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Use of Electronic Information Resources by the Science Teachers of First Grade Colleges in Mysuru Region- A Study

Surendra C.S.[1]; Mallinath Kumbar[2]

Research Scholar, Department of Library and Information Science, University of Mysore, Manasagangotri, Mysuru-570006[1]; Former Professor, Department of Library and Information Science, University of Mysore, Manasagangotri, Mysuru -570006, Karnataka, India[2]

niceguysuri@rediffmail.com; mallinathkumbar@gmail.com

ABSTRACT

The present study was carried out to know the use of electronic information resources by the Science teachers of First Grade colleges in Mysuru region. The study mainly focused on the use of different types of electronic information resources by science teachers, awareness factor regarding electronic information resources, preferred devices to use e-resources, skill improvement for using electronic information resources, preferred methods to improve skill of using electronic information resources, level of satisfaction regarding infrastructure facility for accessing e-resources, prefer search options for searching online electronic information resources, search methods used, problems faced while accessing information from online search and preferred method of reading electronic information resources. For this purpose the authors prepared a well-structured questionnaire as a tool for data collection and the collected questionnaire has been analyzed and presented with useful percentage analysis and suitable tables and figures for presentation of data. The article concluded with summaries of the results highlighting the major findings and suggestions.

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KEYWORDS: Electronic Information Resources, Search Techniques, Search Strategies.

1. INTRODUCTION

Due to rapid advances in Information Technology have unleashed forces, which are shaping and affecting the basic structure of our society. Large scale computerization, enormous growth of electronic information coupled with global access to information via digital telecommunication infrastructure, are some of the underlying factors of the present transformation process. Information is emerging as a critical resource for user activities at all levels, education, research and development, advancing the frontiers of knowledge. Anyone, anytime, anywhere, any information, any format will be the feature of the emerging society. With more and more emphasis towards right to access, any information should become available to any individual on the planet. It is clear that information will occupy the centre stage in governing human life in the coming years making a profound impact on society and

economy. The use of electronic information resources and search patterns has facilitated the fastest access in the process of teaching, learning and research. Nowadays, the science discipline teachers of the First Grade Colleges under the region of Mysuru are gradually adopting new technologies in rapid pace for satisfying their information needs while carrying out academic and research activities.

2 .REVIEW OF LITERATURE

Many similar studies related to the topic have been reviewed, and the literature review gives a broader outlook. Some of the important reviews are presented below**.**

Dass and Jayaraman (2014) conducted a survey on Utilization of E Resources by Faculty Members and Research Scholars in Management Institutions Affiliated to Bharathiar University, Coimbatore. The aim of the study was to describe the utilization of information e resources by the faculty members and research scholars as the users of various management institutions affiliated to Bharathiar University. A questionnaire method is used to identify the impressions of faculty members and research scholars towards the awareness of library services, adequate of library e resources, and their views on library services. This paper also examines the satisfaction levels of users about e resources, on line database, etc., and services provided by the library. Further an attempt has also been made to highlight the findings of the study and conclusion have based on the analysis of the data.

Kiran Kumar and Kumbar (2015) conducted a study on autonomous engineering institutions affiliated to Visvesvaraya Technological University in Karnataka to examine the factors that affect the optimum utilization of electronic information resources and search pattern. The study mainly focused on the use of different types of electronic information resources by the faculty, source of awareness, learn to use, problems faced, purpose of use, preferred search engines and search methods for effective retrieval of electronic information resources. The science teachers are well aware of existing resources and library services. But they need training in the area of information search and retrieval in the web environment.

Mani and Thirumagal.(2016) To Study examines the existence of various E-resources, awareness about E-resources, preference to E-resources, Assess Points of E- resources problems faced while accessing the E-resources and purpose of E-resources usage in student at Self-financing Engineering College Libraries in Tirunelveli District, Tamil Nadu.

Shukla and Mishra (2011) wanted to determine the extent to which research scholars of Institute of Technology, Banaras Hindu University are aware and make use of e- resources, to highlight the problems faced by them in accessing e-resources, their views on usefulness of e resources compared to that of print resources and the place from where they prefer to access information. A well-structured questionnaire was administered among research scholars of Institute of Technology, Banaras Hindu University to collect the necessary data, keeping in view the objective of the study. Research scholars prefer e- resources against print resources because of its various good features, for their research progress and are looking in future to have more e-resources access within university campus with better internet connectivity.

3. Objectives of the Study

The objectives behind conducting the present study are:

1. To identify various types of electronic information resources available for the science teachers of First Grade colleges in Mysuru region.
2. To know the awareness factor regarding electronic information resources by the science teachers.

3. To know the preferred devices used for accessing e-resources, formats preferred for downloading information and method of reading electronic resources.
4. To know the preferred methods to improve skill of using electronic information resources.
5. To know the level of satisfaction regarding infrastructure facility for accessing e-resources.
6. To find out the preferred search options and search methods used for accessing electronic information resources.
7. To know the problems faced while accessing information from online search and preferred version of information resources preferred by the teachers.
8. To suggest ways and means for maximizing the use of electronic information resources by the Science teachers of First Grade colleges in Mysuru region.

4. METHODOLOGY

The study's scope is restricted to use of electronic information resources by the science teachers of First Grade colleges in Mysuru region. At present Mysuru region has a total of 47 First Grade colleges having science discipline. All the 47 colleges offering science course are covered in this study. The survey method was adopted using questionnaire as a tool for data collection. A structured questionnaire was designed and distributed among the science discipline teachers of the First Grade colleges at Mysuru region. Out of 666 questionnaires distributed among science teachers, 553 filled-in questionnaires were received back, amounting to 83.03%. In addition to the questionnaire method, interview and observation method were also used to collect required information.

5. DATA ANALYSIS

The study use statistical techniques for analysis of data and presented in the form of tables and figures.

5.1. Designation Wise Distribution

The Table-5.1 depicts that a very high number of science teachers 201 (36.35%) are 'Assistant Professors', followed by 188 (34.00%) are 'Guest Faculty', 143 (25.86%) are 'Associate Professors', and 21 (03.80%) are 'Professors'.

Table-5.1: Designation Wise Distribution

Designation	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)
Guest Faculty	101 (33.44)	62 (30.10)	25 (55.56)	188 (34.00)
Assistant Professor	112 (37.09)	69 (33.50)	20 (44.44)	201 (36.35)
Associate Professor	77 (25.50)	66 (32.04)	00 (00.00)	143 (25.86)
Professor	12 (03.97)	09 (04.37)	00 (00.00)	21 (03.80)
Note: Figures in parentheses indicate percentage				

5.2. Gender Wise Distribution

The Table-5.2 shows that out of the 553 science teachers, 281 (50.81%) are 'Male', and the remaining 272 (49.19%) are 'Female'.

Table-5.2: Gender Wise Distribution

Gender	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)
Male	166 (54.97)	94 (45.63)	21 (46.67)	281 (50.81)
Female	136 (45.03)	112 (54.37)	24 (53.33)	272 (49.19)
Note: Figures in parentheses indicate percentage				

5.3. Types of Electronic Information Resources Used and Frequency of Access

Table-5.3 depicts that about 326 (58.95%) of science teachers opine as 'Yes' i.e. they use e-journals and 227 (41.04%) opine an 'No', i.e. they do not use e-journals. Among them 146 (44.78%) of science teachers use e-journals 'Once in a week', followed by 114 (34.96%) '2-3 times in a week', 36 (11.04%) '2-3 times in a month', 18 (05.52%) use 'Daily' and 12 (03.68%) use Once in a month.

About 294 (53.16%) of science teachers opine as 'Yes' i.e. they use e-books and 259 (46.83%) opine an 'No', i.e. they do not use e-books. Among them 142 (48.29%) of science teachers use e-books '2-3 times in a week', followed by 99 (33.67%) 'Once in a week', 21 (07.14%) 'Daily', 18 (06.12%) use '2-3 times in a month' and 14 (04.76%) use 'Once in a month'.

About 106 (19.16%) of science teachers opine as 'Yes' i.e. they use e-conference proceedings and 447 (80.83%) opine an 'No', i.e. they do not use e-conference proceedings. Among them 35 (33.01%) of science teachers use e-conference proceedings '2-3 times in a month', followed by 23 (21.69%) 'Once in a week', 20 (18.86%) '2-3 times in a week', 19 (17.92%) use 'Once in a month' and 09 (08.49%) use 'Daily'.

About 142 (25.67%) of science teachers opine as 'Yes' i.e. they use e-tutorials and 411 (74.32%) opine as 'No', i.e. they do not use e-tutorials. Among them 41 (28.87%) of science teachers use e-tutorials '2-3 times in a week', followed by 34 (23.94%) 'Once in a week', 29 (20.42%) 'Daily', 26 (18.30%) use '2-3 times in a month' and 12 (08.45%) use 'Once in a month'.

About 259 (46.83%) of science teachers opine as 'Yes' i.e. they use e-databases and 294 (53.16%) opine as 'No', i.e. they do not use e-databases. Among them 98 (37.83%) of science teachers use e- databases '2-3 times in a week', followed by 80 (30.88%) 'Once in a week', 36 (13.89%) 'Once in a month', 31 (11.96%) use '2-3 times in a month' and 14 (05.40%) use 'Daily'.

About 105 (18.98%) of science teachers opine as 'Yes' i.e. they use Blogs, Wikis, RSS feeds and 448 (81.01%) opine as 'No', i.e. they do not use Blogs, Wikis, RSS feeds. Among them 37 (35.23%) of science teachers use

Blogs, Wikis, RSS feeds 'Once in a week', followed by 31 (29.52%) '2-3 times in a week', 18 (17.14%) 'Once in a month', 15 (14.28%) use '2-3 times in a month' and 04 (03.80%) use 'Daily'.

About 194 (35.08%) of science teachers opine as 'Yes' i.e. they use open source literature and 359 (64.91%) opine as 'No', i.e. they do not use open source literature. Among them 95 (48.96%) of science teachers use open source literature 'Once in a week', followed by 63 (32.47%) '2-3 times in a week', 17 (08.76%) 'Daily', 11 (05.67%) use '2-3 times in a month' and 08 (04.12%) use 'Once in a month'.

About 176 (31.82%) of science teachers opine as 'Yes' i.e. they use e- reference resources like dictionaries, encyclopedias etc and 377 (68.17%) opine as 'No', i.e. they do not use e- reference resources like dictionaries, encyclopedias etc and. Among them 71 (40.34%) of science teachers use e- reference resources like dictionaries, encyclopedias etc and 'Once in a week', followed by 64 (36.36%) '2-3 times in a week', 23 (13.06%) 'Daily', 13 (07.38%) use '2-3 times in a month' and 05(02.84%) use 'Once in a month'.

Table-5.3: Types of Electronic Information Resources Used and Frequency of Access

Electronic Information Resources	**Usage (N=553)**		**Frequency of Usage ***				
	Yes	**No**	**5**	**4**	**3**	**2**	**1**
E-Journals	326 (58.95)	227 (41.04)	18 (05.52)	114 (34.96)	146 (44.78)	36 (11.04)	12 (03.68)
E-Books	294 (53.16)	259 (46.83)	21 (07.14)	142 (48.29)	99 (33.67)	18 (06.12)	14 (04.76)
E-Conference Proceedings	106 (19.16)	447 (80.83)	09 (08.49)	20 (18.86)	23 (21.69)	35 (33.01)	19 (17.92)
E-Tutorials	142 (25.67)	411 (74.32)	29 (20.42)	41 (28.87)	34 (23.94)	26 (18.30)	12 (08.45)
E- Databases	259 (46.83)	294 (53.16)	14 (05.40)	98 (37.83)	80 (30.88)	31 (11.96)	36 (13.89)
Blogs, Wikis, RSS feeds	105 (18.98)	448 (81.01)	04 (03.80)	31 (29.52)	37 (35.23)	15 (14.28)	18 (17.14)
Open Source literature	194 (35.08)	359 (64.91)	17 (08.76)	63 (32.47)	95 (48.96)	11 (05.67)	08 (04.12)
E- Reference resources (Dictionaries, encyclopedias etc.)	176 (31.82)	377 (68.17)	23 (13.06)	64 (36.36)	71 (40.34)	13 (07.38)	05 (02.84)
$\chi 2$=391.662, df=7, P=0.00			$\chi 2$=216.664, df=28, P=0.00				
Note: 5: Daily, 4: 2-3 times in a week, 3: Once in a week, 2: 2-3 times in a month, 1: Once in a month							
Note: Figures in parentheses indicate percentage							

The $\chi 2$-test conducted for 07 d.f. at the 5% level of significance shows that there is a significant relationship between usage of electronic information resources and types of colleges ($\chi 2=391.662$, $p=0.00<0.05$). It is clear that usage of electronic information resources is dependent upon types of colleges.

The $\chi 2$-test conducted for 28 d.f. at the 5% level of significance shows that there is a significant relationship between frequency of usage of electronic information resources and types of colleges ($\chi 2=216.664$, $p=0.00<0.05$). It is clear that frequency of usage of electronic information resources is dependent upon types of colleges.

5.4. Awareness Factor Regarding Electronic Information Resources

It is clear from the Table-5.4 and Figure-5.1 that 242 (43.76%) of science teachers become aware of newly available electronic resources through cited in report/ journals/conference papers with Mean 1.49174 and SD 0.65708, followed by 216 (39.06%) referred to me by the librarian with Mean 1.75926 and SD 0.73749, 208 (37.61%) by serendipity, by browsing or looking for materials with Mean 1.60096 and SD 0.67894, 189 (34.18%) Announcements in Journals with Mean 1.52910 and SD 0.70931, 169 (30.56%) E-mail alerts form publishers/distributors etc with Mean 1.60355 and SD 0.66367, 158 (28.57%) by personal communication with friends, subject experts and resource persons with Mean 1.71519 and SD 0.77207, 150 (27.12%) bibliographical database searching like indexing and abstracting databases with Mean 1.52667 and SD 0.67029.

Table-5.4: Awareness Factor Regarding Electronic Information Resources

Awareness Factor	**Government (N=302)**	**Private Aided (N=206)**	**Private Unaided (N=45)**	**Total (N=553)**	**Mean**	**SD**
Bibliographical Database Searching (Indexing and Abstracting Databases)	86 (28.48)	49 (23.79)	15 (33.33)	150 (27.12)	1.52667	0.67029
Announcements in Journals	113 (37.42)	52 (25.24)	24 (53.33)	189 (34.18)	1.52910	0.70931
Cited in report/ journals/conference papers	145 (48.01)	75 (36.41)	22 (48.89)	242 (43.76)	1.49174	0.65708
Referred to me by the librarian	91 (30.13)	86 (41.75)	39 (86.67)	216 (39.06)	1.75926	0.73749
By serendipity, by browsing or looking for materials	106 (35.10)	79 (38.35)	23 (51.11)	208 (37.61)	1.60096	0.67894
E-mail alerts form publishers/distributors etc.	84 (27.81)	68 (33.01)	17 (37.78)	169 (30.56)	1.60355	0.66367
By personal communication with friends, subject experts and resource persons	76 (25.17)	51 (24.76)	31 (68.89)	158 (28.57)	1.71519	0.77207
Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%						
$\chi 2=33.813$, df=12, P=0.00072189						

The $\chi 2$-test conducted for 12 d.f. at the 5% level of significance shows that there is a significant relationship between awareness factor regarding electronic information resources and types of colleges ($\chi 2$=33.813, p=0.00072189<0.05). It is clear that awareness factor regarding electronic information resources is dependent upon types of colleges.

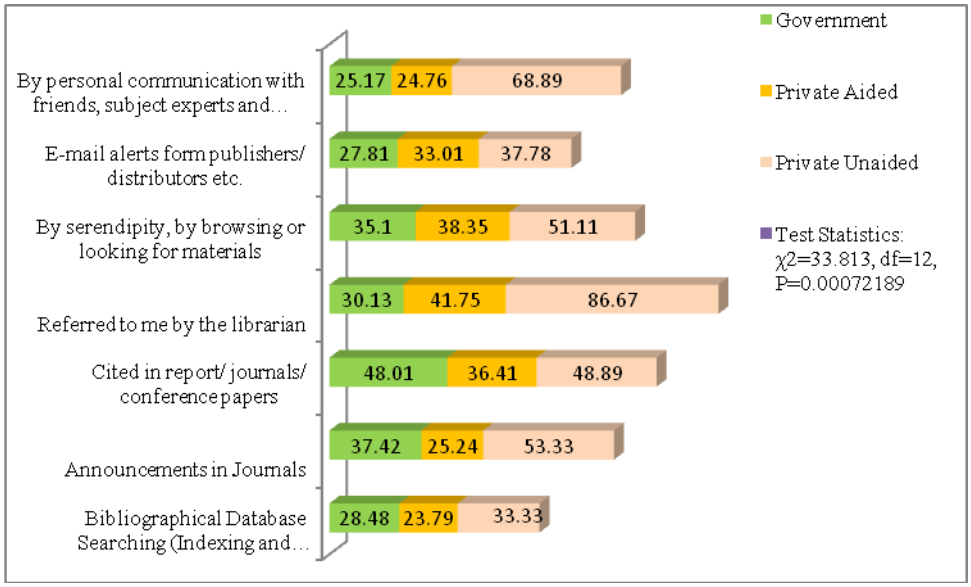


Figure-5.1: Awareness Factor on E-Information Resources

5.5. Preferred Devices to Use E-Resources.

The Table-5.5 and 5.2 shows that 421 (76.13%) of science teachers prefer 'Smart Phone' to access e-resources with Mean 1.61283 and SD 0.66449, followed by 413 (74.68%) prefer 'Laptops' with Mean 1.59806 and SD 0.59310, 242 (43.76%) prefer 'Personal Computers' with Mean 1.61157 and SD 0.72010, 53 (09.58%) of science teachers prefer 'Tablets' to access e-resources with Mean 1.49057 and SD 0.66226.

Table-5.5: Preferred Devices to Use E-Resources.

Device Used to Access E-Resources at Home	**Government (N=302)**	**Private Aided (N=206)**	**Private Unaided (N=45)**	**Total (N=553)**	**Mean**	**SD**
PC	128 (42.38)	80 (38.83)	34 (75.56)	242 (43.76)	1.61157	0.72010
Laptop	189 (62.58)	201 (97.57)	23 (51.11)	413 (74.68)	1.59806	0.59310
Tablets	32 (10.60)	16 (07.77)	05 (11.11)	53 (09.58)	1.49057	0.66226
Smart Phone	206 (68.21)	172 (83.50)	43 (95.56)	421 (76.13)	1.61283	0.66449
Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%						
$\chi 2$=26.382, df=6, P=0.00018896						

The χ2-test conducted for 06 d.f. at the 5% level of significance shows that there is a significant relationship between preferred devices to use e-resources and types of colleges (χ2=26.382, p=0.00018896<0.05). It is clear that preferred devices to use e-resources are dependent upon types of colleges.

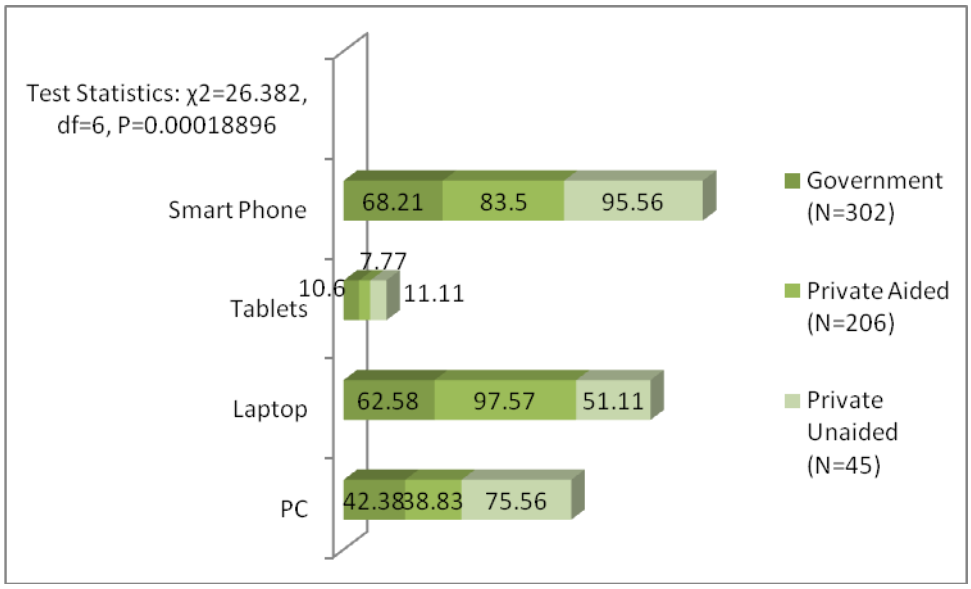


Figure-5.2: Preferred Devices to Use E-Resources.

5.6. Skill Improvement for Using Electronic Information Resources.

The Table-5.6 shows the results in this regard. About 256 (46.29%) of science teachers opine as 'Yes' i.e. they want to improve skill of using electronic information resources with Mean 1.62109 and SD 0.61949 and 297 (53.71%) of science teachers opine as 'No' i.e. they **don't want to improve skill of using electronic information resources with Mean 1.46128 and SD** 0.65083

Table-5.6: Skill Improvement for Using Electronic Information Resources.

Improve Skill of Using Electronic Information Resources	**Government (N=302)**	**Private Aided (N=206)**	**Private Unaided (N=45)**	**Total (N=553)**	**Mean**	**SD**
Yes	116 (38.41)	121 (58.74)	19 (42.22)	256 (46.29)	1.62109	0.61949
No	186 (61.59)	85 (41.26)	26 (57.78)	297 (53.71)	1.46128	0.65083
Note: Figures in parentheses indicate percentage						
χ2=20.679, df=2, P=0.00003233						

The χ2-test conducted for 02 d.f. at the 5% level of significance shows that there is a significant relationship between skill improvement for using electronic information resources and types of colleges (χ2=20.679, p=0.00003233<0.05). It is clear that skill improvement for using electronic information resources is dependent upon types of colleges.

5.7. Preferred Methods to Improve Skill of Using Electronic Information Resources.

The Table-5.7and Figure-5.3 indicates that out of 256 science teachers, 156 (60.93%) science teachers want to improve use of Electronic Information Resources skills by attending orientation/ training programmes with Mean 1.61538 and SD 0.66469, 139 (54.29%) attending workshops/ seminars with Mean 1.74101 and SD 0.63855, 123 (48.04%) discussing with experts with Mean 1.54472 and SD 0.68967, 99 (38.67%) discussing with experts with Mean 1.71717 and SD 0.60370, 63 (24.60%) e-mail assistance with Mean 1.57143 and SD 0.63532, 60 (23.43%) science teachers want to improve use of Electronic Information Resources skills by referring user manuals/guides etc with Mean 1.78333 and SD 0.79774.

Table-5.7: Preferred Methods to Improve Skill of Using Electronic Information Resources.

Preferred methods	**Government (N=116)**	**Private Aided (N=121)**	**Private Unaided (N=19)**	**Total (N=256)**	**Mean**	**SD**
Attending workshops/ seminars	51 (43.96)	73 (60.33)	15 (78.94)	139 (54.29)	1.74101	0.63855
Discussing with experts	70 (60.34)	39 (32.23)	14 (73.68)	123 (48.04)	1.54472	0.68967
Discussing with colleagues	36 (31.03)	55 (45.45)	08 (42.10)	99 (38.67)	1.71717	0.60370
Attending Orientation/ training programmes	76 (65.51)	64 (52.89)	16 (84.21)	156 (60.93)	1.61538	0.66469
E-mail assistance	32 (27.58)	26 (21.48)	05 (26.31)	63 (24.60)	1.57143	0.63532
Referring user manuals/guides etc.	27 (23.27)	19 (15.70)	14 73.68)	60 (23.43)	1.78333	0.79774
Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%						
$\chi 2=30.024$, df=10, P=0.00084893						

The $\chi 2$-test conducted for 10 d.f. at the 5% level of significance shows that there is a significant relationship between preferred methods to improve skill of using electronic information resources and types of colleges ($\chi 2=30.024$, $p=0.00084893<0.05$). It is clear that preferred methods to improve skill of using electronic information resources are dependent upon types of colleges.

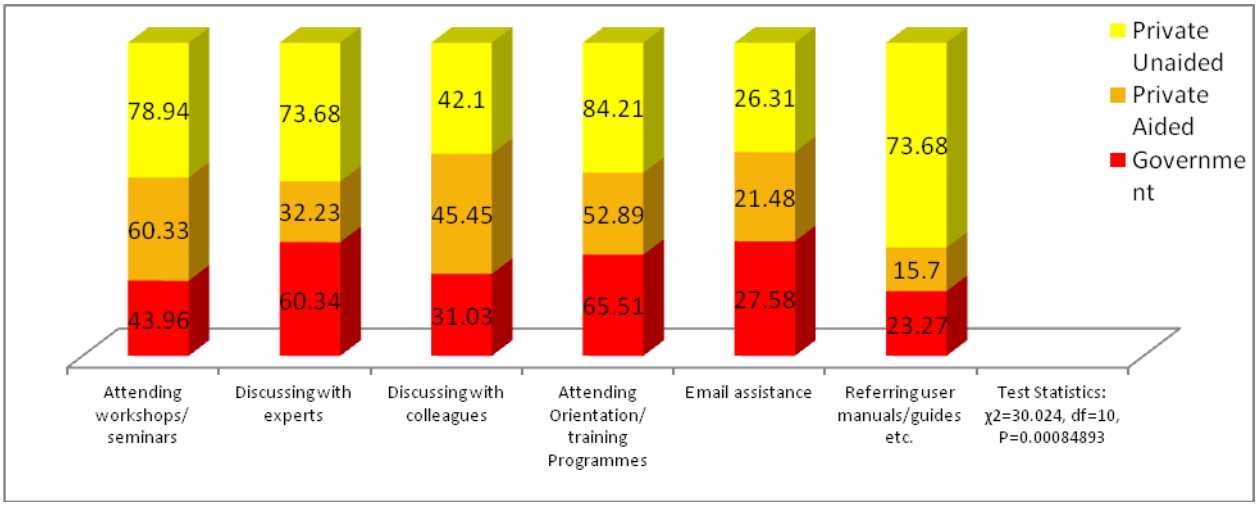


Figure-5.3: Preferred Methods to Improve Skill of Using Electronic Information Resources.

5.8. Satisfied with Infrastructure Facility Provided by College for Accessing E-Resources

The Table-5.8 depicts that about 301 (54.43%) science teachers opinion as 'Yes' i.e. they are satisfied with infrastructure facility provided by college for accessing e-resources with Mean 1.47176 and SD 0.64958 and 252 (45.57%) science teachers opinion as 'No' i.e. they are not satisfied with infrastructure facility provided by college for accessing e-resources with Mean 1.61111 and SD 0.62326.

Table-5.8: Satisfied with Infrastructure Facility Provided by College for Accessing E-Resources

Satisfied with Infrastructure Facility Provided by College for Accessing E-Resources	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)	Mean	SD
Yes	185 (61.26)	90 (43.69)	26 (57.78)	301 (54.43)	1.47176	0.64958
No	117 (38.74)	116 (56.31)	19 (42.22)	252 (45.57)	1.61111	0.62326
Note: Figures in parentheses indicate percentage						
$\chi2$=15.461, df=2, P=0.00043922						

The $\chi2$-test conducted for 02 d.f. at the 5% level of significance shows that there is a significant relationship between satisfied with infrastructure facility provided by college for accessing e-resources and types of colleges ($\chi2$=15.461, p=0.00043922<0.05). It is clear that satisfied with infrastructure facility provided by college for accessing e-resources is dependent upon types of colleges.

5.9. Level of Satisfaction Regarding Infrastructure Facility for Accessing E-Resources.

The Table-5.9 and Figure-5.4 shows that out of 301 respondents to this question, 101 (33.55%) opine that they are 'Satisfied' with the Infrastructure facility provided by the college for accessing e-resources with Mean 1.32673 and SD 0.61514, followed by 93 (30.89%) members of the faculty opined that they are 'Extremely Satisfied' with Mean 1.53763 and SD 0.69652, 69 (22.92%) members of the faculty opined that they are 'Moderately Satisfied' with

Mean 1.62319 and SD 0.56726, 38 (12.62%) members of the faculty are 'Slightly Satisfied' with the Infrastructure facility provided by the college for accessing e-resources with Mean 1.42105 and SD 0.67401.

Table-5.9: Level of Satisfaction Regarding Infrastructure Facility for Accessing E-Resources.

Level of Satisfaction Regarding Infrastructure Facility Made Available	**Government (N=185)**	**Private Aided (N=90)**	**Private Unaided (N=26)**	**Total (N=301)**	**Mean**	**SD**
Extremely satisfied(100%)	54 (29.18)	28 (31.11)	11 (42.30)	93 (30.89)	1.53763	0.69652
Satisfied(75%)	76 (41.08)	17 (18.88)	08 (30.76)	101 (33.55)	1.32673	0.61514
Moderately satisfied(50%)	29 (15.67)	37 (41.11)	03 (11.53)	69 (22.92)	1.62319	0.56726
Slightly satisfied(25%)	26 (14.05)	08 (08.88)	04 (15.38)	38 (12.62)	1.42105	0.67401
Note: Figures in parentheses indicate percentage						
$\chi 2$=30.372, df=6, P=0.0000334						

The $\chi 2$-test conducted for 06 d.f. at the 5% level of significance shows that there is a significant relationship between level of satisfaction regarding infrastructure facility for accessing e-resources and types of colleges ($\chi 2$=30.372, p=0.0000334<0.05). It is clear that level of satisfaction regarding infrastructure facility for accessing e-resources is dependent upon types of colleges.

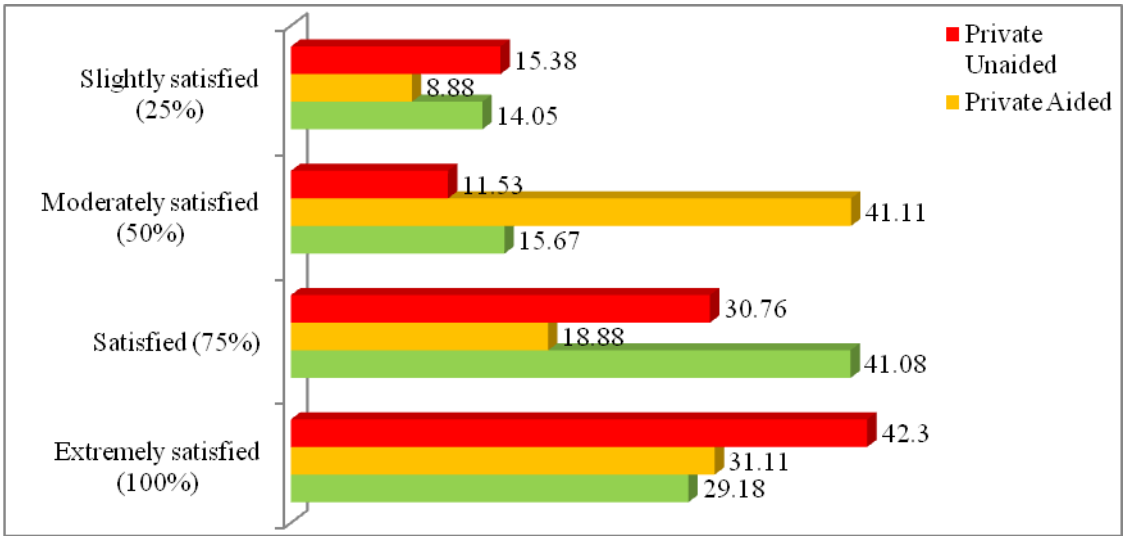


Figure-5.4: Level of Satisfaction Regarding Infrastructure Facility for Accessing E-Resources.

5.10. Prefer Search Options for Searching Online Electronic Information Resources.

The Table-5.10 shows that the 'Basis/ Simple Search' option is used by 207 (37.43%) science teachers members with Mean 1.68116 and SD 0.66288, followed by 105 (18.99%) 'Advance Search' with Mean 1.62857 and SD

0.67974. About 241 (43.58%) science teachers prefer and use both 'Basic and Advance search' options with Mean 1.36929 and SD 0.56205.

Table-5.10: Prefer Search Options for Searching Online electronic information resources.

Preferred Search Options	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)	Mean	SD
Basic /Simple search	89 (29.47)	95 (46.12)	23 (51.11)	207 (37.43)	1.68116	0.66288
Advance search	51 (16.89)	42 (20.39)	12 (26.67)	105 (18.99)	1.62857	0.67974
Both	162 (53.64)	69 (33.50)	10 (22.22)	241 (43.58)	1.36929	0.56205
Note: Figures in parentheses indicate percentage						
$\chi 2$=30.36, df=4, P=0.00000413						

The $\chi 2$-test conducted for 04 d.f. at the 5% level of significance shows that there is a significant relationship between prefer search options for searching online electronic information resources and types of colleges ($\chi 2$=30.36, p=0.00000413<0.05). It is clear that prefer search options for searching online electronic information resources is dependent upon types of colleges.

5.11. Preferred Search Methods.

The Table-5.11and Figure-5.5 shows that about 202 (36.53%) science teachers 'Most Frequently' use author search, followed by 225 (40.69%) science teachers 'Frequently' use title search, 162 (29.29%) science teachers 'Uncertainly' use subject search, 253 (45.75%) science teachers 'Frequently' use keywords search, 219 (39.60%) science teachers 'Uncertainly' use publisher search, 254 (45.93%) science teachers 'Uncertainly' use author address search, 179 (32.37%) science teachers 'Uncertainly' use abstract search and 158 (28.57%) of science teachers 'Uncertainly' use Keywords/Title/Abstract search.

Table-5.11: Search Methods

Search Methods	Number (N=553)				
	MF	F	LF	U	DU
Author	202 (36.53)	197 (35.62)	118 (21.34)	31 (05.61)	05 (00.90)
Title	201 (36.35)	225 (40.69)	99 (17.90)	25 (04.52)	03 (00.54)
Subject	86 (15.55)	126 (22.78)	141 (25.50)	162 (29.29)	38 (06.87)
Keywords	224 (40.51)	253 (45.75)	46 (08.32)	23 (04.16)	07 (01.27)

Publisher	104 (18.81)	72 (13.02)	116 (20.98)	219 (39.60)	42 (07.59)
Author address	56 (10.13)	72 (13.02)	79 (14.29)	254 (45.93)	92 (16.64)
Abstract	102 (18.44)	99 (17.90)	162 (29.29)	179 (32.37)	11 (01.99)
Keywords/Title/Abstract	119 (21.52)	131 (23.69)	125 (22.60)	158 (28.57)	20 (03.62)
MF- Most frequently, F- Frequently, LF- Less frequently, U- Uncertain, DU-Do not use					
Note: Figures in parentheses indicate percentage					
$\chi 2$=1204.616, df=28, P=0.00					

The $\chi 2$-test conducted for 28 d.f. at the 5% level of significance shows that there is a significant relationship between search methods and types of colleges ($\chi 2$=1204.616, p=0.00<0.05). It is clear that search methods are dependent upon types of colleges.

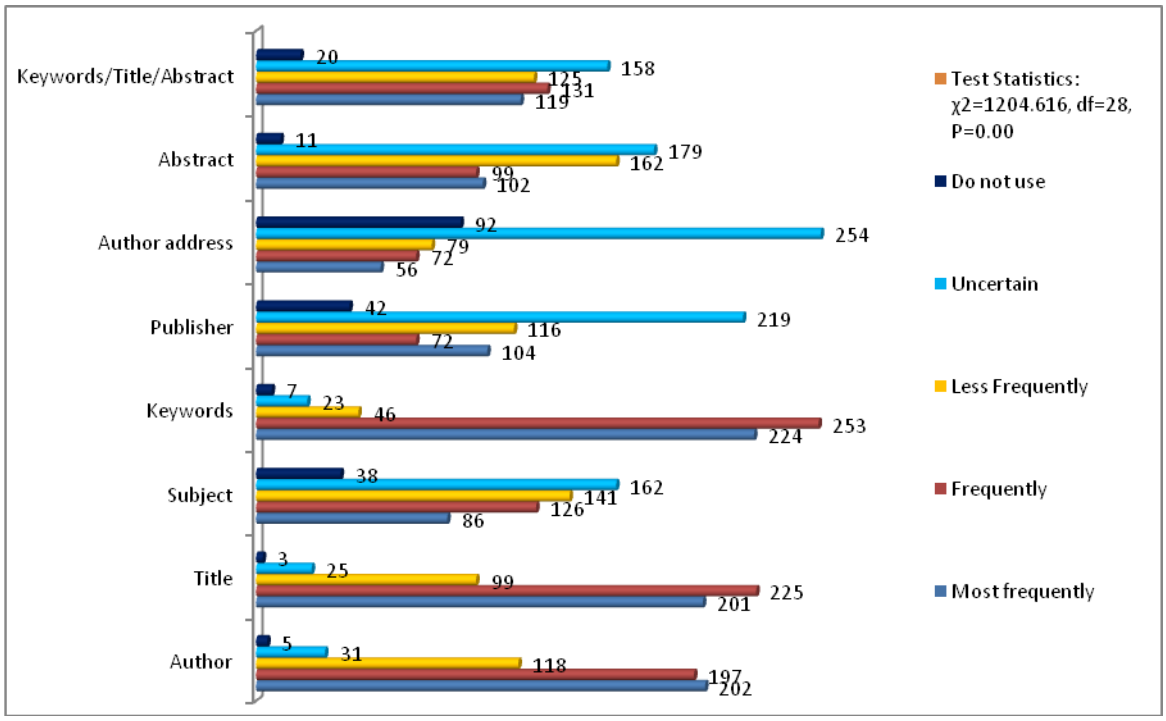


Figure-5.5: Search Methods

5.12. Problems Faced While Accessing Information from Online Search.

The Table-5.12 and Figure-5.6 shows that 367 (66.37%) of science teachers face problem due to unfamiliarity with the search methods with Mean 1.43597 and SD 0.58184, followed by 324 (58.59%) science teachers face problem due to lack of any online help with Mean 1.41975 and SD 0.57979, 280 (50.63%) science teachers face problem due to too much time consuming for searching the information with Mean 1.50000 and SD 0.59161, 248 (44.85%) science teachers face problem due speed of access is slow with Mean 1.56048 and SD 0.66324, 192 (34.72%)

science teachers face problem due unorganized elements/contents in a search page with Mean 1.63542 and SD 0.68647.

Table-12: Problems Faced While Accessing Information from Online Search.

Online Search	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)	Mean	SD
Lack of any online help	203 (67.22)	106 (51.46)	15 (33.33)	324 (58.59)	1.41975	0.57979
Unfamiliarity with the search methods	224 (74.17)	126 (61.17)	17 (37.78)	367 (66.37)	1.43597	0.58184
Unorganized elements/contents in a search page	93 (30.79)	76 (36.89)	23 (51.11)	192 (34.72)	1.63542	0.68647
Too much time consuming for searching the information	154 (50.99)	112 (54.37)	14 (31.11)	280 (50.63)	1.50000	0.59161
Speed of access is slow	133 (44.04)	91 (44.17)	24 (53.33)	248 (44.85)	1.56048	0.66324
Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%						
$\chi 2=26.32$, df=8, P=0.00092571						

The $\chi 2$-test conducted for 08 d.f. at the 5% level of significance shows that there is a significant relationship between problems faced while accessing information from online search and types of colleges ($\chi 2=26.32$, $p=0.00092571<0.05$). It is clear that problems faced while accessing information from online search is dependent upon types of colleges.

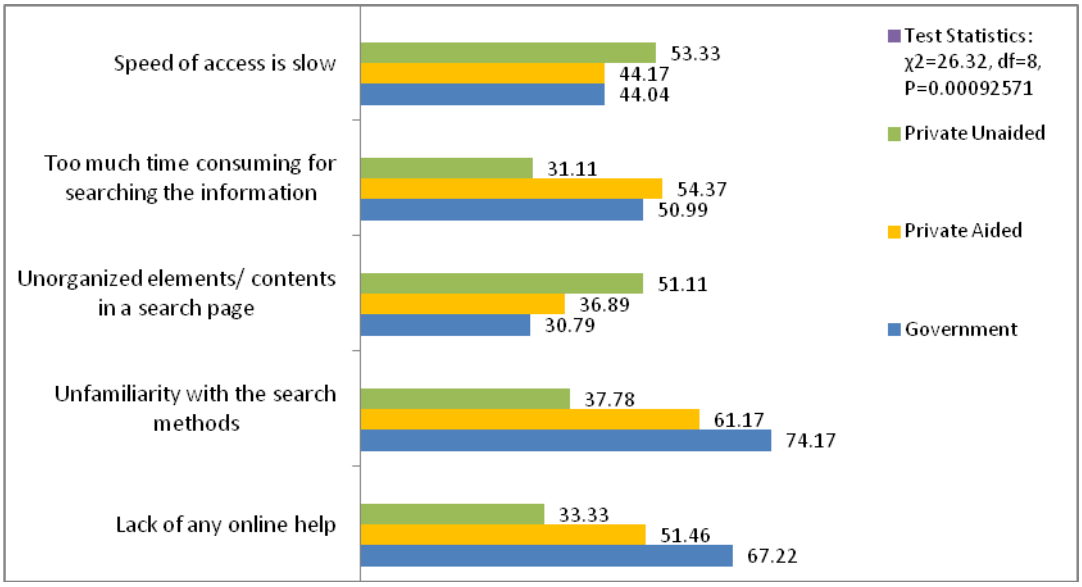


Figure 5.6: Problems Faced While Accessing Information from Online Search.

5.13. Preferred Version of Information Resources

The Table-5.13 and Figure-5.7 depicts that 277 (50.09%) science teachers prefer 'Both print and electronic version' of information resources with Mean 1.41516 and SD 0.58642, 160 (28.93%) science teachers prefer 'Print version' of information resources with Mean 1.68175 and SD 0.67890, 116 (20.98%) science teachers prefer 'Electronic version' of information resources with Mean 1.70690 and SD 0.65676.

Table-5.13: Preferred Version of Information Resources

Prefer Version	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)	Mean	SD
Print versions	79 (26.16)	63 (30.58)	18 (40.00)	160 (28.93)	1.61875	0.67890
Electronic versions	47 (15.56)	56 (27.18)	13 (28.89)	116 (20.98)	1.70690	0.65676
Both print and electronic version	176 (58.28)	87 (42.23)	14 (31.11)	277 (50.09)	1.41516	0.58642
Note: Figures in parentheses indicate percentage						

The $\chi 2$-test conducted for 04 d.f. at the 5% level of significance shows that there is a significant relationship between preferred version of information resources and types of colleges ($\chi 2=22.066$, $p=0.00019445<0.05$). It is clear that preferred version of information resources is dependent upon types of colleges.

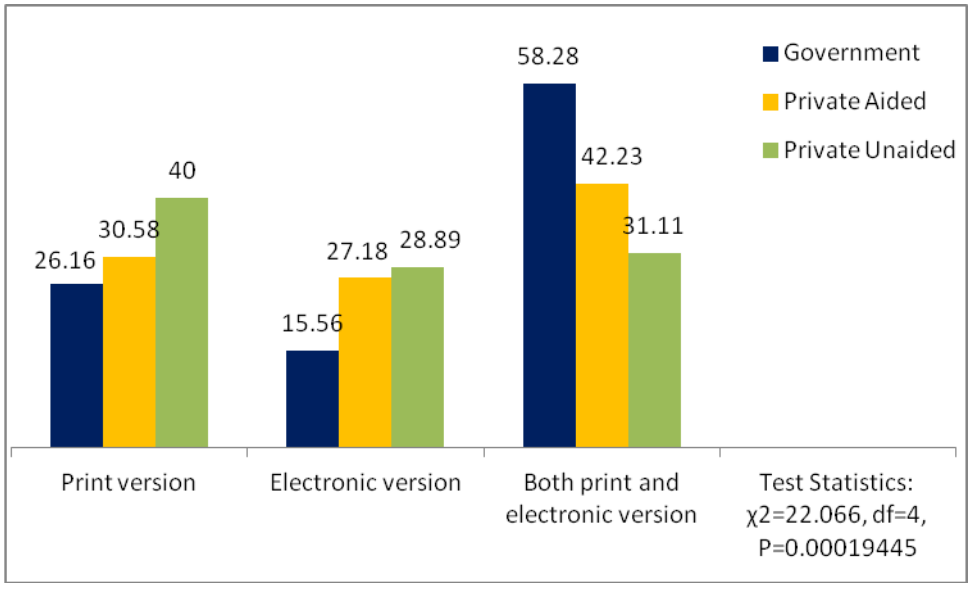


Figure-5.7: Preferred Version of Information Resources

5.14. Preferred Format for Downloading Information.

The Table-5.14 Figure-5.8 depicts that 477 (86.26%) science teachers prefer 'PDF' file formats for downloading Electronic Information Resources with Mean 1.50734 and SD 0.63646, followed by 297 (53.71%) science teachers prefer 'PPT' with Mean 1.68687 and SD 0.67639, 257 (46.47%) science teachers prefer 'HTML' with Mean 1.60311 and SD 0.65279, 234 (42.31%) science teachers prefer 'MS Word' with Mean 1.54274 and SD 0.59223, 87 (15.73%) science teachers prefer 'Rich Text Format' with Mean 1.42529 and SD 0.57998, 16 (02.89%) science teachers prefer others like OCR, SGML, Post Script etc with Mean 1.50000 and SD 0.79057.

Table-5.14: Preferred Format for Downloading Information.

Preferred File Formats	**Government (N=302)**	**Private Aided (N=206)**	**Private Unaided (N=45)**	**Total (N=553)**	**Mean**	**SD**
PDF	272 (90.07)	168 (81.55)	37 (82.22)	477 (86.26)	1.50734	0.63646
HTML	126 (41.72)	107 (51.94)	24 (53.33)	257 (46.47)	1.60311	0.65279
MS-Word	119 (39.40)	103 (50.00)	12 (26.67)	234 (42.31)	1.54274	0.59223
Rich Text Format	54 (17.88)	29 (14.08)	04 (08.89)	87 (15.73)	1.42529	0.57998
PPT	129 (42.72)	132 (64.08)	36 (80.00)	297 (53.71)	1.68687	0.67639
Others like OCR, SGML, Post Script	11 (03.64)	02 (00.97)	03 (06.67)	16 (02.89)	1.50000	0.79057
Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%						
$\chi 2$= 31.375, df=10, P=0.00050863						

The $\chi 2$-test conducted for 10 d.f. at the 5% level of significance shows that there is a significant relationship between preferred format for downloading information and types of colleges ($\chi 2$=31.375, p=0.00050863<0.05). It is clear that preferred format for downloading information is dependent upon types of colleges.

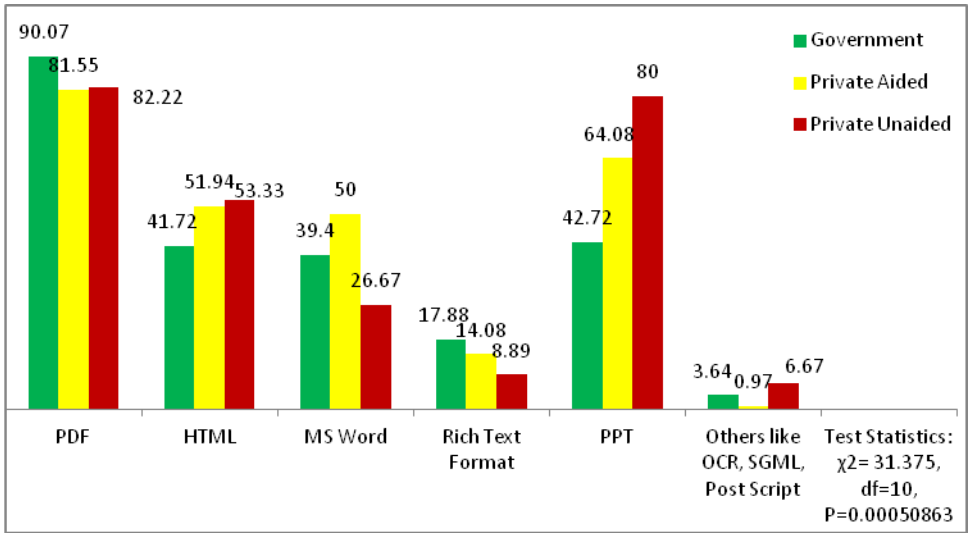


Figure-5.8: Preferred Format for Downloading Information.

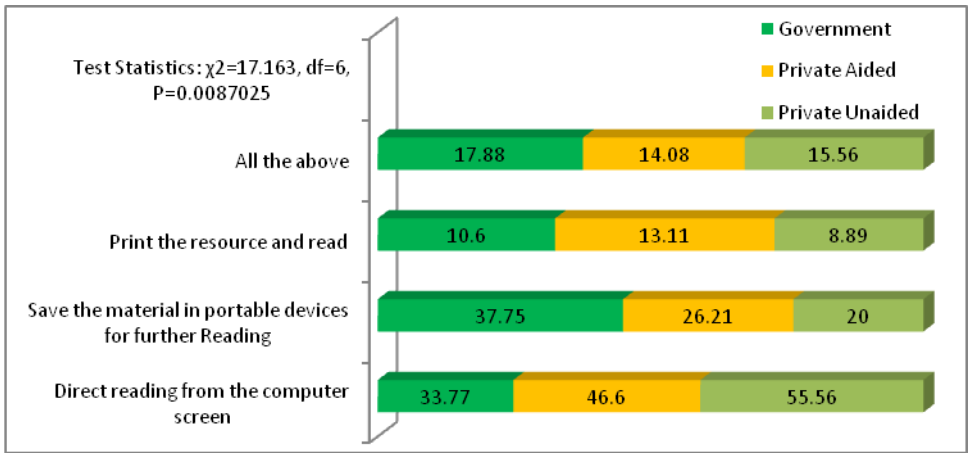
5.15. Preferred Method of Reading Electronic Resources.

The Table-5.15 and Figure-5.9 depicts that 223 (40.33%) of science teachers prefer 'Direct reading of information resources from the computer screen' with Mean 1.6547 and SD 0.67103, followed by 177 (32.01%) of science teachers prefer to 'Save the material in devices for further reading' with Mean 1.40678 and SD 0.58567, 90 (16.27%) of science teachers prefer all the three reading methods like 'Direct reading from the computer screen', 'To save the material for further reading' and 'Print the resource and read' with Mean 1.47778 and SD 0.63644. This is followed by 63 (11.39%) of science teachers prefer to 'Print the Electronic Information Resources and read' with Mean 1.55556 and SD 0.61147.

Table-5.15: Preferred Method of Reading Electronic Resources.

Preferred Method of Reading	Government (N=302)	Private Aided (N=206)	Private Unaided (N=45)	Total (N=553)	Mean	SD
Direct reading from the computer screen	102 (33.77)	96 (46.60)	25 (55.56)	223 (40.33)	1.65471	0.67103
Save the material in portable devices for further Reading	114 (37.75)	54 (26.21)	09 (20.00)	177 (32.01)	1.40678	0.58567
Print the resource and read	32 (10.60)	27 (13.11)	04 (08.89)	63 (11.39)	1.55556	0.61147
All the above	54 (17.88)	29 (14.08)	07 (15.56)	90 (16.27)	1.47778	0.63644
Note: Figures in parentheses indicate percentage						
$\chi 2$=17.163, df=6, P=0.0087025						

The $\chi 2$-test conducted for 06 d.f. at the 5% level of significance shows that there is a significant relationship between preferred method of reading electronic resources and types of colleges ($\chi 2=17.163$, $p=0.0087025<0.05$). It is clear that preferred method of reading electronic resources is dependent upon types of colleges.



Figre-5.9: Preferred Method of Reading Electronic Resources.

SUGGESTIONS

Based on the above results the following suggestions are made for further improvement in use of electronic information resources by the teachers of science discipline in First Grade Colleges in Mysuru region.

- The teachers should be trained in using advance search options for retrieval of relevant information.
- The teachers should further improve their information searching skills to make better use of largely available web information resources.
- The teachers should be trained in using various ICT enabled tools, techniques and software relate to it.
- The speed of the Internet should be increased to speed up information search and retrieval process.
- The web designers/ publishers/ distributors should provide online help menu in the search page for better utilization of their information resources.
- The library and information centers should organize training, seminars and workshops for the users at regular interval of time to keep users in tune with latest Information and Communication Technology enabled technologies.

CONCLUSION

In the current scenario, electronic information sources are very important sources for teaching and research activities. The teachers who are using the electronic resources to update their knowledge seeking quick access and database search without any hindrance to their academic and research activities. So, the way could be found out to increase the speed of the internet access for quick process of accessing the online contents. Even the teachers should become familiar with latest search strategies and techniques for better utilization of available online educational resources. The library should take initiatives in organizing more orientation programmes, lectures, workshops and user awareness programmes in this area to maximize the awareness and use of electronic information resources.

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