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What Features of Assessments Do Higher Education Students Find Most Engaging?

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Abstract

Assessment design offers a critical lever for enhancing higher education students' engagement. To understand what students find most interesting/engaging, we surveyed students (N=668) across arts/humanities, social sciences, and sciences. Students described their most engaging/interesting assessment and then rated three assessment design features, nine emotions, and two perceived learning outcomes associated with it. Students described various assessment types. Few systematic relationships existed between types and features, suggesting that a range of typical assignments can be adapted to include effective features. On regression analysis, the features of authentic assessment and support predicted positive emotions while lack of support predicted negative emotions. Authentic assessment and support also predicted students' perceived achievement on the assessment and boost to self-confidence. Implications for practice are discussed.

Keywords: higher education, authentic assessment, emotions, interest, engagement

Background and Objectives

Higher education (HE) faculty often struggle to engage contemporary students whose backgrounds and situations may differ from their own. To engage today's students, we need to understand what they find most interesting and use that understanding to improve instruction, particularly assessment design (Etten, Presley, McInerney, & Liem, 2008; Sambell & McDowell, 1998). Unlike other course activities, assessments are mandatory. They also structure many hours of students' independent effort and influence preparatory classroom activities, making them a critical lever for enhancing student engagement.

Understanding what features of assessments (assignments) are most engaging and interesting to contemporary students has been under-researched, in part because most HE assessment research has been conducted on a course-level, examining students' reactions to pre-specified assessment activities (Pitt & Quinlan, 2022). Thus, with rare exceptions (e.g. Kaider et al, 2017), the literature tends to be fragmented by type of assessment (e.g. simulations, problem-based learning, blogs). Existing studies are also faculty-led, with researchers often seeking students' views or responses to a focal assessment, sometimes in comparison to more traditional coursework assessments (Pitt & Quinlan, 2022).

This student-led project aimed to capture student perspectives about assessments across whole programs to inform assessment strategy across fields. That is, rather than researching a particular type of assessment or reactions to an innovative assessment within a given course, this project sought students' reflections across their program to describe the most interesting, engaging assessment they had experienced. We aimed to identify assessment design features associated with emotional engagement and positive self-perceived learning outcomes.

Conceptual Framework and Hypotheses

Figure 1 summarizes our conceptual framework, outlining expected relationships between three assessment design features, nine emotions, and two self-perceived learning outcomes. To construct it, we integrated findings from HE assessment literature with research on emotions and interest, which often remain separate.

Existing assessment literature, though of variable quality, suggests students find authentic assessments more engaging and interesting than traditional, decontextualized exams and assignments (Sokhanvar et al, 2021; Pitt & Quinlan, 2022). Villarroel and colleagues (2018) systematically reviewed core concepts across 112 papers to propose that authentic assessments are defined by: a) realism; b) cognitive challenge such as problem-solving and other higher order, transferable skills; and c) the development of evaluative judgment, the ability to judge the quality of their own work. We used Villarroel et al's (2018) dimensions to operationalize a new Authentic Assessment Scale. Though some researchers consider collaboration a part of authentic assessment, Villarroel et al (2018) did not include it as a defining feature. We measured collaboration as a separate feature, expecting it may be associated with emotional engagement and positive self-perceived outcomes. In the face of challenging, new assessment tasks, students also need support, so we added that as a key feature. Interest theory (Renninger & Hidi, 2022) and research on broader instructional design features (Quinlan, 2019) suggest that challenge, realism, and support promote students' interest.

To gain a better understanding of what students find most engaging, the HE assessment field needs more robust conceptualisation and measures of engagement (Pitt & Quinlan, 2022). While engagement is often considered to involve behavioral, cognitive, and emotional engagement (Fredriks et al, 2004), we centered emotional engagement. Emotions matter in learning and assessment in HE but have been often overlooked and under-theorized (Quinlan, 2016). To operationalize emotional engagement, we focused on activating epistemically-related emotions using a validated scale (Pekrun et al, 2017). This scale includes positive emotions (e.g. enjoyment, interested) that we expected would be associated with the three assessment design features above. We also included negative activating emotions (e.g. anxious, frustrating) because assessment – particularly challenging new forms - tends to generate anxiety (von der Embse et al, 2018). Support should reduce anxiety.

Research on interest has shown that positive emotions are associated with a variety of positive learning behaviors and higher achievement (Jansen, Lüdtke, & Schroeders 2016; Renninger & Hidi, 2022; Sansone et al., 2019). Likewise, positive emotions generally lead to higher achievement on complex academic tasks, which, in turn, fuel more positive emotions in a virtuous circle (Pekrun et al 2023). Thus, we expected a correlation between positive emotions and students' self-reported learning outcomes, though directionality could not be inferred through our design. Finally, we tested whether the design features predicted emotional engagement and students' self-reported achievement and self-confidence gain.

Research Questions

RQ1. How did students describe their most engaging, interesting assessment?

RQ2. What were students' emotional experiences of this engaging assessment?

RQ3. What assessment design features (authentic assessment, collaboration, support) predicted a) emotional engagement and b) students' perceived learning outcomes (academic achievement and self-confidence)?

Methods

Participants

Participants were 668 students (438 Female: 191 Male) across first year through master's level, representing a range of fields including arts/humanities (n=112), social sciences (n=443), and sciences (n=113) studying at an English university in the middle of UK league tables. Participants responded to a 10 minute survey.

Measures

Most Engaging Assessment. Part 1 of the survey asked students to "Briefly describe the most interesting, engaging assessment you have done here at the University." The dataset totalled 16,676 words, with an average of 25 words per response.

Assessment Features. Participants rated three features: authentic assessment, based on Villaroel et al's (2018) dimensions (9 items; α=. 923), collaboration (3 items; α= .953) and support (3 items, α= .818) (Table 1) on the extent to which each characterized the assessments they described in Part 1 (1=strongly disagree, 5=strongly agree).

Emotions. We measured activating emotions from Pekrun et al's (2017) short version Epistemically-Related Emotion Scales (EES), plus "interested" and "excited" drawn from their long form; students rated the strength of feeling for one item for each of: curious, interested, anxious, enjoyment, surprised, frustrated, excited, puzzled, confused on a 5 point Likert scale (1=not at all; 5=very strong). On EFA (Table 2), they factored into positive (5 items; α= .825) and negative emotions (4 items; α= .799), though Pekrun et al (2017) emphasize that each is distinct. We analysed them as groups and individually.

Self-perceived learning outcomes. Two Likert scales focused on students' achievement (3 items; α= .834) on the assessment and its impact on self-confidence (3 items; α=.916) (Table 3).

Demographics: Students provided gender, stage of study (1st-5th year of HE), and program, which we grouped into 3 broad fields.

Results

RQ1

Students described a range of assessment types (Table 4, preliminary analysis). Choice, real world application, collaboration, novelty, and self-reflection were the most frequently cited reasons offered for why the described assessment was engaging.

Group work was significantly correlated with collaboration as a feature while written assignments were negatively correlated with collaboration. Otherwise, preliminary analysis showed no systematic relationships between assessment type and assessment features, suggesting that authenticity and support can be built into various types of assessments. Students described, for example, writing policy briefs or preparing presentations for real audiences. These results gave us confidence in analysing all assessment types together.

Multiple choice questions were negatively associated with interested, enjoyment and excited (p<.001). Presentations were negatively associated with puzzled and confused. Written assignments were positively correlated with curious (p<.001). There were no

correlations between assessment type and the two self-perceived outcomes (academic achievement and self confidence) that met the p<.001 significance level.

RQ2

Across all fields, students rated the positive emotions of interested, curious, enjoyment and excited strongly. They reported moderate levels of anxiety and surprise and low levels of puzzled, frustrated and confused (Table 5). Arts and humanities students rated interest, enjoyment, and excitement significantly higher than social sciences and STEM students, while rating puzzled and confused significantly lower than STEM students. In general, more advanced students reported authentic assessments and higher interest. Thus, we include stage of study and field as control variables in our regression analyses.

RQ3

Bivariate correlation analyses using p<.001 (Table 6) showed the anticipated correlations among positive emotions and among negative emotions. Authentic assessment and support were positively correlated with positive emotions. All three assessment features were positively correlated with both outcomes. Support was negatively associated with frustrated, puzzled and confused. In field-specific analyses, these patterns were robust across each of the fields.

On regression analysis, when controlling for stage of study and field, authentic assessment and support predicted positive emotions (Table 7), achievement and self-confidence (Table 8). Collaboration was weakly related to self-confidence, but none of the other variables. Lack of support predicted negative emotions. Regression analyses for each individual emotion showed that most individual emotions fit these general patterns.

Discussion

Overall, students reported that authentic assessments – those with connections to the real world that are cognitively stimulating and promote evaluative judgment – elicited positive emotions of curiosity, interest, enjoyment, and excitement. Authentic assessments were also associated with students' self-perceived academic achievement and growth in self-confidence. Authentic assessment was not systematically associated with negative emotions, including anxiety, frustration, or confusion.

Students still reported moderate levels of anxiety even on these self-selected most interesting, engaging assessments, suggesting the ubiquity of anxiety in relation to assessments. Feeling supported was vital to positive emotions; its absence was associated with negative emotions. Collaboration was generally not associated with emotional engagement or outcomes.

It is vital that we hear students' voices in the design of assessments, as well as other aspects of their educational experience. This study provides a model for how other universities might gather widespread input from students about the kinds of assessments they value. While we have presented a high-level overview of themes across subjects, this project yielded reports tailored to each academic division, enriching local translation to practice enhancement.

Significance and Directions for Future Research

This study makes an important methodological contribution by operationalising authentic assessment, as defined by a systematic review (Villarroel et al., 2018). Creating a standard set of scales for characterising students' perceptions of assessment tasks will support further research on assessment design and its impacts. This study also makes a unique and important contribution by analysing the impacts of authentic assessment and related assessment design features on students across disparate subject areas, from a student perspective, and with a program-level view.

Practically speaking, these findings suggest that faculty could improve students' positive emotional engagement by adding elements of authentic assessment alongside support. Faculty are often concerned that the greater complexity associated with authentic assessments may induce greater anxiety or other negative emotions. These data refute such claims. The qualitative data also suggest that authentic assessment features can be achieved in a variety of typical assessment types. That is, authentic assessment can be implemented through small refinements, such as contextualising tasks in scenarios or asking students to imagine authentic audiences, rather than wholesale redesign or use of new kinds of assessments (Villarroel et al., 2019). Doing so has the potential to significantly enhance students' educational experiences.

The data does show that, even on these highly engaging and interesting assessments, students still tended to report moderate anxiety, consistent with existing research on test anxiety (von der Embse et al., 2018). Faculty need to attend to the potential negative effects of different assessment designs and ensure that, no matter the type of assessment, students feel supported and reassured. Knowing that support is associated with lower negative emotions allows faculty to focus on how they can build the necessary support into assessment design.

Theoretically, it is likely that authentic assessment promotes interest (and other related positive emotions) through the mechanisms of challenge and realism that have already been identified as promoting interest in HE (Quinlan, 2019). Nonetheless, preliminary qualitative analysis of students' descriptions suggest that choice/autonomy and novelty may also be important mechanisms. It is also possible that good teachers are most likely to design and support students through authentic assessments. Thus, it will be important to separate the role of the teacher from the assessment design, given that positive teacher-student relationships are strong factors in promoting interest (Quinlan, 2019). Future research should include measures of a wider range of variables that are known to support interest, such as choice (Patall et al., 2008; Patall et al., 2010), novelty (Quinlan, 2019) and perceptions of the teacher (Quinlan, 2019). Future studies also need to focus on a random selection of assessments to ensure these features distinguish between emotionally engaging assessments and those that are less so.

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Figure 1

Conceptual Framework

Perceived Assessment Features

Emotional Engagement

Perceived Learning Outcomes

Authentic Assessment (Realism, Challenge, Evaluative Judgment)

Collaboration

Support

Interested

Curious

Enjoyment

Excitement

Surprise

Puzzled

Confused

Frustrated

Anxious

Achievement

Self-Confidence

+

+

+

−

−
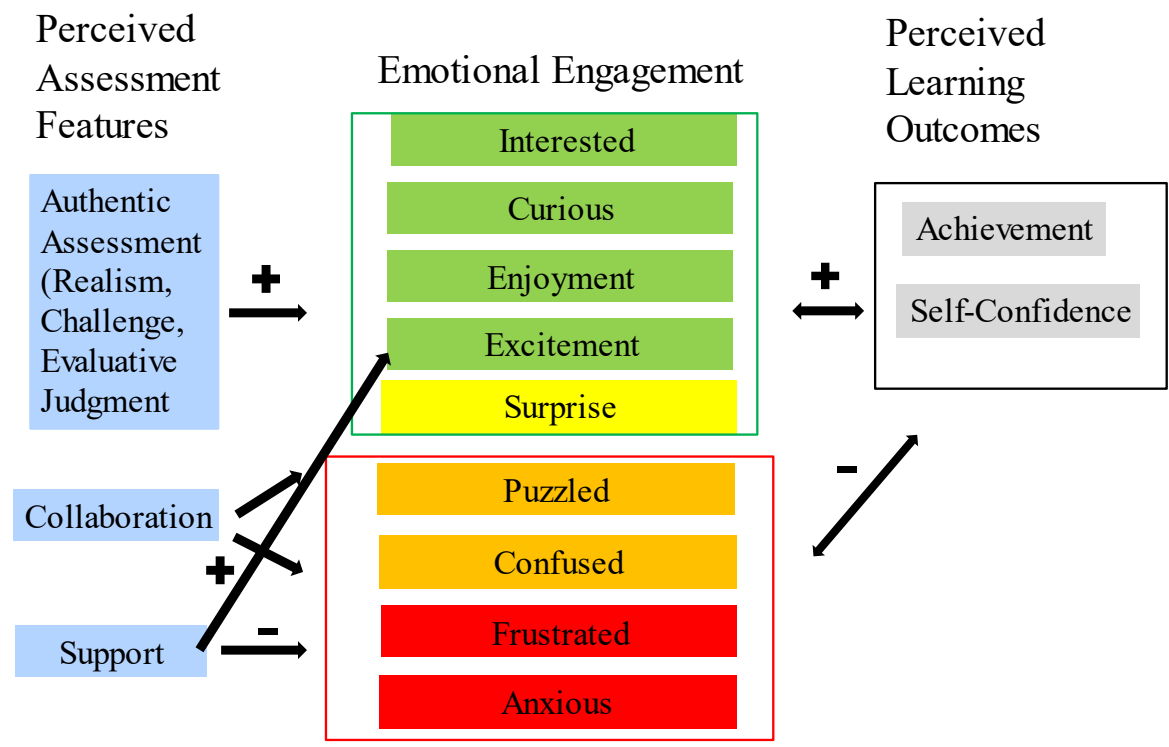
Table 1

Exploratory Factor Analysis of Assessment Features: Three Factor Solution Pattern Matrix

	Factor		
	Authentic Assessment	Collaboration	Support
Eigenvalue	7.05	2.33	1.29
% Variance Explained	46.98	15.54	8.57
Cronbach Alpha	.923	.953	.818
It gave me skills I can use after university.	**.931**	-.008	-.052
It gave me skills I can use in a variety of contexts.	**.852**	-.016	-.014
It promoted my transferable skills.	**.800**	.025	.017
It is useful to my career.	**.771**	-.029	.022
It is relevant to the career I want to pursue.	**.711**	.022	-.075
It helped me identify my skills.	**.696**	-.039	.156
It reflected real life situations.	**.678**	.049	-.074
It helped me appreciate what I'm good at.	**.624**	-.046	.188
It helped me see where to improve.	**.543**	.073	.150
It required collaboration with others.	-.010	**.975**	-.020
It involved group work.	-.041	**.959**	-.009
It developed my teamwork skills.	.070	**.857**	.055
I felt reassured.	-.058	.049	**.899**
I felt supported.	.015	-.004	**.895**
I received feedback from my teaching staff throughout the assessment process.	.158	.004	**.486**

Note: Extraction Method: Principal Axis Factoring.
 Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 4 iterations.

Table 2

Exploratory Factor Analysis of Emotions: Two Factor Solution Pattern Matrix

	Factor	
	Positive	Negative
Eigenvalue	3.30	2.34
% Variance Explained	36.67	25.99
Cronbach Alpha	.825	.799
Interested	**.804**	-.094
Enjoyment	**.797**	-.168
Excited	**.784**	-.057
Curious	**.717**	.009
Surprised	**.437**	.156
Confused	-.056	**.856**
Puzzled	.083	**.786**
Frustrated	-.041	**.674**
Anxious	-.020	**.518**

Note: Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Rotation converged in 4 iterations.

Table 3

Exploratory Factor Analysis of Perceived Learning Outcomes: Two Factor Solution Pattern Matrix

	Factor	
	Self Confidence	Academic Achievement
Eigenvalue	3.96	.89
% Variance Explained	66.05	14.96
Cronbach Alpha	.916	.834
It improved my self esteem	**1.003**	-.085
It made me feel empowered.	**.835**	.030
It increased my confidence.	**.762**	.148
I thought I did well on it.	-.062	**.899**
I think I did better than I usually do.	.001	**.732**
It allowed me to showcase my skills and knowledge.	.167	**.687**

Note: Extraction Method: Principal Axis Factoring.
 Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Table 4

Assessment Types Described as Most Engaging by Field

		Arts/Humanities		Social Sciences		STEM		Total	
		N	%	N	%	N	%	N	%
Assessment Type		3	2.7%	38	8.6%	11	9.7%	52	7.8%
	Assessed Seminar	0	0.0%	3	0.7%	0	0.0%	3	0.4%
	Debate	0	0.0%	3	0.7%	1	0.9%	4	0.6%
	Exam	1	0.9%	10	2.3%	0	0.0%	11	1.6%
	Group Work	7	6.3%	75	16.9%	9	8.0%	91	13.6%
	MCQs	4	3.6%	21	4.7%	15	13.3%	40	6.0%
	Other	3	2.7%	5	1.1%	4	3.5%	12	1.8%
	Podcast or Video	8	7.1%	4	0.9%	0	0.0%	12	1.8%
	Portfolio	5	4.5%	6	1.4%	0	0.0%	11	1.6%
	Poster	0	0.0%	24	5.4%	1	0.9%	25	3.7%
	Practical Based	22	19.6%	48	10.8%	51	45.1%	121	18.1%
	Presentation	10	8.9%	24	5.4%	4	3.5%	38	5.7%
	Problem solving	0	0.0%	6	1.4%	6	5.3%	12	1.8%
	Written assignment	49	43.8%	176	39.7%	11	9.7%	236	35.3%
Total		112	100.0%	443	100.0%	113	100.0%	668	100.0%

Table 5.

Emotions Experienced During Students' Most Engaging Assessment by Field

		N	Mean	Std. Deviation	ANOVA F (df, df)	ANOVA p value	Significant Mean Differences (Bonferoni post-hoc paired comparisons) p values	
Curious	Arts/Humanities	112	3.87	.82				
	Social Sciences	443	3.78	.95	.915 (2, 665)	.401		
	STEM	113	3.70	.95				
	Total	668	3.78	.93				
Interested	Arts/Humanities	112	4.29	.70			Arts/Humanities-Soc Sciences	.013*
	Social Sciences	443	4.03	.87	7.466 (2, 665)	<.001	Arts/Humanities-STEM	<.001***
	STEM	113	3.85	.90				
	Total	668	4.04	.86				
Anxious	Arts/Humanities	106	2.94	1.03				
	Social Sciences	439	2.95	1.12	.158 (2, 655)	.854		
	STEM	113	2.88	1.11				
	Total	658	2.93	1.11				
Enjoyment	Arts/Humanities	111	4.05	.82			Arts/Humanities-Soc Sciences	<.001***
	Social Sciences	441	3.58	.96	11.720 (2, 662)	<.001	Arts/Humanities-STEM	<.001***
	STEM	113	3.56	1.07				
	Total	665	3.65	.97				
Surprised	Arts/Humanities	109	2.87	1.09				
	Social Sciences	440	2.78	1.15	.694 (2, 659)	.500		
	STEM	113	2.70	1.02				
	Total	662	2.78	1.12				
Frustrated	Arts/Humanities	110	2.36	1.04				
	Social Sciences	438	2.33	1.05	1.443 (2, 658)	.237		
	STEM	113	2.52	1.13				
	Total	661	2.37	1.06				
Excited	Arts/Humanities	111	3.71	1.06			Arts/Humanities-Soc Sciences	<.001***
	Social Sciences	439	3.30	1.08	8.094 (2, 660)	<.001	Arts/Humanities-STEM	<.001**
	STEM	113	3.19	1.05				
	Total	663	3.35	1.08				
Puzzled	Arts/Humanities	106	2.20	.92			Arts/Humanities-STEM	<.001**
	Social Sciences	439	2.38	1.06	11.153 (2, 655)	<.001		
	STEM	113	2.83	1.16				
	Total	658	2.43	1.07				
Confused	Arts/Humanities	110	1.86	.80			Arts/Humanities-Soc Sciences	.010*
	Social Sciences	436	2.17	1.01	10.721 (2, 656)	<.001	Arts/Humanities-STEM	<.001**
	STEM	113	2.47	1.08			Soc. Sciences-STEM	.012
	Total	659	2.17	1.01				

Table 6.

Pearson Product Moment Correlation Between Study Variables

	Gender	Stage of Study	Field	Authentic Assessment	Collaboration	Support	Curious	Interested	Anxious	Enjoyment	Surprised	Frustrated	Excited	Puzzled	Confused	Achievement	Self Confidence
Gender	--																
Stage of Study	-.008	--															
Field	.085*	-.016	--														
Authentic Assessment	.019	.132***	-.075	--													
Collaboration	-.027	.087	.032	.311***	--												
Support	-.026	.103**	-.140**	.583***	.229***	--											
Curious	.005	.102**	-.052	.465***	.043	.327***	--										
Interested	.019	.147***	-.146***	.485***	.030	.397***	.694***	--									
Anxious	-.034	-.055	-.017	-.028	.014	-.128***	-.088*	-.081*	--								
Enjoyment	-.015	.141***	-.147***	.475***	.149***	.455***	.513***	.672***	-.144***	--							
Surprised	-.029	.116**	-.046	.286***	.131***	.287***	.338***	.265***	.026	.306***	--						
Frustrated	.023	-.115**	.044	-.109*	.003	-.202***	-.058	-.174***	.467***	-.199***	.070	--					
Excited	.037	.112**	-.139***	.498***	.205***	.435***	.516***	.587***	-.116**	.731***	.385***	-.117**	--				
Puzzled	.030	-.051	.172***	-.001	-.014	-.141***	.016*	-.086*	.365***	-.150***	.119**	.499***	-.059	--			
Confused	.003	-.091*	.178***	-.132***	-.027	-.251***	-.108**	-.197***	.420***	-.256***	.063	.555***	-.170***	.711***	--		
Achievement	.017	.140***	-.096*	.638***	.249***	.550***	.365***	.406***	-.142***	.410***	.188***	-.206***	.371***	-.171***	-.284***	--	
Self confidence	-.046	.152***	-.126**	.735***	.292***	.571***	.400***	.414***	-.158***	.484***	.270***	-.205***	.509***	-.110**	-.226**	.634**	--

*Correlation significant at p<.05 (two-tailed);

**Correlation significant at p<.01(two-tailed);

***Correlation significant at p<.001 (two-tailed)

Gender: 1=Female; 2=Male; 3=Non-binary, fluid or non-disclosed

Field: 1=Arts/Humanities; 2=Social Sciences; 3=STEM

Table 7.

Regression with Level of Study, Field of Study and Assessment Features as Predictors of Positive Emotions and Negative Emotions

Independent Variable	Positive Emotions R² = .374 F=65.678*** (6, 660)		Negative Emotions R² = .075 F=8.909*** (6, 659)	
	Std Error	β	Std Error	β
Constant PE=3.383, NE=2.575	.054		.072	
Stage of Study	.018	.086**	.024	-.081*
Field: Arts/Hums	.066	.079*	.089	-.023
Field: STEM	.064	-.014	.087	.087*
Authentic Assessment (Centred)	.035	.428***	.047	.079
Support (Centred)	.031	.226***	.041	-.270***
Collaboration (Centred)	.017	-.031	.023	.040

*Correlation significant at p<.05;
**Correlation significant at p<.01;
***Correlation significant at p<.001

Table 8.

Regression with Level of Study, Field of Study and Assessment Features as Predictors of Outcomes of Achievement and Self Confidence

Independent Variable	Achievement R² = .462 F=94.455*** (6, 660)		Self-Confidence R² = .580 F=152.041*** (6, 660)	
	Std Error	β	Std Error	β
Constant A=3.752, S-C=3.552	.056		.057	
Stage of Study	.018	.045	.019	.049
Field: Arts/Hums	.069	-.002	.070	.039
Field: STEM	.067	-.032	.069	-.031
Authentic Assessment (Centred)	.037	.466***	.038	.589***
Support (Centred)	.032	.267***	.033	.202***
Collaboration (Centred)	.018	.035	.018	.060*

*Correlation significant at p<.05;
**Correlation significant at p<.01;
***Correlation significant at p<.001