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Utilization of Social Network Platforms for Teaching and Learning in Engineering Education at Coimbatore District

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Abstract

The rapid advancement of technology in recent years has become essential in many domains, particularly higher education. This research discusses the availability of resources and the use of social networking sites (SNS) in Coimbatore zone engineering education. These days, students and the younger generation use social networking sites as one of the most efficient ways to talk to their peers about their educational needs. In order to share knowledge and information with teachers and students, the majority of engineering institutions have established a special group on social networking sites. Multimedia systems are used in the teaching process to convey information. The use of various SNS by engineering colleges for their educational method has been analyzed..

Keywords*: Pedagogical System, social networking sites, E-learning, Advanced learning process, Technologies in learning trends, Education with AI.*

Introduction

People can create profiles, connect with others, share information, and develop online communities on social networking sites. These websites help users communicate and form relationships with one another, frequently through common hobbies, histories, or in-person connections. Facebook, Twitter, WhatsApp, and others are a few examples.

Communication technology is widely employed in social interactions, educational systems, and leisure activities. Younger generations now use social networking sites (SNSs) to rapidly share information with their teachers, friends, and family. With the aid of SNSs, we may quickly obtain information on every incidence occurring worldwide. Students in the higher education system frequently use social networking sites (SNSs) to find the right

answer to their problems. Encountered, and they have the opportunity to receive guidance from experts in their field. Students are looking for a more efficient learning process to meet their educational goals because the current one is too conservative. Students and younger generations are currently aware of the use of social media platforms for education. Teachers share information and use a variety of technology, like as computers and projectors, to present the material with real-time examples so that students can grasp the concept. They also have multiple approaches to solving a same problem.

The use of social websites by smart devices in recent years may have an impact on the teaching and learning process in higher education through the use of social media and the internet. However, smart phones are the most commonly used technology to improve their learning. Constructivist method of teaching and learning was used in the social media-integrated instructional design. SNSs are crucial for guiding and managing the learning process, with a focus on problem-solving.

The connection between the teacher and students, as well as the use of materials, is based on the technology-engagement teaching strategy (TETS). However, as SNSs offer a variety of communication channels for direct knowledge transfer, the advancement of communication technology was the most effective instrument in the remote learning system. Although users of SNSs come from a variety of age groups, teenagers have larger networks of friends and community groups than other users. There is a favorable correlation between the frequency of public posting on well-known SNSs and the degree of verbal and affective intimacy. In this sense, it can be said that tasks like updating a person's status or tagging photos help them with their social-emotional requirements.

Objectives:

1. According to the survey's findings, excessive social networking is common among Coimbatore District's engineering colleges (Tamilnadu).
2. To identify the qualitative themes that emerges from faculty members' SNS-using dynamics.
3. The faculty members' engagement and progress on SNS.
4. The Function of Social Networks in Education Research, Teaching, and Learning Education in Engineering.

Three fundamental instruments were used to collect data. A self-made survey with questions based on the participants' basic demographic data, including age, gender, and social media use. Awareness of the SNS was the basis for the second survey. A self-made questionnaire created to implement SNS in the teaching and learning process served as the third tool. Twenty-five questions were included in order to collect data from engineering college faculties in the Coimbatore district. To gather comprehensive data, questions about SNSs in education, learning methods and processes, and the amount and quality of resources were included in the third section of the survey.

Sample: 235 out of 290 faculty members from engineering colleges in the Coimbatore region of Tamilnadu, 133 of whom were men and 102 of whom were women. Faculty members from various engineering institutions in the Coimbatore district who varied in age, position, and department took part in the study.

Data Analysis

A qualitative analysis based on the questionnaires was used to conduct this study. Following sample selection, 235 participants answered questionnaires regarding their demographics and social networking activities related to the teaching and learning process. In order to better comprehend the faculty members of engineering colleges' use of social networks in the teaching and learning process, a mixed method approach to analysis was chosen. The averages, percentages, frequencies, and standard deviations of a number of variables pertaining to the participants' demographics and SNS activity were ascertained by content analysis. For a clearer visual depiction of the results refer to grapes.

The use of cutting-edge technology in the higher education system by faculty members was examined using both quantitative and qualitative data. Several questions about using the internet, different SNS accounts, accessibility of SNSs, availability of resources, features of SNSs, and the role of SNSs in higher education are used to gather information about the impact of social media on the teaching and learning process in a single questionnaire. The faculty's opinions on SNSs in higher education are examined using their answers to 25 questions, while the remaining questions are utilized to examine social activity. Through social media, the study examines how modern technology and various communication strategies are used in higher education. Totally 81% of faculties are response the questionnaires.

Findings of the Study

Total distributed questionnaires	Respondents	percentage
290	235	81%

Table 1 – Gender wise faculties

Gender	Respondents	Percentage
Male	133	56.60
Female	102	43.40
Total	235	100.00

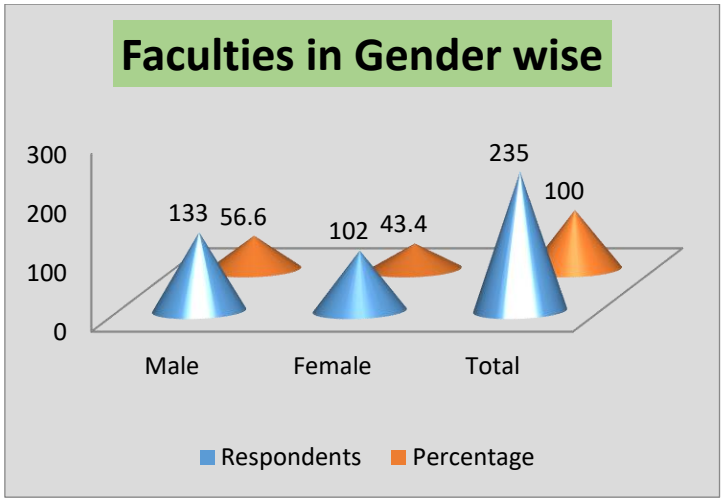


Table 2 – Age of Faculties

Age	Respondents	Percentage
Below 25 Years	31	13.19
26 - 35 Years	81	34.47
36 - 45 Years	76	32.34

Above 45 Years	47	20.00
Total	235	100.00

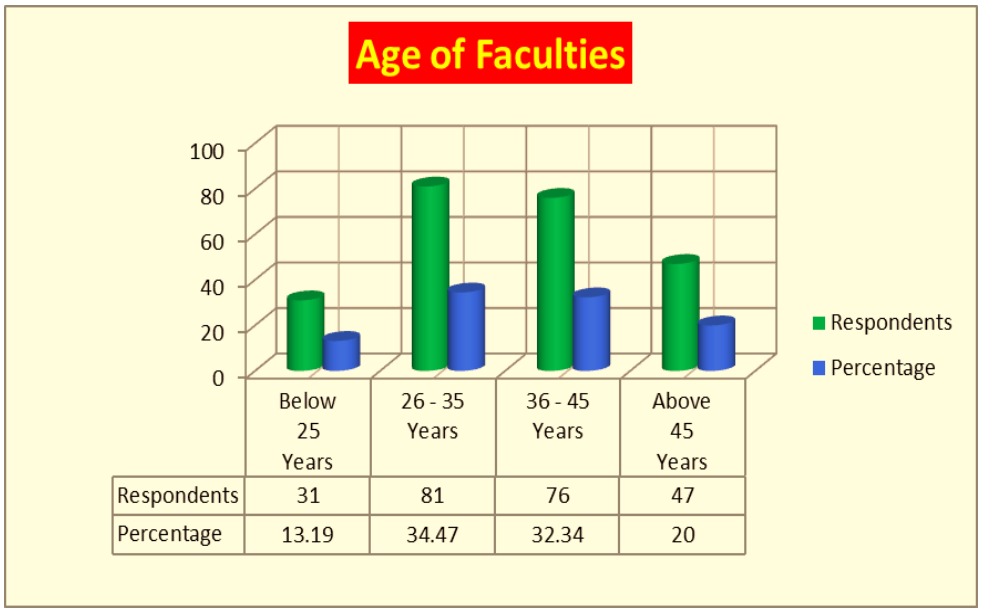
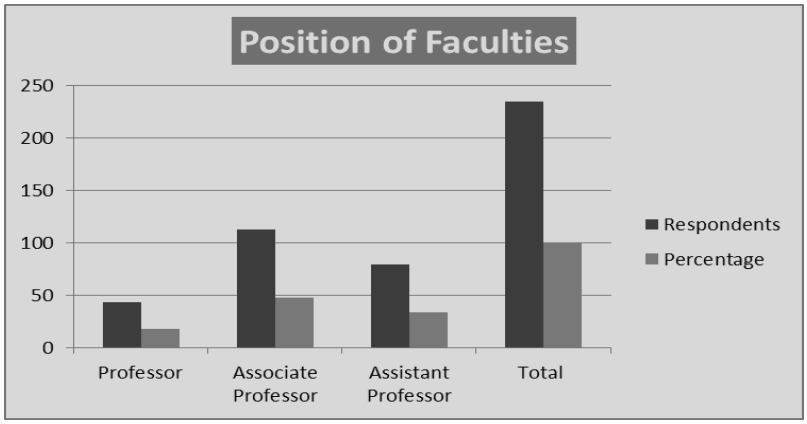


Table 3 - Position of Faculties

Position	Respondents	Percentage
Professor	043	18.30
Associate Professor	113	48.09
Assistant Professor	079	33.61
Total	235	100.00



From Table 1 133 (56.60 %) of the faculty members are male and 102 (43.40 %) female are responded out of 300 engineering college teachers.

Table 2 shows that the majority of the faculty members 81 (34.47 %) are between the ages of 26 and 35 and 76 faculty members (32.34 %) are between the ages of 36 and 45 and 47 members are above age 45. As indicated in table 3, associate professors made up the majority of the population 113 (48.09%) and 79 Assistant professors use SNSs.

Table 4 - Faculty Members SNSs Account and its Usage

SNSs	Frequency	Percentage
Researchgate.net	41	17.45
Acdemia.edu	22	09.36
WhatsApp	49	20.85
Google scholar	24	10.21
Hike	09	03.84
LinkedIn	08	03.40
Face book	26	11.06
MySpace	11	04.68
Photo Bucket	06	02.55
wiki/Blog	13	05.53
Twitter	18	07.67
Other's	08	03.40
Total	235	100

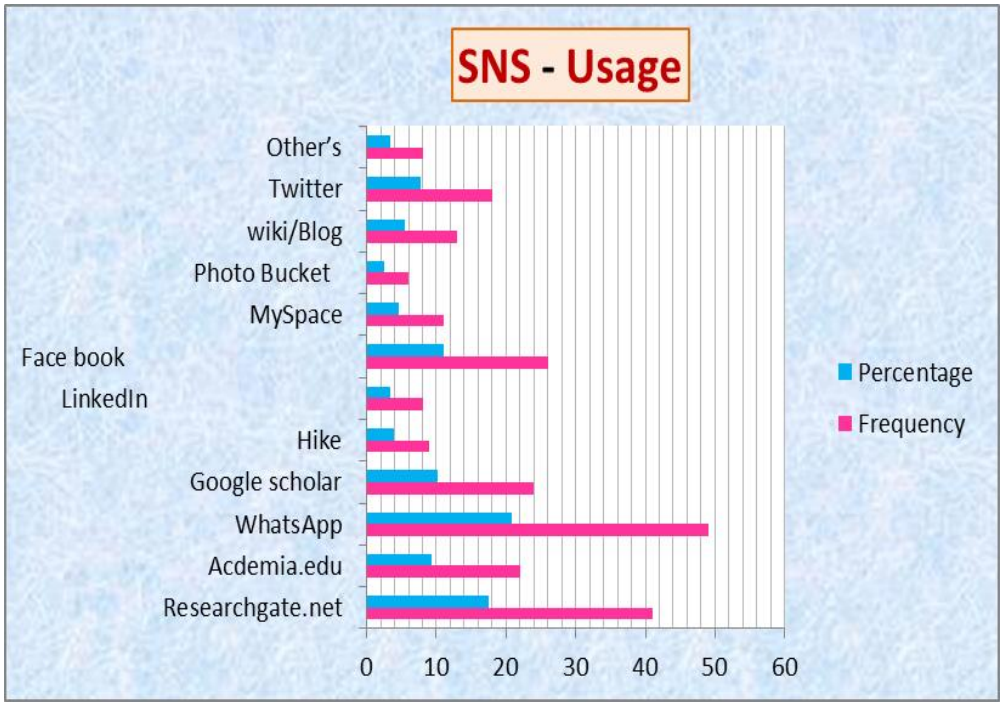
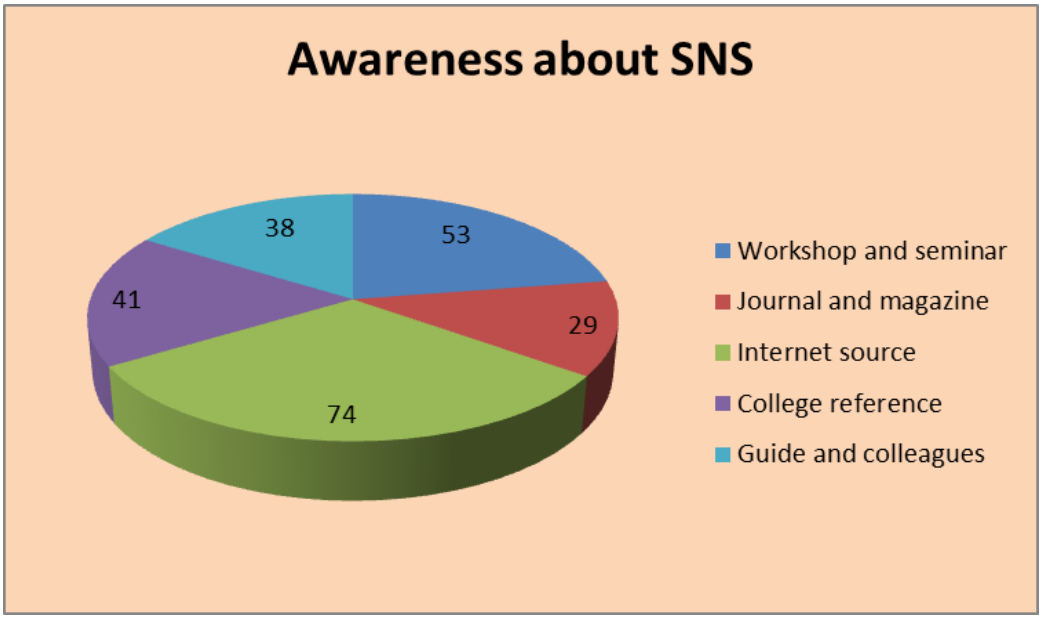


Table 4 shows the frequency and percentage distribution of different Social Networking Sites (SNSs) used by faculty members. It allows us to understand which platforms are most popular and prevalent among this group.

WhatsApp is the most frequently used SNS (20.85%): This highlights the importance of instant messaging platforms for communication among faculty members, possibly for both professional and personal interactions.
ResearchGate.net is also highly used (17.45%): This is expected, as Research Gate is a platform specifically designed for researchers and academics to share their work, collaborate, and network.
Facebook has a significant presence (11.06%): This indicates that general social networking platforms are also used by faculty members, likely for personal and broader professional networking.
Google Scholar is used by a notable portion (10.21%): Similar to Research Gate, Google Scholar is crucial for academic visibility and tracking citations, explaining its usage.
Other academic/professional platforms show moderate use: Academia.edu (9.36%), Twitter (7.67%), and LinkedIn (3.40%) reflect the use of platforms for scholarly communication and professional networking, though to a lesser extent than Research Gate and Google Scholar.
Platforms with lower usage: Hike (3.84%), MySpace (4.68%), Photo Bucket (2.55%), and wiki/Blog (5.53%) have relatively low usage among faculty members. This might suggest these platforms are either less relevant to their professional needs or have been superseded by other platforms.
Table 5 - Awareness about SNS

Sources of awareness	Frequency	Percentage
Workshop and seminar	53	22.55
Journal and magazine	29	12.34
Internet source	74	31.49
College reference	41	17.45
Guide and colleagues	38	16.17
Total	235	100.00

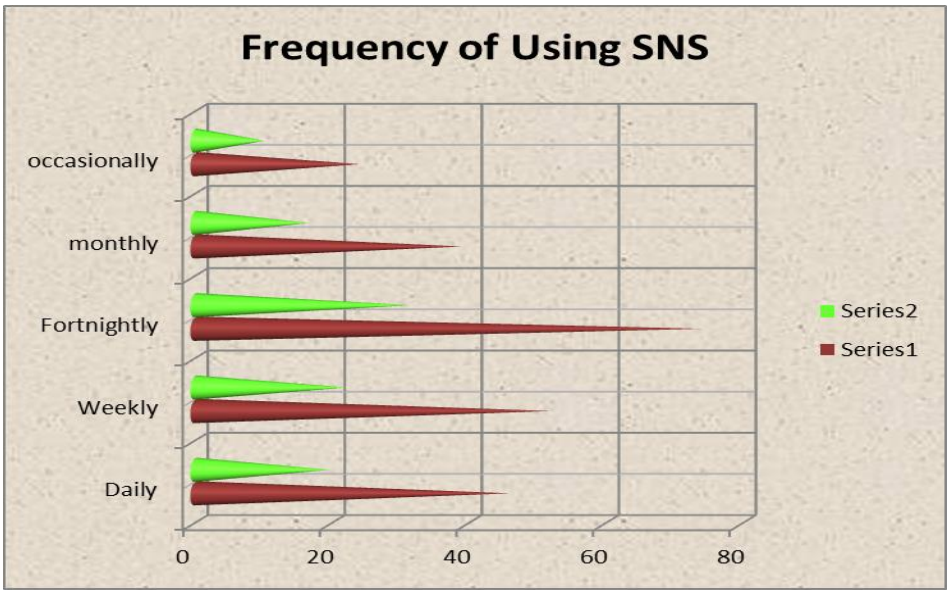


Indicates the table 5, SNS awareness l74 members form Internat, 53 members workshop, 41 members college reference and guide, journals are 38, 29. In the table 6, 74 members are fortnightly and 46 are daily and weekly 52

are using the social network site for academic purpose. From the table 7 using faculties are SNS as follows for writing articles 71, Collect research materials 58, and 46 are seminars.

Table 6 - Frequency of Using SNS

Frequency	Frequency	Percentage
Daily	46	19.57
Weekly	52	22.13
Fortnightly	74	31.49
monthly	39	16.60
occasionally	24	10.21
Total	235	100.00



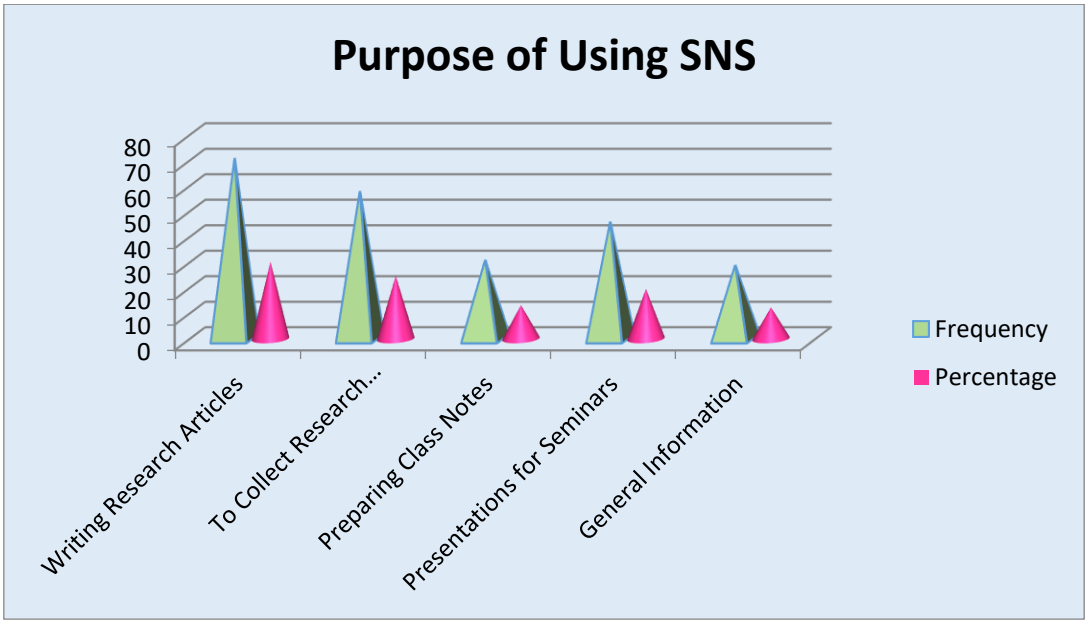
The table 6 shows the distribution of frequency of an activity, with categories ranging from "Daily" to "Occasionally."

Fortnightly" is the most frequent response (31.49%): This indicates that the activity is most commonly performed every two weeks.
Weekly is the second most common (22.13%): This suggests that a significant portion of respondents engage in the activity on a weekly basis.
Daily comes in third (19.57%): While still a substantial portion, it's less frequent than "Weekly" or "Fortnightly.
Monthly is less frequent (16.60%): This shows a decrease in engagement compared to the more frequent intervals.
Occasionally is the least frequent (10.21%): This suggests that the activity is not a regular occurrence for a small segment of the respondents.

Table 7 - Purpose of Using SNS

Purpose	Frequency	Percentage
Writing Research Articles	71	30.21
To Collect Research Materials	58	24.68

Preparing Class Notes	31	13.19
Presentations for Seminars	46	19.58
General Information	29	12.34
Total	235	100.00



Writing research articles 71 (30.21%): This is the most significant purpose, indicating that SNS plays a crucial role in academic research and writing. It suggests that researchers leverage these platforms for collaboration, sharing findings, or accessing resources related to their work.

To collect research materials 58 (24.68%): This is the second most common purpose, highlighting the importance of SNS as a source of information and resources for research. Researchers may use these platforms to find papers, datasets, or connect with other researchers.

Presentations for seminars 46 (19.58%): This purpose shows a moderate usage of SNS, suggesting that individuals also use these platforms to aid in preparing or sharing seminar presentations

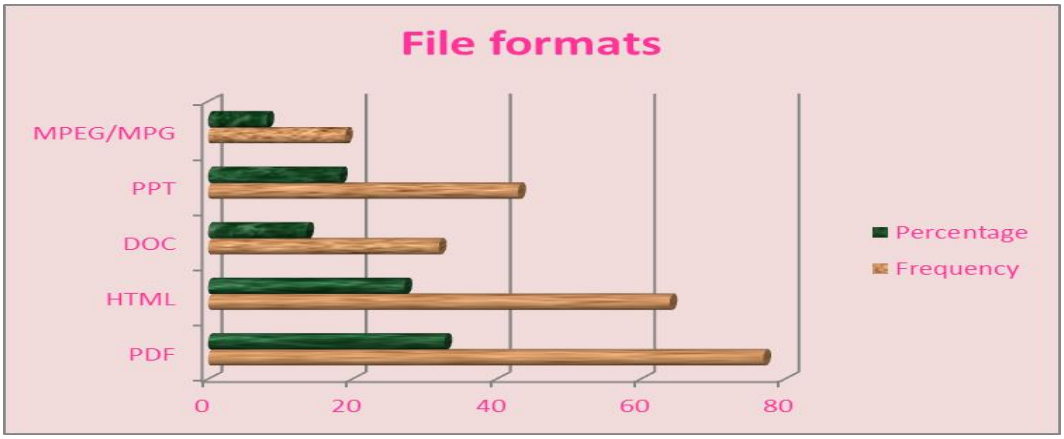
Preparing class notes 31 (13.19%): This purpose has a lower frequency, indicating that SNS is less commonly used for creating instructional materials.

General information 29 (12.34%): This is the least frequent purpose, suggesting that while SNS is used for information gathering, it's less prioritized compared to research-specific activities.

Table 8 – File formats of Using SNS

File formats	Frequency	Percentage
PDF	77	32.77
HTML	64	27.23

DOC	32	13.62
PPT	43	18.29
MPEG/MPG	19	08.09
Total	235	100.00

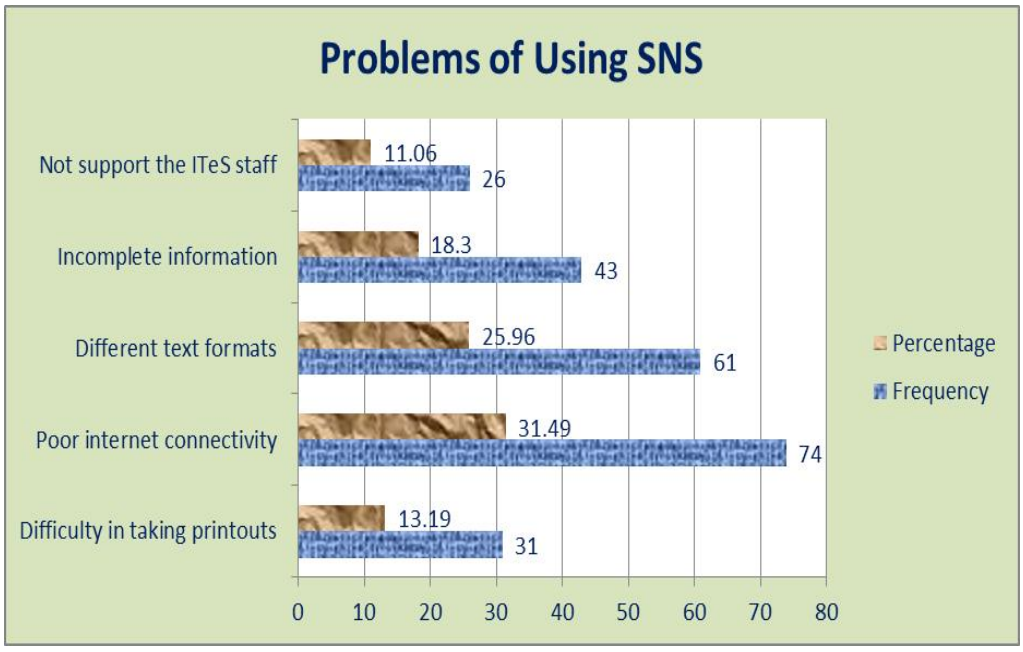


PDF: Archiving, sharing documents with consistent formatting. **HTML:** Web content, structured documents for online viewing. **DOC:** Word processing documents, often for editing and collaboration. **PPT:** Presentations, visual aids for conveying information. **MPEG/MPG:** Video files.

From table 8 **PDF** is the most frequent file format, representing nearly a third (32.77%) of the total. This suggests its widespread use for document sharing and archiving, likely due to its platform independence and consistent formatting. **HTML** is the second most frequent, accounting for 27.23%. This is expected given the prevalence of web-based content and documents. **DOC** and **PPT** formats have a noticeable presence, with 13.62% and 18.29% respectively. This indicates the continued use of word processing and presentation software. **MPEG/MPG** is the least frequent format in this dataset, at 8.09%. This could imply a lower incidence of video files compared to document-based formats in this particular context.

Table 9 – Facing Problems of Using SNS

Problems	Frequency	Percentage
Difficulty in taking printouts	31	13.19
Poor internet connectivity	74	31.49
Different text formats	61	25.96
Incomplete information	43	18.3
Not support the ITeS staff	26	11.06
Total	235	100.00



1) Poor Internet Connectivity (74 occurrences, 31.49%)

This is the most significant problem, affecting nearly one-third of the cases. It suggests that reliable internet access is crucial for the system or process in question, and its absence is a major hindrance.

2) Different Text formats (61 occurrences, 25.96%)

This is the second most frequent problem. It indicates issues with data standardization or compatibility, which can lead to errors, rework, or difficulty in processing information.

3) Incomplete Information (43 occurrences, 18.3%)

This problem suggests that data quality is a concern. Incomplete information can hinder decision-making, require follow-up, and reduce efficiency.

4) Difficulty in Taking Printouts (31 occurrences, 13.19%)

While less frequent than the other issues, this problem still affects a notable portion of cases. It might point to technical glitches, software incompatibility, or user difficulties with printing functionalities.

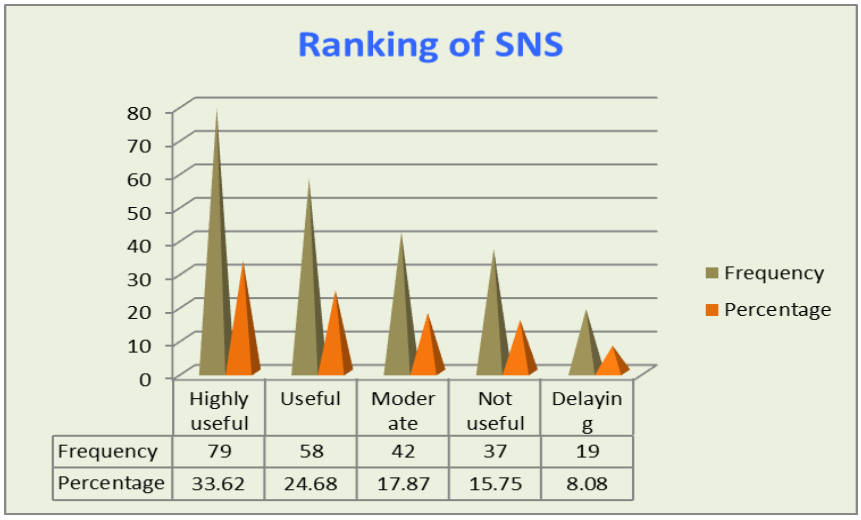
5) Not Support the ITeS Staff (26 occurrences, 11.06%)

This is the least frequent problem in this dataset. It is somewhat vague, but suggests that the system or process may not be adequately meeting the needs or requirements of the ITeS staff. This could be related to training, features, or support.

Table 10 – Overall Ranking of SNS for academic use

Ranking of SNS	Frequency	Percentage
Highly useful	79	33.62

Useful	58	24.68
Moderate	42	17.87
Not useful	37	15.75
Delaying (Time loss)	19	08.08
Total	235	100.00



Highly Useful (79 occurrences, 33.62%) This is the most frequent response. It indicates that a significant portion of the respondents have a positive view of SNS, perceiving them as highly beneficial.

Useful (58 occurrences, 24.68%) This is the second most frequent response. Combined with "Highly useful," it suggests that a majority (33.62% + 24.68% = 58.3%) of the respondents find SNS to be useful to some extent.

Moderate (42 occurrences, 17.87%) This category represents a neutral or ambivalent perspective. These respondents may see both positive and negative aspects of SNS or find their usefulness to be situational.

Not Useful (37 occurrences, 15.75%) This indicates a negative perception of SNS. These respondents may not find SNS to be beneficial or may have had negative experiences.

Delaying (Time loss) (19 occurrences, 08.08%) This is the least frequent response. It represents a strongly negative view, focusing on the time-wasting aspect of SNS.

Positive Attitude Predominates: SNS is viewed as helpful or extremely helpful by a resounding majority of respondents (58.3%). This shows that SNS are commonly considered as important tools. Considerable Neutral/Negative Opinion: Nonetheless, a sizable percentage of participants (17.87% + 15.75% + 8.08% = 41.7%) hold a somewhat to negatively oriented opinion of social networking sites. This suggests that their usefulness or possible disadvantages, such as time waste, are being questioned. Opinion Polarization: The data indicates some degree of polarization, with a sizable minority voicing worries about the time spent on social networking sites and a huge proportion viewing them as extremely helpful.

Discussion

According to the research, social networking sites are generally seen favourably, but there are also serious reservations about their utility and time-wasting potential. In order to maximize the positive aspects of social networking sites and minimize their negative ones, more research is required to fully comprehend the subtleties of these perspectives.

In this study, we examined the faculty members' awareness of the role social networking sites play in engineering education at Coimbatore District Engineering College. 20.85 % of faculty members have been using the WhatsApp and 17.45 % of them access Researchgate.net using SNS for academic purpose. The majority of faculty members firmly believe that using social networking sites (SNS) for research and teaching is a good way for both faculty and students to get the information they need in their field.

Conclusion

According to the research, Facebook and WhatsApp are important platforms for social and intellectual activities. Over half of faculty members use social networking sites (SNSs) like Research Gate, Google Scholar, and Wiki Blog for work-related purposes. The required information is downloaded in PDF format by almost 32.77 % of faculty, DOC by 13.62 %, and PPT by 18.29 %.

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