Data Article

Dataset of factors affecting learning outcomes of students at the University of Education, Vietnam National University, Hanoi

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A R T I C L E   I N F O

A B S T R A C T

The dataset was constructed to manage students and factors affecting the learning outcomes of students at the University of Education - Vietnam National University, Hanoi, to meet the research needs. In this article, we present the value of the data, data description, design, materials, and methods. We conducted a survey of students and alumni of the University of Education, Vietnam National University, Hanoi, from March to June 2023. There were 2170 students and alumni who responded to the link to answer the survey. Furthermore, in this article, we also mention the appendix, supplementary materials, and research data. This dataset offers significant insights into the elements that drive student learning outcomes. The generated data is analyzed and validated in this article and is ready to be used for the following research about the relationship between student outcomes and different elements in the digital age.

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Specifications Table

Subject	Education, Higher Education
Specific subject area	Learning analytics, Socioeconomic
Type of data	Table
Data collection	The target population of the survey was students at VNU University of Education, Vietnam National University, Hanoi, who were studying and had graduated. The data was collected through an online questionnaire, which used the snowball sampling method.
Data source location	Institution: VNU University of Education, Vietnam National University, Hanoi City/Town/Region: Hanoi Country: Vietnam
Data accessibility	Repository name: Dataset about VNU students Data identification number: 10.17632/23ppcdbmhc.1 Direct URL to data: https://data.mendeley.com/datasets/23ppcdbmhc/1 Instructions for accessing these data: -
Related research article	None

1. Value of the Data

- This dataset is valuable for educational researchers to understand factors affecting student outcomes.
- This dataset has provided essential data for examining the relationship between students' demographics (gender, year of study, ethnic minorities, state-supported policy, and the economic situation of the student's family) and students' perception of motivation with themselves and external factors from the university (training programs, facilities, university-specific support policy, lecturers' support, and friends.
- This dataset is a resource for educational researchers to compare factors affecting students in other studies in different countries.
- The findings from this dataset have supported management students' learning in student management departments and the university.
- The study continues to model the impact on learning motivation, thereby helping lecturers, academic advisors, educational administrators, etc., to intervene promptly to improve student performance.

2. Background

For a long time, educators have investigated how student learning outcomes are influenced by factors both internal and external to the learner. Academic performance is affected by many factors, like students' family income and parents' level of education and employment conditions [1]. Teacher support plays an instructional role and is also relevant to student outcomes [2]. The enhancement of support and service for students has a positive impact on their attitudes toward intentions to study at universities [3]. Moreover, personal relationships with friends/classmates and interest/ preparation/adaptation to tasks learning have affected student learning outcomes [4].

In Vietnam, two factors that positively influenced the academic performance of students were the factor of students themselves and the factor of lecturer capacity [5]. In addition, the evidence was found that students' convenience in educational services (like facilities and teaching equipment, educational environment, and organized educational activities) significantly affects their satisfaction with educational outcomes [6]. Furthermore, students' academic performance was the most affected by students' motivation/interest, followed by the pedagogical approaches of lecturers, course organization, learning conditions, course structure, and lecturers' knowledge of the subject [7]. The survey questions were based on topics and elements derived from the research works of literature. This study aims to understand the factors that impact students'

Table 1

Distribution of responses by questions about Group A - students' demographics in the dataset.

	Option	N	Percent (%)
Year	3rd year	135	6.2
	4th year	441	20.3
	Graduated	1594	73.5
Gender	Male	240	11.1
	Female	1930	88.9
Policy-based-students	Yes	766	35.3
	No	1404	64.7
Minority Students	Yes	129	5.9
	No	2041	94.1
Poor-household students	Yes	86	4.0
	No	2084	96.0
Students' father educational background	Primary degree	120	5.5
	Secondary degree	274	12.6
	High school degree	603	27.8
	College/university degree	370	17.1
	Graduate degree	643	29.6
	Not public	160	7.4
Students' mother educational background	Primary degree	125	5.8
	Secondary degree	294	13.5
	High school degree	592	27.3
	College/university degree	495	22.8
	Graduate degree	502	23.1
	Not public	162	7.5
Students' father occupation status	Government employee	514	23.7
	Self-employment	565	26.0
	Freelance	650	30.0
	Other	409	18.8
	Not public	32	1.5
Students' mother occupation status	Government employee	491	22.6
	Self-employment	557	25.7
	Freelance	695	32.0
	Other	405	18.7
	Not public	22	1.0
Average time each day hanging out with friends	under 1 h	557	25.7
	from 1 to lower 2 h	785	36.2
	from 2 to lower 3 h	590	27.2
	from 3 to lower 4 h	152	7.0
	over 4 h	86	4.0
Average time each day using social media	under 1 h	229	10.6
	from 1 to lower 2 h	735	33.9
	from 2 to lower 3 h	634	29.2
	from 3 to lower 4 h	306	14.1
	over 4 h	266	12.3
Average time each day studying	under 2 h	17	.8
	from 2 to lower 4 h	47	2.2
	from 4 to lower 6 h	78	3.6
	from 6 to lower 8 h	245	11.3
	over 8 h	1783	82.2

learning outcomes, and the dataset was collected from students at the University of Education, Vietnam National University, Hanoi.

2.1. Data Description

The dataset and factors affecting learning outcomes are classified into two main groups of independent variables. The first group (A) included demographic variables such as gender, course, ethnicity, parents' qualifications and occupations, family's economic status, and the motivation

Table 2
Descriptive statistics of Group B - Students' learning perceptions during university.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
The level of adapting to the learning environment at the university	Not at all	70	3.50	.970	.021	3.46	3.54
	Little	152					
	Moderate	954					
	Quite	606					
	Very	388					
The level of effecting on the learning methods	Not at all	33	3.66	.929	.020	3.62	3.70
	Little	120					
	Moderate	869					
	Quite	674					
	Very	474					
The level of supporting from the university	Not at all	51	4.00	.981	.021	3.96	4.04
	Little	61					
	Moderate	553					
	Quite	675					
	Very	830					
The level of supporting from lecturers	Not at all	20	4.19	.868	.019	4.15	4.22
	Little	28					
	Moderate	448					
	Quite	706					
	Very	968					
The quality of the university's facilities and equipment	Not	36	4.07	.998	.021	4.03	4.11
	Fairly	131					
	Quite	399					
	Rather	677					
	Really	927					
The quality of lecturers at the university	Not at all	16	4.33	.831	.018	4.29	4.36
	Little	24					
	Moderate	342					
	Quite	636					
	Very	1152					
The suitability of the training curriculum	Not at all	12	4.13	.855	.018	4.09	4.16
	Little	45					
	Moderate	465					
	Quite	779					
	Very	869					
The level of learning competing in classrooms	Not at all	13	3.94	.891	.019	3.90	3.97
	Little	76					
	Moderate	629					
	Quite	772					
	Very	680					
The level of influence from friends	Not at all	20	3.83	.890	.019	3.79	3.87
	Little	82					
	Moderate	707					
	Quite	797					
	Very	564					

Table 3
Distribution of responses by question about participants' grade point average (GPA).

GPA	Option	N	Percentage
Under 2.0	Poor (1)	73	3.4
From 2.0 to lower 2.5	Average (2)	109	5.0
From 2.5 to lower 3.2	Fair (3)	1189	54.8
From 3.2 to lower 3.6	Good (4)	692	31.9
Over 3.6	Excellent (5)	107	4.9

Table 4

Correlations among Group A and students' outcomes (GPA).

Variables	Student's outcomes (GPA)			p-value
	Levene	df	F	
Year	.000	2	15.230	.000
Gender	.368	1	6.917	.009
Policy-based-students	.000	1	9.534	.002
Minority Students	.000	1	3.2891	.072
Poor-household students	.001	1	4.262	.042
Students' father educational background	.000	5	5.081	.000
Students' mother educational background	.000	5	10.061	.000
Students' father occupation status	.004	4	2.232	.067
Students' mother occupation status	.000	4	5.595	.000
Average time each day hanging out with friends	.309	4	2.813	.024
Average time each day using social media	.666	4	8.379	.000
Average time each day learning	.413	4	7.107	.000

Table 5

Pearson's correlation statistics of Group variables and students' outcomes (GPA).

Variable	1	2	3	4	5	6	7	8	9	10
GPA										
Adapt_Learning_Uni	.123**									
Study-Methods	.129**	.564**								
SupportOf_Uni	.050*	.421**	.582**							
SupportOf_Lec	.071**	.403**	.423**	.510**						
Facilitie_Uni	.026	.350**	.493**	.633**	.420**					
Quality_Lecturer	.098**	.349**	.348**	.468**	.612**	.520**				
TrainingCurriculum	.049*	.357**	.433**	.524**	.515**	.605**	.576**			
Competitive_Class	.042*	.346**	.467**	.443**	.505**	.441**	.453**	.526**		
InfuenceF_Friends	.005	.365**	.422**	.421**	.473**	.412**	.419**	.445**	.590**	

Note: * = p-value < .05, ** = p-value < .01

behind choosing their current major, as detailed in Table 1. The second group (B) comprised questions about the student's perceptions and assessments of the lecturers and university, addressing their adaptation to the learning environment and university instructional methods, the level of lecturer support, quality of teaching lecturers, adequacy of university facilities, appropriateness of training curriculum, and competition's level within classrooms and the influence of peers on learning as shown in Table 2. Student learning outcomes were analyzed using the grade point average (GPA). There are two types of GPA, at the time of data collection for undergraduates and the GPA used for graduation consideration for alums, as detailed in Table 3. The number of graduates who responded to the survey was significant, at 73.5%.

3. Experimental Design, Materials and Methods

The sample comprised students who were studying or had graduated from the University of Education, Vietnam National University, Hanoi. This survey was conducted from March to May 2023. The questionnaire was designed on Google Forms and sent to students and alumni. A total of 2238 individuals voluntarily participated and responded to the survey. After filtering out incomplete or inappropriate responses, 2170 answers were deemed valid. We ensured participants that income information would be kept exactly confidential and used solely for research purposes.

Overall, the variables in Group A and Group B all have influenced students' GPAs. The correlation between the variables has been analyzed and presented in Table 4. Examining the correlation between GPA and nine items in group B, the results show that students' personal factors

Table 6
Exploratory factor analysis and factor loading of the study.

Variables	Component				Coefficients	
	1	2	Eigenvalue	Crobach's alpha	Beta	Sig.
TrainingCurriculum	.779			0.888	-.006	.833
Facilitie_Uni	.757				-.067	.030
SupportOf_Uni	.754				-.035	.264
Competitive_Class	.741				-.004	.885
SupportOf_Lec	.741		47.658%		.003	.930
Quality_Lecturer	.729				**.112**	**.000**
InfuenceF_Friends	.708				-.081	.003
Study_Methods	.658				**.138**	**.000**
Adapt_Learning_Uni	.545				.076	.004
GPA		.904	58.154%			

Table 7
Ordinal regression results.

		Estimate	Sig.
GPA	Poor	-2.287	.000
	Average	-1.297	.028
	Fair	1.834	.002
	Good	4.350	.000
Year	3rd year	-.299	.142
	4th year	-.559	.000
	Graduated	0	.
Gender	Male	-.329	.017
	Female	0	.
Policy-based-students	Yes	-.224	.029
	No	0	.
Minority Students	Yes	-.040	.855
	No	0	.
Poor-household students	Yes	-.068	.778
	No	0	.
Students' father educational background	Primary degree	-.230	.495
	Secondary degree	-.168	.577
	High school degree	.089	.756
	College/university degree	.076	.792
	Graduate degree	-.186	.502
	Not public	0	.
Students' mother educational background	Primary degree	-.628	.058
	Secondary degree	-.680	.023
	High school degree	-.561	.051
	College/university degree	-.249	.375
	Graduate degree	.099	.724
	Not public	0	.
Students' father occupation status	Government employee	-.084	.823
	Self-employment	-.278	.453
	Freelance	-.274	.463
	Other	-.240	.527
	Not public	0	.
Students' mother occupation status	Government employee	1.709	.000
	Self-employment	1.722	.000
	Freelance	1.676	.000
	Other	1.400	.002
	Not public	0	.

Table 7 (*continued*)

		Estimate	Sig.
Average time each day hanging out with friends	under 1 h	.085	.723
	from 1 to lower 2 h	.143	.537
	from 2 to lower 3 h	.014	.951
	from 3 to lower 4 h	-.107	.693
	over 4 h	0	.
Average time each day using social media	under 1 h	.397	.040
	from 1 to lower 2 h	.466	.003
	from 2 to lower 3 h	.584	.000
	from 3 to lower 4 h	.524	.003
	over 4 h	0	.
Average time each day studying	under 2 h	-.377	.450
	from 2 to lower 4 h	-.842	.006
	from 4 to lower 6 h	-.310	.194
	from 6 to lower 8 h	-.171	.217
	over 8 h	0	.

are all statistically correlated at the significance level of 0.01 or .005. Students who have adapted to the learning environment, have better learning methods, and have received support from the school and from the lecturers all tend to have higher GPAs. Furthermore, competition in the classroom and friends also has a positive impact on students' outcomes, as detailed in Table 5.

Exploratory factor analysis was used to confirm the order and to estimate the construct suitability of the scale variables in the students' University of Education context, including two components with GPA separated as separate components. Then, linear regression determined the order of impact of the scale variables on students' GPA. Students' learning methods and the quality of lecturers are, respectively, the two factors that have the most significant impact on students' outcomes, as detailed in Table 6.

In addition, GPA is the basis for ranking and supports classifying student results; in this case, ordinal regression was applied with nominal and ordinal variables. Based on the results, the ordinal regression model is suitable for -2 log-likelihood with sig. < 0.05, and from there, the prediction for each case that the student participated in whose classifying their the corresponding learning outcomes, as detailed in Table 7.

Limitations

This dataset offers significant insights into the elements that drive student learning outcomes. Each question in Group B pertained to an element that supports student learning, but each element includes different content and needs to be further studied in more depth and detail regarding its relationship to student grades in a class or course.

In addition, in the current educational innovation perspective in Vietnam, the learner is the center of the educational process [8]. The educational goal is to develop the learner's comprehensive capacity. In which, the learners competence is the ability to apply knowledge and skills to pratice solving complex problems/situations that are required in life and work. Hence, in evaluating the learner's learning outcomes, it is necessary to add other content and pay attention to the learning process. This dataset provides an analysis of student performance based on GPA and is also a development tool that guides further research into more comprehensive studies of college student outcomes.

Ethics Statement

The authors have read and followed the ethical requirements for publication in Data in Brief. They attest that the current work does not involve human subjects, animal experiments, or any data collected from social media platforms.

Data availability

Dataset about VNU students (Original data) (Mendeley Data)

CRediT Author Statement

Vinh Doan Tran: Conceptualization, Methodology, Investigation, Data curation, Supervision, Writing – original draft; **Kim Son Thi Nguyen:** Conceptualization, Methodology, Supervision; **Diep Ngoc Le:** Conceptualization, Methodology, Data curation, Formal analysis, Writing – review & editing.

Acknowledgements

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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