

## A APPENDIX

Table 1. Derham et al. [13] proposed the scheme of mapping LIWC features with feedback impacts

Impact type	LIWC Features	Feature Abbreviation	Examples
<b>Affective Impact</b>	Positive emotion	<i>posemo</i>	good, strong, nice
	Negative emotion	<i>negemo</i>	difficult, missing, poor
	Reward focus	<i>reward</i>	gain, success, achieve
	Risk focus	<i>risk</i>	careful, caution, doubt
	Achievement	<i>achieve</i>	attain, advantage, effort
<b>Cognitive Impact</b>	Interrogatives	<i>interrog</i>	how, what, when
	Negations	<i>negate</i>	not, can't, shouldn't
	Discrepancy	<i>discrep</i>	could've, lack, should
	Differentiation	<i>differ</i>	but, else, otherwise
	Insight	<i>insight</i>	decide, consider, think
	Causation	<i>cause</i>	because, lead, result
	Assent	<i>assent</i>	agree, yes, alright
	Question mark	<i>QMark</i>	?
	Tentative	<i>tentat</i>	almost, might, maybe
	Certainty	<i>certain</i>	always, clearly, must
<b>Relational Impact</b>	Personal pronouns	<i>ppron</i>	I, your, we
	Impersonal pronouns	<i>ipron</i>	It, that, this
	Power	<i>power</i>	follow, request, weakness
	Affiliation	<i>affiliation</i>	let's, together, we

Table 2. Scheme of politeness features retrieved from [43]

Feature Name	Description	Example
Acknowledgement	Explicit statement of understanding	<i>"I understand your point"</i>
Adverb Limiter	Minimizing with "just", "only", simply"	<i>"It is just enough to be worth it"</i>
Affirmation	Short appreciation to start sentence	<i>"Cool, that will work out then"</i>
Agreement	Explicit statement of agreement	<i>"I mostly agree with that"</i>
Apology	"sorry", "oops", "excuse me", etc.	<i>"I'm sorry for being so blunt"</i>
Ask Agency	Request an action for self	<i>"Let me step back for a minute"</i>
Bare Command	Unconjugated verb to start sentence	<i>"Lower the price for me"</i>
By The Way	"by the way"	<i>"By the way, my old offer stands"</i>
Can You	Direct request	<i>"Can you lower the price?"</i>
Conjunction Start	Begin sentence with conjunction	<i>"And if that works for you"</i>
Could You	Indirect request	<i>"Could you lower the price?"</i>
Disagreement	Explicit disagreement	<i>"I don't agree with that"</i>
Filler Pause	Filler words and verbal pauses	<i>"That would be, um, fine"</i>
First Person Plural	First-person plural pronouns	<i>"it's a good deal for both of us"</i>
First Person Single	First-person singular	<i>"It would benefit me, as well"</i>
For Me	"for me"	<i>"It would be great for me"</i>
For You	"for you"	<i>"It would be great for you"</i>
Formal Title	"sir", "madam", "mister", etc.	<i>"Sir, that is quite an offer."</i>
Give Agency	Suggest an action for other	<i>"I want to let you come out ahead"</i>
Goodbye	"goodbye", "bye", "see you later"	<i>"That's my best offer. Bye!"</i>
Gratitude	"thank you", "i appreciate", etc.	<i>"Thanks for your interest"</i>
Hedges	Indicators of uncertainty	<i>"I might take the deal"</i>
Hello	"hi", "hello", "hey"	<i>"Hi, how are you today?"</i>
Impersonal Pronoun	Non-person referents	<i>"That is a deal"</i>
Informal Title	"buddy", "chief", "boss", etc.	<i>"Dude, that is quite an offer."</i>
Let Me Know	"let me know"	<i>"Let me know if that works"</i>
Negation	Contradiction words	<i>"This cannot be your best offer"</i>
Negative Emotion	Negative emotion words	<i>"that is a bad deal"</i>
Please	Expressing please	<i>"Let me know if that works, please"</i>
Positive Emotion	Positive emotion words	<i>"that is a great deal"</i>
Questions	Question mark count	<i>"Is this for real?"</i>
Reasoning	Explicit reference to reasons	<i>"I want to explain my offer price"</i>
Resassurance	Minimizing other's problems	<i>"Don't worry, we're still on track"</i>
Second Person Single	Second person pronoun	<i>"It would benefit you, as well"</i>
Subjectivity	Identifying personal perspective	<i>"I think that is fair"</i>
Swearing	Vulgarity of all sorts	<i>"The dang price is too high"</i>
Truth Intensifier	Indicators of certainty	<i>"This is definitely a good idea."</i>
WH Questions	Questions w/ WH words (how, why, etc)	<i>"Why did you settle on that value?"</i>
YesNo Questions	Questions w/o WH words	<i>"Is this for real?"</i>

Table 3. Scheme of Writing Metrics extracted by Coh-Metrix [28]

Method	Feature Name	Description
Coh-Metrix	<i>DESPC</i>	Paragraph count, number of paragraphs
	<i>DESSC</i>	Sentence count, number of sentences
	<i>DESWC</i>	Word count, number of words
	<i>DESPL</i>	Paragraph length, number of sentences, mean
	<i>DESSL</i>	Sentence length, number of words, mean
	<i>DESSLd</i>	Sentence length, number of words, standard deviation
	<i>DESWLsy</i>	Word length, number of syllables, mean
	<i>DESWLsyd</i>	Word length, number of syllables, standard deviation
	<i>DESWLlt</i>	Word length, number of letters, mean
	<i>DESWLltd</i>	Word length, number of letters, standard deviation
	<i>CRFNOI</i>	Noun overlap, adjacent sentences, binary, mean
	<i>CRFAOI</i>	Argument overlap, adjacent sentences, binary, mean
	<i>CRFSOI</i>	Stem overlap, adjacent sentences, binary, mean
	<i>CRFNOa</i>	Noun overlap, all sentences, binary, mean
	<i>CRFAOa</i>	Argument overlap, all sentences, binary, mean
	<i>CRFSOa</i>	Stem overlap, all sentences, binary, mean
	<i>CRFCWOI</i>	Content word overlap, adjacent sentences, proportional, mean
	<i>CRFCWOId</i>	Content word overlap, adjacent sentences, proportional, standard deviation
	<i>CRFCWOa</i>	Content word overlap, all sentences, proportional, mean
	<i>CRFCWOad</i>	Content word overlap, all sentences, proportional, standard deviation
	<i>CRFANPI</i>	Anaphor overlap, adjacent sentences
	<i>CRFANPa</i>	Anaphor overlap, all sentences
	<i>LSASSI</i>	LSA overlap, adjacent sentences, mean
	<i>LSAPPI</i>	LSA overlap, adjacent paragraphs, mean
	<i>LSAPPIId</i>	LSA overlap, adjacent paragraphs, standard deviation
	<i>LSAGN</i>	LSA given/new, sentences, mean
	<i>LSAGNd</i>	LSA given/new, sentences, standard deviation
	<i>LDTTRc</i>	Lexical diversity, type-token ratio, content word lemmas
	<i>LDTTRa</i>	Lexical diversity, type-token ratio, all words
	<i>LDMTLDa</i>	Lexical diversity, MTLD, all words
	<i>LDVOCDa</i>	Lexical diversity, VOCD, all words
	<i>CNCAII</i>	All connectives incidence
	<i>CNCCaus</i>	Causal connectives incidence
	<i>CNCLogic</i>	Logical connectives incidence

	<i>CNCADC</i>	Adversative and contrastive connectives incidence
	<i>CNCTemp</i>	Temporal connectives incidence
	<i>CNCAdd</i>	Additive connectives incidence
	<i>CNCPos</i>	Positive connectives incidence
	<i>CNCNeg</i>	Negative connectives incidence
	<i>SMCAUSv</i>	Causal verb incidence
	<i>SMCAUSvp</i>	Causal verbs and causal particles incidence
	<i>SMCAUSr</i>	Ratio of casual particles to causal verbs
	<i>SMCAUSlsa</i>	LSA verb overlap
	<i>SMCAUSwn</i>	WordNet verb overlap
	<i>DRNP</i>	Noun phrase density, incidence
	<i>DRVp</i>	Verb phrase density, incidence
	<i>DRAP</i>	Adverbial phrase density, incidence
	<i>DRPP</i>	Preposition phrase density, incidence
	<i>DRPVAL</i>	Agentless passive voice density, incidence
	<i>DRGERUND</i>	Gerund density, incidence
	<i>DRINF</i>	Infinitive density, incidence
	<i>WRDNOUN</i>	Noun incidence
	<i>WRDADJ</i>	Adjective incidence
	<i>WRDADV</i>	Adverb incidence
	<i>WRDPRO</i>	Pronoun incidence
	<i>WRDPRP1s</i>	First person singular pronoun incidence
	<i>WRDPRP1p</i>	First person plural pronoun incidence
	<i>WRDPRP2</i>	Second person pronoun incidence
	<i>WRDPRP3p</i>	Third person plural pronoun incidence
	<i>WRDFRQc</i>	CELEX word frequency for content words, mean
	<i>WRDFRQa</i>	CELEX Log frequency for all words, mean
	<i>WRDCNCc</i>	Concreteness for content words, mean
	<i>WRDIMGc</i>	Imageability for content words, mean
	<i>WRDMEAc</i>	Meaningfulness, Colorado norms, content words, mean
	<i>RDFRE</i>	Flesch Reading Ease
	<i>RDFKGL</i>	Flesch-Kincaid Grade Level
	<i>RDL2</i>	Coh-Metrix L2 Readability

Table 4. Full results for the comparison of selected features between the **Increase** group and **Not Increase** group. Features marked with † were examined by Chi-square test and Cramer's Phi effect size whereas the remaining features were examined by Mann-Whitney U test and Rank-Biserial effect size

Row ID	Artefact Attributes	Feature Clusters	Features	Increase		Not Increase		Difference	
				M	SD	M	SD	P-val	E.S
Attr.1	Comments strengthen teacher and learner relationships	Knowledge Level	<i>assgmt_1_grades</i>	1.50	1.03	3.16	1.10	<0.01	0.72
			<i>Hedges</i>	0.97	1.55	0.51	1.13	0.01	-0.19
		Politeness	<i>Positive.Emotion</i>	4.29	2.13	4.21	3.00	0.31	-0.09
			<i>Negative.Emotion</i>	0.74	0.79	0.36	0.64	<0.01	-0.27
			<i>Impersonal.Pronoun</i>	1.98	2.18	1.40	2.28	<0.01	-0.23
			<i>Negation</i>	0.18	0.39	0.19	0.50	0.59	-0.03
			<i>Informal.Title</i>	0.02	0.12	0.01	0.12	0.94	0.00
			<i>Could.You</i>	0.03	0.17	0.02	0.14	0.67	-0.01
			<i>Can.You</i>	0.00	0.00	0.01	0.17	0.51	0.01
			<i>For.You</i>	0.02	0.12	0.03	0.18	0.44	0.02
			<i>Reasoning</i>	0.33	0.64	0.27	0.58	0.44	-0.05
			<i>Reassurance</i>	0.02	0.12	0.00	0.00	0.14	-0.02
			<i>Ask.Agency</i>	0.05	0.21	0.01	0.12	0.16	-0.03
			<i>Give.Agency</i>	0.24	0.50	0.08	0.26	<0.01	-0.14
			<i>Please</i>	0.06	0.24	0.10	0.30	0.40	0.04
			<i>First.Person.Plural</i>	0.00	0.00	0.01	0.08	0.51	0.01
			<i>First.Person.Single</i>	0.15	0.40	0.16	0.48	0.76	-0.02
			<i>Second.Person</i>	2.12	1.91	1.92	1.79	0.56	-0.05
			<i>Agreement</i>	0.00	0.00	0.03	0.16	0.18	0.03
			<i>Acknowledgement</i>	0.00	0.00	0.01	0.08	0.51	0.01
			<i>Subjectivity</i>	0.02	0.12	0.02	0.14	0.79	0.01
			<i>Bare.Command</i>	0.27	0.51	0.16	0.42	0.06	-0.10
			<i>WH.Questions</i>	0.02	0.12	0.01	0.08	0.57	-0.01
			<i>YesNo.Questions</i>	0.14	0.43	0.05	0.24	0.07	-0.07
			<i>Gratitude</i>	0.02	0.12	0.01	0.08	0.57	-0.01
			<i>Truth.Intensifier</i>	0.05	0.21	0.05	0.23	0.78	0.01
			<i>Affirmation</i>	0.82	0.58	0.84	0.69	0.99	0.00
			<i>Adverb.Just</i>	0.02	0.12	0.02	0.14	0.79	0.01
			<i>Conjunction.Start</i>	0.08	0.27	0.03	0.18	0.19	-0.04
		Relational Impact (LIWC)	<i>ppron</i>	3.40	2.67	4.30	3.57	0.15	0.12
			<i>affiliation</i>	0.24	0.51	0.13	0.45	0.04	-0.10
			<i>power</i>	1.53	1.51	1.89	2.92	0.81	-0.02
			<i>ipron</i>	3.05	3.28	2.51	3.17	0.13	-0.13

Row ID	Artefact Attributes	Feature Clusters	Features	Increase		Not Increase		Difference	
				M	SD	M	SD	P-val	E.S
Attr.2	Comments that encourage learner agency	Cognitive Impact (LIWC)	interrog	1.69	2.11	0.98	1.95	<0.01	-0.31
			negate	0.99	6.15	0.42	1.58	0.54	-0.03
			discrep	4.38	2.61	4.60	3.56	0.97	0.00
			differ	2.62	1.84	2.47	2.80	0.16	-0.12
			insight	2.36	2.07	3.01	3.39	0.52	0.05
			cause	1.45	1.71	1.33	2.64	0.04	-0.16
			assent	0.00	0.00	0.01	0.10	0.51	0.01
			QMark	0.58	1.05	0.37	1.02	0.04	-0.13
			tentat	3.40	2.83	3.55	3.93	0.52	-0.06
			certain	2.31	1.42	2.03	2.15	0.06	-0.16
Attr.3	Comments encourage positive learner affect	Affect Impact (LIWC)	posemo	5.76	2.31	10.89	12.17	<0.01	0.48
			negemo	0.56	0.85	0.50	1.00	0.35	-0.07
			reward	4.90	3.46	7.96	9.68	0.06	0.16
			risk	0.61	0.74	0.43	0.74	0.07	-0.13
			achieve	4.50	2.52	7.48	11.88	0.09	0.15
			†Self	0.48	0.50	0.59	0.49	0.16	0.10
Attr.4	Comments that highlight strengthen of performance		†Task_Pos	0.61	0.49	0.56	0.50	0.54	0.04
Attr.5	Comments that provide critiques about performance		†Task_Neg	0.44	0.50	0.25	0.43	<0.01	0.19
Attr.6	Comments that provide actionable information for future performances		†Task_Ex_Cor	0.86	0.35	0.77	0.42	0.11	0.11
			†Process	0.85	0.36	0.60	0.49	<0.01	0.25
			†Forward	0.95	0.21	0.88	0.33	0.08	0.12
Attr.7	Comments promote learner independence		†Self_regulate	0.38	0.49	0.24	0.43	0.04	0.14
Attr.8	Comments are usable for learners		Writing Metrics (Coh-Metrix)	†Up	0.91	0.29	0.62	0.49	<0.01
		†Back		0.82	0.39	0.68	0.47	0.04	0.14
		DESPC		0.98	0.12	0.99	0.12	0.94	0.00
		DESSC		3.65	2.10	3.00	2.35	0.01	-0.23
		DESWC	73.03	22.55	52.04	35.43	<0.01	-0.48	
		DESPL	3.65	2.10	3.00	2.35	0.01	-0.23	

<i>DESSL</i>	27.93	21.23	21.23	15.96	0.02	-0.21
<i>DESSLd</i>	11.05	10.90	8.04	8.86	0.03	-0.19
<i>DESWLsy</i>	1.58	0.26	1.48	0.29	<0.01	-0.33
<i>DESWLsyd</i>	0.93	0.20	0.76	0.27	<0.01	-0.41
<i>DESWLlt</i>	5.31	0.83	5.02	0.89	<0.01	-0.32
<i>DESWLltd</i>	5.31	0.83	5.02	0.89	<0.01	-0.32
<i>CRFNOI</i>	0.18	0.20	0.12	0.17	0.05	-0.15
<i>CRFAOI</i>	0.21	0.21	0.16	0.20	0.07	-0.15
<i>CRFSOI</i>	0.18	0.20	0.13	0.18	0.06	-0.15
<i>CRFNOa</i>	0.57	0.80	0.40	0.59	0.14	-0.12
<i>CRFAOa</i>	0.69	0.87	0.51	0.74	0.13	-0.12
<i>CRFSOa</i>	0.60	0.79	0.43	0.65	0.07	-0.14
<i>CRFCWOI</i>	0.02	0.03	0.02	0.03	0.07	-0.15
<i>CRFCWOId</i>	0.02	0.03	0.02	0.02	0.21	-0.10
<i>CRFCWOa</i>	0.08	0.11	0.07	0.11	0.05	-0.17
<i>CRFCWOad</i>	0.08	0.10	0.07	0.09	0.10	-0.14
<i>CRFANPI</i>	0.30	0.25	0.24	0.25	0.05	-0.17
<i>CRFANPa</i>	0.10	0.12	0.08	0.12	0.05	-0.16
<i>LSASSI</i>	0.18	0.20	0.11	0.15	<0.01	-0.23
<i>LSAPPI</i>	0.59	0.27	0.65	0.28	0.12	0.13
<i>LSAPPIId</i>	0.25	0.14	0.24	0.17	0.83	0.02
<i>LSAGN</i>	0.82	0.13	0.87	0.16	<0.01	0.31
<i>LSAGNd</i>	0.71	0.12	0.78	0.15	<0.01	0.35
<i>LDTTRc</i>	69.50	22.29	55.41	29.97	<0.01	-0.32
<i>LDTTRa</i>	0.75	0.20	0.48	0.39	<0.01	-0.38
<i>LDMTLDa</i>	7.45	3.18	5.36	3.47	<0.01	-0.38
<i>LDVOCDa</i>	1.09	0.89	0.73	0.79	<0.01	-0.24
<i>CNCAll</i>	3.02	1.60	2.25	1.65	<0.01	-0.28
<i>CNCCaus</i>	0.26	0.47	0.16	0.37	0.17	-0.08
<i>CNCLogic</i>	0.24	0.50	0.23	0.44	0.89	0.01
<i>CNCADC</i>	2.85	1.52	1.99	1.62	<0.01	-0.33
<i>CNCTemp</i>	7.11	3.13	5.08	3.33	<0.01	-0.38

---

<i>CNCAdd</i>	0.33	0.54	0.28	0.58	0.27	-0.07
<i>CNCPos</i>	0.29	0.70	0.40	1.01	0.71	0.02
<i>CNCNeg</i>	1.38	0.99	1.12	1.32	0.01	-0.21
<i>SMCAUSv</i>	4.64	2.35	3.60	2.87	<0.01	-0.31
<i>SMCAUSvp</i>	1.01	0.85	0.64	0.75	<0.01	-0.27
<i>SMCAUSr</i>	0.44	0.22	0.39	0.20	0.13	-0.13
<i>SMCAUSlsa</i>	0.28	0.18	0.28	0.26	0.24	-0.10
<i>SMCAUSwn</i>	6.58	3.04	4.94	3.56	<0.01	-0.32
<i>DRNP</i>	0.40	0.32	0.26	0.32	0.01	-0.22
<i>DRVP</i>	0.40	0.32	0.26	0.32	0.01	-0.22
<i>DRAP</i>	19.92	6.51	14.70	10.05	<0.01	-0.41
<i>DRPP</i>	7.45	3.52	5.47	3.82	<0.01	-0.33
<i>DRPVAL</i>	2.41	1.56	1.65	1.63	<0.01	-0.31
<i>DRGERUND</i>	1.76	3.23	0.90	1.73	0.35	-0.07
<i>DRINF</i>	0.05	0.21	0.12	0.42	0.32	0.04
<i>WRDNOUN</i>	0.32	0.53	0.25	0.51	0.33	-0.06
<i>WRDADJ</i>	24.86	9.41	16.99	12.50	<0.01	-0.42
<i>WRDADV</i>	7.52	3.59	5.50	3.85	<0.01	-0.33
<i>WRDPRO</i>	5.95	3.07	4.14	3.35	<0.01	-0.39
<i>WRDPRP1s</i>	2.44	1.63	1.72	1.66	<0.01	-0.27
<i>WRDPRP1p</i>	4.18	3.20	3.39	2.93	0.08	-0.15
<i>WRDPRP2</i>	0.15	0.40	0.16	0.47	0.74	-0.02
<i>WRDPRP3p</i>	2.03	1.83	1.82	1.67	0.53	-0.05
<i>WRDFRQc</i>	0.20	0.40	0.21	0.43	0.87	0.01
<i>WRDFRQa</i>	0.00	0.00	0.01	0.08	0.51	0.01
<i>WRDCNCc</i>	419.23	79.73	346.31	163.48	<0.01	-0.26
<i>WRDIMGc</i>	578.99	103.22	555.03	151.38	0.43	-0.07
<i>WRDMEAc</i>	256.17	46.74	246.45	68.95	0.79	0.02
<i>RDFRE</i>	276.82	50.81	266.37	74.55	0.74	0.03
<i>RDFKGL</i>	304.20	57.62	292.36	81.72	0.95	0.01
<i>RDL2</i>	5.55	0.96	6.29	1.79	<0.01	0.30

---



Table 5. Marking Rubric for the assignments of introductory data science course

Criteria	High distinction (HD)	Distinction (D)	Credit (C)	Pass (P)	Fail (F)
<b>Analyse the role of data in different styles of business</b>	Provides a sophisticated critical analysis.	Provides some critical analysis.	Provides limited critical analysis.	Provides minimal analysis.	Provides description rather than analysis.
<b>Analyse different parts of data science project from the perspective of the data science process and from the perspective of the roles such as statistician, archivist, analyst and systems architect</b>	Provides critical analysis of different parts of a data science project. Provide distinct classification of data scientist roles.	Provides some analysis of different parts of a data science project. Provide some classification of data scientist roles.	Provides limited analysis of different parts of a data science project. Provide limited classification of data scientist roles.	Provides minimal analysis of different parts of a data science project. Provide minimal classification of data scientist roles.	No analysis of different parts of a data science project. No clear classification of data scientist roles.
<b>Demonstrate the size and scope of data storage and data processing and classify the basic technologies in use</b>	Clearly demonstrates the size and scope of data storage and data processing and classification of the basic technologies in use.	Provides some demonstration of the size and scope of data storage and data processing and classification of the basic technologies in use.	Provides limited demonstration of the size and scope of data storage and data processing and classification of the basic technologies in use.	Provides minimal demonstration of the size and scope of data storage and data processing and classification of the basic technologies in use.	No clear demonstration of the size and scope of data storage and data processing and classification of the basic technologies.
<b>Classify the kinds of data analysis and statistical methods available for a data science project</b>	Provides distinct classification of the kinds of data analysis and statistical methods that are available.	Provides some classification of the kinds of data analysis and statistical methods that are available.	Provides limited classification of the kinds of data analysis and statistical methods that are available.	Provides minimal classification of the kinds of data analysis and statistical methods that are available.	No clear classification of the kinds of data analysis and statistical methods.
<b>Locate and assess resources, standards, software and tools for a data science project</b>	Provides clear and succinct assessment of standards, software and tools for a data science project in an organisation.	Provides some assessment of tasks required for standards, software and tools for a data science project in an organisation.	Provides limited assessment of standards, software and tools for a data science project.	Provides minimal assessment of standards, software and tools for a data science project.	No clear assessment of tasks required for standards, software and tools for a data science project..
<b>Creative and critical thinking</b>	Thinks out of the box, creates or extends to a novel or unique idea. Provides a sophisticated critical analysis.	Collect ideas, solutions and other information in good ways. Provides detailed justification and analysis	Reformulates a collection of available information. Provide some justification and analysis.	Mostly repeats existing information. Provide limited justification and analysis.	Just repeats existing information. Do not provide any justification or analysis.
<b>Presentation, structure, expression, grammar and spelling</b>	Well structured, with impressive fluency and flow. Appropriate use of sub-headings and relevant content sections. Adheres to Specifications (word limit, duration, file format)	Well-structured and generally good links and flow. Adheres to specifications (word limit, duration, file format)	Satisfactory structure, mostly satisfactory links and flow. Adheres to specifications (word limit, duration, file format)	Overall basic structure is adequate, but lacks links and flow. Adheres to specifications (word limit, duration, file format)	Poorly structured, lacking linkages and flow. Does not adhere to specifications (word limit, duration, file format).

<b>Supporting the Data Science proposal with realistic data, authentic models and output</b>	Project well-constructed and explained using real (or a realistic) dataset with impressive suggestions or mockups of authentic models and output/ visualizations for various stakeholders.	Supports the project sufficiently by identifying realistic datasets and their descriptions. Demonstrates some modelling were performed with output generated.	Satisfactory explanation with data. Report demonstrates good understating of data sources and datatypes. Limited demonstration of modelling and output. Limited results/mockup on how the results will be presented to stakeholders.	Provides basic understanding of data required. Provides links and descriptors of few realistic datasets/sources. Lacks evidence of using the dataset for modeling but provides some discussion on the nature of the output.	No evidence of using any real or realistic dataset to support the proposal.
--	--	---	--	---	---

## REFERENCES

- [1] Rola Ajjawi, David Boud, Michael Henderson, and Elizabeth Molloy. 2019. Improving feedback research in naturalistic settings. In *The Impact of Feedback in Higher Education*. Springer, 245–265.
- [2] David Boud and Elizabeth Molloy. 2013. Rethinking models of feedback for learning: the challenge of design. *Assessment & Evaluation in higher education* 38, 6 (2013), 698–712.
- [3] Penelope Brown and Stephen Levinson. 1987. Politeness: some universals in language usage. Cambridge University Press, Cambridge, UK.
- [4] David Carless. 2006. Differing perceptions in the feedback process. *Studies in higher education* 31, 2 (2006), 219–233.
- [5] David Carless. 2019. Feedback loops and the longer-term: towards feedback spirals. *Assessment & Evaluation in Higher Education* 44, 5 (2019), 705–714.
- [6] David Carless and David Boud. 2018. The development of student feedback literacy: enabling uptake of feedback. *Assessment & Evaluation in Higher Education* 43, 8 (2018), 1315–1325.
- [7] Anderson Pinheiro Cavalcanti, Rafael Ferreira Leite de Mello, Vitor Rolim, Máverick André, Fred Freitas, and Dragan Gašević. 2019. An analysis of the use of good feedback practices in online learning courses. In *2019 IEEE 19th ICALT*, Vol. 2161. IEEE, 153–157.
- [8] Anderson Pinheiro Cavalcanti, Arthur Diego, Rafael Ferreira Mello, Katerina Mangaroska, André Nascimento, Fred Freitas, and Dragan Gašević. 2020. How Good is My Feedback? A Content Analysis of Written Feedback. In *Proceedings of the 10th LAK*. ACM, New York, NY, USA, 428–437.
- [9] Tianqi Chen and Carlos Guestrin. 2016. Xgboost: A scalable tree boosting system. In *Proceedings of the 2016 Conference on KDD*. 785–794.
- [10] Jacob Cohen. 2016. A power primer. (2016).
- [11] Phillip Dawson, Michael Henderson, Paige Mahoney, Michael Phillips, Tracii Ryan, David Boud, and Elizabeth Molloy. 2019. What makes for effective feedback: staff and student perspectives. *Assessment & Evaluation in Higher Education* 44, 1 (2019), 25–36.
- [12] Phillip Dawson, Michael Henderson, Tracii Ryan, Paige Mahoney, David Boud, Michael Phillips, and Elizabeth Molloy. 2018. Technology and feedback design. *Learning, design, and technology* (2018).
- [13] Cathrine Derham, Kieran Balloo, and Naomi Winstone. 2021. The focus, function and framing of feedback information: linguistic and content analysis of in-text feedback comments. *Assessment & Evaluation in Higher Education* (2021), 1–14.
- [14] Douglas Fisher and Nancy Frey. 2009. Feed up, Back, Forward. *Educational Leadership* 67, 3 (2009), 20–25.
- [15] John Hattie. 2012. *Visible learning for teachers: Maximizing impact on learning*. Routledge.
- [16] John Hattie and Helen Timperley. 2007. The power of feedback. *Review of educational research* 77, 1 (2007), 81–112.
- [17] Michael Henderson, Rola Ajjawi, David Boud, and Elizabeth Molloy. 2019. Identifying feedback that has impact. In *The impact of feedback in higher education*. Springer, 15–34.
- [18] Hassan Khosravi, Simon Buckingham Shum, Guanliang Chen, Cristina Conati, Yi-Shan Tsai, Judy Kay, Simon Knight, Roberto Martinez-Maldonado, Shazia Sadiq, and Dragan Gašević. 2022. Explainable artificial intelligence in education. *Computers and Education: Artificial Intelligence* (2022).
- [19] Kenneth R Koedinger, Sidney D’Mello, Elizabeth A McLaughlin, Zachary A Pardo, and Carolyn P Rosé. 2015. Data mining and education. *Wiley Interdisciplinary Reviews: Cognitive Science* 6, 4 (2015), 333–353.
- [20] Vitomir Kovanović, Srećko Joksimović, Zak Waters, Dragan Gašević, Kirsty Kitto, Marek Hatala, and George Siemens. 2016. Towards automated content analysis of discussion transcripts: A cognitive presence case. In *Proceedings of the 6th LAK*. 15–24.
- [21] Lisa-Angelique Lim, Shane Dawson, Dragan Gašević, Srećko Joksimović, Abelardo Pardo, Anthea Fudge, and Sheridan Gentili. 2021. Students’ perceptions of, and emotional responses to, personalised learning analytics-based feedback: an exploratory study of four courses. *Assessment & Evaluation in Higher Education* 46, 3 (2021), 339–359.
- [22] Jionghao Lin, Mladen Rakovic, David Lang, Dragan Gasevic, and Guanliang Chen. 2022. Exploring the Politeness of Instructional Strategies from Human-Human Online Tutoring Dialogues. In *LAK22: 12th International Learning Analytics and Knowledge Conference*. 282–293.
- [23] Anastasiya A Lipnevich, David AG Berg, and Jeffrey K Smith. 2016. Toward a model of student response to feedback. In *Handbook of human and social conditions in assessment*. Routledge, 169–185.
- [24] Scott M Lundberg, Gabriel Erion, Hugh Chen, Alex DeGrave, Jordan M Prutkin, Bala Nair, Ronit Katz, Jonathan Himmelfarb, Nisha Bansal, and Su-In Lee. 2020. From local explanations to global understanding with explainable AI for trees. *Nature machine intelligence* 2, 1 (2020), 56–67.
- [25] Scott M Lundberg and Su-In Lee. 2017. A unified approach to interpreting model predictions. *Proceedings of the 31st NeurIPS* (2017).
- [26] Effie Maclellan. 2005. Academic achievement: The role of praise in motivating students. *Active learning in higher education* 6, 3 (2005), 194–206.
- [27] Bruce M McLaren, Krista E DeLeeuw, and Richard E Mayer. 2011. A politeness effect in learning with web-based intelligent tutors. *International Journal of Human-Computer Studies* 69, 1-2 (2011), 70–79.
- [28] Danielle S McNamara, Arthur C Graesser, Philip M McCarthy, and Zhiqiang Cai. 2014. *Automated evaluation of text and discourse with Coh-Matrix*. Cambridge University Press.
- [29] Maria Mikheeva, Sascha Schneider, Maik Beege, and Günter Daniel Rey. 2019. Boundary conditions of the politeness effect in online mathematical learning. *Computers in Human Behavior* 92 (2019), 419–427.
- [30] David J Nicol and Debra Macfarlane-Dick. 2006. Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education* 31, 2 (2006), 199–218.
- [31] Serena Nicoll, Kerrie Douglas, and Christopher Brinton. 2022. Giving Feedback on Feedback: An Assessment of Grader Feedback Construction on Student Performance. In *LAK22: 12th International Learning Analytics and Knowledge Conference*. 239–249.

- [32] Ikenna Osakwe, Guanliang Chen, Alex Whitelock-Wainwright, Dragan Gašević, Anderson Pinheiro Cavalcanti, and Rafael Ferreira Mello. 2022. Towards automated content analysis of educational feedback: A multi-language study. *Computers and Education: Artificial Intelligence* (2022).
- [33] Berry M O'Donovan, Birgit den Outer, Margaret Price, and Andy Lloyd. 2021. What makes good feedback good? *Studies in Higher Education* 46, 2 (2021), 318–329.
- [34] James W Pennebaker, Ryan L Boyd, Kayla Jordan, and Kate Blackburn. 2015. The development and psychometric properties of LIWC2015. (2015).
- [35] Filipe Dwan Pereira, Samuel C Fonseca, Elaine HT Oliveira, Alexandra I Cristea, Henrik Bellhäuser, Luiz Rodrigues, David BF Oliveira, Seiji Isotani, and Leandro SG Carvalho. 2021. Explaining Individual and Collective Programming Students' Behavior by Interpreting a Black-Box Predictive Model. *IEEE Access* 9 (2021), 117097–117119.
- [36] Tracii Ryan, Michael Henderson, Kris Ryan, and Gregor Kennedy. 2021. Designing learner-centred text-based feedback: a rapid review and qualitative synthesis. *Assessment & Evaluation in Higher Education* 46, 6 (2021), 894–912.
- [37] Shirley V Scott. 2014. Practising what we preach: towards a student-centred definition of feedback. *Teaching in Higher Education* 19, 1 (2014), 49–57.
- [38] Maciej Tomczak and Ewa Tomczak. 2014. The need to report effect size estimates revisited. An overview of some recommended measures of effect size. *Trends in sport sciences* 1, 21 (2014), 19–25.
- [39] Yi-Shan Tsai, Rafael Ferreira Mello, Jelena Jovanović, and Dragan Gašević. 2021. Student appreciation of data-driven feedback: A pilot study on OnTask. In *LAK21: 11th international learning analytics and knowledge conference*. 511–517.
- [40] Ning Wang, W Lewis Johnson, Richard E Mayer, Paola Rizzo, Erin Shaw, and Heather Collins. 2008. The politeness effect: Pedagogical agents and learning outcomes. *International journal of human-computer studies* 66, 2 (2008), 98–112.
- [41] Naomi Winstone, David Boud, Phillip Dawson, and Marion Heron. 2022. From feedback-as-information to feedback-as-process: a linguistic analysis of the feedback literature. *Assessment & Evaluation in Higher Education* 47, 2 (2022), 213–230.
- [42] Min Yang and David Carless. 2013. The feedback triangle and the enhancement of dialogic feedback processes. *Teaching in Higher Education* 18, 3 (2013), 285–297.
- [43] Michael Yeomans, Alejandro Kantor, and Dustin Tingley. 2018. The politeness Package: Detecting Politeness in Natural Language. *R Journal* 10, 2 (2018).