CHAPTER V

FINDINGS & DISCUSSION

5.1. OVERVIEW

This chapter throws light on the findings from the previous chapters. The findings and discussions are presented as per the objectives and research questions. This section will discuss the quantitative & qualitative findings along with the findings of observations made by the Investigator during the students’ task performance.

The objective and research questions for this study are

**To develop a tool to evaluate the DIL Level of college students**
- What is Digital Information Literacy in the Indian Context?
- Which is the suitable method for DIL-literacy assessment?
- How can we evaluate a student’s DIL skill?

**To assess the students online proficiency in accessing information**
- How do they use web browsers and access data/information?
- How do they use search engines?
- Do they possess the skills of sharing information online?

**To assess the students computer proficiency in manipulating the data and presenting the legal aspects of the Information accessed**
- Are they familiar with application softwares?
- How do they design, present and manipulate digital data/information?
- How do they store digital data/information?
• Are they familiar with the legal aspects of presenting data/information?

To identify the factors that has influence on DIL skills of a college student

• Does frequent social media access have influence on the acquisition of DIL skills of a student?
• Do social media practices have an influence on the acquisition of DIL skills of a student?
• Does the institution they study in influence their acquisition of DIL skills?
• Do the stream (Arts or Science) they study in influence their acquisition of DIL skills?
• Does their year of birth influence their DIL skills?
• Does the device used have an influence on their DIL skills?
• Does the SES of a student have an influence on DIL skill of a student?
• Is there a gender difference among the DIL skills of a student?

5.2. FINDINGS RELATED TO THE RESEARCH QUESTIONS

5.2.1. What is the suitable method to assess Digital Information Literacy in Indian Context?

To answer this research question, a vast literature review was conducted. Different information literacy assessment standards were identified at the international level and examined (Chapter 2). The investigation revealed that the most suitable framework for Digital Information literacy assessment is the ACRL information literacy. In the context of a developing country like India, ACRL
standard need some modifications. For example, legal and ethical aspects of Information area serious issue in USA, ACRL standard has given more weight age for legal aspects of information. But In India, recently academic plagiarism issue is becoming a serious concern. Investigator has taken only few performance indicators in ACRL and done few modifications in that. ACRL indicators includes five standards such as determining the nature and extent of information needed, and accessing the needed information effectively and efficiently; evaluating the information and its sources critically and incorporating selected information into one’s knowledge base and make use of the information effectively to accomplish a specific task and to comprehend the economic, legal, and social issues surrounding the use of information, and using the same ethically and legally. (Refer ACRL Standards Annexure 1). The final product included 5 standards, 22 performance indicators and more than 100 outcomes intended to provide some insight into the skill set needed during the research process. Information Literacy Competency Standards for Higher Education", adopted five standards and numerous performance indicators to consider the best practices for the implementation and assessment of post-secondary information literacy programs”(Neely, 2006).

These standards formed the backbone for the thesis. In the international literacy model, internet and www skills are represented in basic computer skills but it will not fit for the country like India. Hence, Investigator has taken the core concepts from ACRL. Indian context of the digital information literacy is divided into four levels. Totally 5 standards of 22 performance indicators with 44 outcomes were identified from ACRL. To identify the suitable DIL performance indicators for students, criticism from the panel of expert’s members was acquired through the Delphi Technique. After two Delphi rounds, 4 levels with 5 performance
indicator and 18 performance indicator outcomes were identified. A set of subtasks and a rubric to assess the task performance were also prepared in consultation with the experts [Refer Chapter 4].

**Level 1**: In the level 1, a digital information literate student should have the ability to access the relevant digital information in an effective and efficient manner. Information Literacy is “the capacity of people to recognize their information needs, locate and evaluate the quality of information, store and retrieve information, make effective and ethical use of information, and apply information to create and communicate knowledge” (UNESCO, 2008, p.8). Students should be able to extract information from different web sources. They should also know how to share the collected digital information online in e-mail and social media platforms.

<table>
<thead>
<tr>
<th>Level 1</th>
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<tbody>
<tr>
<td>Accessing the relevant data/information effectively and efficiently and sharing it online.</td>
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<table>
<thead>
<tr>
<th>Performance Indicators</th>
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<tbody>
<tr>
<td>• Assessing the ability to access information</td>
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<tr>
<td>• Assessing the ability to share information</td>
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<table>
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<tr>
<th>Performance Outcomes</th>
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<tbody>
<tr>
<td>Ability to retrieve information [using various information retrieval system]</td>
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<tr>
<td>Using different sources [newspapers, magazines]</td>
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<tr>
<td>Extracting techniques [copy/paste, save as, print, bookmark]</td>
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<tr>
<td>Other databases [Information seeking process beyond local sources]</td>
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<tr>
<td>Relevance of the search [quantity, quality, gaps in the information]</td>
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<tr>
<td>Read the text and select main ideas</td>
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**Level : 2**

In the level 2, the digital information literate student ought to know manipulate downloaded digital information and present it any one of the application/publishing software. They should know to present the data in an attractive format by using the principles of design such as balance, proximity, proportion and contrast. They must be able to manipulate the digital data and present the data in documentation or multimedia presentation software i.e., MS Word or Powerpoint/Adobe Flash.

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<th>Level 2</th>
<th>Performance Indicators</th>
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<tbody>
<tr>
<td>Using the data/information for documentation or presentation purposes.</td>
<td>Assessing the ability to incorporate design, manipulate &amp; present data/information</td>
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**Performance Outcomes**
- Manipulates digital text, images and data
- Incorporates principles of design
- Software for presentation[word, ppt, html, excel]
- Using an appropriate documentation style

**Level 3: In the level 3,** a digital information student should know how to store the data for future retrieval. ACRL doesn’t discuss briefly about the saving file in a folder. Saving the data is very important Information literate person could store and retrieve information (Catts & Lau, 2008).

<table>
<thead>
<tr>
<th>Level 3</th>
<th>Performance Indicators</th>
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<tr>
<td>Storing the data/information for future retrieval.</td>
<td>Assessing the ability to store information</td>
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**Performance Outcomes**
- Create a system for storing/organizing information
- Organizing the content in a manner [format of the information]
In the level 4, digital information student ought to comprehend the ethical, legal and socio-economic aspects/issues surrounding information and information technology. Students should understand the social context around the information. They must be critical in certain aspects of collecting information. Understanding the social context refers to understanding the society/setting where they live. One should be aware of what is happening in the society/societal issues. Social context reflects how the people around something use and interpret it (www.web.stanford.edu). For example, if a student is given a topic ‘Kudankulam Nuclear Power Plant’, he/she must be able to interpret who created the information, what is the issue going behind it. Providing the copyright details is also vital to avoid plagiarism issue. Following netiquettes in the chatrooms and sending mails is also important. A good e-mail netiquette is defined as set of rules following while sending e-mail, such as typing the email in small letter, inserting a concise subject line in an email, including the signature in e-mail.

**Level 4**

Understanding the cultural and social context around the data/information, and using the same ethically and legally.

**Performance Indicators**

Assessing the ability to present legal aspect of information.

**Performance Outcomes**

Understand the Social Context

Including Citations, Footnote, End note, Reference

Including Copyright details

Mentioning the Courtesy/Source

Following Netiquettes
5.2.2. Which is the suitable method for DIL assessment?

In chapter 2, the literature review criticized several existing Information literacy assessment tests. These instruments were questionnaire based, where the participants were expected to rate their own information literacy skill using a likert scale or they had to answer the questions related to information literacy. Such pen and paper based questions will be like ‘I can access Internet’ Do you know how to open the search engine?’ Instead of testing the participant’s ability by asking them questions they can be asked to perform the task. As an example, during the pilot study the students were asked to open the search engine. If the Investigator asked the participants, about their ability to open a search engine it was not sure whether he/she will get a proper answer.

Rather than utilizing ‘pen and paper-based’ self-adequacy surveys, some number of Investigators earlier utilized to assess the information literacy skill of an individual, this study deploys ‘task-based’ method. “TBA instrument is necessary to assess the ICT literacy, it allows participants to complete a given task independently without being told how it is done.” (Jessnor, 2012). “Task based assessments were designed to measure the knowledge, skills and judgment required for competency in a given domain” (Syed, 2008). “Task - based assessment is characterized as the process of evaluating, in connection to a set of explicitly stated criteria, the quality of the communicative performances drawn out from learners as part of goal-directed, meaning-focused language use requiring the integration of skills and knowledge”(Brindley, 1994).

Investigator suggests that task based assessment (TBA), is the suitable method for assessing the Digital Information Literacy of a student. To assess the digital information literacy of a student, 4 levels were proposed with 5
performance indicators and 18 performance indicator outcomes (See Fig 1.1). A set of task under each level and performance indicators were designed to assess their skills. Basic computer skills and Internet knowledge are the prerequisite skill set to participate in the digital information literacy task based assessment test.

5.2.3. How can we evaluate a student’s DIL skill using proposed method?

Task-based assessment instruct the students to carry out actual Digital Information Literacy based tasks. A person might also think they know how to perform a certain computer-based task but in reality, when they attempt to do the task using a computer they may fail instead (Jessnor, 2012). A digital information literacy of student in India, should be evaluated based on their ability. So, proposed TBA instrument tasks were developed by keeping their literacy level in mind. The final version of the assessment tool comprises of 4 set of computer based tasks with 17 subtasks. The students were asked to complete the task.

5.2.4. How do they use web browsers and search engines to access data?

Task-1

To answer the above research questions, students were expected to perform five subtasks. These set of subtasks will assess the online proficiency of student in accessing information. The subtasks are 1) Use Internet 2) Refer atleast three different websites and collect relevant data 3) Read the text and rewrite (if required) 4) send this file to email id(nithiviscom@gmail.com) and 5) Post/Share the content in FB/Blogs/WhatsApp any social media account. The first subtask expected the students to access Internet which includes opening a browser and search engines. The second subtask expected the students to collect
data from three different web sources other than Wikipedia. The third subtask expected the students to read and select the relevant information on given topic and if required they can also rewrite. The fourth task expected the student to share the file in e-mail [copy/paste the content in or after finishing documentation they can send e-mail as an attachment]. The fifth task expected the student share the content in anyone of the social media.

5.2.5. Are they familiar with application software and able to design, manipulate and present digital data?

Task-2

Students were expected to perform seven subtasks in this level. This set of subtasks will assess the computer proficiency of the student. The subtasks are

1) Use Word, PowerPoint/Excel/Flash or any other software to present your data
2) Combine the information downloaded and make it into 5 paragraphs. 3) Convert to Century Gothic Font/12 Pt, Give Heading and Subheading and align properly 4) Create a hyperlink 5) Use Images [Crop/Resize/Rework the image].6) Give video link and 7) Remove hyperlink. The first subtask expected the students to open any one of the application software such as word, ppt, excel or multimedia presentation software such as Flash. The second and third subtask expected the students to copy the downloaded information (5 paragraphs) into the software and change the font into century gothic 0f 12 size. They were also expected to provide headings and align the paragraph properly. In the fourth subtask, students are expected to create a hyperlink. In the fifth subtask, students are expected to use the image. In the sixth subtask students are expected to provide videolink relevant to the downloaded information. The Seventh subtask expected the students to remove hyperlink in the downloaded text.
5.2.6. How do they store the digital data?

Task-3

Students were expected to perform two subtasks in this level. The subtasks are 1) Save the file in folder in C/D/E drive [Folder Name: students task]. 2) Name the file in your name and college [compatible formats such as .doc, rtf, ppt]. In the first subtask students are expected to save the file in folder. In the second subtask students are expected to save the file different file formats.

5.2.7. Are they presenting legal aspects of information accessed?

Task-4

Students were expected to perform three subtasks in this level. The subtasks are 1) Give footnote/reference 2) Give Photo courtesy [mention the source] 3) Include Copyright details. These set of subtasks will assess the student’s ability in presenting the legal aspects of information. In the first subtask, students are expected to give footnote/reference/endnotes. In the second subtask they were expected to mention the photo courtesy. In the third subtask, students are expected to include the copyright details. During observation through task performance it was also noted whether the students are following netiquette. During an interaction through the task performance it was verified whether understanding the social context of an information and collected the information.

Rubric

All the four tasks and 17 subtasks were verified through a proper rubric prepared with the help of PoE. A final list of 25 rubric scoring sheet was prepared. Total score of 25 was given for all the tasks. Students who got scores as 0 to 5 for total score 25 will be coded as novice 5 to 10 for total score 25 will be
coded as advanced beginners level, 10 to 15 out of 25 will be coded as competent level, 15-20 out of 25 will be coded as proficient, above 20 to 25 out of 25 will be coded as expert level. Students with expert level are considered as highly digital information literate and students who are proficient and competent will be considered as medium and low. Students with novice and beginners will be considered very low and poor Digital Information Literacy skills. **To assess the level of digital information literacy, both proficient and expert levels were added. The overall score of proficient and expert level were taken to find out the digital information of student level was high or low.** Thus, the DIL skill of a student can be evaluated with suitable task based assessment. Investigator filled the scoring rubric sheet during the task observation.

### 5.3. QUALITATIVE AND QUANTITATIVE –TRIANGULATION APPROACH

#### 5.3.1. Demographic Information

A total of 139 students participated in this study. Among 139 students, 71 Male and 68 Female students participated in this survey. Out of 139 students, 20 were first year students and 52 were second year students and 67 were final year students. Due to language class hours, Investigator could not gather first year students so only few number of first year students were participated. Majority of the students participated in this survey were final year students. Majority of students participated belonged to lower middle class 61 students (43.9%). Majority of Tamil medium students (66.2%) were participated. As the study was aimed to examine the digital information literacy of rural students and conducted in rural areas, lower middle class and Tamil medium students sample was high.
Among 139 students, 74 Students were from Arts stream and 65 students were from Science stream.

5.3.2. Interviewee Background

A total of 68 college students from selected 18 Arts and Science colleges in Tamil Nadu participated in this In-Depth Interview. The students were first asked to complete the DIL task in computer lab. After the completion of task they were interviewed. In total, 38 Female and 30 Male students participated in the interview. Participants were UG I, II and III year students. 35 students from Arts stream and 33 students from Science stream participated in this interview. Students studying different departments such as Computer Science, Commerce, History, Visual Communication, Maths, Tamil, and English were participated. 119 students who completed the task only filled the questionnaire.

5.4. COMPUTER/LAPTOP ACCESS

Majority of the students (103 students) got laptop distributed by Tamil Nadu Government. As an initiative to improve the ICT literacy of rural students, free laptops were distributed to lower sections of the society (Refer Chapter 1 Introduction). Investigator wants to find the impact of these laptops in their DIL skill. So, questions related to access to government laptop were raised. Even though majority of the student’s have laptop, they use smart-phones for accessing internet. Access to desktop computer seems to be diminishing. A study on PC and Smartphone usage in India, reports that percentage of PC usage has declined to just 10%. It had declined from 40% to just a little over 10% in an year while smart phones usage has increased from perhaps 13% to 22% over the same period (Joel, 2014). Computer literacy in this study context is describes as skill to operate
computer i.e. open the computer and able to work in any one of the application software. Basic computer literacy and internet literacy are the pre requisites for students who participate in the digital information literacy assessment. Interestingly, majority of the students know to operate computers (92%) and access to internet (89.2%). This is contrary to the research findings of the study conducted among rural students in Tumkur, India. This study says that only 32.3% of students were computer literate when compared to urban students (Sampath, 2012).

To find out the social media practices of college students

5.5. SOCIAL MEDIA ACCESS

Result from In-depth interview of students were, students access social media in their devices they own such as smartphones and laptop rather than desktop computer. They access their social media accounts from Home, Browsing Center and College lab. Female students access social media from their laptop. Female students from remote villages use desktop computer in browsing center. Smartphones seems to be the most convenient for both social media and internet access for Male students. In common, Majority of the students use smartphones to access social media.

Quantitative results also confirm that majority of the students(54%) access internet from their laptop(25.2%). Students preferred mode of accessing the social media accounts is through smartphone (40.3) and laptop(38%). IAMAI internet survey report of India 2016 reveals that 50% of the 300 million internet users access internet from mobile phone. It also reveals that 74% access social networking sites using their mobile internet (IAMAI Report, 2016). From the analysis of in-depth interviews, it was found that majority of the students have
account in social media. Facebook and WhatsApp are the primary social media accounts of students. This is supported by the quantitative survey findings, (N=139) 71% of the students have accounts in social media and 29% of the students don’t have any personal account in social media. Majority of the students (64.9%) have account in Facebook, (25.1%) of the students have account in WhatsApp and 10% of the students have account in You Tube, Twitter and others.

During in an in-depth interview majority of the students said that they spent more time in Facebook. Survey findings also reveals that majority of the students said that they spent more time on Facebook (64%) and in WhatsApp (28.8%) and they spent very less time in other social media such as Twitter, You Tube and others (7.2%). Similarly a survey conducted by TNS Indian Research company, reveals that among India’s Internet users, Facebook stands as the mostly used social networking website and WhatsApp tops the list of messaging applications (TNS Survey, 2015).

5.6. SOCIAL MEDIA PRACTICES

During the in-depth interview, students were asked to share their social media practices with the investigator. The interviewees discussed their social media practices which were further classified into Hanging out - friendship driven practices and Messing around and Geeking out- interest driven practices, and Work.

**Hanging out- Friendship Driven**

Majority of the students said that they use social media for chatting with their friends. Social media usage is dominated by college students. A report from social-bakers survey also states that age group from 18-25 are the highest users of
social media. Students particularly like Facebook. They share the posts, view the posts shared on their wall and in other pages and like it and type comments on it. They view and share the content according to their own interest. They update their profile picture. They used to chat with their friends in messenger. “Updating a personal profile on a social network site or texting a friend are typical examples of hanging out” (Boyd, 2011).

Therefore, students like to hangout in their virtual space for their friendship driven practices. Majority of the students use Facebook for the friendship driven practices. Data collected from the college students were classified into Arts and Science student. Students studying in Science stream use the social media for friendship-driven practices when compared to Arts students. Similarly, a study on usage of social networking websites among the college students in India, revealed that main purpose of usage of SNS for the respondents was for messaging and chatting with 38% and 36% respectively (Manjunath, 2013). Paul (2013) says that in this friendship driven practices students are spending less time interacting with content and more time communication with other people.

**Interest- Driven Practices**

Messing around and Geeking out are the Interest driven practices. From the qualitative in-depth interviews it was found geeking out practices of students are at lesser level. The most mainstream exercises on social media incorporate keeping up one's own virtual profile on the likes of Facebook and Twitter, posting and sharing an update/status additionally answering to something a companion/friend has posted (IAMAI Report, 2016).
Only few students make use of social media for Interest driven practices; messing around and geeking out with their friends online. Students are interested in playing social network gaming with their friends and searching information related to Tamil film heroes’ fanclub pages, they download music and listen. All these practices are interest driven, engaging with media content which is called ‘messing around’. For example, one of the physics student likes to visit the pages of ISRO, NASA, he refer You Tube to watch Science experiments. Geeking out interest driven practices involves creative production. Students produce content such as memes and collages and some of them produce shortfilms, remix video. Only few students are producing content few create memes related on social issues and circulate it. Among the interest driven practices, students are mostly likely to messing around online according to their own interest. In this interest driven practices of geeking out students remain as ‘Active Producers’ where as in the hanging out of friendship driven they remain as ‘Passive Viewers’ where they don’t produce any media content they just view, chat within friends groups. “The term creative work traditionally has been used to describe “imaginative” or “expressive” work, where “expressive” refers to sharing aspects of the self” (Sefton-Green 2000,8). In that aspect, students are less expressive and less imaginative in their provided virtual space. A research study conducted among students in Alabama University, revealed that students are destined to use social networking sites for posting pictures and videos. They are least likely to use social networking sites in a professional way. There is a very less creative production of media content. (Jasmine et al, 2016)
Department they belong to have certain influence on social media practices of students. Visual Communication students produce short films, music albums, and take photographs for their academic purpose. They create a Facebook page where they post all their academic works and other projects (short films, documentaries) produced by them. Hence, the students of Visual Communication department act as prosumers. Alvin (2012) explains prosumer is the term used to describe a person who not only consumes media but also produces media. Computer Science and BCA students also involved in such interest driven practices more. They create websites and blogs for their academic project and they promote it through their FB pages and WhatsApp groups. For example, in an interview with Computer Science student said he started a blog for his final year project and another Visual Communication student said he posted his short film taken for his final project submission. From the in-depth interviews of Visual Communication and Computer Science students, it was found that they are more indulged in creative production than any other department students. This is may be because; computer and media literacy courses are embedded in their regular curriculum.

**ACADEMIC DRIVEN**

Social media for academic driven purpose in this context is explained as using the social media groups for completing their assignments and sharing their notes, be a part of job related groups and search job, to view exam results, timetable for exams, online registration. Social media and social network sites in particular can be very useful as an educational tool. Students like to spend time on SNSs, and exercises, videos and other sharing in group which are useful for their academic purposes (Tartari, 2015). Research has been extensively conducted on
social media usage of students for academic purpose. But this study tries to associate it with Digital Information Literacy skills of the student.

From the in-depth interview, it was found that students create WhatsApp groups and share notes. They record the lectures of professors and share it in their social media groups. ebrary’s Global student E Book survey report 2011, reveals that 69 percent of students using social media for the academic purposes. Students use WhatsApp messenger for academic purpose more than social networking websites. A descriptive survey among the university students of Tamil Nadu, revealed that students make less use of social networking sites with regard to academic purposes. The recurrence of use of social networking websites for research academic activities was fairly low and normal.(Subramani & Nithyanandan , 2013). Academic driven ends in geeking out, where students create a project for their submission for that they collect reference from social media. For example, students from Visual Communication department and Computer Science student create projects for their course requirement and share it in their social media account. Thus, the academic driven as well as interest driven practices meets at this point.

5.7. DIGITAL INFORMATION LITERACY & SOCIAL MEDIA PRACTICES

Students who use social media for friendship driven practices DIL scores were assessed. Majority of the students who use social media for friendship driven practices, are at novice, beginners and competent Level. Students who were more involved in interest driven DIL scores were examined. Interestingly it was found that, majority of the students who use social media for Interest driven practices at
geeking out are at Proficient and Expert Level in their Digital Information Literacy skills. Students who engage in social media for academic driven practices are completing their DIL task at competent and proficient level. Hence, the social media practices could influence the Digital Information Literacy skills of a student. Students who spend the social media for geeking out- interest driven practices are at proficient level and expert level in their Digital Information Literacy skills.

5.8 GENDER DIFFERENCE AND SOCIAL MEDIA ACCESS

Female students are the non-users of social media compared to male. Females are non-users who were not able to perform the DIL task. Among the 139 students, only 21 users said that they could not perform the Digital Information Literacy Assessment test. Among 21 users, majority of them are Females and they don’t have account in social media. Quantitative findings also confirmed that among the 59 Female students using social media account is 43, while 16 are not using any social media accounts.

Female students express how WhatsApp is convenient to inform about issues relating to private exchanges of information (Patil et al, 2016). Similar to those Female students who are likely to access WhatsApp than Facebook, because they feel WhatsApp is more comfortable and safe. This is supported by the survey findings that among the 60 male students, 12 male have spent more time in WhatsApp; Among the 59 Female students, 22 female students have spent more time in WhatsApp. In Mumbai, an exploratory study, conducted to find out whether gender did influence the usage of WhatsApp. Gender differences were visible in the usage of WhatsApp, men spent lesser time compared to women and some difference in usage patterns were also confirmed (Rungta, 2015).
Quantitative survey findings reveal that Female students spent much time in social media compared to male students (Refer Table 4.21). Mobile Marketing Association survey report (2016-17) on Smartphone behavior shows that women spent more time on social media than their male counterparts.

5.8.1. Gender Difference in Social Media Practices

Friendship Driven Practices

From the in-depth interviews, it is observed that both males and females students make use of social media for friendship driven practices. But male students are increasingly make use of Facebook for friendship driven practice and WhatsApp has been widely used by the Female students for friendship driven practice.

Interest Driven Practices

From the analysis of in-depth interviews with students, it was found that both male and female students are involved in Interest driven practices equally. Male students involve in geeking out -interest driven practices such as producing short films, creating memes and post it. Female students are interested in messing around interest driven practices such as downloading a song, downloading e-tutorials and viewing it. They search according to their own interest. For example, during in-depth interview, a Maths student said she would watch tutorial videos in You Tube to understand the tough theorems. Visual Communication students said he would watch lot of cinematography tutorial videos.
Academic Driven Practices

Majority of the Female students in their in-depth interviews said that they were likely to use social media for academic purposes, but only few male students said they were making use of social media for academic studies. Majority of the Female students in the interview said they have WhatsApp groups to share notes during their exams and they also discuss about their assignments. Similarly, a study conducted among Karnataka women's state university regarding their social media usage, states that majority of post-graduate students access WhatsApp for educational purposes (Patil, 2016).

5.9. HOW DO THEY USE WEB BROWSERS

Majority of the students (.97 Mean Value) are aware of the term web browsers. They all opened web browsers like mozilla firefox, Google Chrome and the available web browsers in their desktop computers. Students, who have done the task in smartphones, also accessed the available web browsers in their phones. Thus, students performed at an expert level.

5.10. THE USE SEARCH ENGINES AND ACCESSING DATA

Majority of the students (.97 Mean Value) accessed a search engine. They all opened Google search engine to open database, only few students directly typed the topic in the URL. An information literacy study conducted among post graduate students reveals that “Google” is the search engine preferred by the students to locate information from web based sources (Shamim & Priyanka, 2016).
Few students (.86) collected information from three websites. Majority of the students accessed the information from Wikipedia. Few students read the online text (.91 mean value) and checked the data relevancy (.89). Other students just copied the text without reading the text and there is no relevancy to the given topic. For example, screenshot (fig 1.1) of the final output of the students, the topic given to the student was ‘Women and Health’. The information she downloaded was irrelevant. It was expected to collect data on ‘Women and Health’. But the data collected was related to healthy skin, which was irrelevant. Even though students know how to use search engine and locate data, they are lagging in locating relevant information. Students were expected to extract the information of five paragraphs from the web source. Students use the extract techniques (.81 Mean value) such as copying the text in document. Among the other subtasks, the score was low in extracting techniques used to download the information as many of them had not extracted 5 paragraphs.

![Foods for Healthy Skin: You Are What You Eat](image)

**Figure 5.1 Screenshot of Student’s Task on the topic ‘Women and Health’**
It is observed that majority of the students, copy/paste the information from web page. Whether the copy/paste will help them to learn something needs to be questioned. According to Dan perkel(2009), Copy paste literacy is a new literacy practice. Technically speaking, copying and pasting does not require much skill but by integrating theories of appropriation and reuse of media with theories of literacy, perkel argues that Copy/Paste literacy is an emerging literacy practice in digital environment (Dan Perkel, 2009). The copy / paste culture creates a bottom-up takeover of the information flow. This process helps the students to become creators as well as passive consumers of content (Peter, 2006).

5.11. SHARING INFORMATION ONLINE

Majority of the students have e-mail account and they send e-mail of the downloaded information. But they are not familiar with attaching files and sending the mail. Students share the files in e-mail(mean value .74) but they copy and send the downloaded information. Fig 1.2 is the screenshot, a task given to the student on the topic ‘Indian Railways’. He downloaded the information but did not know how to attach as a file in e-mail, he just copied the text from word document to mail window. ‘Sharing Information Online’ in this study context is defined as a measure of one’s ability to use computers to communicate and exchange information. Only few students of (Mean value-0.74) preferred to share in their social media groups. They shared it in their WhatsApp group and Facebook.
5.12. FAMILIARITY WITH THE TEXT EDITING SOFTWARE

Students are familiar in opening the application software (.77 mean value) such as MS Word and PowerPoint. Even though there are other application software in the desktop computer and laptop provided, majority of the students preferred MS .Word to present the downloaded information. They used extract techniques such as paste to bring the downloaded information into the word document and few used save as html file. Somehow few students (.76 mean value) extracted the information. Few students were able to copy the text from web document and did not know how to paste in word document.

5.13. MANIPULATE AND PRESENT DIGITAL DATA

Students opened the application software and copied the downloaded data. After, they were expected to manipulate the data. Majority of the students (.71 mean value) formatted the text. They changed the font size, color and add bold to
the headings. They also provide headings and subheadings (Mean value .62) to the downloaded information. Only few students (Mean value .50) did the alignments properly otherwise students copied the data and saved the file. They did right, left and justified paragraph alignment. Only few students removed the hyperlink (.27) and added hyperlink(.29). Majority of the students are not familiar with the term hyperlink and they only called it is a ‘blue color text’.

![Screenshot of task done by the student on 'Kudankulam Nuclear Power Plant'](image)

Fig 5.3 Screenshot of task done by the student on ‘Kudankulam Nuclear Plant’ (not removed hyperlinks and no headings, subheading.)

Few students of having (.59 mean value) reworked the downloaded image. They compressed the image, added brightness and adjusted the size using picture format options in Ms Word and Ms Powerpoint. Very few students of having (.17 mean value ) provided videolink in the document, others understood the term but don’t know how to provide URL details.
5.14. LEGAL ASPECTS OF DIGITAL INFORMATION

Students scored low values in this set of subtasks. Majority of the students did not understand the social context of information downloaded. Score given to the social context of the information is based on interaction with them. Investigator discussed the given topic with the student and tried to infer that whether he/she was having some knowledge about the topic. For example: A student from Maths department understood the social context of koodankulam topic and discussed it well. In some interactions, students did not understand the social context of some of the social issue topics given to them. Only few students of having (Mean Value .12) went through the copyright database and raised doubts. Simply, they download the information from free database Wikipedia. Very few students of (.12
mean value) provided citations, footnote, endnote and reference and mentioned courtesy (mean value .17) .Only one student of (.03 mean value) mentioned copyright details. Few students of (mean value .34) were proper in following netiquettes. They added subject when sending the mail, typed the e-mail ids in capital letter.

5.15. STORING THE DIGITAL INFORMATION

Majority of the students knew how to save the file (.72 mean value), only students of (mean value 0.62) created proper folder and saved the name in a proper format. Very few students(.54 mean value) checked the compatibility options such as saving file in word 97-2003, PDF,rtf format which could be open in other computers also. Many of the students just clicked CTRL+S to save the file.

5.16. DIGITAL INFORMATION LITERACY OF STUDENTS

The overall score level of students is discussed. Majority of the students completed the task at proficient level of (40.7%). Students completed the task at novice (20.3%) and competent level of (20.3%). Few students completed the task at expert level of (10.9%) and advanced beginners level of (8.4%).

The overall score is also discussed in level wise. In the Level 1,students completed the task at expert level of (86.75), in Level 2 students completed the task at competent level of (52.2%) ,in Level 3 (65.5%) students completed the task at proficientand in Level 4(15.6% )students completed the task at novice level. The score levels had come down in the level 4 and level 2.Many of the students was not familiar with legal aspects of information such as copyright details, mentioning courtesy and quoting references. Similarly, the study conducted among the doctoral students in Calicut University also reveals that students are less aware of
plagiarism and Non-Science students are less aware of copyright issues relevant to
digital information (Vasudevan & Suchitra, 2013). It is observed that, many of the
male students did not present the information well, they just copied it in the
application software. They have not provided headings, hyperlinks and not aligned
it properly. This could be the reason for the low score in level 2. At the outset
students are good at online proficiency in accessing information compared to their
computer proficiency.

5.17. GENDER DIFFERENCE & DIGITAL INFORMATION LITERACY
SKILLS

5.17.1. Online Proficiency

These set of tasks are online oriented. It assessed the online proficiency of
students. The tasks like accessing the browser and collecting online data were
given. Majority of the Male students opened a browser when compared to the
Female student. Female students find some inconvenience with opening the
browsers in smartphones. Male students accessed the search engine skill level and
accessed the relevant data. When compared to male students, female students
performed better in sending e-mails and sharing in social media tasks than male. At
the outset, male students are good at online proficiency compared to Female
students.

A study conducted among Korean students by Park et al (2016) also
showed the same findings that there is a difference among male and female
students in the Computer & Information Literacy level, particularly in creating and
sharing information.
5.17.2. Computer Proficiency

These set of tasks are computer oriented. It assessed the computer proficiency of students. The tasks like working with application software, storing the data.

Female students are good at working with application software. (Opening the software & Copying the data). It was observed that, they sincerely performed the task given by the investigator. Female students were good at presenting the data when compared to male students. They also saved the file properly in a folder in the mentioned format. Female students were good at storing the digital information properly. At the outset, female students were good at computer proficiency compared to male students.

Figure 5.5 Screenshot of the Task done by Female student, reworked with the image text and aligned properly.
5.17.3. Legal Aspects

The next level is the legal aspects of information. This task is computer and online based. It involves computer based tasks like mentioning the courtesy and citations in the document. It also involves following the netiquette an online based task. On comparison to Female and male students, in legal aspects of information level male student were reported as high. When the proficient and expert level scores of male (36%) and Female (66%) are compared it is found that Female students are found to be higher in Digital Information Literacy skills.

5.18. SOCIAL ECONOMIC STATUS (SES) & SOCIAL MEDIA, DIGITAL INFORMATION LITERACY SKILLS

Socio economic status of the student was classified into upper, upper middle, lower middle, upper lower and lower classes. But, the collected data falls only in upper middle, lower middle and upper lower category. Among it, upper lower stands for the below poverty line people.

SES & SOCIAL MEDIA ACCOUNT: On combining the proficient and expert level score, students belonging to lower middle class (68%) were reported as high in Digital Information Literacy skills. Students belonging to upper middle class were reported as low in Digital Information Literacy skills. Therefore, they had accounts in social media but not have any influence on DIL skill of a student. This is discussed in the socio-economic perspective, while the upper middle class students who participated all had multiple accounts in social media. But their DIL skill was reported as low.
5.19. DIGITAL INFORMATION LITERACY SKILLS AND YEAR OF COLLEGE/BIRTH

Year in which they study in college, year of birth have an impact on DIL skill of a student. Quantitative survey results show that there is difference in DIL skill of a student on the year of college they study. On combining the proficient and expert level, III year students are of (72%) reported to be high in Digital Information Literacy skills in comparison to II year of (36%) and I year of (12%) students. This could be because final year students are little experienced as they had done so many assignments and projects during their college time for different subjects.

This quantitative result is supported by the analysis of in-depth interviews in different aspect. Among final year students majority of them were born after 1994, those who were known as neo-millennial their in-depth interviews were separately analyzed and their DIL skills was also examined. Neomillennials were reported to have high level of Digital Information Literacy skills. They have multiple accounts and spent more time in social media. They make use of social media for both friendship and interest driven practices. Majority of the neomillennials make use of social media for interest-driven practices. From the in-depth interviews, it was found that there is some sort of influence among the social media practices of neo millennial and their DIL skill.
5.20. DIGITAL INFORMATION LITERACY SKILLS AND USE OF SOCIAL MEDIA

On combining the proficient and expert level of students of (75%) those who are not using the social media account are reported to have been high in DIL skill compared to who are having social media account. Students who are in social media for more than 5 years (45%) were reported to be low in DIL skill. Students in social media are more than 2 years (56%) were reported to be high in DIL skill. Students who spent more than 3-5 hours (36%) a day were reported as low in DIL skill and spent 2-3 hours (48%) is high in digital information level. Social media access doesn’t have any influence on DIL skill of a student. When examining the DIL skill of the interview participants, students who are geeking out (i.e., Interest Driven Practices) in social media are reported to be high in DIL skill. Therefore, it was found that it is not about having multiple social media accounts; years a student holds social media account and time they spend in social media have any influence in DIL skill of a student. But, from the in-depth interviews it was confirmed that social media practices of a student have influenced the DIL skill of a student.

5.21. INSTITUTIONS & AND DIGITAL INFORMATION LITERACY SKILLS OF THE UNDERGRADUATE STUDENTS.

“Students who have attended other colleges or universities may have been exposed to a more or less stringent information literacy program or program of instruction. It is important to know the type of institution they study” (Neely, 2009). In DIL skill of proficient and expert level, self-financed college (80%) of the student’s performance was reported as high when compared with the
government college (50%) and autonomous college(43%). This could be because of the infrastructure they are providing at self-financed colleges. Majority (85%) of the self financed colleges selected for this study have Wi-Fi facility in campus and provide CG lab hours for all department students.

5.22. THE STREAM (ARTS OR SCIENCE) THEY STUDY & DIGITAL INFORMATION LITERACY SKILLS OF THE UNDERGRADUATE STUDENTS

A survey conducted among the vocational students in Srilanka confirmed that, student’s social media usage patterns are influenced by the field of study. Undergraduates of computer based degrees use social media at a higher percentage than other those of non-ICT based degree. Because of their course structure, ICT based undergraduate students are familiar with online tools more than non-ICT degree students (Ranaweera et al, 2015). On combining the proficient level and expert level, Arts stream students of (54%) are reported as higher in DIL skill in comparison to the Science stream students of (43%). This could be because of the curriculum of Arts students have computer oriented subjects.

5.23. FIRST GENERATION LAPTOP USERS (GOV.LAPTOP) AND THE DIGITAL INFORMATION LITERACY SKILLS OF THE UNDERGRADUATE STUDENTS.

The upper lower class students (100%) are the highest users of government laptop users. Mostly students are of (53%) who are using the government laptops are at proficient and expert level. Upper lower class was reported as high in DIL skill. During the in-depth interviews, many of the students they are found to be using the laptop for the first time and they were the one who first have laptop at
their home. Hence, learning curiosity could be one of the reasons for their usage of laptop in constructive manner.

5.24. MEDIUM OF INSTRUCTION AND DIGITAL INFORMATION LITERACY SKILLS OF THE UNDERGRADUATE STUDENTS.

Majority of the Tamil medium students participated in this assessment. There is some relationship between Information literacy skill of a student and proficiency in the second language English (Shamim & Priyanka, 2016). At the proficient and expert level, English medium students (58%) were reported to be high in DIL skill compared to the Tamil medium students (48%). English on the internet is homogenizing language use in digital environments. During the task, many of the students raised doubts regarding the language. If the topic and the task were given in Tamil, the result might have changed. But the students were given permission to submit their final output in Tamil. None of them had done the task in Tamil.

5.25. DEVICE AND DIL SKILL

At the proficient and expert level, students who use desktop computer for more than 2 years are reported to be low in DIL skill and students who are using desktop computer for last 6 months are reported to be high in DIL skill. Hence, using computer for long time doesn’t have a big impact on DIL skill of a student. When asked about their preferred mode of accessing internet or social media, laptop and smartphones were found to be the main devices. At the proficient and expert level, students who use laptop instead of smart phones frequently (to access social media) were reported to be high in DIL skill. A study conducted among the rural areas of Theni district in Tamil Nadu, also reveals that more number of rural
students are in the habit of using laptop and it is evident that their computer literacy knowledge has been increased. (Nithya et al, 2015)

5.26. SUMMARY

In-depth Interview data, survey data, observational data and student’s work were analyzed to answer the research questions. On examining the data, it is found that says that task-based assessment is the only suitable method to assess the Digital Information Literacy (DIL) skill of the students. Task –based assessment method used in the Indian context will help to assess the DIL skill of all students. Ratings such as Beginner, Advanced Beginner, Competent, Proficient and Expert were given according to the students’ skill level. DIL skill of a students’ is assessed in three parameters: Online Proficiency and Computer Proficiency and Legal aspects of presenting information. It has been observed by the investigator that students are good at online proficiency but yet to develop in computer proficiency and presenting legal aspects of information. Majority of the students completed the task at proficient level. Gender difference exists among the students in terms of their DIL skill. Male students are good at online proficiency and understanding the legal aspects of information; Female students are good at computer proficiency. At the overall level, performance of Female students are found to be digitally information literate than male students.

Socioeconomic status of a person also influences the DIL Skill of a student. Students belonging to the upper lower class are more digitally information literate than upper and lower middle class. Frequent social media access does not have an influence on DIL skill of a student. It means regular access to social media and years they have account in social media did not increase the Digital Information Literacy skills of a student. Social media practices in this study context are defined
as how the student engages themselves in social media. These, social media practices have some influence on DIL skill of a student. Students those who are involved in interest driven practices are highly digital information literate in comparison to the other practices such as friendship driven and academic driven. Students studying in self-financed institution are found to be more digital information literate than government and autonomous college. Stream which students study, also influence the DIL skill of a student. Art stream students were found to be more digital information literate than science students. Year of birth also reflects on the DIL skill of a student. Final year students who born after 1994, were known as neo-millennial. They are high in Digital Information Literacy skills compared to the other students. Devices they access have influenced DIL skill of a student. A student who uses laptop frequently to access internet and social media is more digital information literate than the smartphone and PC users.