Pages: 129 – 139 | Vol. VIII, No. II (Spring 2023) | DOI: 10.31703/ger.2023(VIII-II).10
URL: http://dx.doi.org/10.31703/ger.2023(VIII-II).10 | Global Economics Review (GER)

Cite Us

Analysis of Sustainable Academic Performance through Interactive Learning Environment in Higher Education

Munira Abdul Rehman * Ajab Ali Lashari † Saqib Abbas ‡

p-ISSN: 2521-2974 | e-ISSN: 2707-0093 | L-ISSN: 2521-2974

Citation: Rehman, M. A., Lashari, A. A., & Abbas, S. (2023). Analysis of Sustainable Academic Performance through Interactive Learning Environment in Higher Education. *Global Economics Review*, *VIII*(II), 129-139. https://doi.org/10.31703/ger.2023(VIII-II).10

Abstract: *A number of factors on which the students' academic performance is dependent like students' trajectory movement, their background knowledge, family background, use of technology, help from seniors or classmates, student satisfaction, and self-regulated. In the present era of education, people believe that the necessities for sustainable development of students are achievable not the inborn attribute of the individual. The study's purpose was to analyse the impact of the perceived usefulness factor, difficulty factor, behaviour factor and attitude factor on the academic performance of learners at higher education level and how the trajectory movements of students influence their sustainable academic performance. The undergraduate students of public universities of Karachi were taken as the population, the sample size is 145, and a convenience sampling method was used. A questionnaire was adopted as an instrument for collecting data. The finding shows that the trajectory movements of students have a significant impact on academic performance. The study supported the four theories which were discussed in the theoretical framework.*

Key Words: Academic Performance, Interactive Learning, Perceived Usefulness, Sustainable, Trajectory

JEL Classification:

Introduction and Background of the Study

Education is the fundamental element for the growth and success of nations and students' academic performance is the basic factor for the quality of education (Das, 2014) According to Anthony. A (2018) Students' academic performance is one of the basic attributes in the system of education.

There are a number of factors involved which boost the performance of students which includes, time given to study, the social and economic position of parents, the age of students, guideline given by teachers and parents, background knowledge and space, communication skills, and learning environment significantly effect on academic performance of the students (Signh&Signh,2016)

In the present era of the digital world, education technology enables people to

*PhD Scholar, Department of Education, Sindh Madressatul Islam University, Karachi, Sindh, Pakistan.
†Lecturer, Department of Education, Sindh Madressatul Islam University, Karachi, Sindh, Pakistan.
‡ Assistant Professor, Benazir Bhutto University, Lyari, Karachi, Sindh, Pakistan.

Corresponding Author: Ajab Ali Lashari (Lecturer, Department of Education, Sindh Madressatul Islam University, Karachi, Sindh, Pakistan.
Email: ajab.lashari84@gmail.com)

believe that essentials for sustainable development of students, inventive teaching approaches and methods are reachable not the innate ability of man (Ely, 2018)

For this purpose, the role of universities and how they create an environment of learning and provide necessities so that students' trajectory movement can help them to perform well in their academics. At the higher education level it is one of the most debatable issues how universities manage and make sure to achieve sustainable development targets with respect to students' academic performance (Murray, 2018)

Sustainability in education is a universal challenge, even for developed countries like UK and USA. In the UK, the dropout rate at the university level increased for successive 3 years i.e. 2015 to 2018(Wealer, 2018). In the USA, after enrollment, only 40% of students have successfully completed their graduation within four years of a specified time (Selingo, 2018). A number of studies also show alarming situations related to the performance at higher education level in Pakistan (Arshad, 2019). The National Human Development Report of 2018 indicated that only 6% of youngsters have more than 12 years of education in Pakistan.

Like other countries of the world, Pakistan is facings a number of issues and challenges related to education, low enrollment rate, high dropout rate, gender discrimination, and lack of attention from the government towards higher education, statically outcomes show the dark track toward the sustainable development of education, despite of a number of factors related to the problem, trajectory movement of students has received limited attention by the researchers, the issue of trajectory movement is actually associated with the learning environment.

The number of elements linked with this issue, out of which trajectory movement is directly linked with sustainable academic performance hasn't received much attention in educational research. In the absence of a suitable environment for learners, they possibly take an interest in other activities and start bunking their classes. For this purpose, limited work has been done to analyse the educational setting and evaluation, such as attending classes, having assignments, the worth of taking notes, paying attention in class support students in advance (Bellur, Nowak & Hull,2015)

However educational sustainability could be used in association with the experts to develop authentic opportunities for learning (Brundiers, Weik Redman, 2010)

Research Objectives

In the study, the researcher has analyzed sustainable academic performance through interactive learning environments in higher Education

This study aims:

1. To analyze the impact of perceived usefulness factors on the academic performance of learners at higher education level
2. To analyze the impact of difficulty factors on students' academic performance at the higher education level
3. To analyze the impact of attitude factors on students' academic performance at higher education level
4. To analyze the impact of behavioural factors on students' academic performance at higher education levels.

Research Questions

1. What are the impacts of perceived usefulness factors based on trajectory movements on the academic performance of learners?
2. What are the impacts of difficulty factors based on the trajectory movements of the students on their academic performance?
3. What are the impacts of attitude factors based on the trajectory movements of learners on their academic performance?
4. What are the impacts of behaviour factors based on the trajectories of students on their academic performance?

Review of Literature

The sustainable development goals (SDGs) after MDGs are for sustainable development globally not only for the welfare of mankind but for the planet. Out of 17 goals, 4 indicate the importance of education in sustainable development globally. This plays an important role in achieving the other goals. The aim of the goal is to ensure quality education that provides equal chances to all. It is the responsibility of educational institutions to guide students so they can contribute to sustainable development globally.

For this purpose, students' learning outcomes are an important component for the sustainable development of students and academic performance is achievable through interactive learning environments. A number of studies suggested that a well-organized design supports human resources.

The results shown by the previous studies suggested that students learn more in an interactive learning environment.

Theoretical Framework

Technology Acceptance Model (TAM)

The TAM is an information system theory that models how users come to accept and use technology, behavioral intention is a factor that leads people to use the technology (Syed Far Abid Hussain, Zhao XI, Muhammad Nurunnabi &Bilal Anwar (2019). In the beginning, it was built by David in 1989 and a combined view was proposed later by a number of researchers.

According to this theory, there are two factors which find out whether the system of computer will be acceptable to its invested customers or not one is when the user believes that by using this technology their work performance will increase and the other is when the users trust in these technologies would be effortless and easily accessible.

According to Wikipedia external variables like social interaction has an essential element to find out the attitude altitude when the technology acceptance model is set up the individuals will have the aim and viewpoint to use it but discrimination may be found due to age groups and gender the reason for this is all the persons are not alike.

Attachment Theory

This theory was developed by John Bowlby, British Physiologist. This theory believes that humans are naturally close with their caretakers. They are by birth required to build a close relationship with them specifically in the initial six months if they get appropriate care, love and attention from their caregivers (Simpson et al., 2017). It gives the concept that children are attached biologically to others for the support of survival in the world (Bowlby, 1975)

According to this theory, the attachment of human being to each other support them from an educational point of view students learn from their teachers, classmates, and senior students taking regular classes, going to the library, and lab regularly, these movements can build up the strong relationship with their class fellows and this act affects their success (Bergin&Bergin, 2009).

Social Cognitive Theory (SCT)

This theory was extended by Albert Bandura in 1960 and has been used in education, communication and psychology. According to this theory, human behaviour is the replication of others' actions, they copied the behaviour of a model performing in front of them, or by observing others' behaviour. The individual can learn or seek knowledge directly from observing other means of social interaction, and undergo changes and out-of-home effects. This theory explains that the psychological and social elements have an impact on the behaviour of an individual (Bandura,1993), the study will explain the behaviour factors by SCT theory, study continuation, hope, future achievements and opportunities.

The Expectation Confirmation Model (ECM)

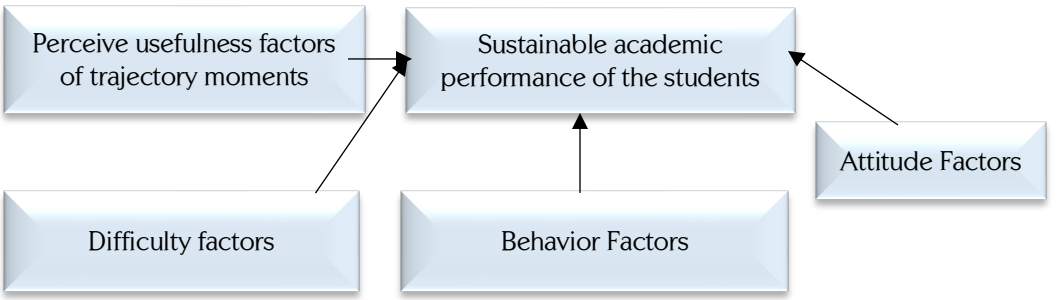
This theoretical model was introduced by Bhattacharjee in 2001, this theory explains the objectives of IS utilizer and how to reuse it,

this study includes some of the features that will be taken like perceive usefulness, habits and satisfaction levels of students. The factors of attitude in the research model include the attitude of learning, classroom attitude and future attitude.

User verification and intentions are the diviners of satisfaction. In the field of education, a number of studies are supported by the ECM framework to find out the student's continuance intentions.

Study Model

Figure 1



Sustainable Academic Performance

The goals of every generation are similar they aim for individual social, economic, and technological development which leads to spend fruitful life. On the planet on which we live, climate changes have a negative effect and due to this lack of resources take place, societal imbalance makes the rich become richer and the poor become poorer even though few countries do not provide basic facilities like food, shelter and other fundamental needs. So it is the responsibility of individuals living on the planet to make long-term strategies to reduce the effect and especially the role of higher education institutions i.e. universities involvement is crucial to cope with the growing challenges of the environment and social elements of sustainable development. (Danciu, 2013). According to UNESCO, the goal of sustainable education development is to authorize the students to decision-making and step activities with responsibility.

The sustainable education abstraction demands the active involvement of the community to manage and design complex models for study programs in the light of basic components of sustainability.

In the present era role of universities is shifted from teaching and fundamental research to the transformation of knowledge and skill development in applied research.

A number of educational institutes aim to increase their academic performance globally reforms take place rapidly in which the need of students are also undertaken to meet their future demands (Brandenk, 2012)

The sustainable development concept is vast and can be applied to a number of areas whether it is scientific, technology, philosophy or even politics.

Sustainable development in higher education institutes undergoes a number of well-defined challenges which contain multi-dimensional difficulties of sustainability and integration of content (Akin, 2019)

For growth and success of the students' academic performance is the basic factor for the quality of education which is the basic attribution in the system of education. (Das, 2014)

A number of studies inquired about the track of sustainable development of students'' intentions, beliefs, attitudes and behaviour (Tang, 2018).

Role of Interactive Learning for Sustainable Academic Performance

To motivate the students to acquire their desired academic results for sustainable development. There are many factors on which the students' academic performance is dependent like students' trajectory movement, their background knowledge, family background, use of technology, help from seniors or classmates, student satisfaction, self-regulated learning and to determine the performance of the universities the main indicators are the rate of graduates and students' academic trajectory which also leads towards curriculum changes (Sanchez et al, 2022)

The academic trajectory field is vast as there are a number of theoretical and methodological views in literature present today due to the availability of vast data related to the track followed by university students.

'Trajectory' deals with a career path which can change direction and position. (Han et al., 2017)

Importance of Trajectories in solving difficulties of Students

Students who belong to the economically disadvantaged can improve their social skills which ultimately increase their involvement in social activities and extend their learning process (Milter, et al., 2009) the relationship with peers has a positive impact on students' development as time passes. The connection with the peers and classmates not only changed the behavior and attitude of the student but side by side their relationship with each other the students made a strong bond with each other. This is known as a co-evolutionary process (Veenstra & Steglicu, 2012)

Role of Student's attitude in their Achievement

Winston Churchill once quoted that attitude is a small thing but it makes a great change, in the attitude of the student towards their learning whether it is positive or negative effect their learning point of view for their whole life (Maryjoy, 2019). According to Hajazi and Naqvi (2006), students' academic performance is the product of many factors like Psychological, economic, social and other environmental factors.

A number of studies show that academic achievement is directly linked with the students' attitude towards the learning. Candeias (2010) indicated that the attitude of students towards the school depends upon how he or she behaves in the environment, how they interact with peers and teachers and how much they involve in curricular activities. The attitude of coming late and delaying the submission of assignments affects students' performance (Batairch, 2014). It also not only lowers their own performance but also distracts their classmates and teachers with their negative attitude, on the other hand, learners also lead towards the idea of improving the teaching and learning process through this a teacher can evaluate his or her teaching and reform their work which makes their teaching and learning process more effective (Bakar, 2010).

Role of Students' Behaviour in Sustainable Academic Performance

Human behaviour plays a crucial role in solving both crises i.e. environmental and sustainability, even the present emergencies of environmental sustainability are also concerned with human behaviour. Education for sustainable development has considered an important instrument to achieve or shift from a point where they stand towards a more secure and sustainable future (Rijeka, 2020)

Education is the process through which skills, knowledge and attitude are transferred from one generation to another with the help of teachers and researchers (Jaffar, 2008). Academic achievement and performance are the product of it which can be measured and assessed usually by the teachers and there is not defined accurately how it can be measured in the best way. The examination is also taken for this purpose (Crispo, 2010)

Currently, the meta-analysis suggested that student's achievements depend upon various factors parental involvement in students' learning process has a great impact on students' skills like habits of reading (Farooq.2011)Another study indicated that student performs well when he or she feels safe and secure, esteem and involve in learning activities, so the environment which includes social, economic, ethical and educational climate has fruitful effects on academic performance of learners, self-motivation leads towards their higher achievement, they engage in learning and their interest make them learn, it is also observed that if students feel any difficulty they become disappointed and less motivated but the case may be different from person to person as some students manage their stress and take difficulty as a challenge, some lose hope which mirrors in their social behaviour and decline in their performance (Nunez,2005).

There are numerous factors which affect their academic performance perceived usefulness factor in which students believe that by using certain technology they can achieve more, behavior and attitude factors, and environment also influences their academic performance.in higher classes, peer pressure and their support, and teacher's attitude also impact their achievements.

Research Methodology

Research Strategy

The design of the research was explanatory in nature; a quantitative method was used to analyze the result of the study. The survey method was adopted to collect the data

Population, Sampling and Participants

The population of the study were undergraduate students of public universities in Karachi. The respondents were from different disciplines.

For data collection, the researcher used the convenience sampling method, the researcher selected this method due to time constraints and ease of approach. For the collection of data and to get maximal responses, the author generated a Google form out of a questionnaire and shared it online with the undergraduate students by taking consent from them. For this purpose, the researcher also visited the universities for collecting data and personally administered the survey process.

The subject of the study were undergraduate students of public universities in Karachi. The sample size of the study is 145 respondents.

Research Instrument

The researcher adopted the questionnaire which was used as an instrument for collecting data, the questionnaire comprises 19 items in total out of which 3 were for the demographic information of participants, 4 statements are for usefulness factors,3 for difficulty factors,3 for attitude factors 4 for behaviour factors, 2 statements were related to dependent variable academic performance. The instrument was structured in a Likert scale ranging from 1 to 5 options 1 is for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree.

Procedure

As an ethical consideration of research, the researcher took consent from the participants of the study, after completing the data collection the data was organized, and for the purpose of data analysis, the data was statically calculated.

Data Analysis Plan

To analyze and interpret data the researcher has set up the following steps: The researcher has analyzed the data by using correlation and regression analysis to test the hypothesis. Smart PLS 4 software has been used to analyze data.

Data Analysis and Interpretation

This research study was designed to analyze the impact of different movements of university students which influence sustainable academic performance over study also showed the impact of perceived

usefulness factors on the attitudes and behaviour of learners at higher education levels. This chapter includes presentations and tables of analysis and interpretation of responses from statements structured in the Likert scale, the smart PLS 4 software has been used to analyze the data.

Measurement Model Assessment

It is assessed by validity and reliability (Hair, 2006). In the beginning, the factor loading for all the items was assessed, which shows the significant value of the construct, the value of Cronbach's alpha shows the acceptable values from 0.70 to 0.81(Vinzi *et al.,*2010). For further confirmation, the composite reliability of the construct was measured. Table 1 shows the significant value of composite reliability which is found over 0.70 which indicates the clear reliability of the construct (Hair et al., 2006). For convergent validity, the AVE of the construct was assessed which was found greater than 0.5 which is the required value for it (Hair et al., 2006). Only the Usefulness factor loadings are partially significant with low values as compared to accepted values, figure 1 also shows the above value with a graphical presentation of the structural Equation Model.

Table 1

Loadings, Reliability and Validity

Variables	Loadings	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Attitude Factor		0.694	0.841	0.602
AF1	*0.*749			
AF2	0.673			
AF4	0.899			
Behaviour Factor		0.776	0.841	0.607
BF1	0.532			
BF2	0.831			
BF 3	0.818			
BF 4	0.885			
Difficulty factor		0.700	0.753	0.607
DF1	0.813			
DF2	0.864			
DF3	0.644			
Usefulness Factor		0.791	-0.372	0.271
UF1	-0.566			
UF2	-0.566			
UF3	0.480			
UF4	0.456			
Academic Performance Factor (DV)		0.170	0.328	0.528
APF1	0.962			
APF2	0.361			

Descriptive Statistic and Correlation Analysis

The next step followed by the measurement assessment is to evaluate the path coefficient which is for the evaluation of the relationship between the construct of the study to evaluate their significant value statically.

Table 2 represents the descriptive statistics and correlation analysis. The values show a strong correlation among the variables.

All the independent variables are associated with dependent variables; the researcher has also conducted the regression test by continuing the process of analysis.

Table 2

Descriptive Statistic and Correlation

Variables	Mean	St. Deviation	1	2	3	4	5
AF	3.856	0.938	1				
DF	3.416	0.866	0.326	1			
AF	3.821	0.858	0.632	0.477	1		
BF	4.173	0.793	0.255	0.196	0.303	1	
DV	4.028	0.845	-0.199	- 0.178	-0.035	o.235	1

Notes: IS is a dependable variable which is the academic performance of students, the significant value for correlation is 0.01

Regression Analysis

In regression analysis academic performance has been taken as the dependent variable and the usefulness factor, difficulty factor, attitude and behaviour factor have been taken as the independent variable. There is no control variable in the study, the age and gender of all the participants are approximately the same as they are all undergraduate students of the universities of Karachi and belong to the same age group. The regression analysis shown in Table 3 indicates the significant relationship among the variables UF and BF and for other variables i.e. AF and DF are not significant.

Table 3

Regression Analysis

Variable	SE	Beta value	T value	P value
UF	0.078	0.237	2.472	0.015
BF	0.454	0.252	4.733	0.000
AF	0.028	0.477	0.287	0.775
DF	0.111	0.326	1.389	0.167

Note: the significant p-value is < than 0.05 and t value significant when it is higher or equal to 1.96

The researcher further continued with Summary ANOVA where jointly all the independent variables jointly affect the dependent variable shown in Table 4

Table 4

Summary Anova

	Sum Square	Df	Mean Square	F	P value
Total	144.000	143	0.000	0.000	0.000
Error	106.089	139	0.763	0.000	0.000
Regression	37.911	4	9.478	12.418	0.000

Note: The significant p-value is < 0.05

The significant relationship among four independent and one dependent variable along with their construct shows the strong correlation among them presented in Table 2. The strong significant relationship among the variables i.e. Dependent variable and Independent variables shown in Tables 3 and 4, also supported the hypothesis of the study

Findings of the Study

The factor loading for all the items was assessed, which shows the significant value of

the construct, and the value of Cronbach's alpha shows the acceptable values from 0.70 to 0.81. For further confirmation, the composite reliability of the construct was measured. The value of composite reliability which is found over 0.70 indicates the clear reliability of the construct. The value of AVE was assessed for convergent validity which was found greater than 0.5 which is the required value for it (Hair et al., 2006). According to the results, the two hypotheses of the usefulness factor and behaviour factor based on the student's trajectory are accepted and the difficulty factor and attitude factors are rejected. It means that there is a significant impact of the perceived usefulness factor and behaviour factor based on the trajectory of students' academic performance means is accepted and there is no significant impact of students' attitude factor and difficulty factor based on students' trajectory on academic performance means it is rejected.

Conclusion

The finding of the study reveals that the trajectory movements of students have a significant impact on academic performance. Statically measures also represent the strong relationship between academic support from peers as well as care of teachers, attitude towards learning and behaviour towards study continuation connected with the trajectory movements of learners have a significant and productive impact on sustainable academic performance. Furthermore, this study has a strong theoretical background with four factors and the result shows the stability with a new aspect of trajectory movement role in the sustainable development of education. This study fully supported the four theories which were discussed in the theoretical framework.

Recommendations

Following the recommendation made by the researcher in light of the above conclusion, the trajectory is a novel concept in the field of education and has a vast scope for further study. In future the in dept. study of trajectory moments and their impact on sustainable educational development of students using mixed methods is recommended by the researcher, moreover, the comparative study among high achievers and low achievers trajectories has also suggested, it may take time and investment in finding innovative ways to attain education sustainability through it.

References

Abaidoo, A. (2018). *Factors contributing to academic performance of students in a Junior High School*. GRIN. https://www.grin.com/document/450284

Arshad, M., Qamar, Z. A., Gulzar, F. H., & Ahmed, G. (2019). School Environmental Effects on Academic Achievement in English Subject at Secondary Level in District Rawalpindi, Pakistan. *Indian Journal of Science and Technology*, *12*(6), 1–10. https://doi.org/10.17485/ijst/2019/v12i6/140719

Bandura, A. (1993). Perceived Self-Efficacy in Cognitive Development and Functioning. *Educational Psychologist*, *28*(2), 117–148. https://doi.org/10.1207/s15326985ep2802_3

Bellur, S., Nowak, K. L., & Hull, K. S. (2015). Make it our time: In class multitaskers have lower academic performance. *Computers in Human Behavior*, *53*, 63–70. https://doi.org/10.1016/j.chb.2015.06.027

Bergin, C., & Bergin, D. (2009). Attachment in the Classroom. *Educational Psychology Review*, *21*(2), 141–170. https://doi.org/10.1007/s10648-009-9104-0

Bhattacherjee, A. (2001). Understanding Information Systems Continuance: An ExpectationConfirmation Model. *MIS Quarterly*, *25*(3), 351–370. https://doi.org/10.2307/3250921

Bowlby, J. (1975). *Separation: Anxiety and anger (2nd ed.)*. Harmondsworth: Penguin.

Brundiers, K., Wiek, A., & Redman, C. L. (2010). Real-world learning opportunities in sustainability: from classroom into the real world. *International Journal of Sustainability in Higher Education*, *11*(4), 308–324. https://doi.org/10.1108/14676371011077540

Canales Sánchez, D., Bautista Godínez, T., Moreno Salinas, J. G., García-Minjares, M., & Sánchez-Mendiola, M. (2022). Academic trajectories analysis with a life-course approach: A case study in medical students. *Cogent Education*, *9*(1). https://doi.org/10.1080/2331186x.2021.2018118

Das, S.K.; Halder, U.K.; Bairagya, S. (2014). Awareness of School Students about Sustainable Development in Education. *PolySciTech, 1*, 112–116.

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Doctoral dissertation, Cambridge, MA: Massachusetts Institute of Technology

Deng, Z., Han, W., Wang, L., Ranjan, R., Zomaya, A. Y., & Jie, W. (2017). An efficient online direction-preserving compression approach for trajectory streaming data. *Future Generation Computer Systems*, *68*, 150–162. https://doi.org/10.1016/j.future.2016.09.019

Ely, A. V. (2018). Experiential learning in "innovation for sustainability." *International Journal of Sustainability in Higher Education*, *19*(7), 1204–1219. https://doi.org/10.1108/ijshe-08-2017-0141

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). An Introduction to Structural Equation Modeling. *Classroom Companion: Business*, 1–29. https://doi.org/10.1007/978-3-030-80519-7_1

Merriam-Webster. (2019). *Definition of SUSTAINABLE*. Merriam-Webster.com. https://www.merriam-webster.com/dictionary/sustainable

Murray, J. (2018). Student-led action for sustainability in higher education: a literature review. *International Journal of Sustainability in Higher Education*, *19*(6), 1095–1110. https://doi.org/10.1108/ijshe-09-2017-0164

Purvis, B., Mao, Y., & Robinson, D. (2019). Three Pillars of sustainability: in Search of Conceptual Origins. *Sustainability Science*, *14*(3), 681–695. springer.

https://doi.org/10.1007/s11625-018-0627-5

Selingo, J. (2018). Why do so many students drop out of college? And what can be done about it?. https://www.washingtonpost.com/news/grade-point/wp/2018/06/08/why-do-so-many-students-drop-out-of-college-andwhat-can-be-done-about-it/?noredirect=on&utm_term=.c1fab7c877f5

Singh, S. P., Malik, S., & Singh, P. (2016). Research paper factors affecting academic performance of students. *Indian Journal of Research, 5*(4), 176-178.

Suzan van Dijken. (2023). John Bowlby | British developmental psychologist and psychiatrist. In *Encyclopædia Britannica*. https://www.britannica.com/biography/John-Bowlby

Tadese, M., Yeshaneh, A., & Mulu, G. B. (2022). Determinants of good academic performance among university students in Ethiopia: a cross-sectional study. *BMC Medical Education*, *22*(1). https://doi.org/10.1186/s12909-022-03461-0

Tavakol, M., & Dennick, R. (2011). Making Sense of cronbach's Alpha. *International Journal of Medical Education*, *2*(2), 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

The Editors of Encyclopedia Britannica. (2017). Developmental psychology. In *Encyclopædia Britannica*. https://www.britannica.com/science/developmental-psychology

Wang, S., Allen, R. J., Lee, J. R., & Hsieh, C.-E. (2015). Evaluating the developmental trajectory of the episodic buffer component of working memory and its relation to word recognition in children. *Journal of Experimental Child Psychology*, *133*, 16–28. https://doi.org/10.1016/j.jecp.2015.01.002

Weale, S. (2018, March 8). *University drop-out rates in UK rise for third successive year*. https://www.theguardian.com/education/2018/mar/08/university-drop-out-rates-uk-rise-third-year

Zakrajsek, T. (2016). All learning is an active process: Rethinking active/passive learning debate." The Scholarly Teacher (weblog). https://www.scholarlyteacher.com/blog/all-learning-is-an-active-process