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Digital distractions during blended learning and its negative repercussions: an empirical analysis

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Abstract

Purpose – Many studies have illustrated the vast advantages which blended learning has to offer to the learning community. However, when a learner accesses a digital platform, one cannot ignore the negative repercussions which the learner would be subjected to in the process. Our study tries to analyze the negative repercussions of digital media distractions on their wholistic development.

Design/methodology/approach – Information pertaining to the use of digital media among students for blended learning and the consequent distractions faced by them in the process was elicited through a well-structured questionnaire from pre-university and university students. The PLS-SEM model was constructed to identify the effect of digital distractions on students' academic performance, outlook of life and health, keeping counseling and spiritual inclination as moderating variables.

Findings – From our research, we inferred that the students' time spent on a digital platform was directly related with their time spent on blended learning and their tendency to get distracted. However, they were more prone to e-distractions than e-learning. Furthermore, e-learning did not enhance their academic performance. However, distractions had significant negative repercussions on their mental health. Counseling that the students were getting in their educational institutions did not play any significant role in improving their mental health.

Originality/value – Studies which have been undertaken to analyze the negative repercussions of blended learning on the wholistic development of students are scarce. Given the increasing popularity of blended learning among South Asian students in recent times, our study has tried to bridge this gap.

Keywords Students, Blended learning, E-platform, Negative repercussions, Future life

Paper type Research paper

1. Introduction

Information communication technology (ICT) has had a disruptive role in various sectors. 4G and 5G revolutions magnified the already significant impact that ICT had on teaching–learning pedagogy, be it in rural or urban regions (Kumar *et al.*, 2022a; Kumar and Rangappa, 2021). The advent of Covid-19 and subsequent worldwide lockdowns had necessitated teaching–learning community to embrace online learning. Although in the post pandemic period, the academia did revert back to the traditional mode of learning, the possibilities opened up by online education could not be ignored (Favale *et al.*, 2020), particularly in developing countries like India (Kumar *et al.*, 2022b). The inevitable online classes which were necessitated worldwide due to Covid induced lockdown not only hastened the process of shifting from a traditional centralized teaching–learning approach to a decentralized teaching–learning approach, but along with that, showed a plethora of innovative

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possibilities (Kemaloglu Er and Bayyurt, 2022) like massive online open courses, blended learning and online diploma courses, etc. Among these various approaches, blended learning has the potential to have a wider audience. By and large, blended learning is a model, which seeks to combine traditional learning with online spaces and experiences (Teachthought Staff, 2022).

Although many studies (Kenney and Newcombe, 2011; Kintu *et al.*, 2017; Kemaloglu Er and Bayyurt, 2022) have empirically validated the various advantages that blended learning can usher to learning community, it should be noted that learners can get distracted by social media and porn websites in the midst of their learning venture. This can have negative repercussions on their mental and physical health.

There are several studies which have empirically tried to analyze the negative repercussions of internet on the lifestyle of adolescents and adults. A cross-sectional study undertaken by Kwak *et al.* (2022) involving 29,811 high school students in the age group of 16–18 years of South Korea observed that the group of students who were using internet more than the average of the group under study experienced higher levels of stress, suicidal tendencies and mental problems. Interestingly, some studies (Tian *et al.*, 2017; Buizza *et al.*, 2022) empirically inferred that college students were more likely to be victims of mental health problems due to surfing the internet as compared to high school students. It does seem that age and maturity do play a role when it comes to responsible use of the internet (Teng, 2022). When it comes to the influence of gender on problematic use of the internet, prevalent studies portray inconclusive results. A study undertaken by Dufour *et al.* (2016), observed that boys were more likely to use the internet for playing online games, which increased their loneliness and girls were more likely to use the internet for social communication, which in turn reduced their loneliness and mental stress. However, other studies (Huang, 2010; Tokunaga, 2017) did not observe any moderating role played by gender in making the students more susceptible to mental problems due to digital distractions. Digital distractions such as social media and porn can take a darker form. Regular watching of porn by students is found to make them more vulnerable to severe depression and anxiety (Camilleri *et al.*, 2021). Furthermore, students watching deviant porn are more likely to have poor mental health (Svedin *et al.*, 2022) and be more prone to exhibit self-destructive tendencies like alcohol and tobacco addictions (Mattebo *et al.*, 2013). It is a sad state of affairs, that in the midst of academic pressure and hormonal changes, students do tend to abuse the internet and ruin their mental health. However, some studies have found out that counseling (Kanga, 2017) and inclination towards spirituality among students (Brown *et al.*, 2013) do go a long way in helping them to strengthen their mental health and improve their outlook towards life.

The advent of Covid-19 created necessary conditions for academia to imbibe the online mode of learning. In recent times, some researchers have analyzed the impact of online education on students' mental health. However, the results of the studies pertaining to the impact of online learning on students' mental health have shown mixed results. For instance, studies conducted by Fatimah and Mahmudah (2020) and Bolatov *et al.* (2021) observed that the transition of students from online learning to traditional learning enhanced their mental health. At the same point of time, other studies conducted by Akpınar (2021), Ahmad *et al.* (2022) and Van *et al.* (2022) inferred that online learning created mental health problems among students. The major limitation of these studies was that they were set in an extraordinary circumstance, that is, during the pandemic, and these studies were based on analyzing the impact of the complete online educational system on the mental health of students. There is a scarcity of studies which have explored the impact of blended learning on students' mental and physical health.

Furthermore, several other studies have tried to analyze the effect of internet and digital distractions on students' mental health in isolation. However, most of these undertaken studies have the implicit assumption that, when students watch porn or use social media, they

do so, in the time fixed by them for the said purpose. On the other hand, most of the research pertaining to blended learning has been undertaken on the premise that students engaged in blended learning are not going to be digitally distracted in the process. However, a digital platform is not a unidimensional world. When students access digital platforms, they are susceptible to distraction via social media and adult websites, which can have negative repercussions on their mental and physical health.

Most of the studies which have been conducted so far have not linked the cause-and-effect relationship between students' use of the internet for learning amidst digital distractions like social media and porn on their mental and physical health along with their academic performance in a wholistic manner. Our study tries to bridge this research gap by analyzing the probable negative repercussions of blended learning that can adversely affect learners' social, academic and mental well-being, while keeping counseling and spiritual inclination of students as moderating variables.

In India, most of the educational institutions lack formal counseling set up. Literature has shown that having a formal counseling (Kanga, 2017) setup in educational institutions and inclination towards spirituality among students (Brown *et al.*, 2013) could go a long way in helping them to maintain a better physical and mental health status. The preliminary research questions which our research seeks to address are as follows:

(1) What is the influence of the amount of internet usage on students' e-learning and their vulnerability to digital distractions?

(2) Does the type of digital gadget in use have an influence on the amount of internet usage, e-learning and susceptibility to distractions among students?

(3) Can use of social media result in mental problems, physical health problems and affect personality traits of students?

(4) If students share their problems among their family members and in their educational institutions, can it have a positive impact on their mental health and personality traits?

(5) What is the effect of students' physical health and mental health on their academic performance and perception towards their future life?

(6) Does counseling provided by educational institutions enhance students' academic performance and improve their overall perception towards their future life?

(7) Does students' spiritual inclination have any effect on their bad habits, mental health, and overall outlook of their life?

(8) Can e-learning amidst possible distractions improve academic performance and students' attitude towards their future life?

The objective of our study was to understand the negative repercussions of digital distractions during blended learning of students. Students seek distraction when they are put under tremendous pressure to perform and excel. In India, students start to feel the pressure to excel from their Pre-University college days itself. This is the time when the students are expected to up their performance to clear highly competitive exams and get into premier educational institutions. With the advent of Covid, many online coaching institutes have sprung up like Unacademy, Byjus, Physics Wallah and the like, which are providing training for Pre-University students through online and offline mode to enable them to get into such premier institutions. Given the nature of competition, intense pressure from peers and family and conducive environment for blended learning, there is a high likelihood for students to get distracted. Among university students, particularly, among traditional Indian universities,

which are run by state governments, the quality of teaching is not wholistic and students do depend on blended learning to meet their needs and requirements.

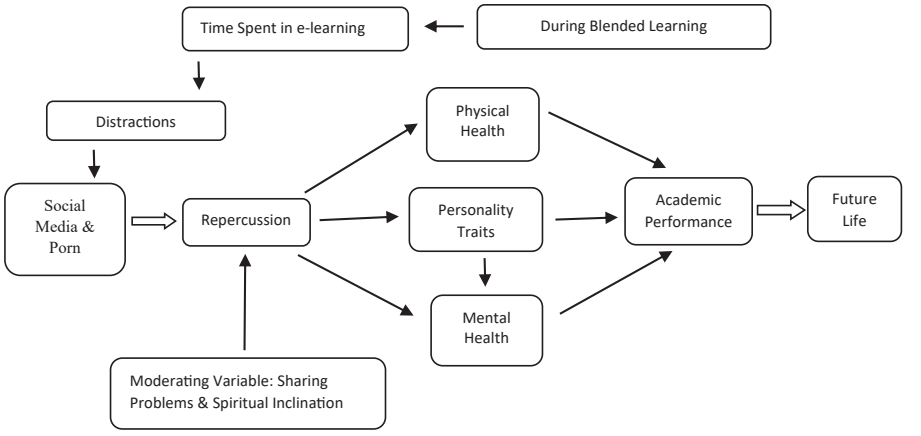
To get a proper understanding of how blended learning would create distraction among Pre-University college students and University students and how it would subsequently impact their mental health, physical health, academic performance and their perception of future life, data were collected from both Pre-University college students as well as students from three Universities.

Unfortunately, in India, according to the National Crime Records Bureau report, in 24 h, 28 students commit suicide (Garai, 2020). This can be attributed to depression, pressure, lack of proper guidance and lack of spiritual inclination among millennials. Through our study, we sought to systematically find out the various factors which had an influence on students' mental health, physical health and their perception of future life in the backdrop of digital distractions due to blended learning, so that proper institutional changes can be brought in at the right time and in the right place to ensure that our youth, who are the future of our nation, are raised on a solid foundation.

2. Research design and methodology

The conceptual framework which has been designed for the study is illustrated in Figure 1.

The conceptual framework illustrated in Figure 1 is based on the premise that, during blended learning, students are expected to spend time on the internet for the purpose of studying. When students access the internet for the purpose of e-learning, during their learning endeavor, they are prone to get distracted as the internet is a multi-faceted platform. The distractions may be in the form of porn or social media. Constant distractions during blended learning are bound to have their repercussions on students' mental and physical health, which would eventually affect their academic performance. In our model, the counseling provided to students by their teachers and family members along with students' spiritual inclinations were considered as moderating variables. The rationale of considering these variables as moderating is based on available literature, which states that counseling (Kanga, 2017) of students and their inclination towards spirituality (Brown *et al.*, 2013) can improve their mental health.



Source(s): Figure by authors

Figure 1.
Conceptual framework for the undertaken study

3. Sampling and data collection

Random sampling was used for the purpose of collecting data. Data were collected from pre-university students along with students pursuing graduation and post-graduation. We wanted to ensure that we cover students across the age spectrum of 17–23 years as this would be the phase of them transitioning from adolescence to adulthood and in turn, they would be most susceptible to digital distractions and adverse effects of stress and mental pressure. Hence, we collected data from 99 students who were pursuing education in the Pre-University college of Mandya district, who belonged to the age group of 16–18, we collected data from 91 students who were pursuing under graduation in universities, who belonged to the age group of 18–21 and we collected data from 91 students who were pursuing post-graduation in universities, who belonged to the age group of 21–23. Data of students pursuing higher education were collected from Bangalore University, Bangalore City University and Davangere University located in the districts of Bangalore and Davangere. The rationale behind collecting data from the districts of Bangalore, Davangere and Mandya was based on the premise that, according to multi-dimensional poverty index, these districts had average to least incidence of poverty and chances were that the students in these districts would have access to reliable ICT infrastructure, so that they could effectively pursue blended learning. Data were collected from 281 students who were from six departments namely Commerce, Economics, Sociology, Psychology, Physical Education and Kannada literature. Among the students from whom data were collected, 48.4% were female students and 51.60% were male students. The investigator went to the concerned educational institutions with permission from relevant authorities and collected data from students through a well-structured questionnaire in a systematic manner. The students were properly guided by the investigator in filling in the questionnaire. The questionnaire in total consisted of 81 items of enquiry. Based on a literature review, the questionnaire was designed to ensure that relevant variables pertaining to the usage of social media, prevalent personality traits among students, undesirable habits, mental and physical problems, counseling and overall outlook of life were considered.

The reliability of the questionnaire was validated through Cronbach's Alpha, which displayed a scale reliability coefficient of 0.8194. The constructs and their items as elicited from the questionnaire are summarized in Table 1.

3.1 Model chosen for the purpose of data analysis

To analyze our objectives, we have relied upon partial least square structural equation modeling (PLS-SEM). The rationale behind choosing the PLS-SEM modeling technique was because of the complexity of our premise, which had different constructs interacting with each other. Furthermore, through our model, we wanted to explore the latent effect of moderating variables, like the effect of counseling and spiritual inclination of students' mental health. We could not model our premise through either traditional regression models or through categorical regression models like Logit, Tobit or Probit as they were well suited for linear problems and in the real world, problems are rarely linear. On the other hand, PLS-SEM, being one of the second-generation regression models, has the potential to estimate complex real-world relationships. Hence, we opted to use the PLS-SEM model to model our study through PLS-4 Software.

4. Reliability of the constructed model

As per Hair *et al.* (2019), reflective robustness of the PLS-SEM model can be validated through loadings, Cronbach's Alpha, composite reliability (ρ_A), average variance extracted (AVE) and hetrotrait-monotrait (HTMT) ratio of correlations criterion. Furthermore, to assess the model's structure in terms of explanatory power, R^2 was used. To test, as to whether issue of

Constructs	Items
Bad habits	Drinking
	Watching porn
	Smoking
Distractions	Hours spent on playing computer games
	Watching entertainment videos
	Time spent in social media (in Hours)
	Visiting unwanted websites
	Watching unwanted videos
Mental problems	Aggressiveness
	Anxiety
	Confusion
	Depression
	Erotic dreams
	Irritation
	Lack of focus
	Nervousness
Negative traits	Loneliness
	Not curious/Apathy
	Pessimistic
	Sad
	Introvert
	Hasty
	Careless
Physical problems	Digestion problem
	Hands trembling
	Wearing spectacles
Social media	WhatsApp
	YouTube
Positive traits	Social
	Patient
	Optimistic
	Happy
	Extrovert
	Curious
	Confident
	Calm

Table 1.
The constructs which have been integrated in the PLS-SEM model

Note(s): In Table 1, mention has been made of only those items which have been integrated in the model. All the items of the construct for which the data was obtained in the questionnaire are not mentioned in the table
Source(s): Table by authors

multicollinearity was de-stabilizing the model, variation inflation factor (VIF) was used. Bootstrapping was used to test the significance and relevance of the path coefficients of the model.

4.1 Testing item reliability

To test item reliability, loadings above 0.708 are recommended (Hair *et al.*, 2018). Our model was able to satisfy this criterion.

4.2 Construct reliability and validity

Cronbach's Alpha, composite reliability (ρ_A) and AVE of the clusters were estimated to assess the reliability and validity of the constructs of the model. The results have been summarized in Table 2.

Hair *et al.* (2018) in their work pertaining to the evaluation of PLS-SEM results, have stated that, to test the internal consistency of constructs, in case of exploratory research, Cronbach's Alpha's value must be 0.60, and acceptable range for composite reliability is 0.60 and that of AVE is 0.50. In their work, they also state that the statistics of Cronbach's Alpha may be too conservative and that of AVE may be too liberal. As an alternate, Dijkstra and Henseler (2015), have suggested the use of composite reliability (ρ_A) as a good compromise for Cronbach's Alpha and AVE. Hence, to assess the validity of our model, we have relied upon composite reliability (ρ_A). From Table 2, we can observe that, except for negative traits, all our constructs are regarded as reliable and valid as per the statistics of composite reliability (ρ_A).

4.3 Convergence validity

Through convergence validity, one can assess the extent to which the construct converges to explain the variances of its item. The metric which is used to gauge convergence validity is AVE. According to Hair *et al.* (2018), an acceptable construct's AVE must have a value of 0.50 or higher. Thus, in our model, out of seven constructs, four constructs achieve convergence validity and three do not which are, namely, mental problems, negative traits and positive traits.

4.4 Discriminant validity

Discriminant validity helps to ascertain as to what extent each construct is empirically distinct as compared to other constructs. According to Henseler *et al.* (2015), HTMT ratio of correlations is seen as a viable way to assess the discriminant validity of constructs. According to Henseler *et al.* (2015), if constructs are conceptually very similar, a desirable threshold value of 0.90 is prescribed and if the constructs are conceptually different, then 0.85 is regarded as an acceptable threshold for the HTMT ratio. The HTMT ratio of none of the constructs exceeded 0.85; hence, according to Henseler *et al.* (2015), all the constructs of our model are valid.

4.5 Assessing the degree of collinearity

According to Hair *et al.* (2018), the presence of collinearity in the formative indicators can be validated with the aid of variance inflation factor (VIF). If VIF values are found to be more than 5, it means that there is a critical issue of collinearity in the formative indicators. Ideally, if the value of VIF is 3 or lower, then formative indicators are said to be acceptable. The VIFs for all our formative indicators, except that for smoking (5.02) and drinking (4.09), were less than 3.

5. Explanatory power and path coefficients of the model

We have relied upon R^2 to assess the explanatory power of the constructs. In behavioral sciences Cohen (1988), puts forth that if $R^2 < 0.02$, then the explanatory power is very weak; if

Constructs	Cronbach's alpha	Composite reliability (ρ_A)	Average variance extracted (AVE)
Bad habits	0.918	0.92	0.859
Distractions	0.708	0.707	0.5
Mental problems	0.622	0.68	0.265
Negative traits	0.419	0.281	0.158
Physical problems	0.671	0.672	0.602
Social media	0.594	0.6	0.711
Positive traits	0.55	0.6	0.223

Source(s): Table by authors

Table 2. Reliability and validity of the model's constructs

R^2 > 0.02, but less than 0.13, then the explanatory power is weak; if R^2 > 0.13, but less than 0.26, then the explanatory power is moderate and if the value of R^2 > 0.26, then the explanatory power is significant. The explanatory power of the constructs used in the model are summarized in Table 3.

From Table 3, we can see that, out of the thirteen endogenous constructs, eight endogenous constructs, explain the variances in a significant manner.

Bootstrapping was relied upon to assess the statistical significance of indicators' weights and their magnitude of their impact (Chin, 1998). The PLS-SEM model with path coefficients is illustrated in Figure 2 and is summarized in Table 4.

6. Results and discussion

RQ1. What is the influence of the amount of internet usage on students' e-learning and their vulnerability to digital distractions?

1) Effect of students' amount of exposure to the internet on their e-learning outcomes:
Through the PLS-SEM model, we were able to infer that the amount of time spent on e-learning by the students was proportional to the quantum of time they spent on the internet. The observation was statistically significant.

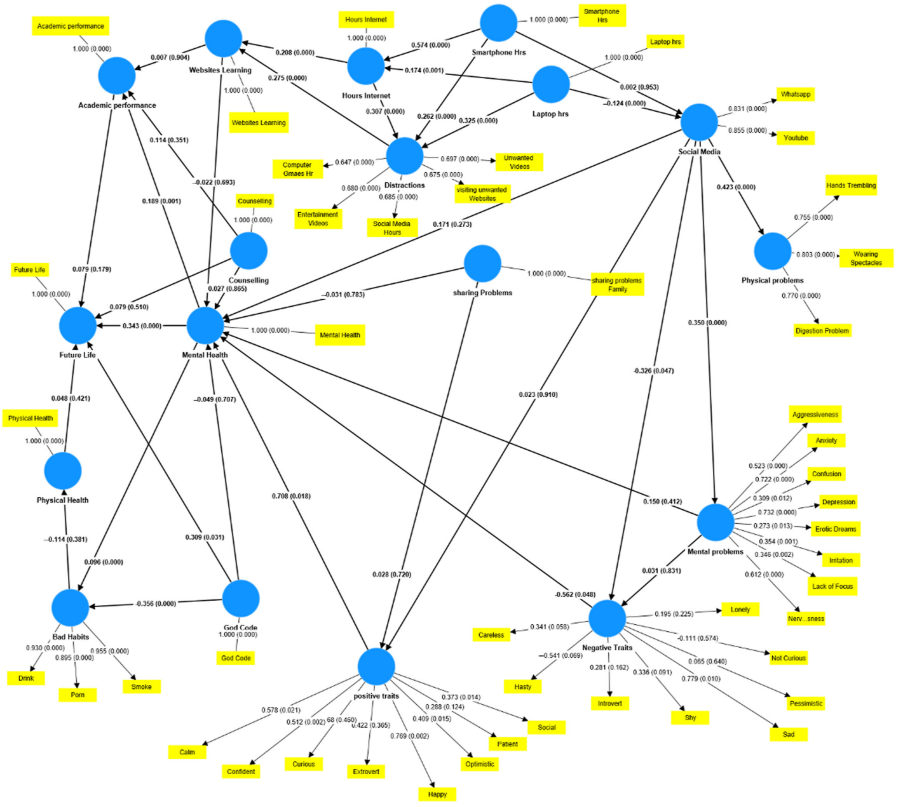
2) Effect of students' amount of exposure to the internet on their vulnerability to digital distractions:
Our study revealed that the more the students used the internet, the more they were prone to get distracted in the digital world.
Interestingly, although the amount of internet use had a positive influence on both e-learning (0.208) and digital distractions (0.307), the magnitude of distraction was higher than the magnitude of e-learning among students (i.e. 0.307 > 0.208).

RQ2. Does the type of digital gadget in use have an influence on the amount of internet usage, e-learning and susceptibility to distractions among students?

Table 3.
Explanatory power of constructs as measured by R^2

Endogenous clusters	*R* square	Explanatory power
Positive traits	0.002	Very weak
Physical health	0.003	Very weak
Academic performance	0.035	Weak
Social media	0.072	Weak
Negative traits	0.098	Weak
Bad habits	0.152	Moderate
Future life	0.156	Moderate
Mental problems	0.164	Moderate
Websites learning	0.181	Moderate
Mental health	0.201	Moderate
Physical problems	0.222	Moderate
Hours internet	0.381	Strong
Distractions	0.426	Strong

Source(s): Table by authors



Source(s): Figure by authors

Figure 2.
PLS-SEM model
(Bootstrapping results)

1) Type of digital gadget and internet usage:
Through our study, we were able to ascertain that, although internet usage among students through both laptops and smartphones was both positive and statistically significant, students relied on their smartphones much more than their laptops for accessing the internet.

2) Type of digital gadget and vulnerability to distractions:
From our study, we were able to infer that although the distractions caused by both the smartphone and laptops were positive and statistically significant, the amount of distraction caused by laptop (0.32) during blended learning was much more than that caused by smartphone (0.26).
Furthermore, through our model, we were also able to observe that usage of social media through laptops, although was statistically significant, was inversely related. Thus, we could infer that students are reluctant to access social media via their laptops. When we analyzed the tendency of students to access social media through their mobile devices, although it was positively related, it was statistically insignificant.

Path	Path coefficient	*P* value
Smartphone → Hours internet	0.574	0***
Laptop → Hours internet	0.174	0.001***
Smartphone → Distractions	0.262	0***
Laptop → Distractions	0.325	0***
Smartphone → Social media use	0.002	0.953
Laptop → Social media use	−0.124	0***
Social media use → Physical problems	0.423	0***
Social media use → Mental problems	0.35	0***
Social media use → Negative traits	−0.326	0.047**
Social media use → Positive traits	0.023	0.91
Social media use → Mental health	0.171	0.273
Hours internet → Websites learning	0.208	0***
Hours internet → Distractions	0.307	0***
Websites learning → Mental health	−0.022	0.693
Websites learning → Academic performance	0.007	0.904
Mental problems → Mental health	0.15	0.412
Mental problems → Negative traits	0.031	0.831
Negative traits → Mental health	−0.562	0.048**
Positive traits → Mental health	0.708	0.018**
Sharing problems → Mental health	−0.031	0.783
Sharing problems → Positive traits	0.028	0.72
Spirituality (God) → Mental health	−0.049	0.707
Spirituality (God) → Bad habits	−0.356	0***
Spirituality (God) → Future life	0.309	0.031**
Counseling → Academic performance	−0.022	0.693
Counseling → Mental health	0.027	0.865
Counseling → Future life	0.079	0.51*
Bad habits → Physical health	−0.114	0.381
Physical health → Future life	0.048	0.421
Mental health → Future life	0.343	0***
Mental health → Academic performance	0.189	0.001***

Table 4.
Path coefficients of the PLS-SEM model

Note(s): *** Statistically significant at 01 percent; ** Statistically significant at 05 percent; * Statistically significant at 10 percent
Source(s): Table by authors

RQ3. Can use of social media result in mental problems, physical health problems and affect personality traits of students?

1) Effect of social media on mental problems:
Our study indicated that frequent use of social media tended to create mental problems like aggressiveness, anxiety, confusion, depression, erotic dreams, irritation, lack of focus and nervousness among students.

2) Effect of social media on physical health problems:
Our model revealed a direct and a statistically significant relationship between the use of social media and the prevalence of health problems like hands trembling, wearing spectacles and digestion problems among students.

3) Effect of social media on personality traits:
Through our study, we were able to observe that, although social media had a positive impact on the inculcation of positive traits among students, it was statistically insignificant. Hence, social media did not have any statistically significant impact on positive personality traits.
As far as negative personality traits were concerned, our model revealed that there was an inverse and statistically significant relationship between the usage of social media and its impact on negative personality traits. However, it is to be noted that, in the cluster of negative traits, only "sad" was statistically significant. Hence, it means that through the usage of social media, students were able to overcome their sadness to some extent.

RQ4. If students share their problems among their family members, can it have a positive impact on their mental health and personality traits? Furthermore, is there any relationship between mental problems and negative personality traits?

1) Effect of students sharing problems among family members on their mental health:
In our study we did not find any statistically significant relationship between students sharing problems with their family members and their impact on their mental health. This may be due to the reason that students may not have been comfortable in sharing their problems with their family members because of fear of what their parents or siblings might think of them.

2) Effect of students sharing problems among family members on their positive traits:
In our model, we did not find any statistically significant relationship between the students' tendency to share their problems with their family members and its impact on their positive personality traits.

3) Relationship between mental problems and personality traits:
Our model depicted a statistically significant inverse relationship between negative traits and mental health. Thus, students' negative traits had an adverse impact on their mental health.
Furthermore, our model reflected a statistically significant positive relationship between positive traits of the students and the status of their mental health.

RQ5. What is the effect of students' physical health and mental health on their academic performance and perception towards their future life?

1) Effect of students' physical health on their future life:
Although through our study, we were able to observe that the quality of physical health did have a positive relationship with the quality of future life, it was not statistically significant.

2) Effect of students' mental health on their perception of their future life:
From our model, we were able to infer that mental health had a direct and a statistically significant relationship with students' perception of their future life. That is, if the students were mentally healthy, they believed that their future life was going to be great.

3) Effect of students' mental health on their academic performance:
Through our model, we were able to observe that, mental health had a positive and a significant relationship with the students' academic performance. That is, a student who was mentally healthy, showed a better aptitude for learning.

RQ6. Does counseling provided by educational institutions enhance students' academic performance and improve their overall perception towards their future life?

1) Effect of counseling provided by educational institutions on students' academic performance
In our model, we did not observe any statistically significant relationship between counseling as provided by educational institutions and academic performance of students.

2) Effect of counseling provided by educational institutions on students' mental health.
Although from our study we observed that counseling had a positive effect on mental health, it was statistically insignificant.

3) The effect of counseling provided by educational institutions on students' overall perception towards their future life.
Through our model, we were able to infer that counseling did not have any statistically significant impact on future life.

RQ7. Does students' spiritual inclination have any effect on their bad habits, mental health and their overall perception of their future life? Furthermore, is there any impact of bad habits on students' physical health?

1) Effect of students' spiritual inclination on their bad habits.
In our model, we observed a statistically significant inverse relationship between spirituality and bad habits like watching porn, smoking and drinking which were prevalent among students. Thus, it reflects that, if students are spiritually inclined, they are less likely to watch porn, smoke or drink.

2) Effect of students' spiritual inclination on their mental health.
Through our study, we did not find any statistically significant relationship between the spiritual beliefs of students and the status of their mental health.

3) The effect of students' spiritual inclination on their overall perception of their future life.
Our study ascertained a statistically significant positive relationship between spiritual inclination among students and their hope of leading a good life in the future.

4) Impact of students' bad habits on their physical health.
Although our study revealed that bad habits like watching porn, drinking and smoking had their adverse effect on physical health, they were not statistically significant. This could be attributed to the fact that, as the students are still young, they have not faced the adverse repercussions of their negative lifestyles yet.

RQ8. What is the effect of e-learning in the midst of possible distractions on students' mental health and academic performance ?

1) Effect of e-learning on students' mental health.
Through our study, we were able to note that, although e-learning had a negative effect on mental health, it was not statistically significant.

2) Effect of e-learning on students' academic performance.
Our study revealed that although e-learning had a positive influence on academic performance, it was not statistically significant.

7. Policy implications

Blended learning has gained prominence after Covid-19. Many studies which have dealt with the role of ICT in augmenting learning experience, have stated that, ICT enhances learning outcome (Stosic, 2015; Kumar *et al.*, 2022a). However, students who do access the digital platform for the sake of learning would not be immune to the various distractions that the digital platform has to offer during their blended learning endeavor. When subjected to distractions like porn, social media and the like, it is bound to have repercussions on their mental health. Previous studies undertaken by Kwak *et al.* (2022) and Tian *et al.* (2017) observed that prolonged and problematic use of the internet had adverse effects on the physical and mental health of students. The advent of the pandemic had necessitated academia across the world to switch to online mode of learning. The studies set in the pandemic period did try to explore the impact of online learning on students' mental health. Several of these studies (Akpınar, 2021; Ahmad *et al.*, 2022; Van *et al.*, 2022) came to the conclusion that students engaged in online learning during the Covid pandemic suffered from mental problems like depression, anxiety and stress. In line with previous studies, through the PLS-SEM model, we were also able to infer that digital distractions during blended learning adversely affected both the mental and physical health of students. Students who were more likely to be digitally distracted during blended learning were more likely to experience mental and physical problems. Through our model, we were able to infer that the mental problems experienced by students ranged from minor symptoms like lack of focus, irritation, confusion and erotic dreams to disturbing ailments like nervousness, anxiety and depression. This is in line with the results of a cross-sectional study which was conducted by Rasmussen *et al.* (2020) on the impact of social media on the mental health of US college

students. From our study, we were also able to infer that, digital distractions during blended learning also made students susceptible to physical problems like vision impairment, digestion problems and trembling of their hands. Interestingly, as against the observation of Kanga (2017), through our study we were able to infer that the counseling provided to students in educational institutions was not helping them to enhance their mental health, their academic performance, or their positive outlook towards their future life. This may be due to two reasons. On one hand, the faculties burdened with their academic commitments and lack of psychological expertise may not be in a position to properly understand and guide their students. On the other hand, students may have inhibitions to share their personal problems with their faculties as they may be afraid as to what their faculties would think of them. Through our study, we were also able to observe that sharing problems by students among their family members, although statistically insignificant, adversely affected their mental health. This may be due to the reason that, parents burdened by their own struggles of life and deluded by their own high expectations of their children might not be able to properly understand the impact of psychological problems caused by exposure to digital distractions on their childrens' behavior. Furthermore in line with the study undertaken by Brown *et al.* (2013) on the impact of spirituality on the mental health of undergraduate and graduate college students of the USA, through the PLS-SEM model, we were also able to infer that students with spiritual inclination had better mental health.

Till now most of the studies which have taken place have analyzed the repercussions of internet usage, social media and porn on students' mental health in isolation. Students do not necessarily fix time to indulge themselves in social media and porn. It tends to happen spontaneously. It can happen even in their pursuit of blended learning. This in turn can have its repercussions on their physical health, mental health, academic performance and overall outlook of their future life. Till now, there are hardly any studies which have wholistically explored this dimension. Hence, there was a need of a study which could wholistically gauge the effect of digital distractions during blended learning on the students' psyche and its consequent repercussions on students' physical health, mental health, academic performance and their perception of the quality of their future life in general. Through PLS-SEM modeling, we have explored this premise by taking the spiritual inclination of students and counseling provided in educational institutions as moderating variables. The policy implications from our study are as follows:

7.1 Need for professional psychiatrists in Indian educational institutions in both pre-university colleges and universities

In India, formal education is not just about upskilling of students and making them get "any" job, but it is about going to premier institutions of higher learning, clearing competitive exams and getting government jobs. Hence, students start to face the intense heat of competition and pressure from their pre-university days itself, which is bound to make them susceptible to self-destructive tendencies like abuse of porn, smoking and drinking. Despite the intense pressure that students have been put through since their pre-university days, there are no professional psychiatrists or counselors to cater to the mental problems of Indian students.

Through our research, we were able to infer that counseling as offered by teaching faculties of educational institutions in pre-university and universities is not aiding in strengthening students' mental health or enhancing their academic performance. The main issue with the counseling as offered by Indian educational institutions is that, "solutions" are offered to the "problems" of students as "identified" by their teachers or parents. However, a conducive environment is rarely created in which the students can express their likes, dislikes and issues without fear or favor. To overcome the said serious concern, it is necessary to have a professional psychiatrist in every educational institution of India.

7.2 Inculcation of ethics as a paper

Through our research, we were able to ascertain that, positive traits had a statistically significant positive relationship with the mental health of the students. In pre-university colleges, courses on personality development are not part of the formal curriculum. When it comes to universities, courses on personality development are not provided. Even if provided, it is not provided by all the universities. In fact, among the three universities surveyed, only one department of one university offered a course on personality development, that too, in an *ad hoc* and ineffective manner. Thus, formal introduction of courses on personality development is going to be beneficial for the students in enhancing their mental health.

7.3 Introducing spirituality in core curriculum

Through our model, we were able to ascertain that the inclination of the students in spiritualism and faith in God played a statistically significant role in reducing their bad habits and inculcating a positive outlook on their future lives. If a paper on spiritualism aimed to promote fraternity and brotherhood among students is introduced at the pre-university and university levels, it would go a long way in aiding the wholistic development of students' personality. Having said that, we would not advise promoting any one religion's ideology over the other, if such a paper is to be introduced, particularly in a multi-religious and a multi-cultural nation like India, such a paper must champion the common spirit of brotherhood, humanity and peaceful existence as espoused by all the religions of the world.

7.4 Developing a particular framework for blended learning and putting a systematic evaluating mechanism in place to gauge the students' progress

From our research, we were able to observe that, although e-learning platform and digital distractions were both found directly proportionate to usage of internet hours in a statistically significant manner, for given duration of internet usage, students were spending more time on computer games, porn and social media than on e-learning. As supported by available literature, e-learning definitely improves self-learning among students (Hamdan and Amorri, 2020; Cojocariu *et al.*, 2014). However, if they are more prone to distraction in a digital platform, the net effect may not be good in the long run. Hence, to promote responsible interaction in the digital platform among students, it would be better for teachers to ask the students to browse through particular digital sources and have interaction of the same in the class through a flipped classroom model.

8. Conclusion and way forward

Blended learning is not an endeavor which can be undertaken in isolation. Due to the involvement of the internet and possible digital distractions, it is bound to have its repercussions on students' mental and physical health. Through our study, we were able to observe that the hours the students spent on the internet for blended learning also increased their susceptibility to being digitally distracted. Furthermore, the students spent more time on porn, social media and computer games as opposed to e-learning. This has repercussions on their mental health, physical health and academic performance. Hence, if our policy recommendations are taken in the right spirit and if pilot level studies are conducted by incorporating the same, it would augur well for the welfare of students.

As our study was limited to students pursing education in the three districts of Karnataka, the results may not hold true for the rest of India. Further cross-sectional studies in other states using similar variables can give a better picture of blended learning in India. Moreover, replicating similar studies in other developing countries and developed countries can not only help in understanding the wholistic effect of using information communication technology by

students but also go a long way in enhancing the efficiency and learning outcome of blended learning.

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