | -.98*** | 18.97*** |
| 2 | -3.72*** | -4.43*** | -.72 | 78.36*** |
| 3 | -2.25*** | -2.67*** | -.42 | 39.09*** |
| 4 | -3.40*** | -3.61*** | -.21 | 59.15*** |

Note: *** 1% significance level. Source: Own elaboration.

Table 4. MANOVA model (by Item)

| | | F | p-value | Eta-squared |
|--------|-------------------|-----------|---------|-------------|
| Item 1 | Resource | 14.71*** | 0.000 | 0.153** |
| | Gender | 0.03 | 0.873 | 0.001 |
| | Gender#Resource | 2.36* | 0.097 | 0.028 |
| | Time | 3.18*** | 0.001 | 0.177** |
| | Time#Resource | 1.13 | 0.320 | 0.133 |
| | Internet | 2.64*** | 0.007 | 0.128** |
| | Internet#Resource | 2.21*** | 0.004 | 0.196** |
| | Observations | 228 | | |
| | R ² | 0.53 | | |
| Item 2 | Resource | 20.018*** | 0.000 | 0.199** |
| | Gender | 3.31* | 0.071 | 0.020 |
| | Gender#Resource | 0.51 | 0.598 | 0.006 |
| | Time | 1.21 | 0.285 | 0.075 |
| | Time#Resource | 1.61** | 0.048 | 0.179 |
| | Internet | 1.38 | 0.199 | 0.071 |
| | Internet#Resource | 1.77** | 0.033 | 0.164 |
| | Observations | 228 | | |
| | R ² | 0.63 | | |
| Item 3 | Resource | 15.53*** | 0.000 | 0.161** |
| | Gender | 2.96* | 0.087 | 0.017 |

| | | | | |
|--------|-------------------|----------|-------|---------|
| | Gender#Resource | 0.89 | 0.411 | 0.011 |
| | Time | 2.41*** | 0.008 | 0.141** |
| | Time#Resource | 1.69** | 0.034 | 0.186 |
| | Internet | 2.20** | 0.024 | 0.108** |
| | Internet#Resource | 2.30*** | 0.003 | 0.203** |
| | Observations | 228 | | |
| | R ² | 0.53 | | |
| Item 4 | Resource | 13.93*** | 0.000 | 0.146** |
| | Gender | 3.34* | 0.069 | 0.020 |
| | Gender#Resource | 1.49 | 0.229 | 0.018 |
| | Time | 1.17 | 0.309 | 0.073 |
| | Time#Resource | 1.21 | 0.250 | 0.140 |
| | Internet | 3.02*** | 0.002 | 0.143** |
| | Internet#Resource | 1.15 | 0.311 | 0.113 |
| | Observations | 228 | | |
| | R ² | 0.44 | | |

Note: ***; **, * Statistical significance at 1%, 5% and 10% levels, respectively. Source: Own elaboration.

5. Concluding remarks

The results of the study indicate that all the DLRs offered to the students were positively assessed. However, there were significant differences in the ratings of the different types of Resources, especially in their usefulness, use intensity and general ratings. Digital notes were the most highly rated, while videos had lower ratings in all of the Items analysed.

References

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