CHAPTER VI
CONCLUSION

6.1. OVERVIEW

The previous chapters summarized the findings and discussions for the research questions of this study. The final chapter concludes all the findings and also explains the limitations of this research. It also discusses the recommendations and provides few suggestions for future research. The chapter is divided into the following sections:

- Digital Information Literacy Assessment
- Factors which influence DIL skills
- DIL – Concluding thoughts
- Limitations of the study
- Suggestions for future research
- Summary

6.2 DIGITAL INFORMATION LITERACY ASSESSMENT

6.2.1 Need for Digital Information Literacy Assessment

The introduction of smart phones, and easy access to internet in India has created an upsurge in the number of users accessing online information today. Secondly, the invention and popularity of social networking websites coupled with lowering internet has lead to people being constantly connected and active on social media platforms.
In this cyber society, people are bombarded with digital information. Numerous research studies have revealed that people are spending more time on social media. In this new dynamic era, there are many questions that need to be raised about the influence of these social media platforms on young people, particularly students.

Two important questions that this research has tried to answer are:

- Is the student who spends a large amount of time online, and who is constantly bombarded with information, capable of using and applying the same appropriately?
- Do the students, who spend a large amount of time on social media, gain some skill sets?

“People who are information literate are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand.” (ACRL, 2009)

DIL is the new literacy benchmark required in the Knowledge Society. Students who spend an enormous amount of time on social media are exposed to a lot of views, opinions, humour, personal details of others, information and entertainment. In short, they are ‘information overloaded’.

Often, they share, view, like and post several things, but the question remains whether they understood the proper context behind the information. If an event occurs in real time, there are a hundred versions of the same event available on social media. Students are consuming memes, trolls and spoof videos on political and social occurrences. In this scenario, students ought to have a critical thinking, so that they can understand the underlying agenda behind that social media post. DIL skills also help students to identify genuine and authentic sources of information.
Gurak urges the importance of being a cyber literate, an individual must be “more than a user” of technology and he/she must “become an active participant in the discussion [of] how to critically consume Internet content, as well as, how to use a variety of media on the Internet to express their own viewpoints.” Students are considered as a vulnerable audience of the Internet. Digital Information Literacy skills are required for the students not only to survive on social media, but also to become proficient in it and make use of it for their academic purposes.

For instance, several college students are assigned topics to make paper presentations and submit assignments. For this, students have to sift through available content online, check their authenticity and use the information appropriately and ethically. DIL skills are therefore essential for them to complete their academic assignments. Hence this research highlights the importance of Digital Information Literacy skills. Therefore, this research tries to define Digital Information Literacy (DIL) for the Indian context. This investigator has proposed the following definition for the same:

“DIL is identified as a new literacy practice required for 21st century students. It defines the ability to understand and use the data/information available in Web 2.0 technologies in an efficient manner. Digital Information Literacy assesses a person’s cognitive, technical and critical abilities in collecting and presenting Digital Information.” Cognitive ability is understood as comprehending and accessing appropriate digital data/information. Technical abilities refer to functional skills and proficiency in using computers and the Internet. Critical abilities refer to identifying and evaluating the social, legal, political, cultural background and context of any data/information presented online.
DIL also tries to evaluate the individual’s level of competency in these abilities, such as: accessing online data/information, downloading the relevant data/information, manipulating the collected data/information for presentation and other purposes, and storing the data/information for future retrieval and sharing the data/information online. In addition, it evaluates if an individual is able to present the same data/information legally and ethically by mentioning any copyright details, if required. Digital Information Literacy skills of an individual can be assessed using these defined standards.

6.2.2 Digital Information Literacy – Task-Based Assessment Tool

This thesis proposes the Task-Based Assessment tool, which would assess the DIL skills of individual using task-based tests. DIL-TBA tool was developed on the defined standards of ACRL. The DIL-TBA tool development involves generating performance list indicators, to-do-task lists, rubric and scoring preparation. An authentic assessment should include a set of tasks for students to perform, and a rubric, by which their performance on the task will be evaluated. Therefore, a proper to-do-task list and rubric was designed to assess the Digital Information Literacy skills of Indian students. This investigator had initially proposed 49 indicators drawn from the ACRL standard. The 49 indicators list was later revised and redefined with the help of a Panel of Experts. Delphi technique was used to revise the performance indicators and a final list of 18 indicators was identified. These 18 indicators are further divided into four groups. Each group refers to a certain proficiency level in Digital Information Literacy. A total number of 17 subtasks and 25 scoring rubric were prepared.

The four groups to indicate levels of Digital Information Literacy are:
**Level 1:** Accessing the relevant data/information effectively and efficiently and sharing it online.

**Level 2:** Using the data/information for documentation or presentation purposes.

**Level 3:** Storing the data/information for future retrieval.

**Level 4:** Understanding the social context around the data/information, and using the same ethically and legally.

For each level, performance indicators, corresponding sub-tasks and a rubric for assessment were identified by the investigator. They are presented as follows:

**Level 1:** Accessing the relevant data/information effectively and efficiently and sharing it online.

<table>
<thead>
<tr>
<th>PERFORMANCE INDICATORS</th>
<th>SUB TASKS</th>
<th>RUBRIC</th>
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<tbody>
<tr>
<td>Ability to retrieve online information [using various information retrieval system]</td>
<td>Use Internet</td>
<td>Opening a Browser Accessing a Search Engine</td>
</tr>
<tr>
<td>Using different sources [online newspapers, magazines]</td>
<td>Refer at least three different websites, and collect relevant data</td>
<td>Browsing three different websites [Blogs, Journals, Websites]</td>
</tr>
<tr>
<td>Other databases [Sage/Ephost] [Information seeking process beyond local sources]</td>
<td>Read the information</td>
<td>Checking the data relevancy</td>
</tr>
<tr>
<td>Relevance of the search [quantity, quality, gaps in the information]</td>
<td></td>
<td>Reading the Online Text</td>
</tr>
<tr>
<td>Read the text and select main ideas</td>
<td></td>
<td>Using extracting techniques i.e., Downloaded the Information [Text and Image, Links] [Five Paragraphs]</td>
</tr>
<tr>
<td>Extracting techniques [copy/paste or save a bookmark, html]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usage of Internet/social media [sharing &amp; sending information]</td>
<td>Send this file to mail id [<a href="mailto:testtba@gmail.com">testtba@gmail.com</a>]</td>
<td>Sending e-mails Sharing the information on Social Media</td>
</tr>
<tr>
<td></td>
<td>Share/Post the content in FB/ Blogs/ Social media account</td>
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**Level 2**: Using the data/information for documentation or presentation purposes.

<table>
<thead>
<tr>
<th>PERFORMANCE INDICATORS</th>
<th>SUB TASKS</th>
<th>RUBRIC</th>
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</thead>
<tbody>
<tr>
<td>Software for presentation [word, ppt, html, excel]</td>
<td>Use Word, Powerpoint, Excel or any other software to present your data. Combine the information downloaded and make it into 5 paragraphs.</td>
<td>Opening the text editing Software. Using Extracting techniques [copy/paste or save as, bookmark].</td>
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**Level 3**: Storing the data/information for future retrieval

<table>
<thead>
<tr>
<th>PERFORMANCE INDICATORS</th>
<th>SUB TASK</th>
<th>RUBRIC</th>
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<tbody>
<tr>
<td>• Create a system for storing/organizing information</td>
<td>Save your file in the Folder in D drive and create a shortcut to your file [ex: FOLDER NAME : studentstask]. Name the file in your name and college [Save in Compatible Format][For ex : SivaLoyola.doc[97-2003,rtf]</td>
<td>Created a folder. Saved the File in that Folder. Checking Compatibility-File Types Options.</td>
</tr>
<tr>
<td>• Organizing/Store the content in a manner [suitable file formats]</td>
<td></td>
<td></td>
</tr>
</tbody>
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**Level 4** Understanding the social context around the data/information, and using the same ethically and legally.

<table>
<thead>
<tr>
<th>PERFORMANCE INDICATORS</th>
<th>SUB TASK</th>
<th>RUBRIC</th>
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<tbody>
<tr>
<td>• Understanding the social context of the information</td>
<td>Give footnote/reference/Annotation [where it is taken]</td>
<td>Understanding the social context of the information [who created it, security, free and fee based][During Interaction]</td>
</tr>
<tr>
<td>• Including Citations, Footnote, End note, Reference</td>
<td>Give Photo courtesy [Mention the name of the website/file format]</td>
<td>Including Citations, Footnote, End note, Reference</td>
</tr>
<tr>
<td>• Including Copyright details</td>
<td>Give Copyright details</td>
<td>Including Copyright details</td>
</tr>
<tr>
<td>• Mentioning the Courtesy/Source</td>
<td></td>
<td>Mentioning the Courtesy/Source</td>
</tr>
<tr>
<td>• Following netiquettes [ using email in small letters]</td>
<td></td>
<td>Following netiquettes [ using email in small letters][Observed]</td>
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</table>

This DIL-TBA Tool was helpful to assess the DIL skills of a student. Students were expected to complete the 17 subtasks. Scores for their performance were given on designed Rubric. Scores were entered as dichotomous variables in SPSS. Ratings were given for the DIL skill level. According to Benner’s skill acquisition, DIL skills level of a student were coded as novice, advanced beginner, competent, proficient and expert.
### Scoring Rubric

<table>
<thead>
<tr>
<th>Beginner Score (1-5)</th>
<th>Advanced Beginner Score (5-10)</th>
<th>Competent Score (11-15)</th>
<th>Proficient Score (16-20)</th>
<th>Expert Score (21-25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students properly opened the web browser, used search engines, browsed three websites and read and accessed relevant information.</td>
<td>Students opened the browser, used search engines, browsed three websites and read and accessed relevant information. In addition to the previous task, they shared the downloaded information online and they knew to open application software and copy the downloaded information on any one of the application software.</td>
<td>After presenting the information in the software, students manipulated the downloaded text by aligning it properly adding headings and working with hyperlinks.</td>
<td>In addition to the previous task, students were able to work with the image and give video links. They are able to store the information and save the file in the required format.</td>
<td>In addition to the previous tasks, students must be able to interpret the social context of the information. They should know to add the copyright details of the information. Students should follow netiquette while working online.</td>
</tr>
</tbody>
</table>

A scoring rubric was prepared based on the Benner skill acquisition model widely used in clinical research. It would help to assess the skill level of an individual. A digital information literate student skill level can be decided with the above mentioned parameters. The above scoring rubric is a preliminary level standard when compared to ACRL. In a contextualized manner scoring can constructed for students from varied background. For instance, the subtask and rubric for the levels can be changed. For a computer science engineering student, as opposed to an Arts student beginner level set of tasks can be modified.
6.3. DIGITAL INFORMATION LITERACY SKILLS OF STUDENTS

This study assessed the Digital Information Literacy skills of 139 college students in southern districts of Tamil Nadu using the Task-Based Assessment tool. Using the above TBA tool, Digital Information Literacy of 139 college students was assessed. Out of the 139 students, 13 students ranked ‘expert’, 48 students ranked ‘proficient’, 24 students ranked ‘competent’, 24 ranked ‘advanced beginner’, and 10 ranked at the ‘beginner’ category. The remaining 21 students were unable to complete the task assigned to them as part of the survey.

As many as 85 of the 139 students fall into the first three categories: ‘expert’, ‘proficient’ and ‘competent’. Also, the ‘proficient’ category has the highest subgroup of students – 48. Therefore, it is fair to say that the DIL level of students in rural southern Tamil Nadu is high. According to their DIL-TBA scores, these students are very good in accessing, evaluating and sharing information online. But, a majority of them used only very common and basic sources like Wikipedia. They did not explore the wide variety of authentic and rich information sources available online. Therefore, when critically analyzing the results, this investigator concludes that though the cognitive skills of students are high, their resource literacy skills (Hughes-Shapiro, 1996) are still rudimentary. They were found to be ‘proficient’ in Level 1 skill sets.

About 52% of the students were found ‘competent’ in Level 2 skill sets. Most of them were able to open the application software, use extracting techniques, and manipulate the digital data using formatting and layout techniques. But the same students were struggling to work with hyperlinks and add navigation aids. These hyper literacy skills (David et al, 2008), which involve using features
such as links among the presentations, adding hyperlinks, providing video links, footnotes and endnotes, are yet to develop among these students.

With regards to their Level 3 skill sets, the students were proficient at storing the files in required formats. Only a few students faced difficulties in saving a file in the prescribed compatibility mode. In terms of presenting information, the students displayed reasonably competent information management literacy skills (David et al., 2008).

In Level 4 skill sets, the students are beginners in the case of critically analyzing the information and providing legal aspects of information. They are weak in critical literacy. They are also weak in aspects like presenting information in a legal and ethical manner. This study focused on rural students across 18 colleges in selected 9 districts of southern Tamil Nadu. Colleges located in remote villages were preferred. The students studied included mostly children of plantation workers, fishermen, farmers, salt pan workers, port workers and daily wage laborers.

Hence, the majority of the study participants fall under the Upper Lower section (Kuppusamy, 2012). In this scenario, students ranking good at technical skills is one step ahead development, but the technology alone will not be enough as the critics of technological determinism have pointed out. Critics of technological determinism contend that what numbers more than technical elements social and political issues are concerning: the modes of production, and use, values, purposes and few other variables (Okunnu, 2014).
However, the cognitive and critical approach of the students needs development. The State Government laptop distribution scheme has played a vital role in improving their technical literacy skills. This vast majority of first-time digital learners and laptop beneficiaries are high in DIL skills. The quote, ‘Necessity is the Mother of Invention’ has never been more true than here. Most of these students from the Upper Lower section, who have high DIL skills were not even exposed to computers at school. As beneficiaries of the Tamil Nadu government’s OLPC scheme, they learnt only through play and curiosity. A very small minority of the students learnt computers as part of their curriculum. The large majority learnt only through self-learning and peer learning.

So, it is concluded that students in southern Tamil Nadu with regards to DIL, rank high at technical skills, medium at cognitive skills, and very weak in critical skills. Majority of the students said that they learn to operate computer and internet through self and friends. While the study points out the huge need to improve their critical skills, it is also appreciable that the self-learners and peer-group learners perform tasks at ‘proficient’ level. Even though the Tamil Nadu State Government has taken some measures to bridge the digital divide, we face an emerging knowledge divide. Therefore, this investigator recommends a detailed DIL course as part of school curriculum. Digital divide can no longer be defined as only the gap between the ‘haves’ and ‘have-nots’ with regards to technology access. The divide exists also in the way the technology is being used. Hence, there is a wide knowledge gap even among the ‘digital haves’ in how they understand, interpret, use and present information.
6.4. INFLUENCING FACTORS OF DIL SKILLS

6.4.1. Gender Differences in DIL Skills

Technology was found to be a great equalizer in this researcher’s study. Female students were identified as proficient particularly in technical skill sets. Male students were discovered to be proficient in online skill sets. During the observation, female students displayed sincerity towards task performance. Also, based on the scoring rubric, female students emerged as highly digital information literate in comparison to male students.

In a developing country like India, gender inequality is a serious concern where men are more privileged in all aspects and at various levels. In this context, the findings of this study break the widely prevalent assumption of gender inequality with regards to technology access. This study identified that females score high in DIL skills, that too female students hailing from rural backgrounds. Therefore, putting rural women at the center of the digital revolution can create tremendous empowerment at various levels.

6.4.2. Social Media Practices

Social Media Practices of college students are classified as “Hanging Out, Messing Around and Geeking out” by Ito et al, 2010, an ethnographic study conducted among US kids and youth regarding their new media practices.

This framework divides the new media practices into Interest-Driven, and Friendship Driven practices. In addition, this researcher has added some academic-driven practices into the framework, as the study focuses on the student population. Qualitative in-depth interviews with the students helped to identify the social media access and social media practices of students. Quantitative survey method was used to find the social media access and account details. With regard to their
social media access, majority of the students access Facebook. In a comparison between male and female students, male students are using Facebook more than females. In the case of WhatsApp, the situation is vice versa. Majority of the students’ access social media accounts in smartphones and laptops rather than desktop computers. The study slightly shows the declining usage of desktop computers among the student community. Male students are high in smart phone usage compared to female students. Majority of the female students preferred to use a laptop to access internet.

From the qualitative and quantitative results, this researcher identified certain patterns. The cross tabulations clearly highlighted that social media account ownership and spending time on social media does not necessarily influence the DIL skills of the students. Students who spend more time in social media and having account in social media for more than 5 years have scored low in DIL skill. Interestingly, another finding from the cross tabulation shows that 8 of the student who completed the task at proficient and 4 of the students who completed the task at expert level are not using any social media account. But, the in-depth interviews conducted as part of the study revealed that students who ‘geek-out’ online for interest-driven practices have high DIL skills, than those who hang out for friendship-driven practices. ‘Geeking-out’ is an interest-driven practice, where the students use social media for to connect with their interest based groups. Through interest-driven engagements, interest comes first and they form a friend network based on their interests. In this case, students find online relationship based on their interests, hobbies, and career aspirations. It also involves creative production of works using available online tools. Students involved interested driven practices such as creating memes, being a part of fan club and participate in film
discussions, write film reviews, customizing profile, creating blogs, sports activities. For example, some of the Visual Communication students who want to be become an aspiring director. They produce short films and share it on their own Facebook page. Facebook usage was identified as an important source for the interest driven practices. Eight of the 119 students studied, were not on social media. But, they completed the tasks assigned to them at ‘proficient’ level. So, we cannot say that having an account in social media will have a great impact on the DIL skills of a student. What students are doing with social media, rather than being active on social media, influences their DIL skills a great deal more. The constructive use of social media ends up as a literacy practice. Another finding of the study was that students who were using computers for a long-term also scored low in their DIL levels [Table 4.35]. This reinforces the earlier conclusion that DIL is not about access to technology alone. Finnegan (1988) a critic of technology determinism, argued that who uses and controlled the technology what is it used for and does it fit in the power structure, and is there a wide distribution of technology should be studied. Factors such as political control, class interests, economic pressures, geographical access, educational background and general attitudes should be also considered.

Hence the investigator tried to study the other factors which have influence on Digital Information Literacy skills of a student. Factors such as, where a student hails from (village or town), his/her socio-economic status, medium of instruction, year of birth, year they study in college, institution of study, device they used to access internet and more, were taken for consideration and analyzed. In the southern districts of Tamil Nadu, particularly rural areas, where this research was conducted, another important factor at play was the medium of instruction (MOI).
MOI was identified as a barrier to the acquisition of DIL skills of the students. Students, whose MOI is Tamil, scored low in DIL skills, when compared to an English medium student. Marav (2016) says that students are forced to learn English language in order to explore digital media.

Cross tabulation results confirmed that students from self-financed colleges scored high in DIL skills compared to students from government and autonomous colleges. Students hailing from Upper Lower SES reported high in their DIL skills. Final year students were more proficient than their juniors in DIL skills. Arts students performed higher in DIL skills than science students. Majority of the neomillennials students participated in the DIL-TBA assessment test were ‘proficient’ and ‘expert’ in their DIL skill. Therefore it is concluded that, DIL skill development is heavily influenced by several external factors such as socio-cultural and economic factors. During the observation method, it was found that student was able to locate information. But they could not have access to some of the websites. Free access to information is another influencing factor with regard to DIL skill improvement of a student. If there is net neutrality, chances of improving DIL are very high. With the emergence of new media technologies, there are also several new literacy practices that are emerging. Copy-Paste literacy (Dan Perkel, 2014) and Download literacy are emergent literacy practices that are used today to evaluate Digital Information Literacy. In India, DIL is mainly associated with library studies. A relook into DIL is essential in this scenario.

Therefore, this study concludes that DIL is an essential skill that every netizen should have. Additionally, young people are the most vulnerable audience group of the Internet. Therefore imparting DIL skills at the school and college level is very important.
6.5. LIMITATIONS

- One of the limitations of this study is the size of the sample. As this was a task-based assessment, using qualitative and quantitative data, the time spent on each student was about 45 minutes to one hour. In addition, getting permission to use the lab resources in each college was time consuming.

- Another limitation of the study is the list of Social Media Practices discussed in this study. Social media practices of students have changed recently with the advent of Reliance’s JIO network, which provides free data to its users. So the times spent by students online have gone up from the time period of this study. This would have influenced their DIL skills.

6.6. FUTURE RECOMMENDATIONS

This research only tests the DIL skills of an Arts and Science student. Future research can be done on the DIL skills of students from medicine, law and engineering. Further research can be done in reconstructing this DIL testing framework to suit their contexts. This investigator concludes this framework used is sufficient for testing the DIL skills of students residing in southern districts of TamilNadu. This task-based assessment can be converted into an app or online tool which could measure the DIL level of a student and the score can be used for employment purposes. Investigator suggests that all the colleges should have DIL programme module, which can provide social media education. Digital Information Literacy can be incorporated into their curriculum. There is urgent
need to conduct the user-awareness programmes, such as on-hand workshop-cum-training programmes and user-education programmes on using digital information resources, which are most useful for study and research. “A knowledge society needs media and information literates”(Carlsson 2010,p 17) As far as DIL is concerned, it is not only required for their academic purposes, it is an essential skill to survive in this knowledge society.