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Identifying the influencing factors of self-directed blended learning

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Abstract
The covid-19 pandemic had a significant impact on the global educational system. Students have been exposed to remote learning environments as a result of the pandemic, which has increased the widespread use and recognition of virtual learning among students. During this time, several students recognized the potential benefits of online learning, and once the pandemic was over, they began to incorporate online learning into their daily routines after returning to school, thereby engaging in a self-directed blended learning approach. The study's target population was students in grades IX and XI. A study was conducted on 224 pupils from four different Kendriya Vidyalaya schools through stratified sampling, under Sonitpur district, Assam, India this paper discusses the factors that have influenced the students to adopt of self-directed blended learning approach. Multiple regression analysis was done for this purpose. Three dimensions were considered to evaluate the influencing factors of self-directed blended learning i.e., physical, social, and intellectual dimensions. It was found that all three dimensions had a significant influence on students' adoption of the self-directed blended learning approach with factors of the intellectual dimension being the highest influencing factor.

Keywords: Self-directed blended learning, influencing factors, physical dimension, social dimension, and intellectual dimension

1. Introduction
Blended learning is defined as the parallel combination of both online and offline learning systems It is an educational strategy that combines conventional education along with online learning. It combines the flexibility and accessibility of technology with the in-person interaction and support of a teacher and seeks to find a harmonious balance between online access to knowledge and face-to-face human interactions. According to Christain Institute, 2016, there are four different models of blended learning, namely, rotation model, flex model, self-blend model, and enriched virtual model. This paper performs an in-depth discussion on the factors influencing students to adopt the self-blend approach. The self-blend approach is also referred to as self-directed blended learning or the A La Carte model. It is a form of blended learning where students supplement their traditional, face-to-face, in-school learning with online courses chosen by them and carried on from their home environment or any other comfortable environment outside the formal classroom setting. In this approach, learners in addition to face-to-face classroom learning, students make use of various online apps or social media in order to supplement their classroom learning and gain additional insight on the topic. In order for this method of blended learning to be successful, students must be highly self-motivated. Various benefits like access to both conventional and virtual teachers, increasing one's spectrum of knowledge, quickly availing information, a better understanding of course content, etc., influences students to incorporate this approach in their learning practice.

2. A brief review of the literature
Shree *et al*. (2022) [18] conducted a study on undergraduate medical students and according to the findings of the study, students were more open to a hybrid method of education than simply online classrooms. The study also revealed that while students had a favorable attitude toward learning theory online, they preferred traditional classes for practical sessions.
Maya *et al*. (2022) [16] conducted a study to know the perceptions of university students on switching between conventional and virtual learning. According to the study findings, the claimed benefits of online learning included greater technical proficiency, flexibility in study time, effectiveness in bridging the gap of a missed academic period, and the ability to attend more instructional webinars. The key benefits of the offline learning mode were improved social connection, effective learning, improved concentration, and lower stress.

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Han *et al*. (2022) [9] conducted a study to know the factors motivating parents to choose online learning for their children during and after COVID-19 Pandemic. The study findings revealed that the two new variables influencing parents' perceptions of online learning were significantly improving performance appraisal and risk perception. During the epidemic, parents' perceptions of their children's pleasure with online learning were influenced by perceived ease of use, performance evaluation, and perceived cost. The satisfaction of parents with online learning influenced their desire to select online learning.

Nass *et al*. (2021) [17] conducted a study to know the role of the self-blend model of blended learning as a viable approach for the change of higher education. The study findings revealed that the factors influencing students to adopt the self-blend approach were: great freedom for the student to choose a convenient time, place, and pace of training; motivating students to study in traditional classes with a teacher, and lowering the percentage of incomplete courses.

Gupta (2021) [8] has conducted a study to know the students' perceptions of different modes of learning. According to the study findings, in the event of teacher-student interaction, students prefer offline learning over online learning whereas online learning allows the student for greater learning freedom. Online learning also facilitates students with a wide range of content availability. The majority of students felt that performance evaluation was more effective in offline learning than in online learning.

Chadda and Kaur (2021) [6] in their study findings discussed the level of acceptance of online learning among Punjabi higher education students. It has been discovered in the study that both online and offline ways of learning had advantages as well as disadvantages. The abrupt switch from regular mode to virtual mode of learning during the pandemic scenario was also difficult for students. According to the survey findings students had accepted both online and offline study modes depending on the availability of IT infrastructure, with almost half of the respondents perceiving online mode as more helpful and the other half perceiving offline mode as more helpful.

Faustino and Kaur (2021) [7] in their study findings revealed that the self-blending paradigm promotes creativity, flexible learning, the accomplishment of learning outcomes, and student motivation.

Alsalhi *et al*. (2021) [1] conducted a study on the students of dentistry college and according to the study verdicts self-blend model gives students the chance to pick extra courses in addition to their main ones, which are otherwise not provided by various educational institutions. Students require high motivation for this model to succeed.

Singh *et al*. (2021) [19] in their study found that the majority of students were satisfied with online education and were willing to continue the same learning system in the near future.

Krismadinata *et al*. (2020) [14] in their study results revealed that blended learning can generate flexible learning as this approach facilitates the students to learn at any time and in numerous settings, and also includes the benefits of in-person interaction with teachers and participation in collaborative activities. The use of blended learning has its ratio of offline to online learning.

Horo *et al*. (2020) [10] conducted a study to know the students' perceptions of both conventional and virtual learning during the pandemic lockdown. The study findings connoted that due to various influencing factors, students wished to practice a combination of the online and offline modes of learning in the times to come

Li *et al*. (2017) [15] conducted a study on college-going students and according to the findings, students' views towards online and face-to-face classes were the most impactful on their happiness in blended learning contexts. Higher levels of intrinsic motivation were found to be influential toward satisfaction in blended learning contexts. Computer self-efficacy was found to influence intrinsic motivation and attitudes, but it did not have any influence on the satisfaction of students in blended learning contexts.

Konwar (2017) [13] researched to know the attitude of college students toward online learning. The study findings divulged that the students had a positive attitude toward e-learning and the use of Information and Communication Technologies had developed a successful and impactful teaching and learning approach

Horn and Staker (2011) [11] performed a study to know the students' perception towards both offline and online modes of learning and in their study result they revealed that blended learning provides a more consistent and personalized pedagogy as it allows each student to work at their own pace and helps each child to feel a sense of accomplishment and be successful at school.

3. Research design
An exploratory research design is a research procedure that allows researchers to investigate unfamiliar topics. With the help of this research design, one can avail a better understanding of a particular problem or phenomenon even if it may not always produce conclusive results. The study's design is exploratory as it explores the challenges of self-directed blended learning

4. Method of data collection
The study was carried out at four selected Kendriya Vidyalaya schools in Balipara block, Sonitpur district, Assam, India. Sonitpur district was chosen for the convenience of the researcher. The intent behind the selection of the balipara block was that this block has the highest number of schools. The target group of the study is grade IX and grade XI students as students of these standards are approaching board exams and thus expose themselves to different learning backgrounds to get additional information about a desired content or topic. Since most commonly used e-learning apps prioritize English and Hindi as primary languages of instruction, so does CBSE's curriculum, while, on the other hand, most public schools and State establishments use regional languages as a medium of instruction and communication, so the researcher yearned to choose C.B.S.E schools for the research purpose. To convert a heterogeneous school population into a homogeneous sample, by applying stratified sampling, Kendriya Vidyalaya schools were chosen to generate strata, as these schools mainly use English and Hindi are the main languages of instruction and also enroll students from different economic backgrounds. The sample size of 224 was calculated using the Cochran formula for a finite population (sample size formula). A self-constructed questionnaire was distributed to students to know the factors that have influenced the students to adopt the self-directed blended learning approach.

5. Results and Discussion

Table 1: Multiple regression analysis of factors influencing students to adopt self-directed blended learning

Independent Variables	Beta Coefficient (β)	T	P	R	r²
Physical Dimensions	.212	4.868	.02*		
Social Dimensions	.239	3.115	.04*	.894	.799
Intellectual Dimensions	.413	9.235	.000**		

*$p<0.05$ (significant at 0.05%), **$p<0.01$ (significant at 0.01%)

The results illustrated that the factors of physical dimensions have significantly influenced the students' adoption of self-directed blended learning, with p=0.02 which is below the predetermined significance level of 0.05%. This finding is suggestive of the fact that the inclusion of face-to-face interaction in self-directed blended learning, along with the ability to access course materials and seek clarification from instructors online, may contribute to students' willingness to engage in this learning approach. The online component of self-directed blended learning also allows students to learn at their own pace. According to Nass *et al.* (2021) [17], factors influencing students' choice of a self-blend approach include the flexibility to choose a convenient time, place, and pace for online learning, the opportunity to study in both traditional and virtual classrooms, and the reduction of incomplete courses' workload.

The findings of the study indicate that factors related to social dimension play a significant role in students' adoption of self-directed blended learning, as evidenced by a p-value of 0.04, which is below the predetermined level of significance of 0.05%. This may be because self-directed blended learning fosters a sense of success, confidence, and motivation among students. The offline component of the self-blend approach helps students in enhancing social interaction, increase their concentration level, and reduce stress. These findings are consistent with previous research conducted by Maya *et al.* (2022) [16], which highlighted the benefits of offline learning, such as enhanced social connections, effective learning, improved concentration, and reduced stress levels. Additionally, Faustino and Kaur (2021) [7] have emphasized in their study that self-directed blended learning promotes creativity, the attainment of learning objectives, and student motivation.

The results of the study indicated that factors related to the intellectual dimension have a significant influence on students' adoption of self-directed blended learning, with a p-value of 0.00, which is below the predetermined level of significance of 0.01%. This may be due to the several benefits of self-directed blended learning, like firstly, it enhances their understanding of course content by providing additional learning materials online, secondly, it even helps to bridge the gap of student absenteeism by allowing them to learn the missed content remotely. Additionally, the self-directed blended learning approach offers a wide range of content options, including alternative courses that may not be available in traditional educational institutions. These justifications can be aligned with the research conducted by Maya *et al.* (2022) [16], which highlights the role of the online component in bridging academic gaps and facilitating increased participation in instructional webinars.

6. Conclusion

From the present study, it can be concluded that the intellectual dimension was the most influencing factor for the adoption of self-directed blended learning, as evidenced by its highest beta coefficient (β=0.413) and the highest t value (t=9.235). This may be because the factor of intellectual dimensions facilitates the students to quickly avail a diverse range of information efficiently. The online component of self-directed blended learning offers students the opportunity to enroll in additional courses and expand their knowledge. Gupta (2021) [8] supports this notion by highlighting the wide availability of content through the online component of the self-blend approach. Furthermore, Alsalhi *et al.* (2021) [1] assert that the self-blend model allows students to select supplementary courses that are not typically offered by educational institutions.

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