

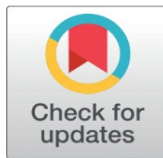
ENGINEERING STUDENTS DEALING WITH DISTRACTIONS: CHALLENGES, STRATEGIES, AND IMPLICATIONS

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ABSTRACT

This study dives into finding the varied distractions engineering students deal with in academic setups absorbed with increased digital engagement and rapid technological changes. Academic performance is seriously impacted due to these distractions that ranges from psychological stress to social media. In this paper, 120 engineering students from Centurion University, Bhubaneswar participated in a survey. The findings of the survey highlighted the main sources of distraction, institutional responses, and coping strategies of the students. The study also derives at a list of suggestions. Digital literacy, cognitive-behavioural techniques, and digital literacy are some essential techniques for a healthy digital habit that fosters focus and productivity.

Keywords: Engineering Education, Student Distraction, Digital Distraction, Academic Performance, Time Management, Attention Management

1. INTRODUCTION

1.1. PERFORMANCE IN TASK-SWITCHING AND FILTERING IRRELEVANT INFORMATION.

These concerns are particularly relevant for engineering education, where students are expected to solve complex problems requiring prolonged concentration and deep analytical skills. In the 21st-century digital era, distractions have become an omnipresent challenge for students, especially those enrolled in rigorous programs like engineering. While technology aids learning, it simultaneously introduces diversions that hamper concentration and productivity (Junco, 2012). This paper examines how engineering students experience, perceive, and manage distractions, with the objective of proposing strategies for educators and institutions.

2. LITERATURE REVIEW

2.1. CONCEPTUAL FRAMEWORK OF DISTRACTION IN ACADEMIC SETTINGS

Distraction in an academics is any internal or external stimulus that disturbs a student's smooth cognitive engagement (Rosen et al., 2011). Unlike other discipline, in engineering, a student is expected to exhibit problem solving attitude and long attention span. This is hindered by certain distractions like multitasking expectations, digital stimuli and stressors (Ward et al., 2017; Ophir et al., 2009).

Distraction is just not only a temporary loss of concentration but a severe cognitive limitation that enlists impairing of learning outcomes, reducing task competency, and inability in processing information (Ellis, Daniels, & Jauregui, 2014). As multitasking is becoming common, students remain oblivious of the degradation of the quality in academics (Blumberg & Brooks, 2017).

2.2. DIGITAL DISTRACTIONS IN HIGHER EDUCATION

The most important source of distraction among students pursuing engineering is digital technology, especially smartphones, messaging applications, and social platforms. Frequent use of Facebook lowers student engagement (Junco 2012). Overusing mobile phone also very significantly reduces academic performance and induces anxiety (Lepp, Barkley, and Karpinski 2014).

Also, the presence of passive device can disturb the functioning of the normal cognitive elements. Thornton et al. (2014) found out that merely having the sight of a mobile phone can hinder learning performances. Similarly, Sana, Weston, and Cepeda (2013) demonstrated that laptop multitasking affects both the students in the classroom as well as the multitasker.

The addiction of social platforms impacts focus (Small & Vorgan, 2008). The idea of "brain drain" (Ward et al., 2017) brings out how cognitive elements are lowered just by the knowledge of a smartphone nearby.

2.3. PSYCHOLOGICAL AND EMOTIONAL SOURCES OF DISTRACTION

Too much academic pressure on engineering students lead to higher anxiety, depression and stress (Beiter et al., 2015). Pressure of time coupled with mental stress led to poor concentration in academics (Misra and McKean 2000).

In most cases, students resort to digital platforms for a temporary satisfaction from emotional stress, and this further deepens the cycle of avoidance (Błażnio, Przepiórka, & Pantic, 2015).

2.4. EFFECTS OF DISTRACTION ON ACADEMIC PERFORMANCE

There are many studies that have explored the effect of particularly digital distractions on academic performances. Junco and Cotten (2012) in their study found that students who text during class hours perform poor on assessments. Likewise, Cain et al. (2016) found that media multitaskers had reduced working memory capacity and performed poorer in academics.

Steel (2007) is of the understanding that procrastination which is majorly induced by distraction is one of the leading limitations to student performance

2.5. COPING STRATEGIES AND SELF-REGULATION

Distraction can be lowered through thoughtful self-regulation, cognitive control measures, and time management. Zimmerman (2002) in his Self-Regulated Learning (SRL) model devises methods for monitoring themselves which leads to maximization of learning. The findings of Macan et al. (1990) showed that students who have better time management experience better academic performance and lead a stress-free life.

Mindfulness techniques such as meditation, focused breathing, and cognitive priming have also been effective. Goleman (1995) and Deci & Ryan (1985) reinforced the role of emotional intelligence and intrinsic motivation in attention regulation.

Certain digital tools like Forest and Pomodoro timers have also helped many students who want to regulate their screen time. Wang et al. (2022) found that self-monitoring apps are very helpful in reducing digital temptation and also in increasing concentration.

3. INSTITUTIONAL AND PEDAGOGICAL INTERVENTIONS

Institutional cooperation is very vital in lowering distractions. Kuh (2001) found the significance of educational ecosystems that fosters deep learning and meaningful engagement. Educators are expected to have interactive pedagogy for longer students' attention (Kiewra, 2002).

Ives, Rieger, and Renani (2024) figured out that when mobile phones were integrated meaningfully in class (e.g., for polling or quizzes), they did not result in higher distraction. Boice's (1996) also shared the same principle that students' engagement increases with student-centred.

3.1. THE EVOLVING NATURE OF DISTRACTION

Distraction in this digital age with digital temptations has grown to be more complex. Lately, with the integration of artificial intelligence, it Distraction has become more complex with the integration of artificial intelligence and personalized digital ecosystems. Ward et al. (2017) cautioned against the overuse of cognitive offloading, where students depend heavily on digital tools for tasks that require deep reasoning.

Recent studies by Blumberg & Brooks (2017) and Bellur et al. (2015) point out that short-form digital content (e.g., YouTube Shorts, TikTok) encourages fragmented attention and impedes long-form comprehension. Ophir et al. (2009) explained that chronic multitaskers show poorer

3.2. PROBLEM STATEMENT

Engineering students deal with more than just academics and its related fields like seminars, projects, assignments, examinations, etc. They require high levels of focus and problem-solving skills, but the growing prevalence of digital distractions, social media, and multitasking behaviours is undermining their academic performance and mental well-being. While earlier research signifies the negative effects of distractions, not many works address the pertinent challenges dealt by engineering students and the coping strategies they adopt. This study endeavours to find common distractions, assess their impact on academic outcomes, and explore effective methods and institutional interventions to address these challenges.

4. RESEARCH METHODOLOGY

This study employs a mixed approach quantitative survey-based research design to examine the challenges, strategies, and implications of distractions among engineering students. The design was selected as it allows for the collection of measurable data from a large sample, enabling a systematic analysis of patterns and relationships. The study was conducted at

Centurion University, Bhubaneswar, focusing on undergraduate engineering students across various departments. The population of the study consists of engineering students enrolled

at Centurion University. A total of 120 students were selected through random sampling to ensure the representation of diverse academic years and branches. This sample size was considered adequate to provide reliable statistical insights. The survey method was used for

primary data collection. A structured questionnaire comprising 32 close-ended questions was designed to gather data on types of distractions faced by students; the frequency and impact of these distractions on academic performance; and coping strategies employed by students.

4.1. PERCEIVED EFFECTIVENESS OF INSTITUTIONAL AND PERSONAL INTERVENTIONS

The questionnaire was distributed both in printed form for convenience and accessibility. The collected

data was analysed using descriptive statistics (mean, percentage, and frequency) to identify patterns and trends. Inferential statistics (such as correlation analysis or chi-square tests) was applied to explore relationships between variables like distraction levels and academic performance. The results were interpreted using tables, graphs, and charts for better visualization. To ensure validity, the questionnaire was reviewed by academic experts and pilot-tested with 10 students. Reliability was assessed using Cronbach's alpha to confirm internal consistency. Participation was voluntary, and informed consent was obtained from all respondents. The data collected was kept confidential and used solely for academic purposes.

5. RESULT AND DISCUSSION

5.1. DATA ANALYSIS AND INTERPRETATION

This section provides a comprehensive analysis of the survey responses from 120 engineering students of Centurion University, Bhubaneswar, regarding distractions during their academic activities. The analysis covers 32 questions from the questionnaire with corresponding data to illustrate the findings. The results are presented through tables, percentage calculations, and interpretations for clarity.

Nature of Distractions (Q1–Q3)

Q1. How often do you find yourself distracted while studying or attending lectures?

Response	Number of Students	Percentage (%)
Always	22	18.3%
Often	35	29.2%
Sometimes	41	34.2%
Rarely	18	15.0%
Never	4	3.3%

Interpretation: A majority of students (18.3%) experience distractions frequently, with 29.2% stating 'Often' and 34.2% stating 'Sometimes'. This indicates that distractions are a common challenge.

Q2. What is the most common source of your distractions?

Source	Number of Students	Percentage (%)
Social Media	52	43.3%
Mobile Notifications	37	30.8%
Friends/Peers	11	9.2%
Family/Home Environment	9	7.5%
Online Entertainment	11	9.2%

Interpretation: Social media (43.3%) and mobile notifications (30.8%) are identified as the top distractions, highlighting digital platforms' strong influence.

Q3. Which time of the day do you face the most distractions?

Time of Day	Number of Students	Percentage (%)
Morning	20	16.7%
Afternoon	28	23.3%
Evening	45	37.5%
Late Night	27	22.5%

Interpretation: Evening (37.5%) is reported as the most distracting time of day, likely due to increased online activity and social engagements.

Impact of Distractions (Q4–Q6)

Q4. To what extent do distractions affect your academic performance?

Response	Number of Students	Percentage (%)
Very Severely	30	25.0%
Moderately	50	41.7%
Slightly	30	25.0%
Not at All	10	8.3%

Interpretation: 66.7% of students claim distractions affect their academics to a moderate or severe degree. The impact of distraction has been disastrous.

Q5. Have you missed deadlines or submitted incomplete work due to distractions?

Yes: 78 students (65%)

No: 42 students (35%)

Interpretation: A significant 65% of students admitted missing deadlines due to distractions.

Q6. How much study time do you lose on average due to distractions in a day?

Time Lost	Number of Students	Percentage (%)
Less than 1 hour	25	20.8%
1–2 hours	49	40.8%
2–3 hours	32	26.7%
More than 3 hours	14	11.7%

Interpretation: 40.8% of students lose 1–2 hours daily due to distractions, while 11.7% lose more than 3 hours.

Coping Strategies (Q7–Q9)

Q7. What strategies do you use to avoid distractions?

Strategy	Number of Students	Percentage (%)
Turning off notifications	43	35.8%
Productivity apps/timers	18	15.0%
Studying in quiet places	29	24.2%
To-do lists & schedules	20	16.7%
Avoiding multitasking	10	8.3%

Interpretation: Turning off notifications (35.8%) is the most common method used by students, while only 15% rely on productivity apps or timers.

Q8. How effective are your coping strategies?

Response	Number of Students	Percentage (%)
Very Effective	20	16.7%
Somewhat Effective	70	58.3%
Not Effective	30	25.0%

Interpretation: A majority of students (58.3%) feel their strategies are only “somewhat effective”, suggesting that they may need better planning techniques.

Q9. Would you like training or workshops on managing distractions effectively?

Yes: 67 students (55.8%)

No: 18 students (15%)

Maybe: 35 students (29.2%)

Interpretation: Over half of the students (55.8%) want workshops to improve their ability to handle distractions.

Digital Distractions (Q10–Q13)

Q10. How frequently do you check your phone while studying?

Frequency	Number of Students	Percentage (%)
Every 5–10 minutes	19	15.8%
Every 15–30 minutes	41	34.2%
Once or twice an hour	38	31.7%
Rarely	22	18.3%

Interpretation: A total of 50% check their phone every 30 minutes or less, indicating significant dependency.

Q11. Which social media platforms distract you the most?

Platform	Number of Students	Percentage (%)
Instagram	40	33.3%
WhatsApp	35	29.2%
Facebook	20	16.7%
YouTube	20	16.7%
Others	5	4.1%

Interpretation: Instagram (33.3%) and WhatsApp (29.2%) are the leading distractions among social platforms.

Q12. Do you use your phone for academic purposes only during study hours?

Yes: 25 students (20.8%)

Sometimes: 70 students (58.3%)

No: 25 students (20.8%)

Interpretation: A majority (58.3%) admit to non-academic phone use during study time.

Q13. How many hours per day do you spend on non-academic screen time?

Hours	Number of Students	Percentage (%)
Less than 1 hour	15	12.5%
1–3 hours	50	41.7%
3–5 hours	35	29.2%
More than 5 hours	20	16.7%

Interpretation: 41.7% of students spend 1–3 hours daily on non-academic screens, which can hinder focus.

Environmental Factors (Q14–Q16)

Q14. Do environmental factors distract you while studying?

Response	Number of Students	Percentage (%)
Yes, frequently	35	29.2%
Sometimes	50	41.7%
Rarely	25	20.8%
Never	10	8.3%

Interpretation: Nearly 71% of students say the environment distracts them at least sometimes.

Q15. How often do you study in group settings where distractions occur?

Frequency	Number of Students	Percentage (%)
Always	12	10.0%
Often	25	20.8%

Sometimes	40	33.3%
Rarely	30	25.0%
Never	13	10.8%

Interpretation: 33.3% of students study in distracting group settings 'sometimes'.

Q16. Rate how much the study environment affects your focus.

Impact Level	Number of Students	Percentage (%)
Very high impact	25	20.8%
High impact	40	33.3%
Moderate impact	30	25.0%
Low impact	15	12.5%
No impact	10	8.3%

Interpretation: A majority (54.1%) report that the environment has high or very high impact on their focus.

Mental & Emotional Distractions (Q17–Q19)

Q17. Do personal stress or mental health issues lead to distractions?

Response	Number of Students	Percentage (%)
Yes	45	37.5%
Sometimes	55	45.8%
No	20	16.7%

Interpretation: A combined 83.3% of students experience distractions due to stress or mental health factors.

Q18. How often do you daydream or lose focus during study sessions?

Frequency	Number of Students	Percentage (%)
Very often	10	8.3%
Often	20	16.7%
Sometimes	60	50.0%
Rarely	20	16.7%
Never	10	8.3%

Interpretation: Half of the respondents (50%) report daydreaming sometimes, showing a common lack of sustained attention.

Q19. Do you find it difficult to concentrate after a stressful day?

Response	Number of Students	Percentage (%)
Yes, always	40	33.3%
Sometimes	50	41.7%
No	30	25.0%

Interpretation: Nearly 75% struggle to maintain focus after stressful days.

Academic Habits & Focus (Q20–Q22)

Q20. Do you make a daily or weekly study schedule to reduce distractions?

Response	Number of Students	Percentage (%)
Yes	70	58.3%
No	50	41.7%

Interpretation: A slight majority (58.3%) plan their study schedules to minimize distractions.

Q21. On average, how many hours per day do you dedicate to focused study?

Hours	Number of Students	Percentage (%)
Less than 1 hour	15	12.5%
1–2 hours	40	33.3%
3–4 hours	45	37.5%
More than 4 hours	20	16.7%

Interpretation: 37.5% of students study 3–4 hours daily, while 12.5% study less than an hour.

Q22. Do you find online classes more distracting compared to in-person lectures?

Response	Number of Students	Percentage (%)
Strongly agree	30	25.0%
Agree	40	33.3%
Neutral	20	16.7%
Disagree	20	16.7%
Strongly disagree	10	8.3%

Interpretation: A combined 58.3% agree that online classes are more distracting than in-person lectures.

Likert Scale Analysis (Q23–Q32)

Each statement was rated on a 1–5 scale (1 = Strongly Disagree, 5 = Strongly Agree).

Statement	Mean Score
Q23. I can easily ignore my phone when I am studying.	2.8
Q24. Social media is my biggest source of distraction.	4.2
Q25. I am able to concentrate better with productivity tools.	3.7
Q26. Procrastination is a major problem for me.	4.1
Q27. My friends or peers often distract me.	3.6
Q28. Noise in my surroundings affects my focus.	4.0
Q29. I feel more productive in a quiet, organized place.	4.4
Q30. Distractions have negatively impacted my grades.	3.9
Q31. I need better time management skills.	4.1
Q32. I am willing to try new apps to minimize distractions.	4.3

Interpretation: High scores for Q24, Q29, and Q32 highlight that social media, environment, and openness to solutions are key issues.

6. DISCUSSION

Distraction is common with students while studying and attending lectures. Most of the students state that social media and mobile notifications are the most common source of distractions. Most of the students get disturbed during evening and night. When most of the students accept that they are severely hit in their academics, and similarly many miss deadline due to distractions, but, only few admit losing time to distraction. It was found that the students use some very effective techniques to cope with distractions. Most of them turn off notifications while others use timers and adhere to fixed schedule.

It was also observed that many students use phone frequently and certain social media platforms like Instagram and WhatsApp are very popular among them. It was also observed that majority of the students use phones for around 3 hours. Environmental distractions also are troubles the students have to deal with. Many admit environment has either high or very high impact on their focus. Mental and emotional distractions are another big worry for the students. They find themselves unable to concentrate after being stressed.

7. RECOMMENDATIONS

From the above findings, it may be suggested that students, educators and institutions have their respective and collective role to ensure distractions don't distract. The students should engage in mindfulness and physical activities. They should also disable notifications as and when desired, and particularly during study times. They should also Pomodoro techniques and adopt time-blocking methods. The institutions can mull over having at least 1 credit for mindfulness. Simply having mindfulness and yoga into the curriculum can also help. They should also conduct seminars and workshops on digital wellness and time management. Dedicated student counselling cell for mental health and wellbeing can also be the gamechanger. The educators on the other hand could also encourage active learning strategies, having engaging sessions with more interactive activities. They should also use formative assessments to maintain focus of the students and develop their attention span.

CONFLICT OF INTERESTS

None.

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