



Student engagement and experience in UK universities

Results from multilevel analyses
of the PRES, PTES and UKES
surveys

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Author Note

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Executive summary

This document reports on multilevel analyses of three Higher Education Academy (HEA) survey data sets. First, the Postgraduate Research Experience Survey (PRES), a national survey on postgraduate research student experiences. Second, the Postgraduate Taught Experience Survey (PTES), a national survey of postgraduate taught student experiences, and third, the United Kingdom Engagement Survey (UKES), a recently developed survey to help higher education institutions (HEIs) understand and address their students' engagement with their studies. Each survey involves tens of thousands of students.

Multilevel models were constructed for each of the three HEA surveys to:

1. determine what proportion of the variance in experience and engagement is explained by student and institutional characteristics;
2. generate coefficients/estimates for important student and institutional characteristics, hence exploring the impact of student and institutional variables on the experiences and engagement of postgraduate research students (PGR), postgraduate taught students (PGT) and UG students (UG); and
3. formulate the implications of these findings for sector and institutional priorities.

The multilevel models show, on the whole, that **only a small percentage of variance in all three of the surveys can be explained at both discipline and institutional level**. Practically, this means that there is substantial lack of agreement among students within each university in terms of their satisfaction with their overall educational experience. In general, the variance at the discipline level is slightly greater than at institutional level. It is hard to reliably distinguish between institutions and disciplines. Certain coefficients stand out for all the surveys:

- > Being disabled in general has a significant impact on student experience and student engagement scores.
- > Gender and age show different patterns for different question scales.
- > On the whole, black and minority ethnic (BME) students have a positive student experience and student engagement.
- > Where we could include distance learning as a variable, for example in the UKES data set, it was a negative predictor for engagement. It could be worthwhile to study in more detail why this is the case and think about ways in which distance-learning students could be engaged.
- > Part-time students more often have a negative perception of the student experience for PRES and UKES, but a positive one for PTES.

- For countries of origin, African and Asian students are more positive about student experience and student engagement across the board than UK students. For PTES however, Australasian and North American students had a more negative experience. EU students also were more negative for PTES but more positive for PRES.
- When we look just at HEI level, there are some significant predictors, but given the low variance overall explained by institutional characteristics, it is highly doubtful these differences are meaningful.

Given the low variance at the institutional level and the significant predictors for all three surveys it seems pertinent not to aim for a university-wide approach for student experience and student engagement. Rather, individual factors should be addressed by individual institutions. Institutional policies could be aimed at improving experiences and engagement for different gender and age groups, distance learning, disabled students and students from Australasia and North America.

Description of the work

This document reports on the results of multilevel analyses of data from three HEA surveys:

- > the United Kingdom Engagement Survey (UKES), a national survey of undergraduate engagement;
- > the Postgraduate Taught Experience Survey (PTES) with feedback from taught postgraduate students about learning, teaching and other aspects of their courses;
- > the Postgraduate Research Experience Survey (PRES) with feedback from postgraduate research students about their learning experience, supervision, and research environment.

This study concerns a *multilevel* approach with the following aims:

1. the development of multilevel models for each of the three HEA surveys;
2. to determine what proportion of the variance in experience and engagement is explained by student and institutional characteristics;
3. to generate coefficients/estimates for important student and institutional characteristics, hence exploring the impact of student and institutional variables on the experiences and engagement of PGR, PGT and UG students;
4. to formulate the implications of these findings for sector and institutional priorities; and
5. to determine whether differences between institutions and disciplines can reliably predict differences across the three surveys.

The work does not only concern the 2013 PRES, 2014 UKES and 2014 PTES but also the three newer 2015 editions. Where possible, especially for UKES, we have conducted additional confirmatory factor analyses (CFA), which are provided in the appendices (see the separate document *Student engagement and experience in UK universities: Technical appendix*). While performing the multilevel analyses we have kept in mind best “multilevel analyses practices” as described by Dedrick et al. (2009). The statistical analyses took place between August and October 2015.

The report consists of separate chapters for the different surveys, with a conclusion for surveys as a whole. However, we’ve tried to indicate any substantial differences between the years as well. We have endeavored to make the report as transparent as possible so underlying choices are clear.

Short overview of literature on student experience and engagement

Although this report does not allow for an extensive literature review, it is important to mention some relevant aspects of student experience and engagement, as they are becoming increasingly more important. In 2010 the Higher Education Academy conducted a review of student engagement literature (Trowler and Trowler [HEA] 2010). Three dimensions of student engagement became apparent from the literature: student engagement in individual student learning; student engagement with structure and process; student engagement with identity. We refer to the full report for a complete overview of these dimensions, but the key points can be summarised as follows:

Regarding student engagement in individual student learning:

- student engagement improves outcomes;
- specific features of engagement improve outcomes;
- engagement improves specific desirable outcomes;
- the value of engagement is no longer questioned; and
- responsibility for engagement is shared.

Regarding student engagement with structure and process:

- student engagement in university governance benefits student representatives;
- student representation on committees in the UK is generally felt to be effective;
- high-performing institutions share several “best practice” features regarding student engagement in governance;
- high-performing institutions share several “best practice” features regarding student leadership; and
- the most commonly reported form of “engagement” of students in the UK is through feedback questionnaires.

Regarding student engagement with identity:

- prior characteristics do not determine whether students will engage;
- engagement benefits all students – but some more than others;
- engagement requires successful transition; and
- some students experience engagement negatively.

In light of this it is relevant to study student experiences and engagement in more detail, making these analyses particularly pertinent. In addition to the aspects, student evaluations of course delivery, particularly around assessment, are also related to outcomes (Gibbs 2010). It must however be remembered that when different student conceptions of good teaching are muddled together an average rating is very difficult to interpret. “Low inference” questions that refer to specific teacher behaviours are much easier to interpret. In this report we will distinguish both relevant scales and “overarching” evaluations.

Using multilevel modelling

Data from the PRES, PTES and UKES are hierarchical in structure. Each of the students surveyed studies a certain discipline, a discipline can be said to be nested in an institution. This nesting *suggests* that two notionally identical students based at the same institution are likely to be more similar in their responses to the survey than two notionally identical students studying at two different institutions. Of course, this is an *assumption* which needs to be tested. With multilevel modelling we can explore the unique impact of student, discipline and institutional characteristics upon students' responses to items. The unique effects of different student, course and institutional characteristics are referred to in multilevel modelling terms as fixed effects.

Analyses produce coefficients which can be interpreted as the change in the score associated with the given characteristic, compared to a reference group. Take the small fragment from PRES 2013 depicted in Figure 1.

FIGURE 1 FRAGMENT FROM PRES 2013

Fixed Part	SUPERVISION					
	Null model		Model 1		Model 2	
	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
constant	4.321	0.008	4.322	0.014	4.257	0.023
Location: Scottish			-0.046	0.025	-0.049	0.024
Location: Welsh			0.01	0.035	0.01	0.035
Age: 26-30 years old					-0.083	0.011
Age: 31-35 years old					-0.092	0.014

The coefficient for "Age: 26-30 years old" is -0.083 with the reference group being (as mentioned in the running text of the report) 25 years old or younger. This means that, all other things being equal, we would expect a student aged between 26 and 30 years old to have a score on the Supervision scale that is 0.083 units lower than a student of 25 years old or younger.

With large datasets it is important to think carefully about *statistical significance*. In this report we adopted a frequently used p-value of 0.05 to determine significance. However, with large base sizes, results become significant very quickly and therefore it could also be useful to look at the *magnitude*. This can be done by comparing coefficients with the standard error. The ratio between them can be readily calculated, for example in Figure 1: $-0.083/0.011$ yields roughly -7.5. This value is more than both 1.96 (critical value belonging to a confidence limit of 95%) and 2.57 (belonging to a confidence limit of 99%). We say the predictor "Age: 26-30 years old" is a *significant* predictor of the dependent variable, in this case the Supervision scale.

Limitations

Because of the large sample size for the datasets involved, many of the results are statistically significant even where observed differences are very small. It should be noted that the surveys in this report do not use a random sample but adopt a census approach which attempts to survey every student in the relevant population. However, this means that, like in many surveys (even those which attempt a random sample), the resulting data is vulnerable to non-response bias

which is not accounted for in statistical significance testing. This is also the case for any missing data and later in the report we justify our approach with regard to missing data. In addition, deriving continuous variables (scales) from categorical Likert scales is not without controversy given that the “distance” between categories (such as “definitely agree”, “mostly agree” and “neither agree nor disagree”) cannot be assumed to be the same. Finally, some categories will necessarily concern low numbers (e.g. Gypsy or disabled students). It is therefore advisable to remain critical about coefficients for groups with low membership.

Some more technical notes regarding multilevel modeling are given in Appendix L (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Description datasets and data preparation

This report works with data from three datasets, each used in two instances (two different years).

First, the Postgraduate Research Experience Survey (PRES). This survey took place in 122 higher education institutions during the Spring of 2013. 48,401 postgraduate researchers took part, forming 41.9% of eligible respondents. The results showed (Bennett and Turner [HEA] 2014) that 82% of students were satisfied overall, with quality of supervision and research skills development rating particularly high. The PRES consists of several sections: an experience section comprising seven main question scales; a further section on the development opportunities experienced (including the opportunity to teach); and a final section on overall satisfaction and expected timeliness of completion. The questionnaire also asks about students' motivations and anticipated careers, and obtains information about their programme and demographic background. This report presents results from both the 2013 and 2015 editions.

Second, the Postgraduate Taught Experience Survey (PTES), a national survey of PGT student satisfaction. 100 HEIs and over 70,000 students participated in the most recent (2015) survey. The instrument consists of 39 questions, designed to elicit students' views of their experiences regarding Teaching and Learning, Engagement, Assessment and Feedback, Dissertation or Major Project, Organisation and Management, Resources and Services and Skills Development and a range of socio-demographic variables, as well as motivations for choosing their course and views on information provided by their HEI. The profile of respondents is broadly in line with the national PGT population, and the surveys typically get a response rate of just under 30% (Soilemetzidis et al. [HEA] 2014). This report presents results from both the 2014 and 2015 editions.

Third, the United Kingdom Engagement Survey (UKES). UKES is a newly developed instrument that was first piloted in 2013. In 2014, 32 institutions and 25,000 students took part in the survey. The survey is a response to growing institutional interest in student engagement, and aims to help HEIs understand and address their students' engagement with their studies. The majority of UKES is derived from the United States' National Survey of Student Engagement (NSSE) (Indiana University School of Education, 2016). The UKES questionnaire includes 50 items, 39 drawn from NSSE and 11 unique to UKES. The questions reflect four core scales, taken by all participating HEIs, and five optional scales, taken by 17 HEIs in 2014. The core scales address Higher Order Learning, Collaborative Learning, Academic Integration and Course Challenge. The optional modules address Reflective and Integrative Learning, Engagement with Research, Formulating and Exploring Questions, Skills Development and Time Spent on Activities (Buckley [HEA] 2014). The 2015 version, however, has been developed substantially. This report presents multilevel models for both the 2014 and 2015 editions.

Structure of the data

We have included some information on the structure and creation of scales in this report. The variables used in the models include experiences regarding the course, skills development, and a range of demographic variables. For more information we refer to the appendices and individual reports that have been published. For some data sets we've run some CFA to check the underlying structure(s). These are available in Appendix B (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Missing data

Before we continued with multilevel models we performed a missing value analysis on every dataset. The details of the analyses are in Appendix A (see the separate document *Student engagement and experience in UK universities: Technical appendix*). As data is not “missing completely at random” we are very restricted in the choice of missing data treatments. Ideally we would perform a so-called sensitivity analysis on data that are not missing at random. The idea of sensitivity analysis is that we try out a range of plausible “missing not at random” models, and then see how consistent the results are across the different models. If results are reasonably consistent, then we can be confident that, even if data are not missing at random, conclusions would not be compromised. This, however, would seriously influence the timescale of the work. We therefore went with the following strategy:

- Initial models were input into MLwin with list-wise deletion;
- we used single imputation in SPSS for all the scale items (dependent variables) for AMOS' confirmatory factor analyses;
- in MLwin we ran a one-off check for one of the final models.

Results

The following three chapters aim to summarise the results for three bigger entities: PRES, PTES and UKES. We have synthesised the individual datasets in the three chapters:

- one chapter on PRES with analyses from PRES 2013 and PRES 2015;
- one chapter on PTES with analyses from PTES 2014 and PTES 2015; and
- one chapter on UKES with analyses from the UKES 2014 and UKES 2015 core scales, and the UKES 2014 and UKES 2015 optional scales.

The structure of each chapter is roughly similar:

1. First we give an overview of the dataset involved (for specific details we sometimes refer to the corresponding HEA report). We tabulate the dependent and independent variables and indicate whether there were any differences between the 2013, 2014 or 2015 editions.
2. For all datasets, data preparation involved the same steps regarding missing data and CFA; we refer to the general section on this in the report.
3. We then report on the results from running three models which were created using the previously described multilevel approach. These are three-level models (**students** within **disciplines** within **universities**). Although multilevel modelling often results in numerous models through the inclusion and exclusion (when not significant predictors) of covariates, for clarity's sake our report only contains three models:
 - a. model 0: the null model;
 - b. model 1: a model with institutional characteristics included;
 - c. model 2: a model with both student and institutional characteristics included.The full tables report estimates with standard errors and model fit and are in Appendices D to K (see the separate document *Student engagement and experience in UK universities: Technical appendix*). Significant values at the $p < .05$ level are indicated in italics.
4. The models are conducted with several dependent variables, scales and "overarching" components that resulted from CFA.
5. The main body text presents a summary of the results.

For further technical appendices, see the separate document *Student engagement and experience in UK universities: Technical appendix*.

Postgraduate Research Experience Survey 2013 and 2015

Description of the dataset

The Postgraduate Research Experience Survey (PRES) 2013 took place in 122 higher education institutions in Spring 2013. 48,401 postgraduate researchers took part, forming 41.9% of eligible respondents. The results showed (Bennett and Turner [HEA] 2014) that **82% of students were satisfied** overall, with quality of supervision and research skills development rating particularly high. The PRES consists of several sections: an experience section comprising seven main question scales; a further section on the development opportunities experienced (including the opportunity to teach); and a final section on overall satisfaction and expected timeliness of completion. The questionnaire also asks about students' motivations and anticipated careers, and obtains information about their programme and demographic background.

The items included in the scales consist of Likert-style items, going from 1 (definitely disagree) to 5 (definitely agree). This implies that with higher numbers for scales, students agreed more that certain statements applied to them or their institution. For more information on the structure of the instruments we refer to the PRES reports. In 2015 the PRES was repeated, with 123 institutions taking part. There were 53,348 responses collected and the response rate was 41%.

Variables in the dataset

Dependent variables

We built several models with different dependent variables. Question 17a is an "overall satisfaction" rating. Although some literature suggests that one such item might be appropriate to consider as a single "best" indicator of students' overall satisfaction (Cheng and Marsh 2010; Marsh and Cheng 2008), we assumed it would be better to explore several dependent variables. One approach might be to use a simple average response to all PRES items, but this approach implicitly assumes that each of the specific PRES factors (or each PRES item) is equally important. Also, the use of this unweighted average further assumes that there are no additional aspects of satisfaction with educational experience beyond those which have been measured by the PRES.

In addition, as summarised under "data preparation" in the HEA report on the PRES, CFA resulted in a slightly different (combined) structure. The PRES has seven scales: Supervision (SV); Resources (RE); Research Culture (RC); Progress and Assessment (PA); Responsibilities (RP); Research Skills (RS); and Professional Development (PD). For more details on what they encompass we refer to the 2013 PRES report. The 2013 report states that factor analysis showed that there was an optimal five-factor solution with the four last scales combined in two scales. Based on the CFA in the report, two additional (combined) scales were constructed (PARP and RSPD). In total 11 dependent variables were included in the models.

TABLE 1 DESCRIPTIVES FOR PRES 2013 SCALES

	Supervision	Resources	Research Culture	Progress and Assessment	Responsibilities	Research Skills	Professional Development	Combined RS and PD	Combined PA and RP	Overall Satisfaction	Overall
N	47631	47351	47264	47630	47541	47512	47406	47635	47825	47623	47857
Mean	4.3	4.1	3.7	4.0	4.0	4.2	4.0	4.1	4.0	4.1	4.1
SD	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	1.0	0.6

Independent variables

The independent variables can be divided into **respondent characteristics** and **institutional characteristics**.

Respondent characteristics taken from PRES were:

- age, an ordinal variable in which ages are grouped, with 25 years old or younger as the reference category;
- gender, a categorical variable with male as the reference category;
- disability, a categorical variable with disabled (yes) as the reference category;
- country of origin, grouped, a categorical variable with UK including Channel Islands as the reference category;
- ethnic background, a categorical variable with white as the reference category; and
- student status (full- or part-time), a categorical variable with full-time as the reference category.

Institutional characteristics taken from the PRES survey were:

- type of university, a categorical variable with 1994 group as the reference category; and
- country, a categorical variable with England as the reference category.¹

These independent variables were selected as they were the **main potential predictors** available in the PRES datasets.

The models are available in Appendix D (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

¹ Note this is different from PTES because that dataset had a separate indicator for England, and PRES 2013 does not.

Differences between PRES 2013 and 2015

Most of the questions were the same for the PRES 2015 questionnaire, except:

- Q19b. Is your doctoral training programme provided through a Doctoral Training Centre, a Doctoral Training Partnership or a Centre for Doctoral Training?
- Q31. When you started your programme, did you consider yourself to be fluent in English?
- Q31a. To what extent do you agree or disagree that you have received appropriate support for your English language needs?

Columns with “other” non-quantitative data were removed, as well as columns with a high percentage of missing data (as per the general description of data treatment). There are some additional small differences with PRES 2013, mainly at ethnicity. PRES 2015 uses a more fine-grained classification. This does, however, also mean that some estimates are based on even smaller numbers. This has to be kept in mind while interpreting the results. These independent variables were selected as they were the main potential predictors available in the PRES datasets. As the dataset for PRES 2015 for the rest is similar to that of PRES 2013 we refer to that dataset for further details. Table 2 Descriptives for PRES 2015 scales provides descriptives of all the dependent variables for PRES 2015. The models are available in Appendix E (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

TABLE 2 DESCRIPTIVES FOR PRES 2015 SCALES

	Supervision	Resources	Research Culture	Progress and Assessment	Responsibilities	Research Skills	Professional Development	Combined RS and PD	Combined PA and RP	Overall Satisfaction	Overall
N	53161	52972	52878	53254	53260	52983	52842	53130	53297	53101	53319
Mean	4.4	4.1	3.8	4.1	4.1	4.3	4.1	4.2	4.1	4.1	4.1
SD	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	1.0	0.6

Conclusions PRES 2013 and 2015

Overall, as demonstrated in Table 3, the first key finding is that **the vast majority of the variance is explained at the individual level**, with only about 5% of variance remaining at discipline and HEI levels. In most cases discipline explains more variance than HEI. In table 3 red is used to highlight the level with the lowest variance for each variable, orange for the middle level of variance, and green the majority of variance.

TABLE 3 VARIANCE AT THE THREE LEVELS FOR THE 11 DEPENDENT VARIABLES

	Supervision	Resources	Research Culture	Progress and Assessment	Responsibilities	Research Skills	Professional Development	Combined RS and PD	Combined PA and RP	Overall Satisfaction	Overall
Level: HEI	0.5	2.6	1.6	1.7	1.0	0.5	0.5	0.6	1.5	0.7	1.0
Level: Discipline	1.1	8.6	4.5	2.3	1.6	1.0	1.4	1.2	2.0	1.7	2.3
Level: Individual	98.3	88.9	93.8	96.0	97.4	98.4	98.1	98.2	96.5	97.6	96.6

Within the table red is used to highlight the lowest variance for each variable, orange for the middle level of variance, and green the majority of variance. For PRES 2015, presented in Table 4, the results are remarkably consistent. **Again, the vast majority of the variance is explained at the individual level**, with only around 3% of variance remaining at discipline and HEI levels. In most cases discipline explains more variance than HEI.

TABLE 4 VARIANCE AT THE THREE LEVELS FOR THE 11 DEPENDENT VARIABLES

	Supervision	Resources	Research Culture	Progress and Assessment	Responsibilities	Research Skills	Professional Development	Combined RS and PD	Combined PA and RP	Overall Satisfaction	Overall
Level: HEI	0.5	2.5	1.9	1.6	1.0	0.5	0.7	0.6	1.5	1.1	1.0
Level: Discipline	0.8	9.8	4.2	2.1	1.9	1.0	1.2	1.0	2.0	1.5	2.3
Level: Individual	98.6	87.6	93.9	96.3	97.1	98.4	98.2	98.4	96.5	97.4	96.6

Within table 4 red is used to highlight the level with the lowest variance for each variable, orange for the middle level of variance, and green the majority of variance. To summarise the influence of predictors on the dependent variables, Table 5 shows the influence of the predictors on the dependent variables during 2013/2015 (see below the table and appendix 1 in this document for the table key). Within table 5 green indicates a significant positive predictor, whilst red indicates a significant negative predictor.

Table 5 shows significant predictors and their direction. On the whole PRES 2013 and PRES 2015 showed similar patterns:

- There was high overall satisfaction.
- By far the largest part of variance is explained at the individual level.
- The introduction of institutional factors in the models does not have much explanatory power for overall student satisfaction.
- Russell Group institutions score higher on Resources (RE) and Research Culture (RC).
- Universities Alliance and Guild HE institutions score higher on Professional Development (PD).
- In addition, Guild HE universities also score higher on Progress and Assessment (PA) and Responsibilities (RP).
- Location-wise, students in London-based institutions demonstrated lower satisfaction scores across the board in PRES 2015. Scottish universities had some lower scores in 2013 but not in 2015.
- Older students were more satisfied with Resources (RE), Progress and Assessment (PA) and Responsibilities (RP) than the "25 years and younger" reference group. They were less content with Supervision (SV), the Research Culture (RC) and Professional Development (PD).
- Females showed less satisfaction on most scales than males.
- When students are not disabled, they are more positive.
- Regarding ethnicity, British Indian, Chinese and black African students had a more positive experience than the reference group (white).
- When we look at country of origin, Middle Eastern, Asian and European students are more positive about their experience than UK students, in particular for Supervision and Responsibilities.
- Part-time students were less positive about their experience, except for Resources in the PRES 2015 edition.
- In cases where the option "prefer not to say" was available, the students who chose that option were relatively negative.

Table 5 shows the influence of the predictors on the dependent variables during 2013/2015 (see below the table and appendix 1 in this document for the table key). Within table 5 green indicates a significant positive predictor, whilst red indicates a significant negative predictor.

TABLE 5 PREDICTORS FOR SCALES IN PRES 2013 AND PRES 2015

		Supervision	Resources	Research Culture	Progress and Assessment	Responsibilities	Research Skills	Professional Development	Combined RS and PD	Combined PA and RP	Overall Satisfaction	Overall
HEI Level predictors												
Type	Million Plus	/	/-	/-	/	/	/	/	/	/	/-	/
	Russell	/	++	++	/	/	/	/	/	/	/+	/
	Universities Alliance	/	/	/	+/	/	+/	++	++	+/	/	/
	Small and Specialist	/-	/	+/	/	/	/	/	/	/	/	/
	Guild HE	/	/	/	++	++	/	++	++	++	/	+/
Location	Scottish	/-	/	/-	/-	/	/	/	/	/-	/-	/
	Welsh	/	/	/	/	/	/	/	/	/	/	/
	London	N/-	N/-	N/-	N/	N/-	N/-	N/-	N/-	N/-	N/-	N/-
Individual level predictors												
Age	26-30 years old	/-	/-	/-	++	/-	/	++	+/	/	/-	/-
	31-35 years old	/-	/-	/-	++	/-	/	/	/	/	/-	/-
	36-40 years old	/-	/	/-	++	/	/	/-	/	++	/-	/-
	41-45 years old	/-	/	/-	++	/	++	/-	/	++	/	/
	46-50 years old	/-	++	/-	++	+/	++	/-	/	++	/	/
	51-55 years old	/	++	/	++	++	++	/-	/	++	/+	/+
	56 years old or older	/	++	/-	++	++	++	/-	/	++	/+	++
	Prefer not to say	N/-	N/-	N/-	N/	N/	N/	N/-	N/-	N/	N/-	N/-
Gender	Gender: Female	/-	/-	/-	/-	/-	/-	/	/-	/-	/-	/-
	Gender: Prefer not to say	/-	/-	/-	/-	/-	/-	/-	/-	/-	/-	/-
	Gender: Other	/-	/-	/	/-	/-	/-	/	/-	/-	/-	/-
Disability	None	++	++	++	++	++	++	++	++	++	++	++

		Supervision	Resources	Research Culture	Progress and Assessment	Responsibilities	Research Skills	Professional Development	Combined RS and PD	Combined PA and RP	Overall satisfaction	Overall
Ethnicity	White or white British: Gypsy or Traveller	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/
	Black	+/	+/	+/	+/	+/	+/	+/	+/	/	/	+/
	Black or black British: Caribbean	N/	N/	N/-	N/	N/	N/	N/	N/	N/	N/	N/
	Black or black British: African	N/+	N/+	N/+	N/+	N/+	N/+	N/+	N/+	N/+	N/+	N/+
	Any other black background	N/+	N/+	N/+	N/+	N/+	N/	N/+	N/	N/+	N/	N/+
	Mixed background	/	/	/	/	/	-/	-/	-/	/	-/	/
	Mixed: White and black Caribbean	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/
	Mixed: White and black African	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/
	Mixed: White and Asian	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/	N/
	Mixed: Any other mixed background	N/	N/	N/	N/+	N/+	N/	N/	N/	N/+	N/	N/
	Chinese or Chinese British	+/	-/	+/	+/	+/	/	/	/	+/	/	+/
	Chinese	N/+	N/	N/+	N/+	N/+	N/	N/	N/	N/+	N/-	N/+
	Asian or Asian British – Indian, Pakistani or Bangladeshi	+/	+/	+/	+/	+/	+/	+/	+/	+/	/	+/
	Asian or Asian British: Indian	N/+	N/	N/	N/+	N/+	N/+	N/+	N/+	N/+	N/	N/+
	Asian or Asian British: Pakistani	N/	N/	N/	N/+	N/	N/	N/	N/	N/+	N/	N/
	Asian or Asian British: Bangladeshi	N/	N/	N/	N/+	N/+	N/	N/	N/	N/+	N/	N/
	Asian or Asian British – other Asian background	+/	-/	/	-/	/	-/	-/	-/	/	-/	-/
	Any other Asian background	N/	N/-	N/	N/-	N/	N/-	N/-	N/-	N/	N/-	N/-
	Arab	+/	/	/	/-	/	/-	/-	/-	/	/-	/-
	Prefer not to say	-/	-/	-/	/	-/	-/	-/	-/	-/	-/	-/
Other	+/-	-/	-/	/	/	/-	/-	/-	/	/-	/-	
Origin	Other European Union countries including Cyprus	+/+	+/+	/	+/+	+/+	/	-/	-/	+/+	+/+	+/+
	Other EEA countries	/	/	/	/	/	/	/	/	/	/	/
	Other Europe	+/+	/	/	+/+	+/+	/	-/	-/	+/+	/	+/+
	Africa	+/	+/	/	+/+	+/	+/	/-	/	+/	/	+/
	Asia	+/+	/+	+/+	+/+	+/+	/+	-/	/	+/+	+/+	+/+
	Australasia	/	-/	/	/	/	/-	/	/-	/	/	/
	Middle East	/+	/	/	/	/+	/	/	/	/+	/	/+
	North America	/+	-/	/	-/	/+	/	/	/	-/	/	/
	South America	/+	+/+	/	/	+/+	/	-/	-/	+/	+/+	/
	Other	-/	-/	-/	/-	/-	-/	-/	-/	/-	-/	-/
Status	Part-time	/	/+	-/	-/	-/	/	-/	/	-/	/	-/

N=not in survey, +=significant positive predictor, -=significant negative predictor

Postgraduate Taught Experience Survey 2014 and 2015

Description of the dataset

The Postgraduate Taught Experience Survey (PTES) is a national survey of PGT student satisfaction. 100 HEIs and almost 70,000 students participated in the 2015 survey. The instrument consists of 39 questions, designed to elicit views of students on their experiences regarding Teaching and Learning, Engagement, Assessment and Feedback, Dissertation or Major Project, Organisation and Management, Resources and Services, Skills Development and a range of socio-demographic variables, as well as motivations for choosing their course and views on information provided by their HEI. The profile of respondents is broadly in line with the national PGT population, and the surveys typically achieve a response rate of just under 30% (Soilemetzidis et al. [HEA] 2014). The items included in the scales consist of Likert-style items, ranging from 1 (definitely disagree) to 5 (definitely agree). For more information on the structure of the instruments we refer to the PTES reports. This report uses data from 2014 and 2015 PTES editions.

Variables in the dataset

Dependent variables

The dependent variables for the analysis of PTES were the seven scales for Teaching and Learning (TL), Engagement (EN), Assessment and Feedback (AF), Dissertation or Major Project (DMP), Organisation and Management (OM), Resources and Services (RSS) and Skills Development (SD), and the overall satisfaction scale (note that contrary to PRES this is the *sum* of the scale items, not the mean).

Independent variables

The independent variables can be divided into **respondent** characteristics and **institutional** characteristics.

Respondent characteristics taken from the PTES survey were:

- age, an ordinal variable in which ages are grouped, with 18-23 as the reference category;
- gender, a categorical variable with male as the reference category;
- disability, a categorical variable with disabled (yes) as the reference category;
- country of origin, grouped, a categorical variable with UK as the reference category;
- ethnic background, grouped, a categorical variable with non-BME as the reference category; and
- student status (full- or part-time), a categorical variable with full-time as the reference category.

Institutional characteristics in the PTES dataset were:

- type of university, a categorical variable with 1994 group as the reference category; and
- country, a categorical variable with Scotland as the reference category.

These independent variables were selected as they were the **main potential predictors** available in the PTES datasets.

The models are available in Appendix F (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Differences between PTES 2014 and 2015

The same variables were used for the 2015 scales as were used for the 2014 scales, with the exception of location, which had an additional field for "London" in 2015. The models are available in Appendix G (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Conclusions PTES 2014 and 2015

Overall, as demonstrated in Table 6, the first key finding is that **the vast majority of the variance is explained at the individual student level**, with only about 5% of variance remaining at discipline and HEI levels. In most cases discipline explains more variance than HEI.

The two institutional variables, type of university and country, are not generally very significant. Individual student characteristics matter more, explaining up to 97% of total variance. BME students and students without disabilities are more positive, as are most of the time part-time and male students, those from the older age groups, and those from Africa and Asia. In table 6 red is used to highlight the level with the lowest variance for each variable, orange for the middle level of variance, and green the majority of variance.

TABLE 6 VARIANCE AT THE THREE LEVELS FOR THE EIGHT DEPENDENT VARIABLES (PTES 2014)

	Teaching and Learning	Engagement	Assessment and Feedback	Dissertation or Major Project	Organisation and Management	Resources and Services	Skills Development	Overall Satisfaction
Level: HEI	1.5	1.4	2.4	0.9	1.8	2.7	1.3	2.0
Level: Discipline	3.7	3.1	5.7	2.2	4.2	1.8	2.0	3.3
Level: Individual	94.8	95.5	91.9	96.9	94.1	95.4	96.7	94.7

The findings from the 2015 PTES confirm those from 2014, in that again (see Table 7) the vast majority (over 90% on all scales) of variance is attributable to differences between individual students rather than their discipline or the HEI they attended. Discipline explains more variance than HEI, with the latter never explaining more than 3%. In table 7 red is used to highlight the level with the lowest variance for each variable, orange for the middle level of variance, and green the majority of variance.

TABLE 7 VARIANCE AT THE THREE LEVELS FOR THE EIGHT DEPENDENT VARIABLES (PTES 2015)

	Teaching and Learning	Engagement	Assessment and Feedback	Dissertation or Major Project	Organisation and Management	Resources and Services	Skills Development	Overall Satisfaction
Level: HEI	1.0	0.8	2.6	0.9	1.3	2.2	1.0	1.6
Level: Discipline	5.2	3.9	6.2	3.1	5.5	2.4	2.6	4.6

Level: Individual	93.8	95.3	91.2	96.0	93.2	95.3	96.4	93.8
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A difference from 2014 was that the two institutional variables, type of university and country, did explain a meaningful proportion of HEI level variance. In particular, students from Small and Specialist universities and those based in London tended to express lower levels of satisfaction. At the individual student level, BME students and students without disabilities are more positive, as are generally part-time and male students, those from the older age groups, and those from Africa and Asia. These findings confirm those from 2014. To summarise the influence of predictors on the dependent variables in more detail, Table 8 shows significant predictors and their direction. On the whole PTES 2013 and PTES 2015 showed similar patterns. Within table 8 green indicates a positive significant predictor, whilst red indicates a negative significant predictor.

TABLE 8 PREDICTORS FOR SCALES IN PTES 2014 AND PTES 2015

		Teaching and Learning	Engagement	Assessment and Feedback	Dissertation or major Project	Organisation and Management	Resources and Services	Skills Development	Overall
HEI level predictors									
Type	Million Plus	-/	/	/	/	/	/	/	/
	Russell	/	/	-/	/	/	+/	/	/
	Universities Alliance	/	/	+/	/	/	+/	/	/
	Small and Specialist	-/	/	-/	-/	-/	-/	/	-/
	Guild HE	/	/	+/	/	/	/	/	/
Location	English (reference category in PTES 2015)	/N	+/N	/N	/N	+/N	/N	/N	/N
	Welsh	/	/	/	/	/	-/	/	/
	Scottish (reference category in PTES 2013)	N/	N/	N-/	N/	N-/	N/	N/	N/
	London	-/	/	-/	/	/	-/	-/	-/
Individual level predictors									
Age	26-30 years old	-/	/	/	-/-	-/	-/	-/-	-/
	31-35 years old	/+	/	+/	/	/	/	-/	/+
	36-40 years old	+/+	/+	+/+	+/	/	-/	/	/+
	41-45 years old	+/+	+/+	+/+	+/+	/+	/	/	/+
	46-50 years old	+/+	+/+	+/	+/+	/+	-/	/	+/+
	51-55 years old	+/+	+/+	+/	+/+	/	-/	-/	+/+
	56 years old or older	+/+	+/+	+/+	+/+	+/+	-/	/	+/+
	Prefer not to say	/	-/	/	-/	-/	/	-/	-/
Gender	Female	/	-/	/+	-/-	-/-	-/-	-/-	-/-
	Prefer not to say	-/	-/	-/	-/	-/	-/	-/	-/
	Other	/	-/	/	/	-/	-/	-/	-/
Dis	No	+/+	+/+	+/+	+/+	+/+	+/	+/+	+/+

	Prefer not to say	/-	/-	/-	/-	/-	/	/-	/-
Ethnicity	BME	/+	/+	+/+	+/+	+/+	+/+	+/+	+/+
	Other	/-	-/-	/-	/-	+/	/	+/-	/-
		Teaching and Learning	Engagement	Assessment and Feedback	Dissertation or major Project	Organisation and Management	Resources and Services	Skills Development	Overall
Origin	Other European Union countries including Cyprus	-/-	-/-	-/-	/-	+/+	/+	-/-	-/-
	Other EEA countries	-/	-/	-/	/	/	/	-/	-/
	Other Europe	/	-/-	/-	/	+/+	+/+	/	/
	Africa	+/+	+/+	+/+	+/+	+/+	+/+	+/+	+/+
	Asia	+/+	/	+/+	+/+	/+	+/	/	+/+
	Australasia	/	/-	-/-	-/-	/-	-/-	/-	/-
	Middle East	-/-	-/-	-/-	-/-	/+	/	/+	-/
	North America	-/-	/-	-/-	-/-	/-	-/-	-/-	-/-
South America	-/-	-/-	-/-	/	/	/+	/	-/	
Status	Part-time	+/+	+/	+/+	/+	+/+	-/	/+	+/+

N=not in survey, +=significant positive predictor, -=significant negative predictor. Green indicates a significant positive predictor, whilst red indicates a significant negative predictor.

United Kingdom Engagement Survey 2014 and 2015

The United Kingdom Engagement Survey (UKES) is a newly developed instrument first piloted in 2013. The survey is a response to growing institutional interest in student engagement and aims to help HEIs understand and address their students' engagement with their studies. The majority of UKES is derived from the National Survey of Student Engagement (NSSE), developed by Indiana University, which is widely used in North America. The UKES questionnaire includes 50 items, 39 drawn from NSSE and 11 unique to UKES. The questions reflect four core scales, taken by all participating HEIs, and five optional scales, taken by 17 HEIs in 2014. The core scales address Higher Order Learning, Collaborative Learning, Academic Integration and Course Challenge. The optional modules address Reflective and Integrative Learning, Engagement with Research, Formulating and Exploring Questions, Skills Development and Time Spent on Activities (Buckley [HEA] 2014).

In 2014, 25,533 responses were gathered from students attending the 32 participating institutions, with an overall response rate of approximately 13% (down from 17% in 2013). The demographic characteristics of respondents are similar to those in 2013: 62% of the respondents were female and 38% male; 92% were full-time and 8% were part-time; 85% were from the UK, 7% from the rest of the EU, and 8% from outside the EU; 95% were in undergraduate education and 5% were taught postgraduates.

Seventeen of the 2014 survey items were compulsory for all participating institutions; these were largely the items used in 2013. There were 36 further items that institutions were free to use if they wished. Take-up of these extra items was varied. Six institutions used only the compulsory items and 11 institutions used all 50; the mean item take-up was 37.

In 2015, 24,387 students across 24 institutions took part in UKES, with an increased overall response rate from 13% in 2014 to 17% in 2015. Because some scales and items have changed, the results for UKES 2014 and 2015 are more difficult to compare than the stable PRES and PTES. For this reason we present the results for UKES 2014 and 2015 separately and in a different presentation style than PRES and PTES; we distil some general conclusions at the end.

Structure of the data in UKES 2014

The UKES 2014 edition contained the following core scales (16/17 items):²

- Higher Order Learning (HOL, 4 items + 1),³
- Course Challenge (CC, 2 items);
- Collaborative Learning (CL, 4 items); and
- Academic Integration (AI, 6 items).

Furthermore there were the following optional scales (33 items):

- Integrative and Reflective Learning (6 items)
(connecting ideas with prior experience and social issues, combining ideas from different modules, and reflecting on one's own and other peoples' views);

² For more information see the original UKES 2014 report.

³ One question on memorising course material was not included in the analysis.

- Time Spent (7 items)
(asking students to estimate the number of hours spent on a range of activities was also added, drawn from NSSE); and
- Skills Development 1 (9 items) and Skills Development 2 (3 items)
(items about particular skills a student might develop).

Outcomes measures were added to the survey, in the form of 12 items on the extent to which students' experiences had contributed to the development of their knowledge and skills. Ten of those items were drawn from NSSE, with two (on becoming an independent learner, and being innovative and creative) being developed specifically for UKES:

- Engagement with Research (4 items)
(four questions focus on research-led learning and teaching, understood as incorporating the findings and methods of research into the curricula [Griffiths 2004]); and
- Formulating and Exploring Questions (4 items)
(closely based on Levy and Petrulis' [2012] framework, the four questions ask students about the extent to which the course emphasises formulating their own lines of inquiry, exploring those self-formulated lines of enquiry, exploring lines of enquiry formulated by staff, and actively participating in the creation of knowledge).

Variables in UKES 2014

For UKES the dataset was split into: a core set of scales of which there were four – Higher Order Learning (HOL), Course Challenge (CC), Collaborative Learning (CL), and Academic Integration (AI); and optional scales of which there were six – Reflective and Integrative Learning (RIL), Time Spent (TS), Skills Development 1 (SD1), Skills Development 2 (SD2), Engagement with Research (ER) and Formulating and Exploring Questions (FEQ). One question on memorising course material was not included in the analyses.

Variables in the core dataset

The dependent variables for the analysis of UKES were four scales: Higher Order Learning (HOL), Course Challenge (CC), Collaborative Learning (CL), and Academic Integration (AI) and the overall engagement scale. Table 9 presents the descriptives for those scales

TABLE 9 DESCRIPTIVES FOR UKES 2014 CORE SCALES

	Higher Order Learning	Course Challenge	Collaborative Learning	Academic Integration	Overall Engagement
N	23650	21006	23413	22436	25430
Mean	3.0	3.2	2.7	2.1	2.6
SD	0.7	0.6	0.7	0.6	0.5

The independent variables can be divided into **respondent** characteristics and **institutional** characteristics. **Respondent** characteristics taken from UKES were:

- age, an ordinal variable in which ages are grouped, with 17 and under as the reference category;

- gender, a categorical variable with female as the reference category;
- distance learner, a categorical variable with yes as the reference category;
- level, a categorical variable with undergraduate taught (UGT) as reference category; and
- student status (full- or part-time), a categorical variable with full-time as the reference category.

Institutional characteristics in the UKES dataset were:

- type of university, a categorical variable with Pre-1992 as the reference category; and
- size, a categorical variable with Small as the reference category.

These independent variables were selected as they were the **main potential predictors** available in the UKES datasets.

The models are available in Appendix H (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Variables in the optional dataset

The dependent variables for the analysis of UKES were the five scales for Reflective and Integrative Learning, Engagement with Research, Formulating and Exploring Questions, Skills Development and Time Spent on Activities, and the overall engagement scale. The independent variables can be divided into respondent characteristics and institutional characteristics, and are the same as those for the core scales. The models are available in Appendix I (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Conclusions for UKES 2014

Conclusions for the core dataset

These analyses of the core UKES scales show that **the majority of explained variance (see Table 10) is at the individual student level, between 76% and 96%. The HEI level tends to account for the least variance, except for Collaborative Learning.** At the discipline level variance ranges from 3.0% (Course Challenge) to 6.4% (Collaborative Learning).

TABLE 10 VARIANCE AT THE THREE LEVELS FOR THE FIVE DEPENDENT VARIABLES

	Higher Order Learning	Course Challenge	Collaborative Learning	Academic Integration	Overall
Level: HEI	1.9	1.8	17.4	2.9	7.4
Level: Discipline	5.9	3.0	6.4	5.3	3.9
Level: Individual	92.4	95.2	76.2	91.8	88.7

The explanatory power of HEI level variables was mixed. As demonstrated in Table 11, generally it can be concluded that Post-1992 institutions seem to have a positive contribution towards Collaborative Learning and Academic Integration with regard to engagement. In terms of size, there was little variance, except for Higher Order Learning, where larger HEIs contributed positively. At the individual student level generally, males demonstrated less engagement with HOL and CC and more for AI. Age bands 18-25 and 66+

demonstrated lower engagement but it must be said that numbers for the latter group are low. Not being involved in distance learning was a positive predictor of student engagement, as was level of course, with PGT positively contributing to HOL and AI. Finally, part-time status was a negative predictor for student engagement overall and CC, CL and AI in particular. We can see that the overall indicator of engagement reflects the composition of the individual scales, which is to be expected as the overall score combines all the questionnaire items. For gender this means that some negative predictors are “cancelled out” by a positive predictor.

TABLE 11 PREDICTORS FOR SCALES IN UKES 2014 (CORE SCALES ONLY)

		Higher Order Learning	Course Challenge	Collaborative Learning	Academic Integration	Overall
HEI level predictors	HEI Size: Medium					
	HEI Size: Large	+				
	HEI Size: Very large					
	HEI Type: Post-92			+	+	+
Individual level predictors	Gender: Male	-	-		+	
	Age: 18-25				-	-
	Age: 26-35					
	Age: 36-45					
	Age: 46-55					
	Age: 56-65			-		
	Age: 66 and over			-	-	-
	Distance learner: No		+	+	+	+
	Distance learner: Not used	-	+	+	+	+
	Status: Part-time		-	-	-	-
	Level: PGT	+			+	+
	Level: PGR					

Conclusions for the optional dataset

These analyses of the optional 2014 UKES scales show that the majority of explained variance, between 83 and 95%, is at the individual level. The HEI level tends to account for the least variance, never explaining more than 3%. The picture for discipline level variance is more diverse, ranging from 3% (Time Spent on Activities) to 13% (Skills Development).

At HEI level, the most consistently significant variable was type of HEI, with Post-92 students expressing greater engagement with Formulating and Exploring Questions, Engagement with Research, Reflective and Integrative Learning and Overall Engagement. Being in a very large university was negatively related to engagement with Reflective and Integrative Learning and Time Spent on Activities. The individual level variables were not generally significant and explained little variance. The only variable to emerge with any consistency was level of study, with PGTs expressing higher levels of engagement than UGs.

Differences between UKES 2014 and UKES 2015

As well as changes to the scales, there were also some changes to variables and additional variables included in the dataset. Thus, HEI size was no longer included, but location was. Similarly, there were some considerable changes in the UKES questionnaire. A detailed comparison is included in Appendix C (see the separate document *Student engagement and experience in UK universities: Technical appendix*). The changes were:

- some minor changes in wording of the HOL, CL and AI scales and changes to the names of the scales;
- the items for Course Challenge were reworded;
- the Reflective and Integrative Learning scale was reworded and became a core scale in 2015 called Reflecting and Connecting;
- the 2014 scales for Engagement in Research and Formulating and Exploring Questions became one scale, Engagement;
- the two Skills Development scales were integrated in one scale;
- Staff-Student Partnership scale is a new scale; and
- the wording of Time Spent was changed.

Structure of the data in UKES 2015

The UKES 2015 edition contained the following core scales (22 items):

- Critical Thinking (CT, 4 items);
- Learning with Others (LO, 4 items);
- Interacting with Staff (IS, 6 items);
- Reflecting and Connecting (RC, 6 items); and
- Course Challenge (CC, 2 items).

Furthermore there were the following optional scales (26 items):

- Engagement with Research (ER, 4 items);
- Staff-Student Partnership (new scale) (SP, 3 items);
- Skills Development (SD, 12 items); and
- Time Spent on Activities (TS, 7 items).

Variables in UKES 2015

Apart from the scales mentioned in the previous section, we also calculated an overall engagement scale (see Appendix B in the separate document *Student engagement and experience in UK universities: Technical appendix*).

Variables in the core dataset

The dependent variables for the analysis of the core UKES scales were the five scales for Critical Thinking, Learning with Others, Interacting with Staff, Reflecting and Connecting, and Course Challenge as well as the overall engagement scale (see the approach for UKES 2014). Descriptives are tabulated in Table 12 Descriptives for UKES 2015 core scales. Although not all scales could be compared because of changes in the questionnaire, it is noticeable that most topics in scales seem to have mean scores similar to those for the UKES 2014 edition.

TABLE 12 DESCRIPTIVES FOR UKES 2015 CORE SCALES

	Critical Thinking	Learning with Others	Interacting with Staff	Reflecting and Connecting	Course Challenge	Overall
N	24367	24354	24370	24361	24373	24377
Mean	3.1	2.7	2.1	2.8	3.5	2.7
SD	0.7	0.7	0.6	0.6	0.6	0.5

The independent variables can be divided into **respondent** characteristics and **institutional** characteristics. **Respondent** characteristics taken from UKES were:

- gender, a categorical variable with male as the reference category;
- age, an ordinal variable in which ages are grouped, with 18 and younger as the reference category;
- ethnicity, a categorical variable with white as the reference category;
- mode of delivery, a categorical variable with “primarily a face-to-face learner” as the reference category;
- student status (full- or part-time), a categorical variable with full time as the reference category;
- origin, a categorical variable with UK (including the Channel Islands) as the reference category; and
- disability, a categorical variable with disabled as the reference category.

Institutional characteristics in the UKES 2015 dataset were:

- type of university, a categorical variable with Pre-1992 as the reference category; and
- location, a categorical variable with England as the reference category.

These independent variables were selected as they were the **main potential predictors** available in the UKES datasets.

The models are available in Appendix J (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Variables in the optional dataset

As well as changes to the scales, there were also some changes to variables included in the dataset. For example, HEI size was no longer included, but location was. Similarly, there were some changes to the individual level variables (see below). The dependent variables for the analysis of UKES were the four scales for Engagement with Research, Staff–Student Partnership (new scale), Skills Development and Time Spent on

Activities and the overall engagement scale (see above). The independent variables can be divided into respondent characteristics and institutional characteristics, and are the same as those for the core scales. The models are available in Appendix K (see the separate document *Student engagement and experience in UK universities: Technical appendix*).

Conclusions for UKES 2015

Conclusions for the core dataset

As summarised in Table 13, these analyses of the core UKES scales show that **the vast majority of explained variance, more than 90%, is at the individual level. The HEI level tends to account for almost no variance, never explaining more than 1.9%**. The discipline level explains between 2.7 and 7.3% of variance.

TABLE 13 VARIANCE AT THE THREE LEVELS FOR THE SIX DEPENDENT VARIABLES/SCALES

	Critical Thinking	Learning with Others	Interacting with Staff	Reflecting and Connecting	Course Challenge	Overall
Level: HEI	0.0	1.1	1.9	0.0	0.3	0.5
Level: Discipline	4.4	7.1	4.8	7.3	2.7	5.5
Level: Individual	95.6	91.8	93.3	92.7	97.0	94.0

In table 13 red is used to highlight the level with the lowest variance for each variable, orange for the middle level of variance, and green the majority of variance. The explanatory power of HEI level variables on variance between students' experiences and engagement within different HEIs was mixed.

As demonstrated in

Table 14, generally it can be concluded that Post-1992 institutions seem to have a positive contribution towards Learning with Others (LO) and Interacting with Staff (IS) with regard to engagement. However, they scored lower for Course Challenge. Scottish institutions also scored higher than the reference category (English institutions) for Learning with Others and Course Challenge. At the individual level generally, females demonstrated less engagement with most of the scales except Course Challenge. Older age groups answered most scales higher than the reference group (18 and younger) except for Learning with Others. This corresponds with the results for the similar Collaborative Learning scale in the UKES 2014 edition. Generally, distance learners and part-time students scored lower as predictors for engagement, both overall and for separate scales. With regard to country of origin, African and Asian students' indicators serve as positive predictors for student engagement. Finally, not having a disability and being a black and minority ethnic (BME) student are positive predictors for engagement. We can see that the overall indicator of engagement reflects the composition of the individual scales, which is to be expected as the overall score combines all the

questionnaire items. For gender this means that some negative predictors are “cancelled out” by a positive predictor.

TABLE 14 PREDICTORS FOR SCALES IN UKES 2015 (CORE SCALES ONLY)

		Critical Thinking	Learning with Others	Interacting with Staff	Reflecting and Connecting	Course Challenge	Overall
HEI level predictors	Location: Welsh	-				-	
	Location: London						
	Location: Scottish		+			+	+
	Type: Post-92 Group		+	+		-	+
Individual level predictors	Gender: Female	-		-	-	+	-
	Gender: Prefer not to say	-	-	-	-	-	-
	Gender: Other						
	Age: 19-21 years old			+	+		
Individual level predictors	Age: 22-25 years old	+	-	+	+		+
	Age: 26-30 years old	+	-	+	+	+	+
	Age: 31-35 years old	+	-	+	+	+	+
	Age: 36-40 years old	+	-	+	+	+	+
	Age: 41-45 years old	+	-		+	+	
	Age: 46-50 years old	+	-	+	+	+	+
	Age: 51-55 years old	+	-			+	
	Age: 56 years old or over		-			+	
	Age: Prefer not to say						
	Ethnicity: BME	+	+	+	+		+
	Ethnicity: Other			+			
	Distance learner	-	-	-		-	-
	Part-time learner	-	-	-			-
	Origin: Other EU incl. Cyprus		-		+	-	
Origin: Other EEA countries		-	-				

Origin: Other Europe							
Origin: Africa	+			+	+	+	
Origin: Asia	+		+		-	+	
Origin: Australasia							
Origin: North America							
Origin: South America		-					
Disability: No	+	+			+	+	
Disability: Prefer not to say	-			-	-	-	

Conclusions for the optional dataset

These analyses of the optional 2015 UKES scales show that the vast majority of explained variance, between 91 and 75%, is at the individual level. The HEI level tends to account for the least variance, never explaining more than 2.5%. The discipline level explains between 3 and 7% of variance. The HEI level variables were mostly insignificant. Gender, BME, distance learner status, and in some cases age and part-time status, were significant, but only explained a limited amount of variance.

Overall conclusions

This report set out to:

1. develop multilevel models for each of the three HEA surveys;
2. determine what proportion of the variance in experience and engagement is explained by student and institutional characteristics;
3. generate coefficients/estimates for important student and institutional characteristics, hence exploring the impact of student and institutional variables on the experiences and engagement of PGR, PGT and UG students;
4. formulate the implications of these findings for sector and institutional priorities; and
5. determine whether the three surveys can reliably distinguish between institutions and between disciplines in relation to their impact upon student experience and engagement.

The first aim was reached by creating multilevel models for several dependent variables. Appendices D to K provide several models for the three surveys (see the separate document *Student engagement and experience in UK universities: Technical appendix*). The multilevel models show, on the whole, that **only a small percentage of variance in all three of the surveys can be explained at both discipline and institutional level**. The percentage of variance at individual level is between 80 and the high 90s. Even scales that showed less variance in previous survey editions, for example the Collaborative Learning scale in UKES 2014, had a higher variance for a similar scale Learning with Others in UKES 2015. Practically this means that there is substantial lack of agreement among students within each university in terms of their satisfaction with their overall educational experience. In general, the variance at the discipline level is slightly greater than at institutional level. Having reached the second aim regarding variance at different levels we can only address the fifth aim: with the bulk of the variance at the individual student level it is hard to reliably distinguish

between institutions and disciplines. When it comes to particular coefficients for all surveys, certain coefficients stand out:

- Being disabled in general has a significant impact on student experience and student engagement.
- Gender and age show different patterns for different scales.
- On the whole, black and minority ethnic students have a positive student experience and student engagement.
- Where we could include “distance learning” as a variable, for example in the UKES data set, it was a negative predictor for engagement. It could be worthwhile to study in more detail why this is the case and think about ways in which distance learning students could be engaged.
- Part-time students more often have a negative perception towards student experience for PRES and UKES’ engagement, but positive for PTES than the reference category (full-time students).
- For countries of origin, African and Asian students are more positive about student experience and student engagement across the board than the reference category (UK students). Only the PTES Australasian and North American had a more negative experience. EU students also were more negative for PTES but more positive for PRES.
- While there are some significant predictors at HEI level, with organisational characteristics explaining variance at this level, these represented a low level of total variance so it is highly doubtful these differences are meaningful.

Given the low variance at the institutional level and the significant predictors for all three surveys it seems pertinent to not aim for a university-wide approach for student experience and student engagement. Rather, individual factors could be addressed by every institution individually. Institutional policies could be aimed at improving experiences and engagement for different gender and age groups, distance learning, disabled students and students from Australasia and North America.

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Appendix 1: Key

Key to the tables	
/	2013/2015
N	Not in the survey
+	Significant positive predictor
-	Significant negative predictor

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