Content Analysis of ACRL Blog

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Abstract: This study analyzes ACRLog (the ACRL Blog) by its content. Using the stratified random sampling technique, 277 posts were selected from a total of 991 posts sent to ACRLog from September 2005 to November 2010. These 277 posts are grouped by subject and by author's status (academic, librarian). Differences in subjects by years and by authors are examined. In addition, word frequencies in the posts were calculated and the most used words and noun phrases determined. Differences in the use of these words and noun phrases by years and by authors are also analyzed.

Keywords: Blog; weblog; ACRL blog; ACRLog; content analysis.

Introduction

A blog, also known as weblog, is a frequently updated/dynamically modified website that contains a series of date-time stamped brief entries (text, link, image, sound or video file or combination of these) usually in reverse chronological order (from newest to oldest) so that the most recent appears at the top of the blog's first page (Ewins, 2005; Schmidt, 2007; Herring et al., 2006; Tripathi & Kumar, 2010). Older entries are archived on separate pages but still accessible (Bar-Ilan, 2007). Blogs allow adding comments to the entries (Ewins, 2005; Schmidt, 2007). Long entries such as essays are not suitable for blogs (Ojala, 2004).

Blogs are worldwide accessible information channels that enable open participation in the electronic public sphere, so they are good sources of public opinion and public and private events, and they create community among people with similar interests (Ewins, 2005; Thelwall, 2007; Thompson, 2003; Bar-Ilan, 2007). They offer easy, inexpensive, flexible and interactive self-publication of content (Herring et al., 2005) that gives the author more control over the content (Schmidt, 2007). Blogs form a historical record of debates (Thelwall, 2007). There are many blog types ranging from purely topic oriented to purely personal: blogs by sectors of society, specific blog types such as warblogging, political blogs, informational blogs, photoblogs and high profile blogs (Thelwall, 2007; Bar-Ilan, 2007).

Blogging came to public awareness in the mid-1990s (Thompson, 2003). It has gained high popularity in a very short time and grown exponentially (Bar-Ilan, 2007; Herring et al., 2006). The earliest blogs appeared in 1998 (Ojala, 2004). Whereas there were only 23 known blogs at the beginning of 1999, in 2000 there were thousands of blogs (Blood, 2000). In 2003 the estimated number of blogs was half a million (Thompson, 2003), in 2005 it was about 7 million and over 70 million blogs were tracked in 2007 (Sifry, 2007). Finally, in 2008 Technorati indexed over 133 million blogs (Winn, 2008).

Parallel to the dynamic character of blogs, scholarly studies related to blogs (uses and impact of blogs, analyses of personal blogs, blogging about political topics, blogosphere, etc.) have increased (Herring et al., 2006; Schmidt, 2007). There were only 11 articles published between 1995-1999 including the term "blog". In 2003 this number was 647 (Drezner & Farrell, 2004).

Web 2.0 tools – Really Simple Syndication (RSS), Instant Messaging (IM) and blogs – are popular in libraries (Stephen, 2006; Tripathi & Kumar, 2010). Librarians were among the first to start using blogs as true communication devices (Ojala, 2004). Blogs are efficient marketing tools to inform users about library services, library events, changes, additions and other developments in library services and collections (Ojala, 2004; Bar-Ilan, 2007; Alcock, 2003; Tripathi & Kumar, 2010; Weaver, 2003). In the study of Bar-Ilan (2007), use of blogs by libraries, librarians and information specialists was analyzed and it was found that librarians use blogs to disseminate professional and general information; libraries often use blogs for announcements and to disseminate information to their users. Clyde (2003, 2004b) studied the use of blogs by libraries and discovered that libraries do not

actually use the potential of the blogs (Bar-Ilan, 2007: Clyde, 2003; Clyde, 2004a). Crawford (2005, 2006) also analysed librarian blogs. According to Tripathi and Kumar (2010), many libraries use blogs to list new databases, inform students about the downtime of servers/databases, announce hours of operation and holidays. Clyde (2004b) studied 55 library blogs using content analysis and found that they were commonly used for providing news, information and links to Internet resources for library users.

McLemee (2005) mentioned lack of a blog on academic librarianship. There are blogs by academic librarians/libraries but it is difficult to find a blog including all issues about academic and research libraries. ACRL (Association of College and Research Libraries) Strategic Plan 2020 mentions "Increasing ACRL's communication on major trends and issues in libraries..." (ACRL, 2009). ACRL Blog, called ACRLog, started in September 2005 and is a blog for academic and research librarians, sponsored by ACRL (ACRL, 2005). ACRLog's mission is "to discuss the issues of the day in the field of academic and research librarianship..." (ACRL, 2011).

This study aims to analyze ACRLog by its content. A total 991 posts were sent to ACRLog from September 2005 through November 2010, of which 277 have been selected using stratified random sampling technique. These 277 posts are grouped by subject and by author's status (academic, librarian). Differences in subjects by years and by authors and words in the posts are examined.

The following research questions are addressed by this study:

- What are the main topics of the ACRLog posts?
- Do the posts differ by subjects according to years? If this is true, which years and which subjects cause this difference?
- Do the subjects of posts differ by author's status? If this is true, which subjects are these?
- What are the most frequently used words and noun phrases in the posts? Do these mostly used words and noun phrases differ by year? If this is true, which words, noun phrases and years cause the difference?
- Do most frequently used words and noun phrases differ by author's status? If this is true, what are these words and noun phrases?
- How are the mostly used words and noun phrases scattered among the posts? Are they from a limited number of posts or from a wide range of posts?

Data and Methods

The number of posts taken into account in this study (n=277) was determined with the following formula:

$$n = 1 / ((1 / N) + (e^{2} / (z^{2} (p (1 - p))))$$
 (1)

In formula (1), the error rate (e) is 0,05, confidence level is 1,96 and significance value (p) is 0,50. The stratified random sampling technique was used with the sampling ratio values (N_i/N) as years are strata. According to the results of stratified random sampling, sample sizes for each year are shown in Table 1.

Table 1. The number of ACRLog posts by year (universe: Ni, sample: ni)

Year	$N_{\rm i}$	n_{i}	$N_i/N (n_i/n)$	N_i/n_i
2005	108	31	0.11	28.70
2006	294	83	0.30	28.23
2007	241	66	0.24	27.38
2008	144	42	0.15	29.16
2009	123	33	0.12	26.82
2010	82	22	0.08	26.82
Total	991	277	1.00	27.95

Table 1 also shows the number of posts by year. Notice that 2005 data only cover 4 months. 2006 has the highest number of posts and then the number of posts has decreased until 2010, which has the fewest number of posts (10 posts were sent between September-December 2010).

A sample of 277 posts were categorized under 11 subjects using the subject categorization of Järvelin and Vakkari (1993) (see Table 2). There were 16 authors registered to ACRLog. Authors were classified as academic and librarian to test the differences between their posts. Five authors were academicians and 11 authors were librarians. Using an Excel program, frequencies of all the words and noun phrases in the posts have been calculated. There were 33 words with frequencies more than 100 and 14 noun phrases with high frequencies.

Content analysis was used in this study. Content analysis methods was used earlier to analyze the structural properties and themes of blogs (Herring et al., 2006). The chi-square test was performed to test whether there is any difference in the subjects of the posts and in the use of words and noun phrases by year and by author's status. If there are differences, adjusted residual values have been examined to find the causes of these differences. Excel and SPSS programs were used for the analysis.

Findings

Findings of the study can be grouped into three categories: subjects by years, subjects by authors and words/noun phrases (by years and by authors).

Subjects by years

Table 2. Categorization of posts sent to ACRLog by subjects (2005-2010)

Subject	2005	2006	2007	2008	2009	2010	Total
The Professions	0	1	1	0	3	1	6
Library History	0	0	0	1	2	0	3
Publishing	6	2	5	3	0	0	16
Education in LIS	4	7	4	4	2	6	27
Analysis of LIS	0	2	3	1	1	0	7
LIS Service Activities	2	18	11	8	6	2	47
Information Storage and Retrieval	2	2	5	1	1	2	13
Information Seeking	3	6	0	2	2	3	16
Scientific and Professional Communication	6	9	9	7	4	2	37
Technological aspects of LIS	6	24	16	5	8	5	64
Others	2	12	12	10	4	1	41
Total	31	83	66	42	33	22	277

Table 2 shows 277 posts categorized by subjects according to the years they were posted. Most of the posts were about "technological aspects of LIS", "LIS service activities", "others" (conference announcements, information and announcements about ACRL, personal ideas and experiences, etc.) and "scientific and professional communication". By year, the posts sent in 2005 were mostly about "publishing", "scientific and professional communication" and "technological aspects of LIS". The most frequent subjects between 2006-2009 were "technological aspects of LIS", "LIS service activities" and "others". In 2010 a change was observed in the subjects of the posts; "education in LIS", "technological aspects of LIS" and "information seeking" were primary subjects for 2010.

To analyze the difference in the subjects of the posts by years, the chi-square analysis was carried out. There was a statistically significant difference in the subjects of the posts by years (p=0,017, G²=450). Adjusted residuals were examined to find which years and which subjects caused the difference exactly.

¹ As 42 cells (71.2%) have expected values bigger than 5 (20%), we used the Likelihood Ratio (G²) test statistic instead of Pearson's Chi-Square.

Subject		2005	2006	2007	2008	2009	2010	Total
Profession	% Subject	0	16.7	16.7	0	50	16.7	100
	% Year	0	1.2	1.5	0	9.1	4.5	2.2
	Adjusted Residual	-0.6	-0.7	-0.4	-1	2.9	0.8	
Publishing	% Subject	37.57	12.5	31.3	18.8	0	0	100
	% Year	19.4	2.4	7.6	7.1	0	0	9.7
	Adjusted Residual	3.4	-1.6	0.7	0.4	-1.5	-1.2	
Education in LIS	% Subject	14.8	25.9	14.8	14.8	7.4	22.2	100
	% Year	12.9	8.4	6.1	9.5	6.1	27.3	9.7
	Adjusted Residual	0.6	-0.5	-1.2	-0.1	-0.8	2.9	
Information Seeking	% Subject	18.8	37.5	0	12.5	12.5	18.8	100
	% Year	9.7	7.2	0	4.8	6.1	13.6	5.8
	Adjusted Residual	1	0.7	-2.3	-0.3	0.1	1.6	
Total	% Subject	11.2	30	23.8	15.2	11.9	7.9	100
	% Year	100	100	100	100	100	100	100

Table 3. Years and subjects that cause the difference

Table 3 shows the cells that represent the years and subjects that show a difference in bold.² In 2005 "publishing", in 2007 "information seeking", in 2009 "profession" and in 2010 "education in LIS" show the differences. Posts in 2005 were primarily about "publishing" (38%). There were no posts about "information seeking" in 2007. More than half of the posts about "profession" were sent in 2009. The posts in 2010 were mostly about "profession in LIS" (27%).

Subjects by author's status

Table 4. Number of the posts by subject according to author's status

Subject	Academic	Librarian	Total
The Professions	2	4	6
Library History	0	3	3
Publishing	5	11	16
Education in LIS	15	12	27
Analysis of LIS	4	3	7
LIS Service Activities	27	20	47
Information Storage and Retrieval	12	1	13
Information Seeking	12	4	16
Scientific and Professional Communication	19	18	37
Technological aspects of LIS	40	24	64
Others	28	13	41
Total	165	112	277

Table 4 shows that 165 of the 277 posts were sent by academics and 112 posts by librarians. Both of the author groups mostly write about "technological aspects of LIS".

We also tested whether there is any difference between subjects of the posts according to the author's status and found that there is a statistically significant difference (p=0.007, G²=24.069). Table 5 shows which subjects show the difference between academicians and librarians.

The subjects that caused the difference were "publishing" and "information storage and retrieval". Most of the posts about "publishing" were sent by librarians (69%) and almost all of the posts about "information storage and retrieval" were sent by librarians (92%).

² Adjusted residual values that have a z (0.95) value more than 1.96 show difference.

Subject		Academic	Librarian	Total
Publishing	% Subject	31.3	68.8	100
	% Year	3	9.7	5,8
	Adjusted residual	-2.3	2.3	
Information Storage and Retrieval	% Subject	92.3	7.7	100
	% Year	7.3	0.9	23.1
	Adjusted residual	2.5	2.5	
Total	% Subject	59.2	40.8	100
	% Year	100	100	100

Table 5. Differences in posts by subjects according to the author's status

Words and noun phrases

Table 6 shows 33 words that have frequencies greater than 100. ACRLog posts show a high frequency of the words "library" (1300) and "librarian" (712). Table 7 shows the most frequently used noun phrases in ACRLog posts, "academic librarian" (382) and "academic library" (189). Despite the rapid growth in information technologies, variation of information sources and increase in the personal information need and the increase of electronic information sources and electronic services, "information literacy" was used more than "user education".

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Table 6	Words	naving	trequiencies	greater than	1 ()()
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Word	N	Word	N	Word	N
library	1300	blog	211	education	160
librarian	712	conference	209	college	157
student	674	article	197	access	156
academic	663	user	196	web	151
information	405	google	189	learning	136
research	328	program	186	community	135
faculty	310	post	182	higher	132
ACRL	288	resource	178	literacy	129
book	248	report	171	scholarly	120
member	223	technology	167	dijital	105
university	211	service	162	ACRLog	104

Table 7. Most used noun phrases in ACRLog

Noun phrase	N	Noun phrase	N
academic librarian	380	web 2.0	13
academic library	189	university librarian	13
higher education	75	university library	13
information literacy	70	reference services	12
search engine	51	academic freedom	12
open access	28	user education	9
web site	27	interlibrary loan	9

Although no statistically significant difference was detected in terms of number of posts between academics (165) and librarians (112), most frequently used words and noun phrases were used by academics (77% and 78%, respectively).

Words and noun phrases by year

Most frequently used words and noun phrases by year are shown in Table 8 and Table 9, respectively.

Table 8. Most frequently used words by year

Word	20	05	20	06	20	07	20	08	20	09	20	10	To	tal
•	N	%	N	%	N	%	N	%	N	%	N	%	N	%
library	113	9	342	26	303	24	235	18	162	12	145	11	1300	100
librarian	30	4	198	28	145	20	143	20	99	14	97	14	712	100
student	46	7	161	24	134	20	108	16	108	16	117	17	674	100
academic	39	6	217	33	143	22	119	18	76	11	69	10	663	100
information	40	10	118	29	86	21	69	17	60	15	32	8	405	100
research	22	7	65	20	58	18	71	22	59	18	52	16	328	100
faculty	16	5	85	27	40	13	53	17	73	24	43	14	310	100
ACRL	18	6	122	42	81	28	21	7	32	11	14	5	288	100
book	31	13	34	14	66	27	80	32	26	10	11	4	248	100
member	32	14	100	45	35	16	24	11	26	12	6	3	223	100
university	22	10	53	25	35	17	52	25	31	15	18	9	211	100
blog	20	9	43	20	64	30	31	15	44	21	9	4	211	100
conference	29	14	71	34	39	19	26	12	11	5	33	16	209	100
article	17	9	58	29	33	17	26	13	25	13	39	20	197	100
user	16	8	85	43	27	14	16	8	12	6	40	20	196	100
google	26	14	75	40	35	19	22	12	15	8	16	9	189	100
program	22	12	78	42	15	8	27	15	30	16	14	8	186	100
post	10	5	40	22	25	14	60	33	35	19	13	7	182	100
resource	17	10	51	29	33	18	30	17	21	12	26	15	178	100
report	13	8	84	49	29	17	17	10	11	6	17	10	171	100
technology	5	3	56	34	42	25	20	12	39	23	5	3	167	100
service	9	6	49	30	28	17	20	12	21	13	35	22	162	100
education	27	17	58	36	34	21	14	9	19	12	8	5	160	100
college	9	6	46	29	27	17	29	18	31	20	15	10	157	100
access	3	2	30	19	30	19	18	12	38	24	37	24	156	100
web	21	14	45	30	45	30	9	6	20	13	11	7	151	100
learning	20	15	33	24	36	26	16	12	19	14	12	9	136	100
community	9	7	33	24	24	18	29	21	30	22	11	8	135	100
higher	10	8	41	31	32	24	18	14	20	15	11	8	132	100
literacy	29	22	45	35	7	5	21	16	22	17	5	4	129	100
scholarly	1	1	17	14	21	18	25	21	39	33	17	14	120	100
dijital	11	10	31	30	27	26	19	18	7	7	10	10	105	100
ACRLog	3	3	29	28	36	35	23	22	10	10	3	3	104	100

"Library", "librarian", "student", "academic", "ACRL" "education", "web", "google" and "technology" were the most frequently used words in 2006 and 2007 while "university", "research" and "blog" were more prevalent in 2006 and 2008 (Table 8). "Book" was used most often in 2007 and 2008, "literacy" in 2006 and 2009, "user" in 2007 and 2010 and "access" in 2009 and 2010. "Academic librarian" was the most frequently used noun phrase for each year (Table 9). "Academic library" was the most frequently used noun phrase in 2006 (29%) and 2007 (27%); "information literacy" in 2006 (30%) and 2008 (21%), "search engine" in 2006 (54%), "open access" in 2009 (28%) and 2010 (35%), and "web site" in 2006 (40%). The use of the noun phrase "open access" in the last two years shows that this subject gained importance. The decrease in the use of the noun phrase "information literacy" in recent years is an interesting finding because there have been lots of studies on this subject. One of the other interesting findings is the use of "Web 2.0" in 2005 and 2006 and no use in recent years since Web 2.0 has increasing importance for university and research libraries (Tripathi & Kumar, 2010).

Noun phrases	20	005	20	06	20	07	20	800	20	09	20	10	То	tal
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
academic librarian	20	5	118	31	76	20	83	22	42	11	41	11	469	100
academic library	11	6	54	29	50	27	28	15	22	12	24	13	278	100
higher education	7	9	26	35	15	20	10	13	13	17	4	5	169	100
information literacy	11	16	21	30	4	6	15	21	13	18	6	9	161	100
search engine	5	10	28	55	10	20	4	8	-	-	4	8	144	100
open access	1	4	2	7	5	18	2	7	8	29	10	36	93	100
web site	6	22	11	41	6	22	3	11	1	4	-	-	127	100
web 2.0	4	31	2	15	5	39	-	-	2	15	-	-	113	100
university librarian	1	15	7	31	-	8	5	46	-	-	-	-	113	100
university library	2	8	4	54	1	-	6	39	-	-	-	-	114	100
reference services	2	17	1	8	4	33	5	42	-	-	-	-	112	100
academic freedom	2	17	-	-	6	50	4	33	-	-	-	-	112	100
user education	4	44	5	57	-	-	-	-	-	-	-	-	110	100
interlibrary loan	3	33	1	11	2	22	_	_	_	-	3	33	75	100

Table 9. Most used noun phrases by years

The most frequently used words and noun phrases by years exhibit statistically significant differences (p=0.000, X^2 =928.279; p=0.000, G^2 =206.274).

Words and noun phrases by authors' status

The most frequently used words and noun phrases by authors' status are shown in Table 10 and 11.

Table 10. Most used words according to author's status (academic, librarian)

Word	Academic	Librarian	Total	Word	Academic	Librarian	Total
library	995 (1)	305 (1)	1300	post	132 (17)	50 (10)	182
librarian	557 (3)	155 (3)	712	resource	127 (19)	28 (19)	178
student	475 (4)	199 (2)	674	report	124 (20)	47 (12)	171
academic	573 (2)	90 (6)	663	technology	143 (15)	24 (21)	167
information	279 (6)	126 (5)	405	service	113 (23)	49 (11)	162
research	287 (5)	41 (14)	328	education	139 (16)	21 (23)	160
faculty	261 (8)	49 (11)	310	college	116 (21)	41 (15)	157
ACRL	270 (7)	18 (24)	288	access	98 (27)	58 (9)	156
oook	97 (28)	151 (4)	248	web	130 (18)	21 (23)	151
nember	208 (9)	15 (25)	223	learning	108 (25)	28 (19)	136
university	151 (13)	60 (8)	211	community	110 (24)	25 (20)	135
olog	166 (11)	45 (13)	211	higher	114 (22)	18 (24)	132
conference	188 (10)	21 (23)	209	literacy	106 (26)	23 (22)	129
article	132 (17)	66 (7)	197	scholarly	89 (29)	31 (18)	120
ıser	156 (12)	40 (16)	196	digital	60 (31)	45 (13)	105
google	139 (16)	50 (10)	189	ACRLog	83 (30)	21 (23)	104
orogram	147 (14)	39 (17)	186				

The most frequently used word by both author groups was "library". This was followed by "academic", "librarian", "student" and "research" by academics, and "student", "librarian", "book" and "information" by librarians. It is interesting to note that the word "digital" is used least by academics even though with the developing technology most information sources are in digital format nowadays. On the other hand, the word "book" was used more frequently by librarians than by academics.

The noun phrases "academic library" and "academic librarian" were used most often by both academics and librarians. Librarians used "information literacy", "search engine" and "open access" a more frequently while academics used "higher education" more often. "Information literacy" was preferred more frequently than "user education" by both academics and librarians.

Table 11. Most frequently used noun phrases by author's status (academic, librarian)

Noun phrases	Academic	Librarian	Total
academic librarian	320	60	380
academic library	153	36	189
higher education	68	7	75
information literacy	45	25	70
search engine	26	25	51
open access	11	17	28
web site	24	3	27
web 2.0	9	4	13
university librarian	12	1	13
university library	11	2	13
reference services	5	7	12
academic freedom	8	4	12
user education	9	0	9
interlibrary loan	3	6	9

The most frequently used words and noun phrases differ statistically significantly by author's status. (p=0.000, $X^2=506.095$; p=0.000, $G^2=87.483$) (see Table 12 and Table 13). All words except "book" "book" were used more often by academics, indicating that academics use more words than librarians do in their posts. The noun phrases "open access", "reference service", "interlibrary loan" were used more often by librarians, and "academic librarian", higher education", "information literacy" by academics.

Table 12. Words that show a difference between authors

Word	Acad	emic	Libra	arian	Total		
	N	%	N	%	N	%	
student	475	71	199	29	674	100	
academic	573	86	90	14	663	100	
information	279	69	126	31	405	100	
research	287	88	41	12	328	100	
faculty	261	84	49	16	310	100	
ACRL	270	94	18	6	288	100	
book	97	39	151	61	248	100	
member	208	93	15	7	223	100	
university	151	72	60	28	211	100	
conference	188	90	21	10	209	100	
article	132	67	66	33	197	100	
service	113	70	49	30	162	100	
education	139	87	21	13	160	100	
access	98	63	58	37	156	100	
web	130	86	21	14	151	100	
higher	114	86	18	14	132	100	
dijital	60	57	45	43	105	100	

Noun phrase	Academic		Libra	arian	Total		
	N	%	N	%	N	%	
academic librarian	320	84	60	16	380	100	
higher education	68	91	7	9	75	100	
information literacy	45	64	25	36	70	100	
search engine	26	51	25	49	51	100	
open access	11	39	17	61	28	100	
reference services	5	42	7	58	12	100	
interlibrary loan	3	33	6	67	9	100	

Table 13. Noun phrases that show difference between authors

Appendix shows scattering of most frequently used words to the posts. The word "library" and "librarian" were used by most of the authors (213 and 202 post have "library" and "librarian" in them, respectively). The word "academic" came from 185 different posts, and "university" from 100 different posts. The word "conference" is used 209 times but this frequency comes from 70 posts. Similarly the word "ACRL" is used 288 times in 95 different posts. Despite frequent use of the word "google", relatively fewer number of posts (57) included "google". Appendix shows that the use of words in ACRL blog posts is widely scattered.

Conclusion

We performed a content analysis with 277 posts sent to ACRLog. Most of the posts were about "technological aspects of LIS", "LIS service activities", "others" (conference announcements, information and announcements about ACRL, personal ideas and experiences, etc.) and "scientific and professional communication". There is a statistically significant difference in the subjects of the posts by year. Some 33 words have frequencies of more than 100. ACRLog posts mostly contain the words "library" (1300) and "librarian", and the noun phrases "academic librarian" and "academic library". Scattering of words to the posts is wide. Some of the words like "ACRL", "conference", "google", etc. come from certain blog posts. The subjects of blog posts and most frequently used words/noun phrases in the blog posts provide consistent results.

To increase the quality of ACRL blog as a professional communication, the interest in the ACRL blog should be increased and current issues such as Web 2.0, information literacy and digital rights should be discussed more often to enrich the content

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 $\textbf{Appendix:} \ \text{Most frequently used words' scattering to the posts (N_2) and \ \text{frequencies of most used words (N_1)}$

Word 200		2005	2006			2007		2008		2009		2010		Total	
	N_1	N_2	N_1	N_2	$\overline{N_1}$	N_2	$\overline{N_1}$	N_2	$\overline{N_1}$	N_2	N_1	N_2	$\overline{N_1}$	N_2	
library	113	24	342	60	303	47	235	30	162	30	145	22	1300	213	
librarian	30	23	198	56	145	44	143	32	99	25	97	22	712	202	
student	46	13	161	37	134	31	108	22	108	18	117	16	674	137	
academic	39	19	217	57	143	39	119	30	76	23	69	17	663	185	
information	40	18	118	48	86	32	69	21	60	15	32	9	405	143	
research	22	13	65	29	58	24	71	20	59	21	52	14	328	121	
faculty	16	12	85	30	40	18	53	21	73	15	43	14	310	110	
ACRL	18	9	122	31	81	23	21	15	32	11	14	6	288	95	
book	31	9	34	22	66	23	80	23	26	14	11	9	248	100	
member	32	5	100	29	35	23 14	24	12	26	11	6	8	223	79	
university	22	12	53	29	35	20	52	17	31	12	18	10	211	100	
blog	20	9	43	24	64	19	31	19	44	14	9	10	211	95	
conference	29	8	71	18	39	16	26	16	11	8	33	4	209	70	
article	17	8	58	29	33	17	26	16	25 12	12	39	13	197	95 61	
user	16 26	7 9	85 75	19 12	27 35	17 9	16 22	8 10	12 15	5 7	40 16	5 10	196	61 57	
google	20 22	9 11	78	26	55 15	9 12	22 27	13	30	16	16	6	189 186	84	
program		11	40	26 31	$\frac{15}{25}$	21	60	13 24	30 35		14 13	8	182	64 114	
post	10 17	6	40 51	31 27	25 33	21 17	30	24 14	35 21	19 10	13 26	8 10	178	84	
resource	13	7	84	25	33 29	11	50 17	8	11	15	26 17	9	170	75	
report technology	15 5	6	56	25 19	42	17	20	10	39	11	5	2	167	65	
service	9	7	49	26	28	16	20	18	39 21	11	35	10	162	88	
education	$\frac{9}{27}$	18	58	32	34	17	14	11	19	8	8	6	162	92	
college	9	3	46	25	27	12	29	15	31	13	0 15	9	157	92 77	
access	3	4	30	18	30	19	18	12	38	11	37	9 13	156	77	
web	21	8	45	18	45	18	9	14	20	6	11	8	151	72	
learning	20	10	33	22	36	17	9 16	11	20 19	7	7	7	136	74	
community	9	4	33	20	24	14	29	16	30	11	11	16	135	81	
higher	10	9	41	22	32	15	18	11	20	9	11	8	132	74	
literacy	29	8	45	19	7	3	21	9	22	8	5	5	129	52	
scholarly	1	1	17	8	21	12	25	9	39	13	17	4	120	47	
dijital	11	8	31	13	27	11	19	8	7	4	10	5	105	49	
ACRLog	3	2	29	21	36	14	23	9	10	7	3	3	103	56	