ROLE OF SOCIAL MEDIA ON DIGITAL DISTRACTION: A STUDY ON UNIVERSITY STUDENTS

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ABSTRACT

In the social and economic growth of a developing country like India, education plays an important role. Technology plays an essential role in this education during the teaching-learning process. The classrooms are becoming smart rooms. To boost learning, instructors and students both use technology. Students are always using their gadgets. This use many a times may make the students addicted and distracted. Through an empirical analysis, this paper attempts to recognize and understand the factors that lead to digital distraction among university students in the classroom. To explain this distraction, the research model suggested by Chen, et al., (2014) which consisted of three constructs that influence digital distraction, namely individual factors, contextual factors, and Young's IAT (Internet Addiction Test) has been used. Social media is one of the reasons of this Internet addiction. This paper attempts to cross-sectionally study in-class "digital distraction" of university students using a structured equation model. The full-fledged model suggested that all three factors viz- individual factors, contextual factors and Young's Internet Addiction Test (including social media) lead to statistically significant digital distractions.

Keywords: Contextual Factors, Digital Distraction, Individual Factors, Internet Addiction, Social media, University Students

INTRODUCTION

Education is an important constituent in the socio-economic development of a country, and the systems of education should be both efficient and effective so that they can achieve the goals set in the available resources (Cornali, 2012). Technology plays a vital role in classroom learning (Campbell, 2006; D'Angelo & Woosley, 2007). It is like building block and 21st-century teaching-learning pillar. This technological intervention can be digital resources, games, simulations (Baer & McCormick (2012). The classrooms have become smart classrooms whereby smart boards, laptops, smartphone are a part of teaching. Searching the Internet is a common feature of today's learning process. The mobile phones usage in the teaching-learning process has myriad of benefits, including inquiry-based learning and use of learning pedagogies TPACK (Technological Pedagogical Content Knowledge) which increase student engagement. (Kukulska-Hulme & Viberg, 2018; Traxler, 2018). Incorporating mobiles into the learning process can create an environment which is engaging for the students. (Gupta et al 2019; Khaddage, Müller & Flintoff, 2016). These devices provide a more flexible structure with a shift from authority-based structure towards the concept of community-based learners. (Hamm, et al., 2013). They help and facilitate learning. (Jeng, 2010). This technological intervention helps in cost-cutting and have brought about a revolution in the education sector (Zucker & Light, 2009).

"Digital native" has led to the infusion of laptops into the classrooms (Prensky, 2009) whereby the millennial generation is looking for a real-time mix of technology and education (Kay & Lauricella, 2011). As the technology and IT related advancement

happened in India(Gupta and Kumar, 2017) Students feel that digital devices help their education and are an essential part of their social life (Campbell, 2006). Out of the number of people who own a phone, almost 30.5 % never switch off their mobiles, and 45 % rarely switch it off. This habit, which may be problematic many times, has penetrated the social gathering and the classrooms of the university. (Rainie & Zickuhr, 2015). Faculty members and university administration feel that these devices lead to disruption and distraction during lectures. (Tindell & Bohlander, 2012).

The university students who were addicted and obsessed with digital devices (Campbell, 2006) are now into "cyberslacking" where this "next generation" use these devices for non-class related activities during the lectures (Flanigan & Kiewra, 2018). The penetration and easy availability of information and communication technologies like Twitter and Facebook have increased online time (Waterloo et al., 2018).

The students try multiple things simultaneously, like chatting, playing games, sending e-mails and trying to absorb complex material being taught, but they fail in this (Hembrooke & Gay, 2003). These students try to use technology for the benefit, but they lose their focus because they try to do many things simultaneously. (Mcmahon & Pospisil, 2005). This multitasking leads to what we call as student distraction. (Fried, 2008). These students can distract the other students as well as the instructor. (Desjardins & Alvi, 2011). During multitasking the attention is decreased, and the performance is decreased (Sana et al., 2013). The students resort to multitasking in the classroom, which affects their attention and finally their grades in the examinations. This multitasking continuous outside the classrooms also. (Bellur et al., 2015). Students who use their devices and send messages while a PowerPoint presentation score comparatively less in their quizzes to the students who are not texting. (Froese et al., 2012) By using mobile phones during classrooms, students lose focus and are not able to take notes. (Kuznekoff and Titsworth, 2019). Multitasking affects its information processing capacity. All this finally affects their academic performance (Junco & Cotten, 2012; Van dur Schuur et al., 2015). Students who multitask generally attain lower GPAs (Al-Menayes, 2015; Lau, 2017). The multitasking is performed unconsciously and leads to severe disruptive behaviour (Lindström, 2020). Students in pursuit of multitasking, continuous checking of messages display anxiety and fear missing out. All this leads to impaired learning and low performance. (Lee et al., 2015).

This paper attempts to understand the factors that lead to "digital distraction" among students. This study compares university management and engineering students, males and female students and undergraduates and graduates. Research model given by Chen et al., (2014) was used to understand this "digital distraction". According to it and the literature review that followed three constructs, i.e., individual factors, contextual factors, and internet addiction affect "digital distraction". An empirical study was conducted to understand the cause of this distraction and the measures that can be taken to manage it.

Literature review

With the penetration of technology, there has been a revolution in the education system. (Tyner, 2014). It makes the class interactive, engaging, and creates an environment of learning. (Pitler et al., 2012). It has been found that students use social media like WhatsApp, twitter & Facebook, play games and send text messages while the class is still in progress. (Akst, 2010). Cell phone use has increased in students, and this penetration is sometimes more than 100 %. (Lawton, 2010; Salisbury et al., 2015). The students themselves agree that they quite often use the social media up to 32 times in a day. This use, they believe does not help but actually leads to distraction. (Emerick et al.,2019). The distraction is affected by the following factors:

Individual factors

Individual factors like gender and age have long term consequences on behaviours related to the usage of IT (information technology)-. Females use digital devices for interpersonal and social relations, while males generally use them to get information and online videos (Bellur et al., 2015). McCoy (2016) found that females generally use digital devices for social networking, whereas males use them to surf the web and play games. Students' mobile

usage patterns are influenced by their taste, ability to network, mobile usage patterns, mobility, and social influence. (Martiz, 2015). The students who are addicted to the Internet are the ones who are generally depressed and feel lonely. They may go through various states of stress, pain, and arousal. (Leung, 2006)

Maladaptive cognition and physical element off time loss were essential factors affecting academic performance due to internet addiction (Huang et al., 2010) Students who are continuously busy on the Internet are awake late-night surfing net, leading to lack of sleep of concentration in the class the following day. It affects their marks finally(reference)

Internet addiction

The Internet is the most commonly used medium these days for exchange of information, research in academics, e-commerce, and communication. (Byun et al., 2009). Its use may sometimes lead to a level of use with unpleasant consequences on people's professional and social lives and affect their psychological well-being (Young 2009). This level is a pathological internet use referred to as Internet Addiction (Byun et al., 2009). Young (1998) used it explaining the compulsiveness associated with this disorder. Internet addiction can be explained as "an obsessive pattern of Information technology (IT)-seeking and IT –use behaviour that takes place at the expense of other activities" (Turel et al., 2011). "The abuse or overuse of the Internet is a behavioural manifestation that may lead to many life problems." (Thatcher et al., 2008). The symptoms include withdrawal, mood modification and conflict (Turel et al., 2011).

The Internet has often been blamed for people spending less time with their family; it affects relationships, affects productivity in the office, and may develop psychological problems (Beard, 2002).

A person may overuse the Internet as a behavioural outflow of something problematic in his life (Thatcher et al., 2008). There may be several things which may include or exclude internet addiction. "An individual is addicted when an individual's psychological state, which includes both mental and emotional states, as well as their scholastic, occupational and social interactions, is impaired by overuse of the medium" (Beard, 2002).

University students are addicted to the Internet. They have free wi-fi access; it is a part of the latest teaching pedagogy. Instructors themselves motivate students to use the Internet for gathering the information faster. If the students find difficulty in adjusting with the university culture, they find solace on the Internet. They justify internet users to search for information but are busy with activities that are not related to their studies (Heimonen, 2009).

Newport (2015) in a Gallup survey found that the students in the United States in the age of late teens to mid-twenties check their mobiles very often sometimes every few minutes and most of the times like an addict they do not accept that they are using these mobiles excessively (Richter, 2015).

Contextual factors

With a more passive learning experience, students tend towards being more actively distracted. With so much information available if the lecture is only information sharing, the students' loose interest and are distracted. In numerical subjects, if the instructor cannot come to the level of weak students, they lose interest. Similarly, if the instructor is teaching basics to senior students, they lose interest. In both cases, distraction creeps in. The instructor needs to be entertaining and engaging to get the attention of students. Ugar and Koc (2015) observed that students use digital devices to reduce boredom in a boring class. Students are found saying that, "When we do not need to look at what they are saying because it is all in the book and their reading of the PowerPoints, we think we do not need to pay attention" (Flanigan & Babchuk, 2015). The distraction depends upon the instructor's efforts in making the class engaging and teaching effectively so that this distraction is minimized. The age-old traditional methods do not work many times and lead to distraction. Based on these discussions, this study assumes the instructor's teaching style, the overall class management, the behaviour of other students in the class affects the

intensity of class digital distraction and thus leads to social media addiction.

Research Methodology

A questionnaire was designed which consisted of three sections to identify the factors influencing students' in-class digital distraction. First section of the questionnaire was based on the Young's (1998) "Internet Addiction Test" (IAT) to assess Internet addiction. The second part of the questionnaire consisted of contextual factors to determine the possible reasons for using technology in non-class related issues which includes various social media platforms. The third part consisted of Individual factors that asked respondents to provide demographic information. The study was conducted in private universities of Greater Noida, the National Capital Region of New Delhi. The questionnaire was sent to 400 students. After segregating the incomplete questionnaire, a total of 320 responses were used for data analysis.

Structural Equation Model was developed to understand the difference in distraction between engineering and management students, UG and PG students and male and female students in universities.

Reliability Testing

Cronbach alpha reliability test has been obtained to show that the research instrument has strong reliability (Dhiman et al, 2016).

Hypothesis 1: Internet addiction positively affects the university student's classroom "digital distraction".

Hypothesis 2: The contextual factors positively affect university students in class digital distraction.

Hypothesis 3: The individual factors positively affect university students' in-class digital distraction.

4.Results

4.1 *Results for Engineering Students*

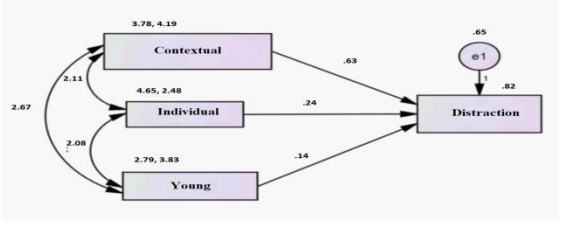

Figure 1: Unstandardized Estimates

Means: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	3.779	.312	13.872	***	
Individual	4.653	.387	14.218	***	
Young	2.785	.412	13.619	.***	

Intercepts: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction	.824	.301	2.142	.002	

"Covariances": (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Individual<--->Young	2.077	.583	3.251	***	
Contextual<--->Individual	2.114	.675	3.462	***	
Contextual<--->Young	2.673	.638	3.917	***	

"Correlations": (Group number 1 - Default model)

			Estimate
Individual	<-->	Young	.773
Contextual	<-->	Individual	.781
Contextual	<-->	Young	.725

Variances: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	1.225	.475	3.208	***	
Individual	1.453	.498	3.208	***	
Young	1.501	.314	3.208	***	
e1	1.907	.430	3.208	***	

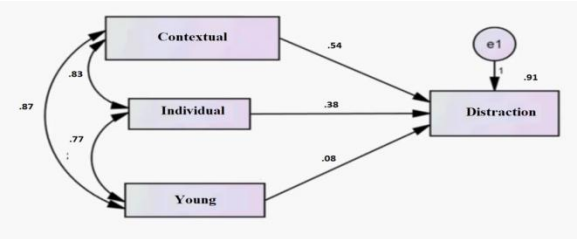

Figure 2: Standardized estimates

Contextual factors have an impact of 0.54 on distraction, and Individual factors impact .38 on distraction. These values are also statistically significant. These three factors explain 91 per cent of the variation in student distraction.

"Regression" Weights: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction<--Contextual	.458	.085	1.872	***	
Distraction<--Individual	.324	.088	1.347	***	
Distraction<---Young	.172	.092	2.835	.***	

Standardized "Regression" Weights: (Group number 1 - Default model)

			Estimate
Distraction	<---	Contextual	.537
Distraction	<---	Individual	.376
Distraction	<---	Young	.084

The full-fledged model suggested that all three factors viz- individual factors, contextual factors and Young's IAT have statistically significant "digital distraction" effects, thus, suggesting that H1, H2 and H3 were fully supported. However, contextual factors are the best predictor causing distraction in students.

Results for Management Students

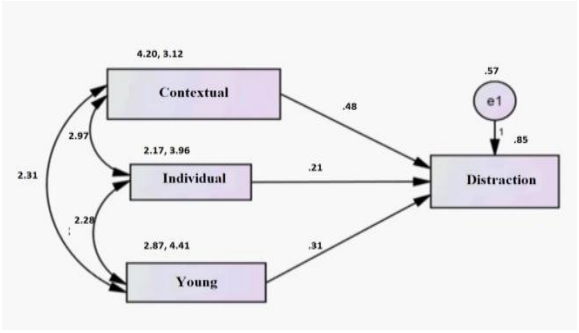

Figure 3: Unstandardized Estimates

Means: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	4.203	.415	12.671	***	
Individual	2.168	.289	11.512	***	
Young	2.873	.376	12.639	.***	

Intercepts: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction	.852	.241	2.724	.007	

"Covariances": (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Individual<-->Young	2.281	.743	2.433	***	
Contextual<--->Individual	2.968	.502	2.366	***	
Contextual<--->Young	2.309	.583	2.221	***	

"Correlations": (Group number 1 - Default model)

			Estimate
Individual	<-->	Young	.835
Contextual	<-->	Individual	.739
Contextual	<-->	Young	.885

Variances: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	1.576	.536	2.743	***	
Individual	1.592	.440	2.743	***	
Young	1.682	.644	2.743	***	
e1	1.562	.463	2.743	***	

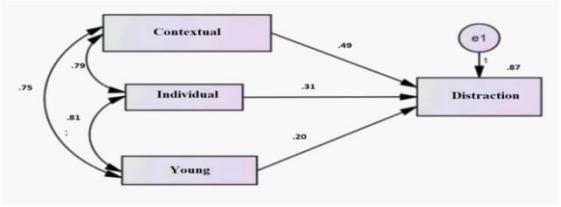

Figure 4: Standardized estimates

Contextual factors have an impact of 0.49 on distraction, and Individual factors have an impact of .31 on distraction. These values are also statistically significant. These three factors explain 87 per cent of the variation in student distraction.

"Regression" Weights: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction<---Contextual	.496	.037	2.856	***	
Distraction<---Individual	.636	.059	2.561	***	
Distraction<---Young	.524	.020	1.523	.***	

Standardized "Regression" Weights: (Group number 1 - Default model)

			Estimate
Distraction	<---	Contextual	.493
Distraction	<---	Individual	.308
Distraction	<---	Young	.204

The full-fledged model suggested that all three factors viz- individual factors, contextual factors and Young's IAT have statistically significant "digital distraction" effects, thus, suggesting that H1, H2 and H3 were fully supported. However, contextual factors are the best predictor causing distraction in students.

4.3 *Results for UG Students*

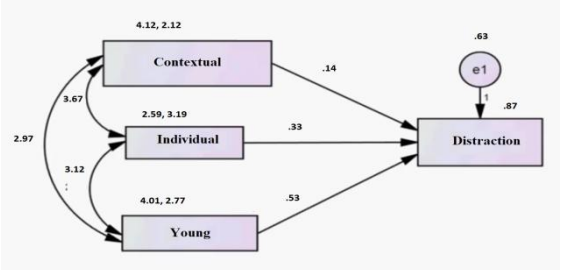

Figure 5: Unstandardized Estimates

Means: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	4.124	.243	13.113	***	
Individual	2.588	.352	14.462	***	
Young	4.013	.425	11.425	.***	

Intercepts: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction	.869	.157	2.352	.002	

"Covariances": (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Individual<-->Young	3.121	.842	2.275	***	
Contextual<->Individual	3.671	.451	2.414	***	
Contextual<-->Young	2.966	.572	2.661	***	

"Correlations": (Group number 1 - Default model)

			Estimate
Individual	<-->	Young	.724
Contextual	<-->	Individual	.749
Contextual	<-->	Young	.735

Variances: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	1.274	.587	2.492	***	
Individual	1.507	.375	2.492	***	
Young	1.285	.472	2.492	***	
e1	1.471	.692	2.492	***	

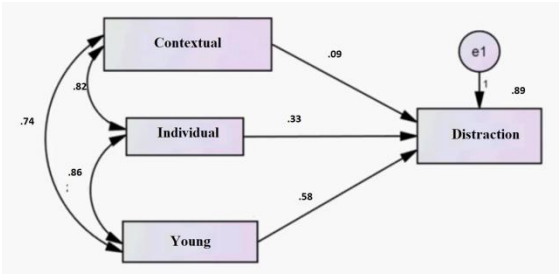

Figure 6: Standardized estimates

Young's IAT factors have an impact of 0.58 on distraction, and Individual factors impact .33 on distraction. These values are also statistically significant. These three factors explain 89 per cent of the variation in student distraction.

"Regression" Weights: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction<-Contextual	.593	.048	1.378	***	
Distraction<-Individual	.415	.052	1.481	***	
Distraction<-Young	.721	.054	2.592	.***	

Standardized "Regression" Weights: (Group number 1 - Default model)

			Estimate
Distraction	<---	Contextual	.087
Distraction	<---	Individual	.339
Distraction	<---	Young	.581

The full-fledged model suggested that all three factors viz- individual factors, contextual factors and Young's IAT have statistically significant "digital distraction" effects, thus, suggesting that H1, H2 and H3 were fully supported. However, contextual factors are the best predictor causing distraction in students.

Results for PG Students

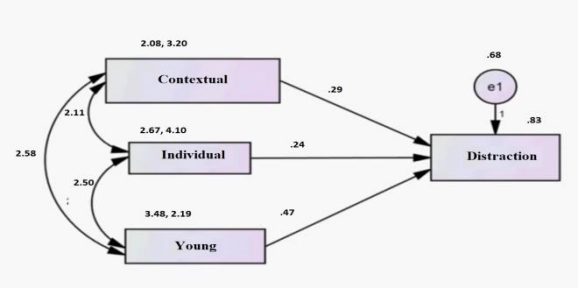

Figure 7: Unstandardized Estimates

Means: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	2.083	.472	13.363	***	
Individual	2.665	.681	13.462	***	
Young	3.484	.632	11.461	.***	

Intercepts: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction	.833	.246	3.173	.001	

"Covariances": (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Individual<-->Young	2.504	.371	2.592	***	
Contextual<-->Individual	2.109	.472	2.461	***	
Contextual<-->Young	2.581	.184	2.265	***	

"Correlations": (Group number 1 - Default model)

			Estimate
Individual	<-->	Young	.825
Contextual	<-->	Individual	.786
Contextual	<-->	Young	.749

Variances: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Contextual	1.483	.353	2.592	***	
Individual	1.364	.472	2.592	***	
Young	1.472	.465	2.592	***	
e1	1.387	.572	2.592	***	

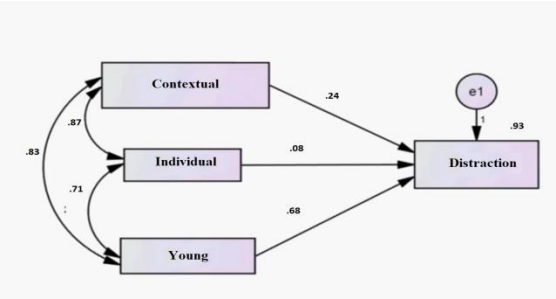

Figure 8: Standardized estimates

Young's IAT factors have an impact of 0.68 on distraction, and contextual factors impact .24 on distraction. These values are also statistically significant. These three factors explain 93 per cent of the variation in student distraction.

"Regression" Weights: (Group number 1 - Default model)

	Estimate	SE.	CR.	P	Label
Distraction<---Contextual	.483	.039	1.244	***	
Distraction<---Individual	.584	.046	1.274	***	
Distraction<---Young	.371	.037	3.361	.***	

Standardized "Regression" Weights: (Group number 1 - Default model)

			Estimate
Distraction	<---	Contextual	.244
Distraction	<---	Individual	.079
Distraction	<---	Young	.682

The full-fledged model suggested that all three factors viz- individual factors, contextual factors and Young's IAT have statistically significant "digital distraction" effects, thus, suggesting that H1, H2 and H3 were fully supported. However, contextual factors are the best predictor causing distraction in students.

DISCUSSIONS

Individual

Individual factors are significant enough in explaining "digital distraction" amongst engineering students and the case of management students. Time spent online is found to be leading to "digital distraction" in both engineering and management students, whereas, an increase in the CGPA score is found to be inversely related to "digital distraction".

When comparing undergraduate programs to postgraduate programs, individual factors are significant enough in explaining "digital distraction" amongst UG students; however, they are not significant in the PG students' case. Time spent online is found to be leading to "digital distraction" in both UG and PG students, whereas, an increase in the CGPA score is found to be inversely related to "digital distraction".

Young's IAT

Young's Internet addiction factors are not significant enough in explaining "digital distraction" amongst engineering and management students. IAT factors in Engineering students explain only 8% of the "digital distraction" score variation and 20% in management students. In the case of UG and PG students, Young's Internet addiction factors are the major contributing factors in explaining "digital distraction". IAT factors in UG students explain 58% of the "digital distraction" score variation and 68% in management students. However, in UG students, the significant distraction sources are Emotional/Psychological conflict and mood modification, whereas, in PG students, time management issues are the major contributing factors for "digital distraction".

Contextual

Contextual factors are found to significant enough in explaining "digital distraction" amongst both engineering and management students. Contextual factors in engineering students explain 49% of the "digital distraction" score variation and 54% in management students. In the case of engineering students, instructor/subject characteristics are the primary sources of "digital distraction", whereas, in the case of management students, classroom management issues lead to "digital distraction". When comparing undergraduate programs to postgraduate programs, contextual factors are significant enough in explaining "digital distraction" amongst PG students; however; they are not very

significant in UG students' case. Contextual factors in UG students explain only 9% of the variation in "digital distraction" score. In the case of PG students, both "classroom management issues" and "Instructor/Subject characteristics" are the primary sources of "digital distraction" whereas, in the case of UG students, only "instructor/subject characteristics" lead to "digital distraction".

CONCLUSION

The study hypothesized that among university students, digital distraction and consequent use of social media is rampant. The essential variables that result in this distraction are individual, digital and contextual. A cross-sectional analysis was conducted among university students comparing management and engineering graduates, undergraduates and postgraduates, and males and females. Although the causes and severity of the variables that contributed to the distraction differed, all the groups were distracted. Compared to management graduates, engineering students are themselves more accountable for their distraction. Both of these groups spend a large portion of their time online using social media and their distraction, i.e. their academic success, impacts their CGPA. Since both are professional courses, students are supposed to be serious about their results, but in their classes, they are distracted, and they are the reasons for it. As compared to postgraduates, undergraduates are more distracted. The explanation may be that postgraduates are more serious about their future and are more seasoned and recognize less time left to waste. However, overall, students spend almost the same amount of time online using social media at any age. Males and females are both distracted, but men are more distracted as compared to females. They may be more techno savvy, so they waste time are more distracted.

Internet addiction is widespread in all cross-section of students. Engineering, management, undergraduates, postgraduates, males and females are all internet addicts. The factor affecting engineering students is that they cannot handle time because of this addiction, while management students experience mood swing and psychological conflicts. Similarly, due to internet addiction, male students cannot manage time and females face mood swings.

Although contextual factors such as classroom management and instructor problems are sufficiently crucial in causing "digital distraction" in undergraduate students, in other situations, these factors contribute to "digital distraction" but with different intensities. In PG students and engineering students, the fundamental causes of "digital distraction" are "instructor/subject characteristics", whereas, in the case of management students, only classroom management problems contribute to "digital distraction".

We see, then, that frequent use of social media among university students is becoming a common source of distraction. Their general well-being and academic success are affected by this distraction. There should be a "zero-tolerance" for using mobile devices in a classroom setting (Flanigan & Kiewra, 2018). However, it might not be possible to cut off digital devices in this techno-savvy world completely. In order to minimize "digital distraction", we need to use technology efficiently and provide a multi-faceted approach. It is essential to consider a "holistic approach". Internet addiction needs to be minimized and regulated, not suppressed. Internet addiction can lead to a broad range of positive behavioural and cognitive improvements and a decline in "digital distraction" (Kittinger et al., 2012). Students need to be inculcated and taught the advantages of the Internet to become a tool for construction and not destruction, presentation, brainstorming, debate, team building activities in which a connection can be made with the real world (Frene, 2009). One solution could be to make the content accessible online via learning management systems or MOOC courses. The burden is more on the instructors to make the class worthy of being drawn and interested in the lessons. The response is between the joint where attention economics and generally established concepts of successful teaching-learning currently practised (Schuck et al., 2013). Instructors have to see that these innovations foster awareness as new technologies are introduced into the classrooms and should not be just a source of information. Intellectual interaction needs to be taken care of (American Psychological

Association, 2009). It can lead to some thinking that is logical and critical. Policymakers must understand the "linkage" between sustainable development and mobile use in education and government. (Lwoga & Sangeda, 2019). Instructors need to be mindful of not teaching straight out of the book or from slides that students later have access to, which may decrease the need for them to remain active during class. Use applied, immersive and stimulating experiences to involve students in active learning to engage in learning activities rather than addicted by their gadgets (Flanigan & Babchuk, 2015). A consistent policy on mobile phone usage will minimize its use while the class is in progress (Chen & Yan, 2016).

This study has many consequences for both educators and researchers. This research indicates that university students are a lot of technologically distracted people. Factors that contribute to distraction are present. It is a phenomenon which is universal. We have to deal with it, and a solution needs to be sought. We need to grasp the root of the problem. The alternative is not the total ban or only avoiding it. The need for the hour is to efficiently and effectively handle it.

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