ROLE OF DIGITAL LITERACY IN ACADEMIC PERFORMANCE OF STUDENTS AT SECONDARY LEVEL

By: Sundus¹, Aatika Aziz²

¹PhD Scholar, UMT Lahore, f2022095015@umt.edu.pk
²PhD Scholar, University of Education, Lahore, aatika.aziz03@gmail.com

Abstract

This study was conducted to find out the role of digital literacy in academic performance of students at secondary level. Major objectives of the study were: i) To assess the level of digital literacy among secondary school students, ii) To investigate the role of digital literacy in academic performance of students at secondary school level, iii) To analyze the relationship between students’ digital literacy and academic performance, iv) To ascertain the difference between students’ opinion on the base of demographics i.e. gender, locality, and age. This study used descriptive survey design. All the male and female students of secondary public school of 10th class 4725 (2507 males and 2218 females) of District Okara. As the population of the students of 10th class at secondary level was large. Therefore, the researcher used stratified random sampling technique to select the sample. Finally, students 1375 (716 male and 659 female) were selected. A 35-item questionnaire, self-structured was used to investigate the role of digital literacy in academic performance of students at secondary level. Results revealed that digital literacy has significant role in academic performance of students at secondary level. The result revealed after analyzing data and by seeing the views of students that digital literacy enhanced their intellectual abilities, learning skills and knowledge. Digital literacy has positive role in the academic performance of students at secondary level.

Keywords: Digital Literacy, Academic Performance, Secondary Level

1. INTRODUCTION

There was an assumption that students born after 1980, who are collectively known as Digital Natives or the Net Generation, would have the most familiarity with digital technologies. Because of this, the pupils who grow up in such a setting will have a wide range of skills with these kinds of technologies (Oblinger & Oblinger, 2005). In addition, Oblinger and Oblinger (2005) described today's students as "digitally literate," meaning that they have a high comfort level with technology, are constantly connected to others, learn quickly and practically, and prioritise their relationships with others. And as Prensky (2001b) pointed out, the current educational system was not designed to teach today's students. According to Bawden (2001), the term "Digital Literacy" was first defined by Gilster in his similarly titled book. Gilster (1997) stresses the point that being computer literate is about more than just knowing how to use a computer. In a similar vein, Martin and Madigan (2006) stress the importance of digital literacy in order to uncover diverse conceptions of online education and the mechanisms by which they are enabled and maintained in demographically distinct groups of people.

Using digital devices in the classroom has grown commonplace and is altering the way today's children study (Benson & Kolsaker, 2015). The term "digital technology" is used to describe a wide variety of computer-related products and services, such as smartphones, tablets, web-based applications, cloud-based data storage and transmission services, etc. Learning activities that involve the use of digital technology are more common among today's students.
These include the usage of email, learning management systems, e-books, e-journals, online quizzes, online discussion forums, and more (Mohammadyari & Singh, 2015).

Institutions of higher learning are capitalising on developments in electronic technology to provide students with a wider variety of interactive learning opportunities. Blended learning (Porter et al., 2014) is one approach that does this by incorporating technological means into the teaching and learning process in an attempt to compensate for the deficiencies of traditional classroom instruction.

Regarding what is necessary for an adult to know about digital media, Buckingham (2010) also described digital literacy as web literacy, game literacy, and generating digital media in the context of evolving conceptions of digital literacies. These elementary forms of digital communication can serve as a springboard for exploring a wide range of additional literacies and skill sets, rather than serving as a replacement for or a superset of existing literacies and skill sets. It does, however, show that any attempt to build a parasol meaning of leading structure of digital literacy would primarily require reconciliation of entitlements for multiple perspectives of digital literacy, an accurate crowd of digital literacies.

As most aspects of modern life become increasingly dependent on computers, the concept of "digital literacy" or "digital competency" has emerged as a hot topic in the education discussion of the 21st century. There are two primary drivers for the need for digital literacy in the classroom. Students' academic performance can be enhanced by encouraging them to reflect on the issue at hand as part of displaying a deeper comprehension of the material. Due to differences in cultural and cognitive backgrounds, ICT-related educational activities have been underrepresented throughout the past three decades. It appears that this outcome can be quite important if one is able to select excellent cognitive tasks that can then be improved upon through technological means (Passey, 2006). Since the topic of digital literacy in the classroom is one that must be addressed for the rest of one's life, contemplation of one's own social and psychological frameworks may prove useful in the near future. Research in the field of education is charged with outlining initiatives and models that are both feasible within the confines of school curricula and will help schools achieve their stated goals. Countries in the developing world and private organisations can evaluate the situation and make the necessary changes. How schools should be guided in regards to assessment and the steady increase in competence, and what methods should be employed.

A thorough definition of "Digital Literacy" was communicated (Martin, 2008). He links "co-literacies," including ICT literacy, information literacy, media literacy, and visual literacy, to the rise of a new and better digital era. Martin defines digital literacy as the proficiency to use the information and communication technologies that shape the 21st century. Martin focused on the importance of digital literacy and e-learning skills for individuals to thrive in knowledge-based society. He argues similarly that digital literacy encompasses the acquisition and application of knowledge, techniques, attitudes, and personal qualities; the ability to plan, execute, and evaluate
digital activity; the aptitude to solve a variety of everyday problems using digital means; and the transparency of one's own digital literacy development.

According to Fieldhouse and Nicholas (2008), digital literacy is the ability to read and write digitally across different media, including but not limited to text, images, animations, sound, video, and other multimodal forms. The three types of digital literacy identified by Spires and Bartlett (2012) are the technical capacities to (a) search for and consume digital content, (b) create digital content, and (c) communicate digital content.

The world is becoming more and more computer aware, and curiously enough, the students that enter the classrooms are often digital natives who are ready to learn and absorb new information using the technologies they find "cool" and remarkable. In a perfect world, today's classroom would be a lively, interactive space where students could freely collaborate on projects using online tools and real-time social media feeds (Calvani et al., 2009). These days' students want to be actively involved in their education, given plenty of authentic learning chances, encouraged to contribute their own experiences, and acknowledged for their contributions. Learning has become an option that can be delivered at a distance; a student with the correct mindset, self-discipline, and resources can be located on one continent while receiving an education on another in real time as the education sector has expanded dramatically over the years. Despite numerous developments, superior curriculum and pedagogical approaches, there remains much room for improvement in education. Schools' preparation of students to become global citizens who can make meaningful contributions to any society is one constant (Leung, 2012).

Belshaw (2011) proposed the idea of digital literacies, which include eight increasingly popular components: cultural, cognitive, constructive, communicative, confident, creative, critical, and civic literacy. The author also noted that, despite some variances in detail, content evaluation and critical thinking are included in a number of these skill-focused interpretations. He went on to define digital literacy as the ability to read, comprehend, and effectively apply dynamically unrelated information. According to Eshet-Alkalai (2004), these researchers appear to be in agreement that digital literacy entails a wide range of complex cognitive, physical, social, and emotional skills that are necessary for successful participation in digital settings.

While the effects of digital technology differ from person to person, it is increasingly expected that people will use digital skills and knowledge to evaluate options, make decisions, and create and deliver performances (Selwyn & Odabaş, 2019). The benefits, wants, and desires of students become more central in a world that is constantly evolving and changing. Teachers and administrators have begun to see the value and necessity of digital whiteboards in the classroom (Erol, 2020).

According to Jacobson and Mackey (2013), a person's level of digital literacy can be defined as their proficiency in the use of information and communication technologies (ICTs) for the purposes of gathering, evaluating, creating, and disseminating knowledge. Higher education
establishments are widely viewed as the most influential factors in societal progress. The primary objective of higher education is to contribute to national development by producing the highly educated and skilled labour necessary for such progress. This can be accomplished with a concentrated effort in teaching, learning, and helping the community as a whole. Consequently, universities today lie at the pinnacle of the educational hierarchy, with space and resources allocated specifically for the pursuit of knowledge and the development of novel ideas (Anunobi & Nwogwugwu, 2013).

These days, digital technologies are expanding at a breakneck pace, and this has led to changes in many aspects of people's daily lives. Education is the most crucial, and many changes and tactics have been made to improve it. This is an issue that is inextricably bound up with the teaching of digital literacy and the utilisation of technological tools in the classroom. In particular, it should provide students with digital tools for learning and using technologies that promote computational thinking. Many educational institutions lack enough access to technological resources. Many schools, especially those in remote areas and with few resources, do not have access to reliable Internet service, which limits students' access to educational opportunities (Llorens, 2020).

DigEuLit's European Framework for Digital Literacy (EFDL) was developed to acknowledge the significance of digital literacy and defines it as follows: "Digital literacy is the awareness, attitude, and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesise digital resources, construct new knowledge, create media expressions, and communicate with others" (Martin, 2006).

Online tools like e-mail, bulletin boards, internet phone, chat rooms, IM, and social networking sites have become ubiquitous in modern society. This is how communities with access to the internet have become the norm. "How individuals can grasp, and manage with, the digital world becomes a crucial one," Martin argues, "out of all the challenges provided by a digitally infused society" (Kope, 2006). Having the ability to read and write digital content requires more than just knowing how to operate a computer. Therefore, it is possible to view digital literacy as more than the mastery of a single skill; rather, it is attained when specific digital competencies are deployed judiciously in real-world settings for the purpose of solving a problem or completing a task (Martin, 2006). Due to the widespread influence of digital technologies, those who lack proficiency in this area will be at a severe disadvantage. Therefore, it's evident that being tech-savvy is a plus in today's world. It is also obvious that not all people in all societies have the same level of digital literacy.

Recent breakthroughs in the technology sphere are a novel experience for people all around the world, and their impact may be felt in sectors as diverse as education, healthcare, the media, and entertainment (Irum et al., 2019). Since technology has evolved into a means of efficiently disseminating knowledge to students, faculty, and other educators, it naturally
occupies a central place in today's classrooms (Grabe, 2007). The difficulties that arise as a result of technological issues have a profound impact on the classroom experience.

Communication is a part of technology and cannot be avoided. Students' ability to effectively communicate, both orally and in writing, is crucial since it will serve them well in a variety of contexts throughout their lives, including but not limited to classroom discussions, group projects, and job interviews (Iksan et al., 2016). A place where people feel comfortable talking to one another is an invaluable resource for teaching and improving communication skills. Video games, TV, laptops, tablets, the Internet, social networks, calculators, and a whole host of other technological resources have made instantaneous and unavoidable communication possible.

Given that most classroom instruction is delivered verbally, Khan et al. (2017) argue that teachers' ability to effectively convey information to their students is essential to their academic performance. The inability of kids to learn and advance academically could be the result of teachers' lacklustre communication skills.

2. Objectives of the Study

The specific objectives of the study were:

1. To analyze the relationship between students’ digital literacy and academic performance.

2. To ascertain the difference between students’ opinion on the base of demographics i.e. gender, locality, and age.

3. Research Questions of the Study

Following research questions were addressed in this study:

1. Does there any significant relationship between students’ digital literacy and academic performance?

2. Does there any significant difference between students’ opinion on the base of demographics i.e. gender, locality, and age?

4. Research Design

A descriptive research was conducted. Because of this, a quantitative survey approach was used to conduct the investigation. This research strategy was chosen because it was the most efficient approach to get information from a big group of people. Since all data was gathered through a questionnaire, the system was impervious to subjectivity and error. A representative
sample was drawn from the wide population in order to carry out this particular study (Creswell, 2012).

5. Population Size

The population of district okara in three tehsils okara, depalpur and renalakurd was 247 public secondary schools (146 male and 101 female) and 4725 students (2507 male and 2218 female) of 10th class.

6. Sample

In this particular research the technique of stratified random sampling is used. Due to diversity in the strata of population, this was the most suitable technique for the selection of sample in this study. In stratified random sampling, the whole population was divided into groups or strata. The size of each stratum was proportionate to the population size of the strata when examined across the entire population. To conduct a stratified random sample, the entire population was divided in strata in first step. Than it is divided into three tehsil as starta. The population divided into urban and rural. Similarly the population further divided into male and female. Our results were based on representative sample of male and female students of 10th class from the Okara, Depalpur and Renalakurd tehsils of district Okara.

A suitable sample can be selected by using the Krejcie and Morgan (1970)’s appropriate table from which sample can be selected corresponding to the population size.

1375 students (716 male and 659 female) of public secondary schools studying in 10th class from the Okara, Depalpur and Renalakurd tehsils of district Okara were also included in the population. Stratified random sampling technique was used to select the sample. In stratified random sampling, the whole population was divided into groups or strata. When looking at the population as a whole, the size of each stratum reflected the size of that group. Our results were based on a sample of 10th-grade male and female students of public secondary schools from Okara, Depalpur, and Renalakurd tehsils in the Okara district.

7. Procedure of Instrument Development

In this study, the questionnaires based on 5 point Likert scale was utilized to analyse the opinion of students towards role of digital literacy in academic performance of students at secondary level. The researcher developed questionnaires after researching the literature and consulting with the supervisor. These instruments have two distinct divisions labeled, A and B section. Section A is about respondents’ personal and demographic data and section B inquired about opinion of students towards role of digital literacy in academic performance of students at secondary level. Participants were asked to select the high-quality option they described for each declaration. After the study was conducted, the scale reliability value changed to be calculated by 0.73, which is highly reliable according to the standard presented by Field (2010).
8. Expert Opinion for the Validation of Instrument

For purpose of tool validation, experts (List attached as Appendix-A) were consulted to check the validity of the tool. They read the content and made few grammatical mistakes in the statements. Furthermore they suggested corrections of the grammatical mistakes for better and clear understanding. The questionnaire was corrected according to the experts’ opinion.

9. Pilot Testing

To ensure the content validity of the tool pilot testing is conducted. Data were collected from 28 students randomly selected from the 10th class of government schools at secondary level from the Okara district. However these participants were not included in the sample. It is found understandable and valid. Therefore, the questionnaire was considered valid to conduct the study.

10. Reliability of the Tool

To check the reliability, data obtained during pilot testing, analyzed by reliability method Cronbach alpha in which correlation coefficient was checked among variables. In this method, coefficient of correlation was obtained among the variables and factors and reliability of these factors is tested. Chronbach Alpha value was .73 which is considered valid and reliable.

11. Data Collection

The use of a questionnaire to gather statistics is a more green method of accumulating data. It takes less time, is much less steeply-priced, and lets in for facts collection from a drastically large sample. After consulting with the supervisor, the researcher developed 40 questions, however best 35 had been finalized. After permission was obtained from the administration of school, the researcher turned to the teachers, briefly introduced the tools and asked them to mark their alternatives on the optical answer sheet. When the instruments are collected, the optical solution sheet is processed and then the statistics is used when you want to view the records. The participants’ response size was calculated to get a general rating from them. The frequency of each item is then tested to see in which areas people feel safe.

12. Statistical Tools and Techniques for Data Analysis

The facts evaluation is imperative to realize the output of the facts which have been accrued. In the respective studies look at, we’ve got carried out one of statistical equipment by the software program SPSS which might be:

13. Descriptive Analysis
The descriptive analysis in facts is important because it defined the average values of variables from the collected facts. It has one-of-a-kind elements that covered mean, standard deviation and frequency value.


Inferential statistics i.e. t-test and ANOVA were used to analyze the difference between teachers’ and parents’ opinion on the base of demographics.

15. Ethical Consideration

A written consent form was approved from ethical committee of university. After approval the researcher took permission from the heads of the schools for data collection.

16. Data Findings

Analysis of Difference between Students’ Opinions regarding Role of Digital Literacy in Academic Performance of Students at Secondary School Level

This section reveals the analysis of data to find the difference between students’ opinions based on their gender, locality, age, and obtained marks in 9th class. One way ANOVA and Independent sample t-test were used to analyze the data.

**Table 1**

*Difference between Male and Female Students’ Opinion*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>716</td>
<td>260.5182</td>
<td>23.60374</td>
<td></td>
<td>1373</td>
<td>1.648</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>659</td>
<td>258.3414</td>
<td>25.35955</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows the difference between male and female students’ opinion. The mean score of male students (260.51) is slightly greater than the mean score of female (260.51). However, the calculated significance value .09 is greater than 0.05, which indicates that there is statistically no significant difference between male and female students’ opinion on role of digital literacy in academic performance of students at secondary school level.

**Table 2**

*Difference between Students’ Opinions by Locality*
Table 2 shows the difference between students’ opinions by locality. The calculated significance value .004 is less than 0.05, which indicates that there is statistical significant difference between urban and rural students’ opinions on role of digital literacy in academic performance of students at secondary school level.

**Table 3**

**Difference between Students’ Opinions by Age**

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1126.092</td>
<td>3</td>
<td>375.364</td>
<td>.626</td>
</tr>
<tr>
<td>Within Groups</td>
<td>822016.793</td>
<td>1371</td>
<td>599.575</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>823142.884</td>
<td>1374</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 indicates the difference between students’ opinions by age. The calculated significance value (.59) is greater than 0.05. This shows that there is statistically less significant difference between students’ opinions by age. F value (.62) also supports the claim.

**Table 4**

**Difference between Students’ Opinions by Obtained Marks**

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>398.992</td>
<td>3</td>
<td>132.997</td>
<td>.222</td>
</tr>
<tr>
<td>Within Groups</td>
<td>822743.892</td>
<td>1371</td>
<td>600.105</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>823142.884</td>
<td>1374</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4 indicates the difference between students’ opinions by obtained marks. The calculated significance value is (.88) greater than 0.05. This shows that there is statistically no significant difference between students’ opinions by obtained marks. F value (.22) also supports the claim.

**Relationship between Students’ Digital Literacy and Academic Performance**

Table 5 demonstrates that there is calculated significant value (.77) is greater than (0.05). It indicates that there is no significant correlation among digital literacy and academic performance.

**Table 5**

*Relationship between Students’ Digital Literacy and Academic Performance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>r</th>
<th>Sig(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Literacy</td>
<td>1375</td>
<td>2.2262</td>
<td>1.06713</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>1375</td>
<td>259.4749</td>
<td>24.47621</td>
<td>.008</td>
<td>.772</td>
</tr>
</tbody>
</table>

17. Discussion

The main objective of the study is to investigate the role of digital literacy in academic performance of students at secondary school level. Researchers drew the conclusion that pupils' academic success was significantly impacted by their level of digital literacy. It is commonly anticipated that people would use their digital skills and knowledge to evaluate alternatives, make decisions, and generate and deliver performances (Selwyn & Odabaş, 2019). This is the case despite the fact that digital technology has various effects on different people. In an atmosphere that is constantly changing, the priorities, aspirations, and passions of the students take centre stage. In recent years, digital whiteboards have been gaining popularity among teachers and administrators in schools (Erol, 2020).

With the rapid development of digital technologies, many parts of people's daily life have shifted. The most important factor is education, and many strategies and reforms have been implemented to help it. It's impossible to separate this problem from the introduction of digital literacy skills and the use of technology in the classroom. In particular, it needs to equip students with the digital resources they need to learn about and employ the technologies that foster computational thinking. Too often, schools just don't have the means to provide their students...
with enough access to modern learning tools. However, many schools, especially those in underdeveloped areas, do not have access to consistent Internet service, which restricts the educational opportunities available to their students (Llorens, 2020).

There has been a considerable improvement in both the breadth and depth of education as a result of the widespread availability of digital technologies in the classroom. Having access to the Internet opens up a world of e-resources and tools that can be used in any discipline or classroom, and this can completely revolutionise a student's learning experience. Thanks to the abundance of data, students in both conventional and alternative settings can actively participate in course materials (European Commission, 2017).

There is a widespread trend among today's students to use computers and other forms of digital technology in order to collaborate on projects, find answers to questions, and develop original methods of studying. The study's findings suggest that in order to meet the needs of industry in the future, universities and colleges will have to place a greater emphasis on digital development in their undergraduate and graduate curricula and give more funding for digital literacy training (Adams-Becker et al., 2017).

18. REFERENCES


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