

Content Analysis

ICT Textbook of the Secondary level

Based on Technology literacy, Internet literacy,
Media and Information Literacy

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Analyzed by

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The Content Analysis of Information and Communication Technology (ICT) Textbook of the Secondary Level Based on Technology literacy, Internet literacy, Information and Media literacy

Abstract

The present research aimed to carry out a content analysis of Information and Communication Technology (ICT) of the VI, VII, VIII, IX-X class based on the components technology, internet, media & information literacy. Content analysis of the lesson book using the checklist was employed for evaluating the components of performing skills of these variables in the formation of the contents of the book. The sample was equal to the statistical population because all the contents of the book were evaluated. Data was analyzed using descriptive statistics (frequency and percentage). The content analysis indicated that the components of technology literacy (frequency of 160), internet literacy (frequency of 48), and media & information literacy (frequency of 20) had the first, second and third rating, respectively. More specifically, ICT book of class VIII is in short of different literacy skills and ICT book of class IX-X is highly focused on technology literacy. In addition, different performing skills of these literacies are limited to preparatory and developing phases, hence, higher order phases like activating, achieving and upgrading are almost absent in those ICT books. Therefore, it can be concluded that, no comprehensive attention has been given to all the components of technology, internet, media & information literacies among the students of the secondary schools.

1. Introduction

It is fair to say that the 21st century has ushered in a time of universal acceptance of the essential role of information and communication technology (ICT) of economic, social, and educational changes (Kozma, 2008). As a result, ICT has been accepted as a key aspect of education, as radically changing and reforming all aspects of education (Scardamalia & Bereiter, 2014). The education system is expected to produce technologically literate students. Hansen (2003) has defined technology literacy as “an individual’s abilities to adopt, adapt, invent, and evaluate technology to positively affect his or her life, community, and environment” (p. 117). Eisenberg & Johnson (2002) suggested that a

technologically literate person can “use technology as a tool for organization, communication, research, and problem solving” (p. 1). Undoubtedly, developing technology literacy and implementing it well in a classroom situation likely involves a complex interaction of epistemic and pedagogical beliefs, intrapersonal factors, social factors, and affordances of the environment (Ertmer, 2005; Leu, 2006). However, a basic premise of Bloom’s taxonomy of cognitive learning outcomes suggests that the exercise of higher order skills involves the ability to evaluate proper implementation and usage beyond simply procedural knowledge (Miller, Linn, & Gronlund, 2009). This implies that an intelligent, technologically literate teacher may choose not to use certain technologies for sound, pedagogically informed reasons. A student may decide not to use a particular technology with an equally informed rationale. Assessing the highest levels of technology literacy requires something more than evidence of knowledge and use.

Furthermore, Dupuis (1997) indicates that information literacy must include knowledge and understanding of the “context” of information in today’s society, information’s composition and organization, as well as its use in life-long learning. Others also think of Internet literacy as skills that go beyond locating and using information to the knowledge for interpreting and evaluating information (Banta & Mzumara, 2004; Livingstone, 2008; Murray, 2003). Sam Wineburg and Sarah McGrew (2017), observe: “the Internet has democratized access to information but in doing so has opened the floodgates to misinformation, fake news, and rank propaganda masquerading as dispassionate analysis.” As such, Media literacy has become a center of gravity for countering “fake news,” and adverse array of stakeholders – from educators to legislators, philanthropists to technologists – have pushed significant resources toward media literacy programs. Media literacy is most commonly described as a skill set that promotes critical engagement with messages produced by the media. At its most basic, media literacy is the “active inquiry and critical thinking about the messages we receive and create,” (Hobbs & Jensen, 2009), and most proponents emphasize this connection to critical thinking. Mihailidis & Thevenin (2013) further supports that media literacy is a necessary competency for engaged citizenship.

Textbooks are one of the most important references and resources for student learning in any educational system. Most educational activities take place within the framework of textbooks, and most of the activities and educational experiences of students and teachers are organized around it (Ariati, 2003). In the meantime, the ICT curriculum as one of the means of education supports to analyze the importance of ICT in local and global context, to identify knowledge and information hub, to ensure improvement in creativity and analytical skills as well as use of

ICT ethically and safely avoiding digital divide. Therefore, in order to determine the amount of attention to technology, internet, media & information literacy, we need a special analysis and one of the types of analyses is content analysis. Content analysis is a systematic research method for describing objective and quantitative content of curriculum books and texts or comparing the messages and content structure with curriculum objectives (Yousefi, 2011). To investigate the amount of the content attention to the components of technology, internet, media & information literacy that are based on the theories and research backgrounds related to the topic, the researcher seeks to answer the question that how much does the content of this book devote attention to the components of technology, internet, media & information literacy?

2. Purpose Statement

To build up a nation, we need to have proper education system which will help an individual to turn their ability into strength. After the formation of Education Policy 2010, the textbooks of national curriculum have been revised as most of the educational activities take place within the framework of textbooks. Moreover, no significant study has been conducted to identify whether the technology, internet, media & information literacy content have been presented in a right way so that it can be adopted by the students without any difficulties. This study aims to content Analysis of Information and Communication Technology (ICT) Textbook of the Secondary level based on Technology literacy, Internet literacy, Information and Media literacy. In this study; how much of these three skills have been highlighted also described. In this analysis, it shows that which skills are presented in each unit.

For conducting the study, the following research questions need to be addressed:

- How much attention has been paid to technology literacy in the content of the secondary school's ICT text book?
- How much attention has been paid to internet literacy in the content of the secondary school's ICT text book?
- How much attention has been paid to media and information literacy in the content of the secondary school's ICT text book?
- Are the performing skills which are presented in the textbooks aligning properly with the ones stated in the curriculum?

3. Literacies: Technological, Internet, Media & Information

A. Technology Literacy

Technology literacy is the ability of an individual, working independently and with others, to responsibly, appropriately and effectively use technology tools to access, manage, integrate, evaluate, create and communicate information. In the words of Standards for Technological Literacy: Content for the study of Technology, Technology is ‘the innovation, change or modification of natural environment in order to satisfy perceived human wants and needs’ (ITEA,2000, P.242)’

B. Internet Literacy

Internet literacy has a close relationship with participation in cyber-culture leading towards the more capabilities to benefit from the advantages of the Internet. (Lankshear and Knobel, 2006). The ability to work with Internet services such as ability to search for information on the website, ability to work with e-mail and use other internet options like social networks, forums, instant messaging, etc. comprise internet literacy.

C. Media and Information Literacy

Media and Information Literacy (MIL) is a combination of knowledge, attitudes, skills, and practices required to access, analyze, evaluate, use, produce, and communicate information and knowledge in creative, legal and ethical ways that respect human rights (Moscow Declaration on Media and Information Literacy, 2012). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines it as the set of competencies to search, critically evaluate, use and contribute information and media content wisely; knowledge of one’s rights online; understanding how to combat online hate speech and cyberbullying; understanding of the ethical issues surrounding the access and use of information; and engage with media and ICTs to promote equality, free expression, intercultural/interreligious dialogue, peace, etc. (UNESCO, 2016). Hence, Media and Information literacy (MIL) enables people to interpret and make informed judgments as users of information and media, as well as to become skillful creators and producers of information and media messages in their own right.

4. Conceptual Framework

A. Technology Literacy

Performing Skills	Definitions of the Performing skill	Phases of Performing skills				
		Preparatory	Developing	Activating	Achieving	Upgrading
Ability to use Computing Technology	Computer literate is a term used to describe individuals who have the knowledge and skills to use a computer and other related technology	Operating computer as machine including copy-paste text and documents and move and organize file	Creating text, organizing data and remixing contents in computer.	Installing simple hardware and software	Creating content with graphics software	Using program language (coding)
Ability to use Digital Technology	Computing system literacy is one of core literacy in digital technology, but there are many more in our daily life from digital calculator to Digital watch, even smart TV.	Operating useful digital devices (smart phone, Tab, TV, watch, thermometer etc.)	Operating complex function of digital devices	Compare different digital device with same purpose	Installing parts of simple Digital technological devices	Repair Digital Technological devices
Awareness of functional safety of Digital devices	This is not about cyber security like hacking, online virus but more functional safety	Identifying Virus, spam in digital devices.	Using simple virus safeguard	Identifying and using safe software	Identifying simple functional technical problem	Fixing simple hardware or software related problem
Coding						

Source:

B. Internet Literacy

Performing Skills	Definitions of the Performing skill	Phases of Performing skills				
		Preparatory	Developing	Activating	Achieving	Upgrading
Being e- citizen	Digital citizenship includes appropriate online etiquette, literacy in how digital technologies work and how to use them, an understanding of ethics and related law, knowing how to stay safe online, and advice on related health and safety issues such as predators and the permanence of data (Australian Curriculum Definition)	Using apps and web platform managing Digital Identity	Using internet, apps and webs to solve daily life problem (purchasing, location tracking, learning from video tutorial)	Protecting and maintaining own digital footprint using strong passwords and privacy settings	Protecting self and devices from spam, virus, cyber crime, hacking etc. And using internet ethically and safely (including cyber safety and health hazard)	Accessing and using all type of public and private e services
Accessing Desire information	Information access is the ability to identify and retrieve information effectively.	Operating search engine for information	Searching information effectively (According Key Words, image, map, location)	Identifying appropriate source of information using advance search with	Interpreting information from hypermedia	Finding desired information from large database

				Hyperlink, Image etc.		
Communicating using internet	Internet communication is referred to as the sharing of information, ideas, or simply words over the World Wide Web, or the Internet	Using e mail for communication	Using social media platform considering their uniqueness	Sending and receiving audio, video and text message	identifying appropriate medium (channel) to communicate with specific people	Identifying appropriate sources, target group/individual to communicate for specific info.
Managing risk on Cyber Security	Technologies, practices, and policies that address threats or vulnerabilities in networks, computers, programs and data, flowing from or enabled by connection to digital infrastructure, information systems, or industrial control systems.	Identifying risk of cyber world	Identifying consequences and effect of cyber crime	Maintaining digital footprint and cyber security	Demonstrating precautions measures to secure him/herself	Demonstrating functional steps and using laws to get protection from cyber crime

Source:

C. Media and Information Literacy

Performing Skills	Definitions of the Performing skill	Phases of Performing skills				
		Preparatory	Developing	Activating	Achieving	Upgrading
Understanding of Media Management	Understanding the function of media message creation both technical and financial way.	Differentiate how different media (online, print, electronic) run (function of message creation)	Identifying who paid to create the message	Identifying the ownership(Financial function) of media houses and owner's value	Demonstrate the ability to interpret the Effects of media ownership on the way information is presented	Identifying of Media Propaganda in Media Message
Ability to Media Message Analysis	Ability to understand who and what the purpose behind the media message and thinking beyond	Identifying who Create the message	Interpret the purpose of the message	Differentiate between news, public Relation and Advertising	Differentiate between Truth, Fact, alternative fact and Opinion	Ability to explore the beyond (The part of the message that's not being told)
Ethical and Safe use of Media	understanding the risks and responsibility involved in using digital media and how to keep your information safe	Ability of Fair use (Copy Right)	Maintaining 'Public Face and identity'	Protect him/herself from Cyber Bullying	Interpret Digital law and other related regulations	Ability of Self-censorship
Filter Information	Knowing the process how to evaluate information and what to believe	Interpret the purpose of producer	Identifying Source of Information	Ability to Compare multiple sources and evaluate the trustworthiness	Justify the sources before believe in any information	Ability to read the visual text and evaluate its authenticity

	(or depends) and what not.					
Use information effectively	Incorporate selected information into one's knowledge base to accomplish a specific purpose. Understand the economic, legal, and social issues surrounding the use of information.	Ability to organize information	Ability to evaluate information	Use information to research	Communicating with gathered information	Ability to fair use of Information
Create and Distribute own media message	Skills of creating and distributing own media message understanding channels, target group and consequence after distribution.	Identifying appropriate media tools to create message	Ability to create text and audio-visual content and remix t them while appropriate	Identifying target audience for a message and appropriate time to distribute	Managing the interaction and communication with audience	Differentiate what to produce and distribute and what not

Source:

5. Methodology:

This study is solely qualitative. The primary research method for this study is content analysis. At first, the content of the text book “Information and Communication Technology” of grade VI, VII, VIII, IX-X was reviewed thoroughly. Each of the lessons (including: text, activity, work) are considered as the sample of the research so that the volume of technology literacy, internet literacy, media and information literacy contents can be identified. The data gathering method in this research was in the form of library. The research tool for measuring was the content checklist of the book of ICT in the secondary school. Theoretical framework was utilized in order to compile this checklist and the agreed components were categorized according to different literacies. Furthermore, components of different literacies are sub-scaled into different phases of performing

skills namely preparatory, developing, activating, achieving and upgrading. Then it was observed whether those contents were appropriate in accordance with the curriculum.

6. Findings

6.1 Content Analysis of ICT book of class VI

Table: 1: Literacy projected in the textbook of class 6.

Unit No	Technology literacy	Internet literacy	Media & Information literacy
Unit : 1	Yes	Yes	Yes
Unit: 2	Yes		
Unit: 3	Yes		
Unit: 4	Yes		
Unit:5		Yes	

In table 1; we have seen that Technology literacy is found in almost each unit except unit 5. Internet literacy is projected in 2 units. However there is scarcity of media and information literacy.

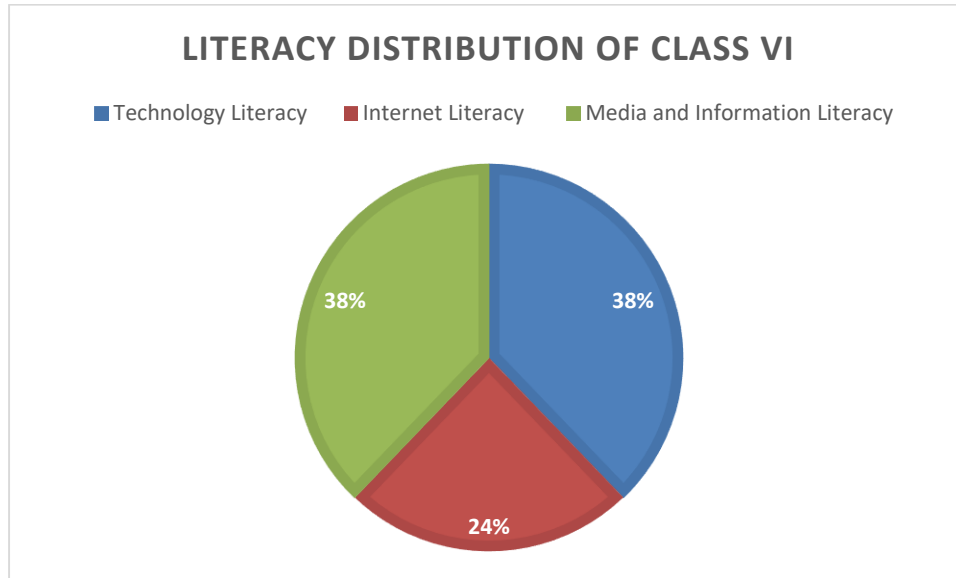


Figure 1: Literacy Distribution in ICT book of Class VI

Technology Literacy (38%) and Media & Information Literacy (38%) are more dominating over Internet Literacy (Figure 1).

Table 2: Composition of Different Literacy based on performing skills

Technology Literacy				
Performing Skills	Ability to use computing technology	Ability to use digital technology	Awareness of functional safety of digital devices	Coding
Frequency	2	4	8	0
Percentage	14.29%	28.57%	57.14%	0%

Internet Literacy						
Performing Skills	Being e-citizen	Accessing desire information	Communicating using Internet	Managing Risk on Cyber Security		
Frequency	2	7	0	0		
Percentage	22.22%	77.77%	0%	0%		
Media and Information Literacy						
Performing Skills	Understanding of Media Management	Ability to media message Analysis	Ethical & Safe Use of Media	Filter Information	Use Information Effectively	Create & Distribute own Media Message
Frequency	10	1	0	1	1	1
Percentage	71.43%	7.14%	0%	7.14%	7.14%	7.14%

In table 2; we found that technology (37.8%) and media & Information (37.8%) literacy are more dominating. Accessing desire information (77.77%) and understanding media management (71.43%) and awareness of functional safety of digital devices (57.14%) are focused highly among different skills.

Table 3: Phases of performing skills of Technology Literacy

Technology literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Ability to use computing technology	1 (7.15%)	1 (7.15%)	0	0	0
Ability to use digital technology	3 (21.43%)	1 (7.14%)	0	0	0
Awareness of functional safety of digital devices	0	1 (7.14%)	7 (50%)	0	0
Coding	0	0	0	0	0

According to table 3; most of the skills are limited to preparatory and developing stages.

Table 4: Phases of performing skills of Internet Literacy

Internet Literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Being	1	1	0	0	0

e-citizen	(11.11%)	(11.11%)			
Accessing desire information	2 (22.22%)	4 (44.44%)	1 (11.11%)	0	0
Communicating Using Internet	0	0	0	0	0
Managing risk on Cyber security	0	0	0	0	0

In table 4; performing skills are consisted of being e-citizen; accessing desire information. These performing skills are limited to preparatory and developing stages.

Table 5: Phases of performing skills of Media & Information literacy

Media & Information literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Understanding of media management	10 (71.43%)	0	0	0	0
Ability to media message analysis	0	1 (7.14%)	0	0	0

Ethical and safe use of Media	0	0	0	0	0
Filter information	0	1 (7.14%)	0	0	0
Use information effectively	0	0	0	0	1 (7.14%)
Create & distribute own Media message	0	0	0	0	1 (7.14%)

According to Table 5; most of the skills are related to preparatory stages of understanding of media management (71.43%). However skills related to Ethical & Safe use of media is not achieved.

6.2 Content Analysis of ICT book of class VII

Table: 6: Literacy projected in the textbook of class 7.

Unit No	Technology literacy	Internet literacy	Media & Information literacy
Unit : 1	Yes	Yes	Yes
Unit: 2	Yes		
Unit: 3	Yes	Yes	

Unit: 4	Yes		
Unit:5		Yes	

In table 6; we have seen that Technology literacy is found in almost each unit except unit 5. Internet literacy is projected in 3 units. However there is scarcity of media and information literacy.

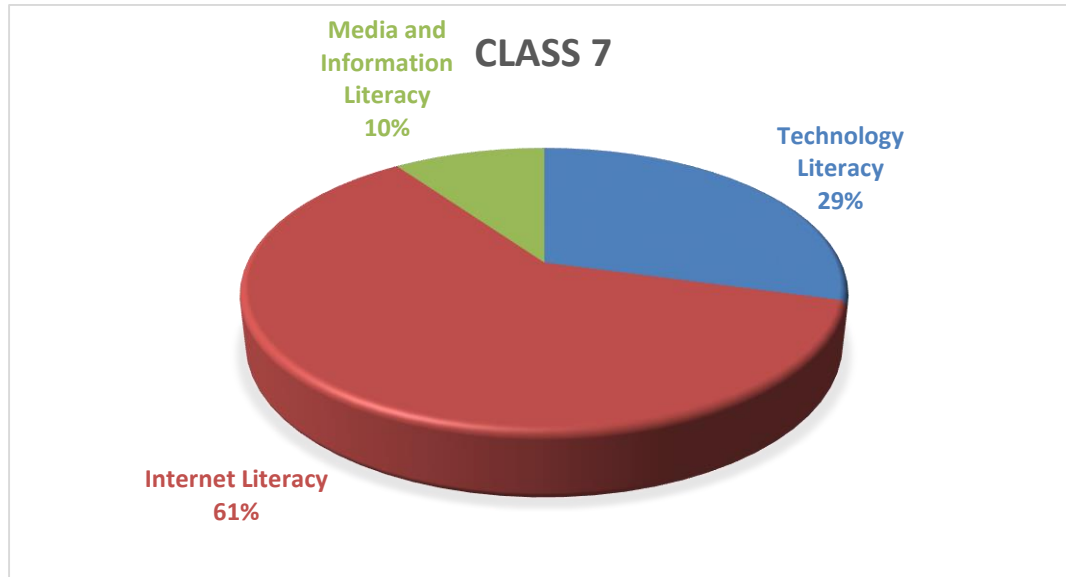


Figure 2: Literacy Distribution in ICT book of Class VII

In Figure 2; Internet literacy is more presented than other literacy. Technology literacy has medium portion but there is scarcity of media & information literacy.

Table 7: Composition of Different Literacy based on performing skills

Technology Literacy						
Performing Skills	Ability to use computing technology	Ability to use digital technology	Awareness of functional safety of digital devices	Coding		
Frequency	7	5	0	0		
Percentage	58.33%	41.67%	0%	0%		
Internet Literacy						
Performing Skills	Being e-citizen	Accessing desire information	Communicating using Internet	Managing Risk on Cyber Security		
Frequency	6	12	0	7		
Percentage	4%	48%	0%	28%		
Media and Information Literacy						
Performing Skills	Understanding of Media Management	Ability to media message Analysis	Ethical & Safe Use of Media	Filter Information	Use Information Effectively	Create & Distribute own Media Message
Frequency	3	0	1	0	0	0
Percentage	75%	0%	25%	0%	0%	0%

In Table 7; we found that internet literacy (60.98%) is more dominating. Accessing desire information (48%); ability to use computing technology (58.33%) and understanding media management (75%) and awareness of functional safety of digital device are not focused at all among different skills.

Table 8: Phases of performing skills of Technology Literacy

Technology literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Ability to use computing technology	4 (33.33%)	3 (25%)	0	0	0
Ability to use digital technology	4 (33.37%)	1 (8.33%)	0	0	0
Awareness of functional safety of digital devices	0	0	0	0	0
Coding	0	0	0	0	0

According to Table 8; most of the skills are limited to preparatory and developing stages.

Table 9: Phases of performing skills of Internet Literacy

	Internet Literacy				
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Being e-citizen	5 (20%)	0	0	0	1 (4%)
Accessing desire information	1 (4%)	9 (36%)	1 (4%)	1 (4%)	0
Communicating Using Internet	0	0	0	0	0
Managing risk on Cyber security	3 (12%)	4 (16%)	0	0	0

In Table 9; performing skills are consisted of being e-citizen; accessing desire information and managing risk on cyber security. These performing skills are limited to preparatory and developing stages mostly.

Table 10: Phases of performing skills of Media & Information literacy

Media & Information literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Understanding of media management	3 (75%)	0	0	0	0
Ability to media message analysis	0	0	0	0	0
Ethical and safe use of Media	1 (25%)	0	0	0	0
Filter information	0	0	0	0	0
Use information effectively	0	0	0	0	0
Create & distribute own Media message	0	0	0	0	0

According to Table 10; most of the skills are related to preparatory stages of understanding of media management (75%). However skills related to Ethical & Safe use of media is achieved only 25%. And no skills are achieved.

6.3 Content Analysis of ICT book of class VIII

Table: 11: Literacy projected in the textbook of class 8.

Unit No	Technology literacy	Internet literacy	Media & Information literacy
Unit : 1			
Unit: 2		Yes	
Unit: 3	Yes	Yes	
Unit: 4	Yes		
Unit:5		Yes	

In Table 11; we have seen that Technology literacy is achieved in 2 units and Internet literacy is projected in 3 units. However there is no space of media and information literacy at all. And unit 1 has no literacy at all.

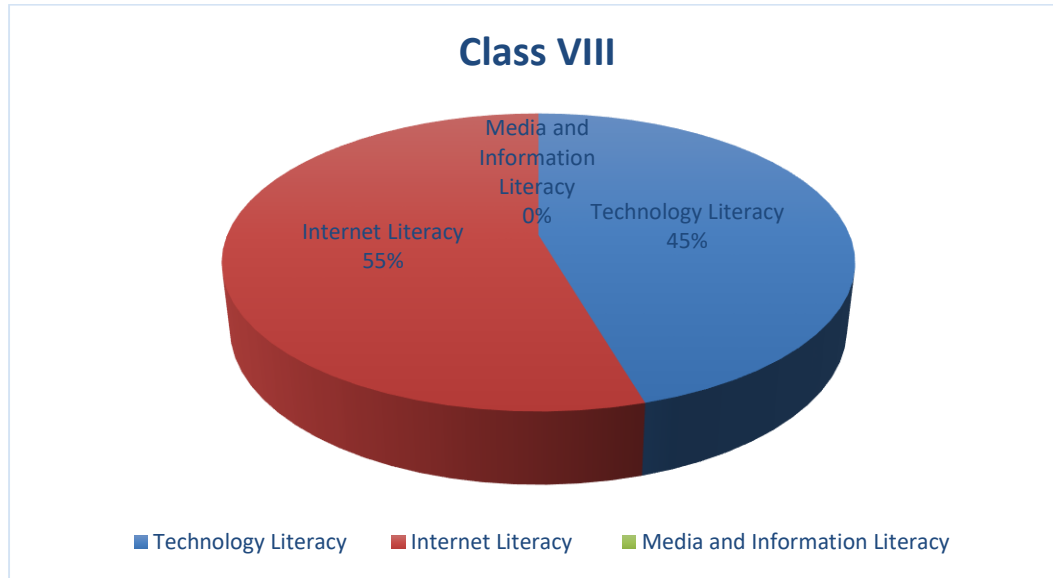


Figure 3: Literacy Distribution in ICT book of Class VIII

In Figure 3; Technology and internet literacy are more dominating and almost equal to the portion. Whereas Media & Information literacy is not touched at all.

Table 12: Composition of Different Literacy based on performing skills

Technology Literacy				
Performing Skills	Ability to use computing technology	Ability to use digital technology	Awareness of functional safety of digital devices	Coding
Frequency	2	0	3	0
Percentage	40%	0%	60%	0%

Internet Literacy						
Performing Skills	Being e-citizen	Accessing desire information	Communicating using Internet	Managing Risk on Cyber Security		
Frequency	0	1	2	3		
Percentage	0%	16.67%	33.33%	50%		
Media and Information Literacy						
Performing Skills	Understanding of Media Management	Ability to media message Analysis	Ethical & Safe Use of Media	Filter Information	Use Information Effectively	Create & Distribute own Media Message
Frequency	0	0	0	0	0	0
Percentage	0%	0%	0%	0%	0%	0%

In table 12; we found that technology (45.45%) and internet literacy (54.55%) are more dominating. Ability to using computing technology (40%) communicating using internet (33.33%) and awareness of functional safety of digital devices (60%) are focused highly among different skills. Media and information literacy are not touched in class 8 textbook.

Table 13: Phases of performing skills of Technology Literacy

Technology literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Ability to use computing technology	1 (20%)	1 (20%)	0	0	0
Ability to use digital technology	0	0	0	0	0
Awareness of functional safety of digital devices	2 (40%)	1 (20%)	0	0	0
Coding	0	0	0	0	0

According to Table 13; most of the skills are limited to preparatory and developing stages.

Table 14: Phases of performing skills of Internet Literacy

	Internet Literacy				
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Being e-citizen	0	0	0	0	0
Accessing desire information	1 (16.67%)	0	0	0	0
Communicating Using Internet	1 (16.67%)	0	1 (16.67%)	0	0
Managing risk on Cyber security	2 (33.33%)	0	1 (16.67%)	0	0

In Table14; performing skills are consisted of accessing desire information; communicating using internet and managing risk on cyber security (50%). These performing skills are limited to preparatory and developing stages mostly. There is no skill of being e-citizenship.

Table 15: Phases of performing skills of Media & Information literacy

Media & Information literacy	
Performing skills	Phases of performing skills (Frequency, Percentage)

	Preparatory	Developing	Activating	Achieving	Upgrading
Understanding of media management	0	0	0	0	0
Ability to media message analysis	0	0	0	0	0
Ethical and safe use of Media	0	0	0	0	0
Filter information	0	0	0	0	0
Use information effectively	0	0	0	0	0
Create & distribute own Media message	0	0	0	0	0

According to Table 15; in the textbook of class 8; there is no media and information literacy at all.

6.4 Content Analysis of ICT book of class IX-X

Table: 16: Literacy projected in the textbook of class 8

Unit No	Technology Literacy	Internet Literacy	Media & information literacy
Unit 1			
Unit 2	Yes	Yes	Yes
Unit 3		Yes	
Unit 4	Yes		
Unit 5	Yes		
Unit 6	Yes		

In Table 16; we have seen that Technology literacy is found in almost each unit except unit 1 and 3. Internet literacy is projected in 2 units. However there is scarcity of media and information literacy.

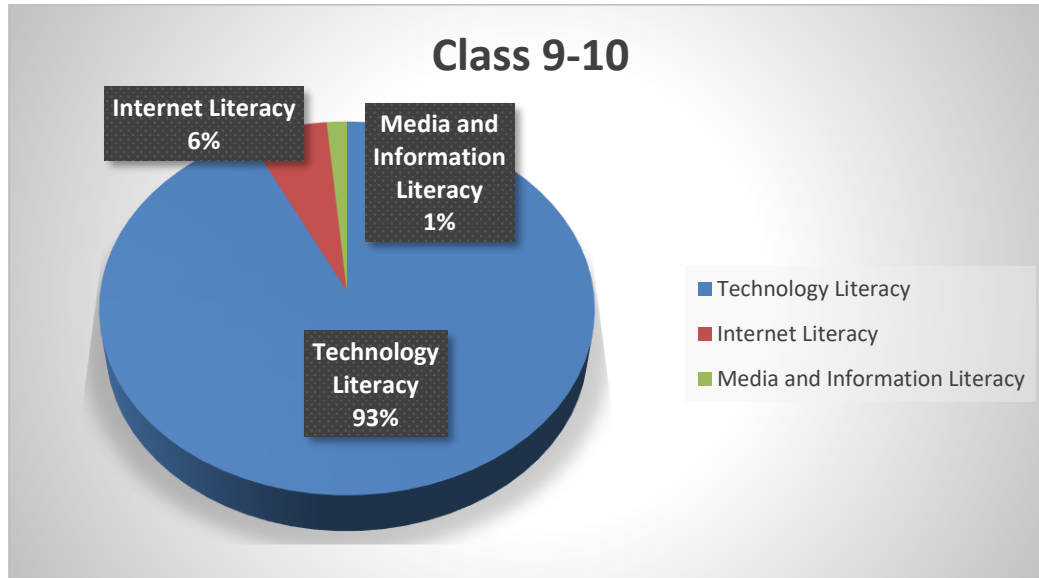


Figure 4: Literacy Distribution in ICT book of Class IX-X

In Figure 4; Technology literacy is holding the highest proportion among the 3 literacy. Internet literacy has a little portion but the presence of media and information literacy is negligible.

Table 17: Composition of Different Literacy based on performing skills

Technology Literacy				
Performing Skills	Ability to use computing technology	Ability to use digital technology	Awareness of functional safety of digital devices	Coding

Frequency	91	1	37	0		
Percentage	70.54%	0.78%	28.68%	0%		
Internet Literacy						
Performing Skills	Being e-citizen	Accessing desire information	Communicating using Internet	Managing Risk on Cyber Security		
Frequency	0	1	0	7		
Percentage	0%	12.50%	0%	87.50%		
Media and Information Literacy						
Performing Skills	Understanding of Media Management	Ability to media message Analysis	Ethical & Safe Use of Media	Filter Information	Use Information Effectively	Create & Distribute own Media Message
Frequency	0	0	1	0	1	0
Percentage	0%	0%	50%	0%	50%	0%

In Table 17; we found that technology (92.8%) is more dominating. Ability to using computing technology (70.54%); managing risk on cyber security (87.50%) focused highly among different skills. There is scarcity of media and information literacy.

Table 18: Phases of performing skills of Technology Literacy

Technology literacy

Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Ability to use computing technology	2 (1.55%)	3 (2.34%)	3 (2.34%)	79 (61.62%)	4 (3.12%)
Ability to use digital technology	1 (0.78%)		0	0	0
Awareness of functional safety of digital devices	3 (2.34%)	1 (0.78%)	0	16 (12.40%)	17 (13.18%)
Coding	0	0	0	0	0

According to Table 18; most of the skills are in achieving skills of the stage ability to using computing technology.

Table 19: Phases of performing skills of Internet Literacy

	Internet Literacy				
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Being		0	0	0	0

e-citizen					
Accessing desire information	1 (12.5%)	0	0	0	0
Communicating Using Internet	0	0	0	0	0
Managing risk on Cyber security	0	3 (37.5%)	2 (25%)	2 (25%)	0

In Table 19; performing skills are consisted of mostly managing risk on cyber security. These performing skills are limited to developing; activating and achieving stages.

Table 20: Phases of performing skills of Media & Information literacy

Media & Information literacy					
Performing skills	Phases of performing skills (Frequency, Percentage)				
	Preparatory	Developing	Activating	Achieving	Upgrading
Understanding of media management	0	0	0	0	0
Ability to media message analysis	0	0	0	0	0
Ethical and safe use of Media	1 (50%)	0	0	0	0

Filter information	0	0	0	0	0
Use information effectively	0	1 (50%)	0	0	0
Create & distribute own Media message	0	0	0	0	0

According to table 20; most of the skills are related to preparatory and developing stages equally in ethical and safe use of media(50%) and create and distribute own media message (50%).

7. Results and Discussions

Results of the research showed that in the secondary level ICT text books, the highest frequency (F=160) has been observed in technology literacy. Moreover, the second priority belongs to internet literacy (F=48). The lowest frequency belongs to media & information literacy (F=20).

In the aspect of technology literacy, the highest frequency belongs to ability to use computing technology (F=102), while awareness of functional safety of digital devices (F=48) has the second priority. Ability to use digital technology (F=10) has the third priority. Specifically technology literacy is more dominating (F=129) in the ICT text book of class IX-X and overlooked in the book of class VIII (F=5). In addition, most of the performing skills of technology literacy is segmented to Achieving stage (P=95), while rest of the components belong to Preparatory stage (F=21), Developing stage (F=13), Activating stage (F=10) and Upgrading stage (F=21).

In the aspect of internet literacy, the highest frequency belongs to accessing desire information (F=21), while managing Risk on cyber security (F=17) has the second priority. The third and fourth ranks belong to being e-citizen (F=8) and communicating using internet (F=2), respectively. Specifically internet literacy is more dominating (F=25) in the ICT text book of class VII. In addition, most of the performing skills of internet literacy is segmented to Developing stage (P=21), while rest of the components belong to Preparatory stage (F=17), Activating stage (F=6), Achieving stage (F=3) and Upgrading stage (F=1).

In the aspect of media & information literacy, the highest frequency belongs to understanding of media management (F=13), while ethical & safe use of media (F=2) and use information effectively (F=2) have the second priorities. The lowest ranks belong to ability to media message analysis (F=1), filter information (F=1) and create & distribute own media message (F=1), respectively. Specifically media & information literacy is more dominating (F=14) in the ICT text book of class VI and overlooked in the book of class VIII (F=0). In addition, most of the performing skills of media &

information is segmented to Preparatory stage (P=15), while rest of the components belong to Developing stage (F=3) and Upgrading stage (F=2).

It has been noticed that technology, internet, media & information literacies listed in the curriculum were presented in the textbooks. It deserves appreciation that the students are more likely to be introduced to different sort of literacies and spontaneously they are about to practice that in their day to day life.

Besides, it can be concluded that ability to use computing technology, awareness of functional safety of digital devices and accessing desired information have been in the limelight while communicating using internet, ethical & safe use of media, use information effectively, ability to media message analysis, filter information and create & distribute own media message have received less attention. Besides, most of performing skills are limited to preparatory and developing stages, however, technology literacy of book of class VIII has been extended to activating stage.

In addition, we found out that there should be more scope for performing skills of activating, achieving and upgrading stages. The given literacy skills in the textbook covered the area obviously, but there is less opportunity for the students to show their creativity to perform skills of higher order. Furthermore, we have noticed that the content related to upgrading performing stages is only presented in the textbook of class IX-X and these upgrading skills are only limited to technology literacy. Contents regarding media & information literacy is completely missing from the textbooks of class VIII. Also, it is noticeable that contents associated with technology and internet literacies is also less in the book of class VIII. Somehow, the issue related to media & information literacy is underrepresented which is not acceptable at all.

8. Recommendations

The skills which have been focused in the curriculum are undoubtedly necessary. It is high time to take proper initiatives for integrating skills related to technology, information, media & information literacies recognized by international societies. So, recommendation of our studies are listed below:

- i. It has always been observed that content knowledge receives more attention than skill generation in case of specific subject. To balance it out, we should emphasize on designing the curriculum accordingly.
- ii. More related contents should be added to the textbooks to even out the situation to ensure proper implementation of the projected literacy skills.
- iii. There should be more scope for performing skills of higher order like activating, achieving and upgrading stages.

- iv. It has been found out that there is less instruction for the teachers regarding literacy skills in case of ICT books of secondary schools. Instructions for teachers for promoting these skills should be specific and well written in the curriculum.
- v. As we are opting more for sustainable learning, it should be confirmed that our teachers are well informed and trained to implement that among the students.

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