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**Using persona analysis to compare student social behaviours with institutional digital provision: a pilot study**

This short report summarises the outcomes of a short pilot study to use Jisc student insights survey data to explore the social behavioural traits of students in relation to social aspects of institutional digital teaching, and other key student demographics.

1. **Background**

In 2017-18 Jisc carried out the third and final pilot phase of the student digital experience insights surveys (formally known as the student digital experience tracker surveys). This was completed by over 37,000 students from 83 higher education (HE) and further education (FE) institutions across the UK.

The digital experience insights service enables individual institutions to investigate the digital experiences of their students and allow them to pinpoint where they currently are and highlight where they are doing well and where there is scope for improvement. The benchmarking data sets also help to highlight how issues of national concern are playing out in relation to the student digital experience.

In 2018 issues included providing support for students to develop the digital skills they need to thrive in the workplace, providing health and wellbeing services online (including online safety), and transparency about the use of students’ personal data.

Previous multivariate analysis focused on factor analysis to confirm the robustness of the survey instrument and identify the questions that were most influential in describing the variation in student opinion relating to their digital experience. The findings of this work are summarised in this report.

The national student dataset offers other opportunities to investigate trends and behaviours. For example, we wondered whether the data provided any evidence of different student digital persona types that would help to explain the student population in new and potentially more useful ways.

Our aim was to group students in terms of their digital behaviours and opinions rather than classifying them via the more-commonly used demographic variables such as sex, age, type or stage of course.

Personas are traditionally created from relatively small amounts of qualitative data, e.g. via interviews with individuals. However, this process can be hampered both by small sample sizes and by the interviewers’ expectations and prior knowledge of the system in question. It can be easy to categorise people according to their position in a system rather than by the way they function and behave. In contrast we employed an alternative approach, using multivariate statistical clustering methods that are more commonly used to identify persona groups in the field of user-centred design and market research.

We hypothesised that the generation of personas using this approach might provide novel insight into digital behaviour typologies, and prove to be more actionable to organisations, for example in terms of identifying suitable support methods and mechanisms than traditional personas.
For this pilot project we focussed specifically on questions relating to social behaviours of students, and how they related to social aspects of institutional digital provision.

2. Method

This analysis used 14 of the 75 individual question statements within the student insights survey. These are summarised in Table 1. We focused on four types of questions, with the aim of seeing whether and how they grouped together:

- **Student opinions** about using technology for learning, with a specific focus on social activities (group learning, working with others etc)
- **Course-level opportunities** for digital learning, focusing on a social activity
- **Student demographics** (age, gender, use of assistive technology)
- **Students’ institutional rating** scores for digital infrastructure and quality of digital teaching and learning

<table>
<thead>
<tr>
<th>Question focus</th>
<th>Question and answer text</th>
<th>Variable name and codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student opinions</td>
<td>In your own learning time, how often do you use digital tools or apps to ...discuss your learning informally on social media (weekly or more, monthly or less, never)</td>
<td>Q5disc+, Q5disc0, Q5disc-</td>
</tr>
<tr>
<td>Digital skills are important in my chosen career (agree, neutral, disagree)</td>
<td></td>
<td>X17Career+, X17Career0, X17Career-</td>
</tr>
<tr>
<td>When digital technologies are used on my course ...I understand things better (agree, neutral, disagree)</td>
<td></td>
<td>GetIt+, GetIt0, GetIt-</td>
</tr>
<tr>
<td>When digital technologies are used on my course ...I feel more connected with my lecturers (agree, neutral, disagree)</td>
<td></td>
<td>Tcon+, Tcon0, Tcon-</td>
</tr>
<tr>
<td>When digital technologies are used on my course ...I feel more connected with other learners (agree, neutral, disagree)</td>
<td></td>
<td>Lcon+, Lcon0, Lcon-</td>
</tr>
<tr>
<td>Which best describes your preferences as a learner? (on my own, mix, group learning)</td>
<td></td>
<td>20Solo, 20Mix, 20Group</td>
</tr>
<tr>
<td>How much would you like digital technologies to be used on your course? (more, same, less)</td>
<td></td>
<td>22more, 22same, 22less</td>
</tr>
<tr>
<td>When digital technologies are used on my course ...I am more easily distracted (agree, neutral, disagree)</td>
<td></td>
<td>X21dis+, X21dis0, X21dis-</td>
</tr>
<tr>
<td>Course opportunities for digital learning</td>
<td>As part of your course, how often do you do the following digital activities? Work online with others (weekly or more, monthly or less, never)</td>
<td>wwo+, wwo0, wwo-</td>
</tr>
<tr>
<td>Student demographics</td>
<td>How old are you? (Under 19, 19-24, over 25)</td>
<td>Age-, Age0, Age+</td>
</tr>
<tr>
<td></td>
<td>What gender do you identify as? (male, female, other)</td>
<td>Male, female, other</td>
</tr>
<tr>
<td></td>
<td>Do you use any assistive technologies to meet your learning needs? (e.g. screen readers, voice recognition, switches) (Yes vital to learning needs, optional to learning, no)</td>
<td>asstec+, asstec0, asstec-</td>
</tr>
<tr>
<td>Institutional ratings</td>
<td>Overall, how would you rate the quality of this institution's digital provision (software, hardware, learning environment)? (Best imaginable to worst imaginable)</td>
<td>Ratetec+ (1,2), Ratetec0 (3,4) and Ratetec- (5,6,7)</td>
</tr>
<tr>
<td></td>
<td>Overall, how would you rate the quality of digital teaching and learning on your course? (Best imaginable to worst imaginable)</td>
<td>RateTL+ (1,2), RateTL0 (3,4) and RateTL- (5,6,7)</td>
</tr>
</tbody>
</table>

Table 1. The questions and variable codes used in the multiple correspondence analysis
Data were re-coded and analysed using a multiple correspondence analysis (MCA) using R, which provides a visual representation of the clusters of variables in two separate MCA plots. The analysis was run separately for university (HE) and college (FE students).

Initial attempts to do this were hampered by the vast quantity of data. We therefore took random subsamples of 4,000 individual data points from the university and college student datasets. Repeated subsampling confirmed that the trends observed were repeated between analyses. Data were interpreted by looking at clusters of variable codes on the MCA plots.

3. Results

The two MCA plots are shown in Figures 1 and 2. The analysis identified three potential ‘digital persona’ groups visible in both the university and college student data, and an additional one on the university data plot. These are summarised as follows:

Positive and connected (HE and FE)
- They rated teaching and learning AND digital infrastructure very highly (choosing to answer either ‘excellent’ or ‘best imaginable’ from the seven-point scale)
- They agreed that use of digital technologies on their course helped them feel more connected with their lecturers and with other learners
- They reported that on their course they work online with others ‘weekly or more’
- When digital technologies are used on their course they agreed that they understand things better
- They want digital technologies to be used more often on their course
- They tend to discuss learning informally on social media ‘weekly or more’
- They feel that digital is important for their chosen career
- Users of assistive technologies fell within this persona group

Neutral and happy with the status quo (HE and FE)
- They feel that teaching and learning AND digital infrastructure are good or average
- They have a neutral opinion when asked whether digital is important for their future career, whether it helps them to understand things better, whether they find technology use more distracting, and whether use of digital technologies on their course makes them feel more connected to lecturers and other students
- They reported that on their course they work online with others ‘monthly or less’

Negative and technophobic (HE and FE)
- They don’t feel technology is useful for their career
- They do not feel more connected with learners or lecturers when digital technologies are used on their course
- They give low rating scores to institutional digital teaching and learning and digital infrastructure (choosing either poor, awful or worst imaginable)
- They want less technology used on their course, and they don’t feel it helps them to learn
It was of interest to see that student age, student gender, and desire for working solo or a mix of solo and group work didn’t fall within any of these three groups and instead were largely independent of them (with one exception, identified below).

It was also of interest to identify a fourth persona cluster in the University data that included students with a preference for group work. This was not present in the college student data set. This group can be described as follows:

**Digitally distracteds (HE only)**

- When digital is used on their course, these students feel more easily distracted from their learning
- They have a preference for learning in groups (rather than solo or in a mix), but they say that their course ‘never’ provides them with opportunities to work with others online
- They also report that they never informally discuss their learning on social media
- They tend to rate institutional digital teaching and learning and digital infrastructure as good or average
- They tend to be aged over 25

Other than this additional persona type, the variable clusters were very similar for university and college students, reflecting previous findings from the initial survey analysis and subsequent Factor Analysis.

4. **Discussion**

Further comparisons and re-analysis of the survey data are needed before we can attempt to predict the proportion of each persona type within the student population. However it is clear that there are far fewer ‘negative technophobes’ than the other two persona types. The institutional variables that associate with the attitudinal questions suggest that these ‘negative’ students are not easily converted to using and enjoying technology both for learning and in their broader life. Their negativity may be due to institutional, personal or course-level issues and may be restricted to or broader than issues pertaining to digital technologies. Targeted interviews could help to further investigate these issues.

These findings raise a number of questions, including:

- Are these hypothesised ‘digital persona types’ determined by the personality of the student, or are they (at least in some part) a reflection of the institutional learning system?
- The positive and neutral student personas are close together with a reasonable overlap. Is there a way to move students from a neutral to a more positive grouping? For example, the positive persona types report that they work online with others weekly or more, whereas the neutrals report working online with others monthly or less. If institutions increase opportunities for students to work together online, will this improve the student digital experience (as measured by the rating scales)? Will this, in turn, improve the overall student experience, or increase retention rates? It would be of interest to consider whether there are any institutional-level or course-level drivers that could trigger an increase in the student experience.
5. Next steps

This short pilot study suggests that this style of analysis has the potential to provide some useful insights into student groups and may offer the potential to create digital persona types. However, there is a need to validate these hypothesised groups with interviews in order to confirm their validity.

This pilot project focused only on a small subset of the overall student dataset both in terms of the questions used and the amount of data analysed. There is clear potential to focus on other questions in order to investigate other aspects of student digital behaviours and opinions. There is also the possibility of using this technique with the teaching staff dataset.

Next steps could include:

- Going back to the insights data to attempt to predict proportions of each persona group (using indicator variables to provide proportion data)
- Increasing the depth of the analysis to include more student data points (above 4,000 currently used)
- Broadening the scope of the analysis to include more questions from the 75 questions asked to students (are there other themes that we could focus on other than the social aspects explored here?)
- Can this technique be used for the teaching staff data to investigate potential teaching persona groups?
- This analysis creates hypothesised persona groups, and should be followed by interviews to validate them, and provide a more holistic and detailed picture of the proposed groups.
Figure 1. The MCA variables plot for 4,000 randomly selected university (HE) students from the 2017-18 insights surveys.
Figure 2. The MCA variables plot for 4,000 randomly selected college (FE) students from the 2017-18 insights surveys.