

## BLENDDED LEARNING IN HIGHER EDUCATION

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### ABSTRACT

*Blended Learning has been considered an effective approach of delivering learning content as it is simple and flexible. The key purpose of this research study was to find the general interest of students towards blended learning with the course design, learning experience and personal factors. In the next step the motivation of the blended learning was also measured with help of indicators like interest, attention, confidence, relevance and satisfaction, for the same group of respondents. Non-random sample selection techniques are used in this study. The sample of the study included 291 higher education students: 119 female and 172 male participants. The participants included 197 (67.7%) were from a rural area, 94 (32.3%) from an urban area, and 243 (83.5%) were in the Bachelor of Arts Education programs and the others, 48 (18.5%) were in the Bachelor of Science Education programs. All the students participated in the survey were currently attending offline courses or included those who finished their last semester virtually. **Aim:** The aim of this study was to identify students interest towards blended learning and satisfaction levels in different cluster groups in Tiruchirappalli. **Method:** A questionnaire was distributed to the students through online survey technique was used to gather data about the interest of students towards blended learning. Descriptive statistics and cluster analysis were used to test the number of groups. **Results:** Based on the k-mean and hierarchical clustering, three cluster groups were identified: Cluster 1-Moderate learner 40.2%, Cluster 2 - Good learner 13.4% and Cluster 3 - Excellent learner 46.4%.*

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**Keywords:** *Blended Learning, Cluster Analysis, Students' Interest and Motivation.*

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### Introduction

Blended Learning is now a 21st century learning mode. Higher education such as universities and colleges and even schools has started to apply this approach in their respective subjects. Blended Learning has been considered an effective approach of delivering learning content as it is simple and flexible. Blended Learning is not a new technology but rather a combination of two existing technologies in learning something. It is considered more effective as it combines two popular pedagogical modes namely traditional face-to-face and E-Learning with multimedia elements. Students in addition to learning in a controlled compound such as the classroom (face-to-face with teachers), they also have the freedom in choosing their learning experiences, such as the time and place, to which they can choose themselves. This can create interest, increase motivation and raise self-esteem for students of all levels. For example, for excellent students (higher than average performers), Blended Learning can be a platform that can speed up their achievements because they do not have to wait and follow the topics that they have already mastered. Likewise, for weak students, B-Learning is a method to motivate them to learn so that they can continue learning according to their own path, pace and ability without feeling inferior just because they are slower than their peers. Blended Learning is one of the mandatory methods of teaching in the classroom to provide students with new learning strategies and methods as well as ensuring the education system itself is in line with the current changes in education.

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## Review of Literature

**Dayagbil FT, Palompon DR, Garcia LL, Olvido MMJ(2021)**, The trajectory for flexible learning delivery, the role of technology, the teaching and learning environment, and the importance of safety and security were among the emerging themes found in the qualitative replies. The contextual foundation for strategic activities during and after the pandemic was given via scenario analysis. Higher education institutions must adapt to flexible teaching and learning modalities, recalibrate the curriculum, equip the faculty, modernise the infrastructure, implement a strategic plan, and evaluate the plan overall in order to maintain teaching and learning continuity.

**H. M. Naveen. IRJET- IPSIT Model (2021)**, The UGC suggests the crucial elements of instructional activities for using the IPSIT architecture. The UGC concept paper on blended learning and teaching offers comprehensive instructions for successfully implementing BL mode in higher education using the IPSIT architecture. In order to help students gain 21st century skills in addition to successful learning and skill development in the relevant subject-domain, this form of instruction will be employed across the country. This method of instruction will aid in the development of numerous practical abilities that will eventually convert into life skills.

**University Grants Commission (2021)**, it is a teaching and learning style that blends traditional classroom techniques with computer-mediated learning activities to give information. This pedagogical strategy entails a combination of in-person and online activities as well as the incorporation of synchronous and asynchronous learning resources, offering the best opportunity for the design of efficient learning processes. The term "blended learning" refers to the educational strategy of integrating digital learning resources with more conventional face-to-face instruction in a classroom. Students would be encouraged to use a cloud-based learning platform to access digital learning resources on their own time as part of a flipped classroom programme.

**Irwan, Angraini R, Tiara M. (2020)**, the purpose of this study is to evaluate the students' interest in the blended learning model of learning. Blended learning is a method of instruction that evenly distributes face-to-face and online courses. Technology advancements in the realm of education led to the adoption of this concept. Students from three ongoing classes who enrolled in 2016, 2017, and 2018 made up the sample. Descriptive analysis revealed that blended learning models were unsuccessful and did not significantly increase learning outcomes, which decreased participants' interest in participating in offline learning.

**Tulasi B, Suchithra R. (2020)**, one of the teaching and learning pedagogies that is most in flux is blended learning. Institutions of higher learning from all fields are implementing blended learning. The millennial generation of students is a digital native group. Therefore, it makes perfect sense for learning and teaching to be more tech-focused. The students' readiness to integrate the digital transition in teaching and learning must yet be determined, though. The benefits of both traditional classroom instruction and online and virtual learning are combined in blended learning. The current study seeks to comprehend students' openness to a blended learning model approach as well as to determine the efficacy of the model.

**Muxtorjonovna AM. (2020)**, Blended learning combines traditional in-person instruction with online, distance, and technological learning. In recent years, the educational system has begun to use this strategy more and more. The article's goal is to outline the benefits of blended learning in the classroom as well as the key components of a successful mixed course. Combining the benefits of online and in-person learning can improve the quality of a blended course. The article also lists additional elements that can be used to create an effective blended course. Overall, adaptable and accessible blended learning is an excellent teaching method. Additionally, it can boost students' motivation and course completion rates.

**Rahman Ismail A, Tengku Shahdan TS, Yulia A. (2019)**, Examining the literature review on blended learning is the study's goal. The advancement of pedagogy coincides with that of educational technology. This blended learning pedagogy has been adopted by many nations' higher education systems and educational institutions. Traditional face-to-face instruction and online learning are combined to create blended learning. To assess if the learning falls within blended learning or not, this report also breaks down the two study methods. Additionally, this study lists the traits of blended learning that should be looked for by researchers. In order to apply blended learning in educational practises, practitioners need follow the list of key features.

**Lalima D, Lata Dangwal K. (2017)**, the advantages of both traditional classroom instruction and ICT-supported learning, including both offline and online learning, are combined in the novel idea of blended learning. It offers opportunities for computer-assisted learning, constructive learning, and collaborative learning (CAI). For blended learning to be successfully implemented, there must be diligent efforts, the proper attitude, a sizable budget, and highly motivated teachers and students. It is complex and difficult to organise because it combines several modes. The concept of blended learning, its key components, and the requirements for its implementation are covered in the current study.

**Mozelius P, Hettiarachchi E. (2017)**, In higher education, the usage of blended learning environments has grown significantly in the twenty-first century. With blended learning serving as a transition between traditional face-to-face instruction and pure online classes, tools and approaches that were initially utilised in experimental distance education courses are now commonplace in classrooms across the country. There are success stories in this diverse range of course designs, but there are also instances with low pass rates and subpar learning results. Problems that were first described twenty years ago are now mixed with additional crucial elements that have only lately been discovered.

**Zhonggen Y. (2015)**, since the idea of online learning gave rise to the notion of blended learning in the early 1990s; the 21st century has seen an enormous amount of research into this approach. It came to the conclusion that, while there may still be some disagreements regarding blended learning, there may be more deficits in either solely online or classroom learning than in blended learning, which combines both approaches.

### **Research Gap**

Most research on blended learning has involved programs where some online sessions are used as replacements for parts of a class lecture program. Based on a review of the literature we believed that learning could improve the quality of teaching and learning if implemented carefully to supplement existing classroom lectures which was done. The need to rethink these areas is evident in the previous research as well as the quick and expedient response needed to move to emergency remote instruction. In preparation for post turn courses and programming, blended learning that is thoughtfully designed and integrated could be contemplated. Blended learning that there is still a scarcity of blended learning research describing current academic practices and that effective blended learning implementation still requires investigation. So the present study mainly concentrated on the Analysis of Students interests towards blended learning with motivational factors.

### **Methodology**

#### **Sample**

Non-random sample selection techniques are used in this study. The key purpose of this research study was to find the general interest of students towards blended learning with the course design, learning experience and personal factors. In the next step the motivation of the blended learning was also measured with help of indicators like interest, attention, confidence, relevance and satisfaction, for the same group of respondents. The sample of the study included 291 higher education students: 119 female and 172 male participants. The participants included 197 (67.7%) were from a rural area, 94 (32.3%) from an urban area, and 243 (83.5%) were in the Bachelor of Arts Education programs and the others, 48 (18.5%) were in the Bachelor of Science Education programs. All the students participated in the survey were currently attending offline courses or included those who finished their last semester virtually.

#### **Survey**

An online survey technique was used to gather data about the interest of students towards blended learning. A pilot test of the survey was administered to 20 students. Appropriate revisions were made based on their comments and suggestions. Necessary modifications were made based on their ideas and feedback.

#### **Data Analysis**

Data were analysed using SPSS – Version 20 (IBM, 2020). Descriptive statistics were used to describe sample demographics. Cluster analysis was used to test the number of groups that could be formed within the students group.

#### **Limitations**

Small sample size and non-random selection were some of the major limitations of this research study. The non-random selection limits the ability of generalization of the results. Future researches should either increase the sample size or use random selection techniques. As the results are only based

on students' interest, the inclusion of faculty opinions in future studies might help in understating the issues faced by instructors regarding online education. The conclusion of the study is mainly based on the opinions of student's interest in blended learning.

### Demographic Frequency Table

The majority of respondents are male, mostly up to 21 years old, from rural areas, from Bachelor of Arts programs and the majority final year students (Table 1). However, 172 (59.1%) of the students were male and 119 female (40.9%), 197 (67.7%) were from a rural area, 94 (32.3%) from an urban area, and 243 (83.5%) were in the Bachelor of Arts Education programs and the others, 48 (18.5%) were in the Bachelor of Science Education programs. The majority 189 (64.9%) of the respondents are used Google meet as Digital Learning app.

**Table 1: Demographic Frequency Table**

Demographics	Respondents	Valid percent
<b>Gender</b>		
Male	172	59.1
Female	119	40.9
<b>Age</b>		
Above 17-below 19	126	43.3
Above 19–below 21	147	50.5
Above 21-below 23	14	4.8
Above 23- below 25	4	1.4
<b>Study Programme</b>		
Arts	243	83.5
Science	48	18.5
<b>Study of Year</b>		
I Year	110	37.8
II Year	67	23.0
III Year	114	39.2
<b>Place of Residence</b>		
Rural	197	67.7
Urban	94	32.3
<b>Digital Learning app used</b>		
Google Classroom	62	21.3
Zoom	26	8.9
Google Meet	189	64.9
Others	14	4.8

Sources: Primary data

### Reliability of the Study

Cronbach's Alpha Reliability Index was used to evaluate internal consistency of each construct. Hair et al. (1998) suggests that that acceptable level of reliability index should be maintained at a minimum of 0.5 in order to satisfy for the early stages of research; and over 0.7 is considered to be a good level.

**Table 2**

Blended Learning	N of Items	Cronbach's Alpha
Course Design	9	0.995
Learning Experience	6	0.992
Personal Factors	2	0.964
Interest	4	0.988
Attention	6	0.991
Confidence	4	0.986
Relevance	3	0.983
Satisfaction	2	0.989
Overall	36	0.998

Sources: Primary data

Table 2 shows the Cronbach's coefficient alpha test results. Among the independent variables, Factors attained the highest Cronbach's alpha value with 0.995 is Course design, while personal factors achieved the lowest value, which is 0.964. All Cronbach's alpha values are more than 0.96. It indicates that all the values are having high reliability and good internal item consistency in the scale (George & Mallery, 2003). Over all reliability for this study have been calculated and found to be 0.998 which is close to 1 and hence considered for good level for further analysis of the data. Thus, the data collected is highly reliable.

### **Cluster Analysis**

Cluster analysis is a group of multivariate techniques whose primary purpose is to group objects based on the characteristics they possess. One of the most common uses of cluster analysis is marked segmentation. All segmentation research, regardless of the method used, is designed to identify groups of entities (people, markets, organisations) that share common characteristics, including, but not limited to, attitudes and consumer and media habits (Punj and Stewart, 1983). This form of cluster analysis also allows the researcher to opt for a different perspective on the data, with no definite concepts regarding profiles, similarities, or performance measures. As such, this analysis will segment student's data into meaningful clusters. These clusters were reviewed, evaluated and discussed to better understand satisfaction behaviours that link those within a cluster, and differentiate them from those in other clusters. Moreover, the k-mean clustering technique attempts to identify groups of cases based on selected characteristics, which are selected by requiring a number of variables. Clusters are separated by analysing cluster membership, distance information, and final cluster centres. In this study, the k-mean clustering method helped to determine the appropriate number of clusters (Hair et al, 2009). The client satisfaction variable was clustered through hierarchical clustering and then the cluster membership, distance, and cluster centre were identified.

### **Cluster Profiles**

Based on the k-mean and hierarchical clustering, three cluster groups were identified: 40.2% in cluster 1, 13.4% in cluster 2 and 46.4% in cluster 3. Subsequently, three unique groups were profiled and membership distributed:

- Cluster 1 (40.2%): Moderate learner
- Cluster 2 (13.4%): Good learner
- Cluster 3 (46.4%): Excellent learner

#### **Cluster 1 (40.2%): Moderate Learner**

The first cluster is profiled as 'Moderate learner'. The majority of this group consists of female students with 98.3%, as well as 92.9% of the students are belonging to the age group of 17-19 years. Majority of the students are from Arts programme with 41.5%, studying I year and they have come from rural areas 59.4%.

#### **Cluster 2 (13.4%): Good Learner**

The second cluster is profiled as 'Good learner'. 21.5% of the students are male and only 1.7% of the students are female. 26.5% of the students are belonging to the age group of 19-21 years. 0.8% of students belongs to Arts programme and with 77.1% of students belong to science programme, studying 1.5% II year and 33.3% III year and they have come from urban areas 41.5%.

#### **Cluster 3 (46.4%): Excellent Learner**

The third cluster is profiled as 'Excellent learner'. The majority of this group consists of male students with 78.5%, as well as 73.5% of the students are belonging to the age group of 19-21 years. Majority of the students are from Arts programme with 51.0% and with 22.9% of students belong to Science programme, studying 88.1% II year and 66.7% III year and they have come from rural areas 40.6% and from urban areas 58.5%.

### **Discussion**

The participants in the present study were primarily separated into three groups using hierarchical clustering first and then k-mean cluster analysis. After clustering, profiling was done based on the characteristics, and satisfaction levels of the sample. Several characteristics associated with greater satisfaction are consistent with the results of previous studies (Puig et al, 2009; Da Cruz and Melleiro 2010).

In case of Gender all the clusters are significant with the mean value of 1.00 for male and 0.248 for female. The mean value in homogeneous subsets are cluster I - 1.0, cluster II - 2.0 and cluster III - 2.09.

In Age cluster I is significant. But the cluster II & III is having significant difference in terms of age i.e in cluster II 3<sup>rd</sup> cluster is not significant and in cluster III 2<sup>nd</sup> cluster is not significant.

Under study programme all clusters are significant.

In Academic status, the cluster I & III is having significant difference in terms of academic status i.e cluster I cluster 3 is not significant whereas in cluster III cluster 1 is not significant.

In study of the year, place of residency, digital learning apps used, course design, learning experience, personal factors and motivational factors (IACRS) all the clusters were significant.

**Table 3**

Demographic Factors	Cluster 1		Cluster 2		Cluster 3		Grand Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Gender	2.00	0.00	1.05	0.22	1.00	0.00	1.41	0.49
Age	1.00	0.00	2.00	0.00	2.10	0.53	1.64	0.64
Study Programme	1.00	0.00	1.95	0.22	1.08	0.27	1.16	0.37
Academic status	1.00	0.00	1.23	0.43	1.00	0.00	1.03	0.17
Study of Year	1.06	0.24	2.97	0.16	2.56	0.50	2.01	0.88
Place of Residence	1.00	0.00	2.00	0.00	1.41	0.49	1.32	0.47
Digital Learning Apps Used	1.72	0.84	3.36	0.49	3.00	0.00	2.53	0.88
<b>Role of Learners in BL</b>								
Course Design	1.01	0.03	4.20	0.73	2.13	0.38	1.96	1.09
Learning experience	1.11	0.24	4.31	0.60	2.39	0.43	2.13	1.12
Personal Factors	1.23	0.37	4.69	0.34	2.65	0.54	2.35	1.22
<b>Motivational Factors</b>								
Interest	1.17	0.33	4.42	0.48	2.52	0.50	2.23	1.15
Attention	1.08	0.17	3.99	0.79	2.33	0.46	2.05	1.06
Confidence	1.13	0.27	4.06	0.63	2.31	0.45	2.07	1.05
Relevance	1.10	0.22	3.95	0.81	2.33	0.43	2.05	1.04
Satisfaction	1.00	0.00	3.88	0.68	2.17	0.49	1.93	1.03

Sources: Primary Data

**Table 4**

Variables	Cluster 1	Cluster 2	Cluster 3	Grand Total
<b>Gender</b>				
Male	0	37	135	172
	0.0%	21.5%	78.5%	100.0%
Female	117	2	0	119
	98.3%	1.7%	0.0%	100.0%
<b>Age</b>				
Above 17 -Below 19	117	0	9	126
	92.9%	0.0%	7.1%	100.0%
Above 19- Below 21	0	39	108	147
	0.0%	26.5%	73.5%	100.0%
Above 21-Below 23	0	0	14	14
	0.0%	0.0%	100.0%	100.0%
Above 23-Below 25	0	0	4	4
	0.0%	0.0%	100.0%	100.0%
<b>Study Programme</b>				
Arts	117	2	124	243
	48.1%	0.8%	51.0%	100.0%
Science	0	37	11	48
	0.0%	77.1%	22.9%	100.0%
<b>Academic Status</b>				
UG	117	30	135	282
	41.5%	10.6%	47.9%	100.0%
PG	0	9	0	9
	0.0%	100.0%	0.0%	100.0%

<b>Study of the Year</b>				
IYear	110	0	0	110
	100.0%	0.0%	0.0%	100.0%
IIYear	7	1	59	67
	10.4%	1.5%	88.1%	100.0%
IIIYear	0	38	76	114
	0.0%	33.3%	66.7%	100.0%
<b>Place of Residence</b>				
Rural	117	0	80	197
	59.4%	0.0%	40.6%	100.0%
Urban	0	39	55	94
	0.0%	41.5%	58.5%	100.0%
<b>App Used</b>				
Google Classroom	62	0	0	62
	100.0%	0.0%	0.0%	100.0%
Zoom	26	0	0	26
	100.0%	0.0%	0.0%	100.0%
Google Meet	29	25	135	189
	15.3%	13.2%	71.4%	100.0%
Others	0	14	0	14
	0.0%	100.0%	0.0%	100.0%

Sources: Primary data

### Suggestions

With no clear assumptions relating profiles, similarities, or performance indicators, this type of cluster analysis also enables the researcher to choose a different viewpoint on the data. This analysis will therefore divide the student's data into useful clusters. To better understand the satisfaction-related behaviours that unite members of a cluster and set them apart from members of other clusters, these clusters were examined, assessed, and debated. Additionally, by needing a number of variables, the k-mean clustering technique seeks to discover groupings of cases based on particular characteristics. Teachers should receive professional development that focuses on the appropriate use of new educational technologies that teachers have never used before, given the vast number of online components that need to be taken into account. In addition to offering guidance during the planning stage, educational designers also play a crucial role in reviewing new courses.

### Further Studies

Future studies should take teachers' interest in blended learning's efficacy into account. This study needs to be finished before teachers may think about blending different delivery methods. E-learning works best when it combines a variety of delivery methods. A crucial element in the success of this strategy is institutional backing. For a blended learning experience to be successful, a whole course design is required. To make this happen, there must be strong institutional support in the form of time off, professional development, financing, and technical assistance.

### Conclusion

This study examines students' interests on blended learning environment as well as increase motivation and raises self-esteem for students of all levels. The results of the study demonstrate that, the more students' accept the course moodle sites well organized and the more positive views they express about blended learning environment. Cluster Analysis was used to analyse the students' interest towards blended learning with the course design, learning experience, personal and motivational factors individually to understand the effectiveness of the methodology. The findings of this study conclude that the use of a blended learning methodology in a social studies classroom works to both increase student achievement and create a more positive attitude among students concerning this method of learning. To conclude it can be said that blended learning is to some extent is the solution to problems prevailing in our educational system. If implemented in a well-planned, organized way with right type of attitudes it can become the future of our educational system. It is in our own benefit that steps for adapting blended learning are soon initiated.

**References**

1. H. M. Naveen. (2021). IRJET- IPSIT Model: An Indian Framework for Blended Learning (BL). *Irjet*, 8(9), 773–781.
2. Dayagbil, F. T., Palompon, D. R., Garcia, L. L., & Olvido, M. M. J. (2021). Teaching and Learning Continuity Amid and Beyond the Pandemic. *Frontiers in Education*, 6(July), 1–12. <https://doi.org/10.3389/feduc.2021.678692>
3. University Grants Commission. (2021). Blended Mode of Teaching and Learning: Concept Note. *New Delhi: UGC*.
4. Tulasi, B., & Suchithra, R. (2020). Blended Learning Effectiveness in Higher Education. *International Journal of Engineering and Advanced Technology*, 9(3), 105–108. <https://doi.org/10.35940/ijeat.c4801.029320>
5. Irwan, Angraini, R., & Tiara, M. (2020). *Analysis of Student Interest on Blended Learning*. 458 (Icsgt 2019), 329–335. <https://doi.org/10.2991/assehr.k.200803.041>
6. Muxtorjonovna, A. M. (2020). Significance of Blended Learning in Education System. *The American Journal of Social Science and Education Innovations*, 02(08), 507–511. <https://doi.org/10.37547/tajssei/volume02issue08-82>
7. Rahman Ismail, A., Tengku Shahdan, T. S., & Yulia, A. (2019). A Review of Blended Learning for Education. *International Journal of Scientific and Research Publications (IJSRP)*, 9(2), p8617. <https://doi.org/10.29322/ijsrp.9.02.2019.p8617>
8. Mozelius, P., & Hettiarachchi, E. (2017). Critical Factors for Implementing Blended Learning in Higher Education. *International Journal of Information and Communication Technologies in Education*, 6(2), 37–51. <https://doi.org/10.1515/ijicte-2017-0010>
9. Lalima, D., & Lata Dangwal, K. (2017). Blended Learning: An Innovative Approach. *Universal Journal of Educational Research*, 5(1), 129–136. <https://doi.org/10.13189/ujer.2017.050116>
10. Zhonggen, Y. (2015). Blended learning over two decades. *International Journal of Information and Communication Technology Education*, 11(3), 1–19. <https://doi.org/10.4018/IJICTE.2015070101>.

