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DIGITAL LITERACY SKILLS AMONG POST GRADUATE DISTANCE LEARNERS IN PUBLIC ADMINISTRATION: A STUDY OF PUNJABI UNIVERSITY, PATIALA (INDIA)

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Abstract: This study was conducted to assess Digital Literacy Skills (DLS) among post graduate distance learners in public administration at Punjabi University, Patiala (India) during the session 2013-14. DLS were assessed with a short instrument, *Scale of Digital Literacy Skills for Public Administration Postgraduates in India*, prepared by the author for public administration students at the post graduate level in the country. Hypotheses were tested with parametric tests with respect to class, gender and area of living (rural, semi-urban, and urban) for both scoring and non-scoring parts. Results indicated that nearly half of the students on the overall had un-satisfactory DLS.

Keywords: Digital Literacy; Information Literacy; Post Graduate Students; Public Administration

1.0 Introduction

Information has become the most important resource in a knowledge based society. The Internet has enhanced the flow of information to sky levels and spread of mis-information is also on the rise in today's digital world. Increasing connectivity and Internet access makes it imperative to assess Digital Literacy Skills (DLS) of distance learners which fall within the domain of Information Literacy (IL).

Association of College and Research Libraries (ACRL 2000[1]) in association with American Library Association (ALA) presented *Information Literacy Competency Standards for Higher Education*, which has five standards in the year 2000. ALA in its Presidential Report defined that an information literate person is able to "recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" (ALA 1989, cited in ACRL, 2000). Presently, there are many IL standards by various organisations and individuals but all had the base of ACRL standards and subject specific IL standards have also become available, for example, in education, English literature, psychology etc. by ACRL. Information literacy is an umbrella term and it includes many other forms of literacies like digital, computer etc.

According to Educational Testing Service[2] (ETS 2007: 2) "ICT literacy is using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society".

ICT Leadership Council[3] (2010: 3) defined digital literacy as "a lifelong learning process of capacity building for using digital technology, communication tools, and/or networks in creating, accessing, analyzing, managing, integrating, evaluating, and communicating information in order to function in a knowledge based economy and society."

It could be of interest to note that offering public administration at the master's level through distance education is just a few years back initiative at Punjabi University, Patiala, which prompted this investigation. Furthermore, imparting of IL skills is not a part of the curriculum currently.

2.0 Review of Literature

It had been found in various studies that teaching to evaluate web contents improves critical skills among the student community (Oakleaf[4] 2009; Gilbert[5] 2009; Calkins and Kelly[6] 2007). Online resources and library materials could have different perceptions among higher education students while evaluating the information (Head and Eisenberg[7] 2010).

Liu and Sun[8] (2012) found significant difference between male and female students with respect to evaluating the information and Korobili, Malliari, and Christodoulou[9] (2009) found gender difference in the evaluation of the information sources.

Amritpal Kaur and Sarman[10] (2012) found that basic computer skills like MS-Word, Email etc. were present in a majority of the PG students and research scholars at Punjab Agricultural University (PAU), Ludhiana. In an earlier study at PAU, Ludhiana, Sharma[11] (2010) found that 96 percent respondents (PG students, research scholars and faculty members) were able to refine keywords.

Research on digital literacy is much less conducted and that too on PG distance learners in public administration in India. This research may throw some reflection on the issue investigated.

3.0 Objectives of the Study

This study was carried out with the following objectives:

1. To assess digital literacy skills (DLS) among PG students in Public Administration;
2. To find out class wise (first and second year) difference among PG students in DLS;
3. To observe any difference between male and female students in DLS; and
4. To find out area wise (rural, semi-urban, and urban) difference among PG students

4.0 Hypotheses of the Study

Following null hypotheses were formulated to achieve the objectives of the study:

1. There is no difference between MA-I and MA-II students in Non-Scoring Digital Literacy Skills (NS-DLS);
2. There is no difference between male and female students in NS-DLS;
3. There is no difference in NS-DLS between students residing in rural, semi-urban and urban areas;
4. There is no difference between MA-I and MA-II students in Scoring Digital Literacy Skills (S-DLS);
5. There is no difference between male and female students in S-DLS; and
6. There is no difference in S-DLS between students residing in rural, semi-urban and urban areas

5.0 Research Design and Method

Post Graduate (PG) distance learners in the subject of Public Administration were administered written questionnaires in the academic session 2013-14. This survey was done in their free time (lunch break) during personal contact programmes.

5.1 Research Instrument

To assess expiscatory skills, the research instrument must have non-scoring and scoring items as well. Hence, a short instrument, *Scale of Digital Literacy Skills for Public Administration Postgraduates in India* (SDLS-PAPI) was prepared by the author for public administration students at the post graduate level in our country (Copy of SDLS-PAPI is attached at the end of this paper). Apart from preliminary questions, it consists two parts: Part A – Non-Scoring items; and Part B – Scoring items.

Part A (non-scoring) contains 20 items on a five point scale (from strongly disagree to strongly agree). It comprises items on: *Computers* (5 items); *Internet* (4 items); *Information Sources, Searching & Evaluation* (ISSE) having 5 items; and *Other items* (6 items) covering Intellectual Property Rights – IPR, E-preservation, E-governance, and Lifelong Learning.

Part B (scoring) has 20 True / False items. It includes items on: *Computers* (4 items); *IPR & E-Preservation* (4 items); *Information Sources, Searching & Evaluation* (ISSE) – 7 items; and *E-governance* (5 items) sub-scale. At least 10 correct items (50 percent) are considered as satisfactory DLS.

5.2 Testing for Hypotheses

T-test and Analysis of Variance – ANOVA (both parametric tests) were performed to test the hypotheses. It may be noted that appropriate adjustments for ANOVA were considered as desired in respective cases.

5.3 Participants

74 distance learners in public administration comprised 38 MA first year and 36 MA second year students. 47 (63.5 percent) were male and 27 (36.5 percent) were female students while 37 (50.9 percent) were residing in rural area, 10 (13.5 percent) in semi urban and 27 (36.5 percent) belonged to urban area (Table 1).

Table 1: Class wise Gender and Area of Participants

Gender	Class		Total No. (%age)
	MA – I No. (%age)	MA – II No. (%age)	
Male	24 (63.2)	23 (63.9)	**47 (63.5)**
Female	14 (36.8)	13 (36.1)	**27 (36.5)**
Total	**38 (100.0)**	**36 (100.0)**	**74 (100.0)**
Area of Living			
Rural	18 (47.4)	19 (52.8)	**37 (50.0)**
Semi-Urban	7 (18.4)	3 (8.3)	**10 (13.5)**
Urban	13 (34.2)	14 (38.9)	**27 (36.5)**
Total	**38 (100.0)**	**36 (100.0)**	**74 (100.0)**
Mean Age = 26 years; Range = 23 years (minimum) to 55 years (maximum); Mode = 23 years [Age calculated with mid-value as per discrete data]			

6.0 Data Analysis and Interpretation

Most (43.2 %) of the students were daily users of Internet (Table 2). The distance learners started using the Internet for the last 3.11 years on an average and spent 1.8 mean hours on it usually in one sitting. Averagely 4.51 mean years had passed since they started using the computers. As per Table 3, most of the students access Internet from home connection (50.0 %) followed by mobile phone (47.3 %) among other access points.

Table 2: Class wise Computers and Internet Usage

Frequency of Internet Use	Class		Total No. (%age)
	MA – I No. (%age)	MA – II No. (%age)	
Daily	14 (36.8)	18 (50.0)	**32 (43.2)**
Many times a week	13 (34.2)	9 (25.0)	**22 (29.7)**
Weekly	7 (18.4)	9 (25.0)	**16 (21.6)**
Not mentioned	4 (10.5)	-	**4 (5.4)**
Total	**38 (100.0)**	**36 (100.0)**	**74 (100.0)**
Averagely using Computers for the last 4.51 years (Mode = 1 year) Range = Zero to 15 years Averagely using Internet for the last 3.11 years (Mode = 1 year) Range = Zero to 12 years Average time spent on Internet usually = 1.8 hours (Mode = 1 hour) Range = Zero to 9 hours			

Table 3: Access Points of Internet (multiple options)

Access Points	Class		Total No. (%age)
	MA – I No. (%age)	MA – II No. (%age)	
Home	19 (50.0)	18 (50.0)	37 (50.0)
Mobile	20 (52.6)	15 (41.7)	35 (47.3)
Office	2 (5.3)	4 (11.1)	6 (8.1)
Cyber Cafe	5 (13.2)	4 (11.1)	9 (12.2)
University Library	1 (2.6)	1 (2.8)	2 (2.7)
Not mentioned	4 (10.5)	-	4 (5.4)

6.1 Non-scoring Digital Literacy Skills (NS-DLS)

According to Table 4, four students of each year scored between 21 to 40 scores. Ten (26.3 percent) first year students scored in the range of 41 to 60 while 4 (11.1 percent) second year students scored in this range. Majority of the students, 60.5 percent of first year and 72.2 percent of second year scored in the range of 61 to 80. Out of 74, just three students scored between the highest range of 81 to 100 in the Non-Scoring Digital Literacy Skills (NS-DLS), however, the maximum score in this category was 86 only.

Table 4: Non-Scoring Digital Literacy Skills (NS-DLS) – All 20 Items

Non Scoring Total Score	Class		Total No. (%age)
	MA – I No. (%age)	MA – II No. (%age)	
1 to 20	-	-	**-**
21 to 40	4 (10.5)	4 (11.1)	**8 (10.8)**
41 to 60	10 (26.3)	4 (11.1)	**14 (18.9)**
61 to 80	23 (60.5)	26 (72.2)	**49 (66.2)**
81 to 100	1 (2.6)	2 (5.6)	**3 (4.1)**
Total	**38 (100.0)**	**36 (100.0)**	**74 (100.0)**
Range Varied from 26 (minimum) to 86 scores (maximum)			

6.2 Scoring Digital Literacy Skills (S-DLS)

Just a single first year student got all the items incorrect in S-DLS (Table 5) and 7 (9.5 percent) students achieved a score of 1 to 5. Majority of the distance learners (59.5 percent) scored in the range of 6 to 10. About one-third (34.2 percent) first year students and 8 (22.2 percent) second year students scored from 11 to 15 and one first year student in the highest category of 16 to 20 (maximum 17 scores). About half (48.6 percent) of the students got satisfactory scores by giving at least ten right answers (50 percent correct), even a few first year students more than the second year ones.

Table 5: Scoring Digital Literacy Scale (S-DLS) – True/False (T/F) Items and Result

Scoring Items Total Score (All 20 T/F items)	Class		Total No. (%age)
	MA – I No. (%age)	MA – II No. (%age)	
Zero	1 (2.6)	-	**1 (1.4)**
1 to 5	4 (10.5)	3 (8.3)	**7 (9.5)**
6 to 10	19 (50.0)	25 (69.4)	**44 (59.5)**
11 to 15	13 (34.2)	8 (22.2)	**21 (28.4)**
16 to 20	1 (2.6)	-	**1 (1.4)**
Total	**38 (100.0)**	**36 (100.0)**	**74 (100.0)**
Range Varied from Zero (minimum) to 17 scores (maximum)			
Result – (Satisfactory or Un-satisfactory)			
Satisfactory	22 (57.9)	14 (38.9)	**36 (48.6)**
Us-satisfactory	16 (42.1)	22 (61.1)	**38 (51.4)**
Total	**38 (100.0)**	**36 (100.0)**	**74 (100.0)**
Satisfactory = 10 correct items (50 percent)			

6.3 Hypotheses Testing

In the non-scoring DLS, Table 6 shows that there is no difference in the digital literacy skills between first and second year students; and also no significant difference between male and female students. Hence, the data failed to reject the first and second null hypotheses.

Table 6: Class wise Hypotheses Testing: Non Scoring – Digital Literacy Scale (NS-DLS) 20 items

Variable	(No.)	Mean	SD	Mean Difference	Equal Variances	Test value (df)	Sig. Value
Class	MA I (38)	62.05	13.277	1.67	Assumed	(t) - 0.536 (72)	.593
	MA II (36)	63.72	13.503				
Gender	Male (47)	63.06	13.898	0.54	Assumed	(t) 0.168 (72)	.867
	Female (27)	62.52	12.503				
Area	Rural (37)	58.41	15.340	(See Area Post Hoc Testing below)	Not Assumed	(F) 4.517^{w} (2, 33.583)	.018
	S-Urban (10)	66.70	7.009				
	Urban (27)	67.56	9.932				
Area – Post Hoc	Rural & S-Urban			8.29	(Games-Howell Test)		.048
	Rural & Urban			9.15			.014
	S-Urban & Urban			0.86			.954
SD=Standard Deviation; **df**=Degrees of Freedom; **Sig.**=Significance Value (Probability); **t**=T-test; ^{w}=Welch F Value (ANOVA)							

Table 6 reveals significant difference in the total non-scoring DLS between students residing in various areas – Rural, Semi-Urban, and Urban. In the total (20 items), the mean score of Rural students was 58.41 followed by 66.70 for Semi-Urban, and 67.56 for Urban students. Hence, the third null hypothesis was rejected. However, the post hoc analyses for the total non-scoring DLS shows that significant difference was found in two cases: (1) between the students of Rural and Semi-Urban students with a mean difference of 8.29 with probability less than .05 (semi-urban students scoring more); and (2) between the students of Rural and Urban areas with a mean difference of 9.15 and probability less than .05 (urban students scoring more), while Semi-Urban and Urban students had no significant difference in their non-scoring DLS.

In the case of scoring DLS, Table 7 showed no significant difference between first and second year students and between male and female students respectively for the total scoring DLS (20 items). Hence, the data failed to reject the fourth and fifth null hypotheses.

Table 7: Class wise Hypotheses Testing: Scoring – Digital Literacy Scale (S-DLS) 20 items

Variable	(No.)	Mean	SD	Mean Difference	Equal Variances	Test value (df)	Sig. Value
Class	MA I (38)	9.26	3.703	0.43	Assumed	(t) 0.578 (72)	.565
	MA II (36)	8.83	2.558				
Gender	Male (47)	9.19	3.567	0.38	Assumed	(t) 0.487 (72)	.627
	Female (27)	8.81	2.418				
Area	Rural (37)	8.00	3.180	(See Area Post Hoc Testing below)	Assumed	(F) 4.990 (2, 71)	.009
	S-Urban (10)	9.30	3.368				
	Urban (27)	10.41	2.650				
Area – Post Hoc	Rural & S-Urban			1.30	(Hochberg's GT2 Test)		.543
	Rural & Urban			2.41			.007
	S-Urban & Urban			1.11			.690

SD=Standard Deviation; **df**=Degrees of Freedom; **Sig.**=Significance Value (Probability); **t**=T-test; **F**=ANOVA

Table 7 reveals significant difference between students of various areas in the total scoring DLS. Rural students had a mean score of 8.00 followed by 9.30 for Semi-Urban students and 10.41 for Urban students. Hence, the sixth null hypothesis was rejected. Post hoc analyses reveal that in this case, only the students of Rural and Urban areas differed significantly with a mean difference of 2.41 and probability less than .05 (Urban students having more scores).

7.0 Findings and Conclusion

Digital literacy skills among distance learners for PG students in public administration were assessed in this paper. The main findings of the study are summarised below.

Nearly one-third of the PG distance learners were daily users of Internet and many of them had started using the computers and Internet for the last one year only (mode = 1 year) but their average years for starting the computers were 4.51 and 3.11 years for Internet. It was also found that on an average they spent about 1.8 hours on the Internet usually (Table 2).

As far as accessing the Internet was concerned, half of the PG students accessed it from Home (50.0 percent) and 47.3 percent from Mobile phones.

In the case of Non-Scoring Digital Literacy Skills (NS-DLS), 66.2 percent students achieved scores in the range of 61 to 80 (Table 4). However, Table 5 revealed that Scoring DLS (S-DLA) were un-satisfactory for more than half of the participants (51.4 percent).

No significant difference was observed between class and gender in the NS-DLS (Table 6) but there were area wise differences in this case (for rural and semi-urban; and rural and urban) where both semi-urban and urban students had more mean scores (than rural students).

In the case of S-DLS (Table 7), no significant difference was found between first and second year students (for class) and (gender) male and female students. Area wise differences were significant in the case of rural and urban students (urban scoring more scores).

8.0 Acknowledgements

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9.0 References

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