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Familiarity of Web 2.0 and its Application in Learning: A Case Study of Seven Indian Universities

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Abstract

The changed learning environment has necessitated formation of interactive networks for sharing, participation and collaboration. The Web 2.0 tools provide avenues in this regard. The present study aims to investigate the level of integration of these tools into the learning practices of the students of seven general universities in the state of Odisha in eastern India. A questionnaire-based survey was conducted among 1000 postgraduate students and research scholars segregated into four major disciplines, Arts and Humanities, Social Sciences, Pure Sciences, and Applied Sciences and Technology. The findings revealed that Web 2.0 awareness is high among the students of Applied Sciences and Technology as compared to the other disciplines. More than half of the students of theoretical sciences are unaware about popular tools like blogs. Because of the popularity of the tools like Wikipedia and Scribd as sources of academic content, most of the students are familiar with wiki and document sharing tools respectively. However, the use of these tools for learning has remained trivial among the students.

Keywords: Social Bookmarking, Education 2.0, Learning 2.0, Social Networking, Video Sharing, Web 2.0, Wiki, Blog

1. Introduction

The latest technological innovation has transformed the Web into platform for multiple services and applications in education and learning. The collaborative Web2.0 tools such as wikis, blogs, social networking and media sharing are gradually becoming more popular media in higher education. Several authors believe that the development and growth of the web has been a major driver of educational change and offers new perspectives and challenges to education at all levels (Steeples and Jones, 2002). It is observed that Web 2.0 supports constructivist approaches to learning and has great potential to socialize online learning to a great extent (Bryant, 2007). Since past several years, educators have been engaged with Web 2.0 technologies to make learning more personalized, more interactive and more dynamic (Amir *et al.,* 2011).

E-Learning was a buzzword a few years ago and meant teaching and learning with the aid of computers, network and all forms of electronically supported learning available anytime, anywhere and for anybody (Kundi & Nawaz, 2014). However, the growth of social networking, and use of new web-based tools among a new generation of students has questioned the efficiency and usability of previous models of e-learning (Virkus, 2008). In 2005 Stephen Downes introduced the term 'e-learning 2.0' to highlight new developments in e-learning based on Web 2.0 or social media tools, such as blog, wiki, Facebook, etc. This new world of e-learning signifies the philosophy of "community practice" which is characterized by an approach to learning based on conversation, interaction, sharing, collaborative creation of content, etc. In this model, the students form networks according to their own interests, collaborate and learn together, develop and share content using various tools and resources, and re-use and organize content according to their preferences and needs (Virkus, 2008). The new medium of learning has made the boundaries unclear between study, entertainment and social interaction, reflecting the global transformation of a knowledge-based and networked society (Redecker, 2008). These services support much flexibility in the learning process by allowing the learners

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for easy publication, sharing of ideas, re-use of the content and giving links as well as access to relevant resources.

2. Objectives

Many people in universities and in workplaces across the world have begun to incorporate Web 2.0 tools into their learning environment. A survey made by Rosemary Luckin and others to test activities and perceptions of learning with Web 2.0 technologies of students aged between 11 and 16 years in UK secondary schools, confirms that these young learners had high levels of access to Web 2.0 technologies and that Web 2.0 activities were prolific (Luckin et al., 2009). The present investigation seeks to trace the integration of Web 2.0 tools in the learning environments of university students of an Indian state. The study explicitly aims to achieve the following objectives:

- To find out the familiarity of the university students in Odisha with Web 2.0 tools,
- To find out the adoption of Web 2.0 in different learning practices by the university students, and
- To find out the most popular Web 2.0 tools used in the universities in Odisha.

3.Hypothesis

The study seeks to test the hypothesis that there is no significant difference in familiarity with and usage of Web 2.0 tools (Blog, Wiki and Document Sharing) among students of different academic disciplines.

4. Methodology and Scope

The present research used a structured questionnaire for collecting data. To ensure the validity, reliability, and effectiveness of the questions, the questionnaire was preliminarily tested with 20 students from different disciplines and necessary modifications were made based on their feedback. The modified questionnaire was administered to 1000 respondents from four major disciplines, Arts and Humanities (AH), Social Sciences (SS), Pure Sciences (PS) and Applied Science and Technology (AT). Some statistical techniques have been used for data analysis. The present study covers seven general universities in Odisha, viz., Berhampur University, Fakir Mohan University, Central University of Orissa, North Orissa University, Utkal University and Sambalpur University. Web 2.0 has innumerable tools and applications, many of which are primarily oriented towards inter-personal communication and networking. Only a few such tools are practically used in the core learning environment. In the present investigation, therefore, three major categories of Web 2.0 applications, viz., blog, wiki and document sharing have been included; under each category, five most popular tools have been studied. To test the hypotheses, one-way ANOVA test was conducted to study whether there is any significant difference in the familiarity with different Web 2.0 tools among the students of different academic disciplines.

5. Review of Literature

Several researchers have suggested that blogs can be used as effective social media in learning. Studies made by Tang and Lam (2012) at the Chinese University of Hong Kong, have shown a positive impact of blog-based teaching portfolios on learning and professional developments. Study made by Rahman (2012) found that blog helps students to gain strength and self-confidence, that enabled them to engage more deeply with others both inside the classroom and outside in the community. Study made by Chang and others (2014) explored the effect of e-portfolios on knowledge assessment and found knowledge storage and accumulation when using blog-based portfolios can enhance students' knowledge. Chu and others (2012) at the University of Hong Kong recommended blog as a suitable tool for learning during internship due to its associated usefulness in collaborative learning, reflection, communication and social support. While using the blog as a communicative and pedagogical platform in two different graduate classes in Korea, study made by Kang and others (2011) explored the premise of a weblog as a place for networked individuality and found that the blogging platform provides an opportunity to form a social constructivist learning environment where both students and the instructor can experience a community of practice, while preserving their unique networked individuality. Chan and Cmor (2009) evaluated the effectiveness of the blog in facilitating the learning of information literacy skills and the results of the survey indicate that the majority of students feel that blog is useful to their learning, both in terms of general information

skills, and in terms of helping research the term paper for the course. In constructivism, knowledge is constructed by engaging students in meaningful learning. In this case the learning process should be reflective to allow students to integrate new ideas with previous knowledge to get new knowledge and enable learning through reflection. Wikis have a significant role in students' reflective learning, and improve students' experience (Parker & Chao, 2007). Several researchers presented that Wiki can be used as effective media for social learning. The study made by Wang and others (2013) suggests that wikis can be an interesting and fruitful tool for language learners to enhance interaction with native speakers, and thus their intercultural communication competence. According to Biasutti (2011), five positive attributes that are commonly linked to wikis are: collaboration, organization, operation, cognition, and emotion. Study made by Maria Kuteeva (2011) at Stockholm University, Sweden found that while using the wiki for writing activities, the students give close attention to grammatical correctness and structural coherence as they become conscious about their audience. The extent of the writer–reader interaction was further observed in the argumentative texts. Thus, writing on the wiki can contribute to raise awareness of the audience (Kuteeva in 2011). The study undertaken at Charles Stuart University, Australia to find out online collaborative learning experiences of distance education students reveals that there is greater integration of Web 2.0 technologies to support distance education teaching and learning and collaborative document sharing platform (Pymm & Hay, 2013). Mahmud and Hassanuzzaman (2009) tried to find Web 2.0 tools which are helpful for the students in learning at Lund University and Malmo University. They found Google Docs as one of the very useful tools for learning.

6. Web 2.0 Tools in Learning

The collaborative Web 2.0 applications have great potential as medium for learning particularly in higher education segment. Neil Selwyn (2008) has rightly observed that, "there are strong links between web 2.0 and socio-cultural theories of learning, which see active and authentic learning taking place best where knowledge can be constructed actively by learners who are supported in communal social settings". The websites of universities have now been increasingly embedding the popular applications such as blog, wiki, Facebook, twitter, RSS, YouTube, and many more. The university students extensively use these platforms to communicate, collaborate, share, publish, and such other learning activities regularly. In this present study, the following three potential categories of Web 2.0 tools- Blog, Wiki and Document Sharing have been studied.

6.1 Weblog

The term "Weblog" or simply "blog", coined by Jorn Barger in 1997, are online public writing environments, which enable a single author or a group of authors to write and publicly display articles, called posts, which are listed in reverse chronological order (Anderson, 2007). Kelleher and Miller (2006) defined blogs as online diaries where people can post their thoughts, information, links and interests. These are often differ in objectives and some offer functionalities that are not commonly used. There are different forms of blogs such as personal diaries, organizational blogs, corporate blogs and knowledge blogs, etc. (Kelleher & Miller, 2006; Mahmud & Hassanuzzaman, 2009). Blog entries may include video and other rich media depending on the blogging software or service that is used (Kennedy et al., 2007). The large number of people engaged in blogging has given rise to the term 'blogosphere' which expresses the sense of a whole 'world' of bloggers operating in their own environment (Anderson, 2007).

The immediacy of blogging encourages a very fresh approach to sharing information. (Mason and Rennie, 2008). The composition of a blog facilitates manifestation as well as analytical, critical, collaborative and creative thinking by encouraging the students to write for the large audience in the public domain. (Duffy & Bruns, 2006; Ellison & Wu, 2008; Farmer, 2006; Akbulut, 2007; Berson & Berson, 2006; Kahn, 2007). Writing for the large audience not only enhances students' writing skills, but also gives them a sense of responsibility, authorship and ownership (Farmer et al., 2008; Ellison &Wu, 2008; Akbulut and Kiyici, 2007). Again, in learning, blogs can be used (1) by students/ Learners to easily keep track of new posts (2) by students to share their ideas and ask peers for comments or suggestion. As the learners can read the blog posts of worldwide people and can update themselves on specific topics, blogs has been extending the communication beyond the class-room.

6.2 Wiki

A wiki is a website that allows the easy creation and editing of any number of interlinked web pages via a web browser using a simplified markup language. The distinguishing feature of wiki is its open editing function that allows users to jointly create the resource (Manson and Rennie, 2008). Unlike blogs, wikis generally have a history function, which allows previous versions to be examined, and a rollback function, which restores previous versions (Anderson, 2007). These are very flexible in being able to adapt how information is organized, so that new pages can be added, the layout changed, and sections deleted by interacting to reach a common consensus. (Manson and Rennie, 2008)

The fundamental premise of wiki construction is a belief in the shared construction of knowledge, and this is consistent with constructivist pedagogy and a focus on encouraging learner-centered content rather than teacher-generated content that students are expected to read and digest. (Manson and Rennie, 2008). In educational contexts, wikis are ideal for (1) collaborative writing; (2) developing peer-to-peer generation of information; (3) the collaborative creation of study guides, text books, annotated reading lists and subject specific knowledge repositories (4) constructivist learning paradigms (5) being a personal knowledge management tool by the learners to collect and elaborate personal ideas. However, wikis can also be used as a simpler alternative to school and class website, to which a broader interested audience can contribute ideas and comments; or by teaching staff to scaffold collaborative projects (Parker & Chao, 2007; Bryant, 2006; Warlick, 2006; Bartolomé, 2008; Franklin & van Harmelen, 2007).

7. Collaborative Editing and Document Sharing tools

These collaborative editing and document sharing tools allow users in different locations to edit and share the same document at the same time. For example, *Google Docs* used for sharing and collaborating, *Scribd*, used for document sharing, *Google Mashups* for multimedia collaboration and editing. Collaborative editing tools like *Google Docs* having several document types i.e. Word, Presentation and Excel provides powerful features to help learners to develop their writing skills. Since those tools are collaborative and available 24/7, they are well-suited for facilitating online writing and peer editing without the barrier of time and place where the collaborators appear. Collaborative Document Sharing tools like Scribd, Slideshare, etc. are simply web-based document sharing services, where, anyone with an account can post materials of almost any length that can be made publicly available, semi-private, or completely restricted. Those services can accommodate files in multiple formats including .doc, .docx, .pdf, .xls, .xlsx, .jpeg, .gif, etc.

A study made at Charles Sturt University, Australia to find out online collaborative learning experiences of distance education students. The result revealed that there is greater integration of Web 2.0 technologies as an effective tool in developing students' skills in critical thinking and collaborative practice, leading to an enhanced distance learning experience (Pymm & Hay, 2013). Another study by Mahmud and Hassanuzzaman (2009) found *Google Docs* as one of the very useful tools for learning used by the students in Lund University and Malmo University (Mahmud & Hassanuzzaman, 2009).

8. Data Analysis and Discussion

8.1 Demographics of Respondents

The survey randomly covered 1000 respondents including postgraduate students and research scholars from seven general universities in the state of Odisha (Table 1).

Table 1. Demographics of the respondents

Faulty	Total Population	No. of responses
Arts & Humanities	1772	267
Social Sciences	1990	320
Pure Sciences	1766	266
Applied Science & Technology	832	147

9. Familiarity and Usage of Blogging Tools in Learning

The use of blogs provides motivation for reading because of their interactive nature. One can read the contents of relevant blogs regularly for getting updates on different topics and can also comment on the contents. Blogging tools provide opportunities for discussion among bloggers and readers. The learners

obtain comments and suggestions from their peers. Unlike textbooks, blogs carry fresh content and nascent thought and hence used as a very efficient learning tool. In the present study, five popular blogging tools have been selected to find out their usage by the students.

Table 2. Familiarity with blogging site

	Arts & Humanities (n= 267)		Social Sciences (n=320)		Pure Sciences (n=266)		Applied Science & Technology (n=147)	
	f_{AH}	%	f_{SS}	%	f_{PS}	%	f_{AT}	%
Blogger	54	20.22	65	20.31	94	35.33	65	44.21
Tumblr	17	6.36	23	7.18	14	5.26	08	5.44
LiveJournal	26	9.73	14	4.37	16	6.01	09	6.12
Wordpress	22	8.23	16	5	05	1.87	13	8.84
Medium	00	00	00	00	00	00	00	00

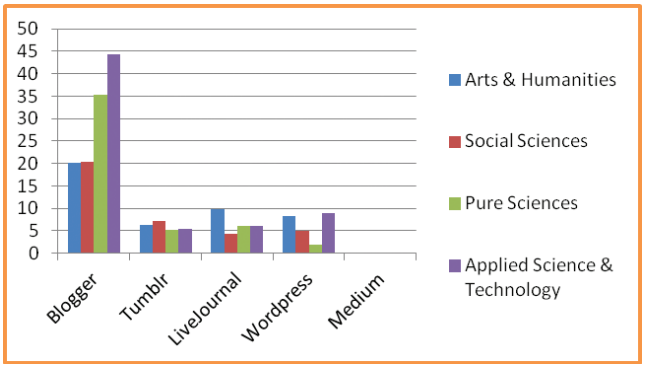

Figure 1. Familiarity with blogging site.

The responses in Table 2 and Figure 1 reveal that, Blogger is the most familiar tool among the students of all the four disciplinary groups. Less than 10% respondents are familiar with the other blogging tools including Tumblr, LiveJournal and Wordpress. As compared to other disciplines, the students in applied sciences and technology have highest familiarity (64.62%) with blogs followed by pure sciences (48.49%) and arts and humanities (44.56%). In social sciences only 36.87% students are familiar with blog. The Fisher's F-Distribution value 0.0622 with degrees of freedom, v1=3 and v2=12 is found to be significant at 0.5% level of significance (CV<TV of F). Therefore, it may be concluded that the familiarity of blogging sites among students of different academic disciplines is not significantly different.

9.1 Use of Blog for Learning

It is often observed that people do not make use of the technology even though are aware of them. Since technology is for problem solving and enhancing efficiency, only awareness does not make much sense. To assess the use of blogs in learning, the respondents were asked to indicate which of the blogging activities they have already experienced (Table 3 and Figure 2).

Table 3. Use of blogs for learning

Blogging activities	Arts & Humanities (n= 267)		Social Sciences (n=320)		Pure Sciences (n=266)		Applied Science & Technology (n=147)	
	f_{AH}	%	f_{SS}	%	f_{PS}	%	f_{AT}	%
Use blog for learning	34	12.73	30	9.37	40	15.03	32	21.76
Read Blogs regularly for getting updates on different topics.	31	11.61	26	8.12	29	10.90	30	20.40
Post comments/ suggestions to peers.	05	1.87	06	1.87	07	2.63	15	10.20
Receive comments/ suggestions from peers via blog.	03	1.12	02	0.62	00	00	00	00

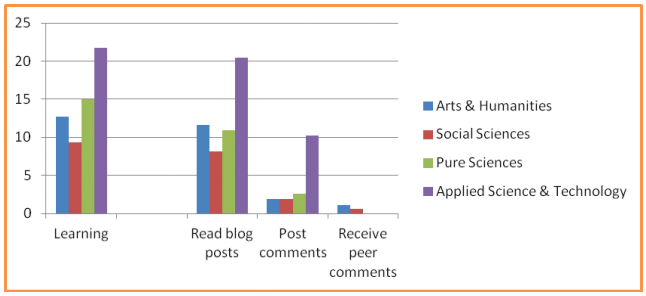

Figure 2. Use of blogs for learning.

The Table 4 and Figure 3 clearly reveal that the use of blogs for learning is of a very low order among the students. To find out specific blogging activities of the students, three options were provided. The first option was '*Read Blogs regularly for getting updates on different topics*'. It was found that 20.4% students from Applied Science and Technology responded positively and the number of students of other disciplines reading Blogs for this purpose was insignificant.

10. Familiarity and Usage of Wiki in Learning

Wiki demonstrated potential as a learning tool as it allows creation and modification of online content easily making it well-suited for cooperative learning environments by motivating the students to participate, to visualize, to modify, and to create information.

There are different kinds of Wikis available on the Web that can be used by students.

Table 4. Familiarity with Wiki sites

Wiki site	Arts & Humanities (n= 267)		Social Sciences (n=320)		Pure Sciences (n=266)		Applied Science & Technology (n=147)	
	f_{AH}	%	f_{SS}	%	f_{PS}	%	f_{AT}	%
Wikipedia	267	100	313	97.81	265	99.62	147	100
Wikibooks	72	26.96	88	27.5	127	47.74	95	64.62
Wikiversity	19	7.11	25	7.81	41	15.41	49	33.33
Wikispace	00	00	00	00	00	00	00	00
Pbworks	02	0.74	21	6.56	00	00	14	9.52

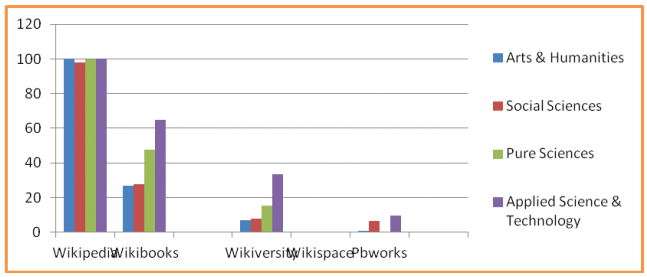

Figure 3. Familiarity with Wiki sites

Table 5 shows that, all the students (100%) in Arts and Humanities and Applied Science and Technology are familiar with Wikipedia. Similarly, majority of students of Pure Sciences (99.62%) and Social Sciences (97.81%) are acquainted with Wikipedia. Familiarity with other Wikis is of a low order. The Fisher's F-Distribution suggests that the familiarity of wiki sites among the academic disciplines is not significantly different.

10.1 Usage of Wiki in Learning

Wiki in all forms has been proven as a medium with learning potentials if used properly. Wikipedia is the first source for many of the learners who search information on the Internet.

Table 5. Learning experiences on Wiki

	Arts & Humanities (n= 267)		Social Sciences (n=320)		Pure Sciences (n=266)		Applied Science & Technology (n=147)	
	f_{AH}	%	f_{SS}	%	f_{PS}	%	f_{AT}	%
Use Wiki for learning	267	100	310	96.87	265	99.62	147	100
Write Content	07	2.62	00	00	00	00	00	00

Modify Content	07	2.62	00	00	00	00	00	00
Read Content	152	56.92	170	53.12	153	57.51	99	67.34

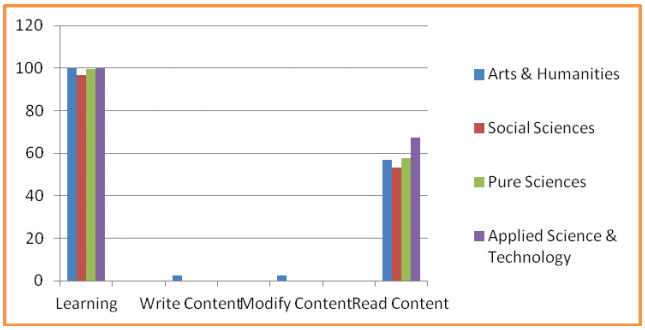

Figure 4. Experiences on Wiki.

Table 5 and Figure 4 clearly reveal that almost all the students of all disciplines have been using Wiki for learning and reading purposes. However, writing and modifying the content is not being practiced at all except 2.62% from Arts and Humanities.

11. Familiarity with Document Sharing Site

In the present learning environment, sharing of documents and other learning content are integral to collaborative learning, peer reviewing, sharing of ideas, etc. Table 6 and Figure 5 disclose the familiarity of university students with a few very popular document sharing tools.

Table 6. Familiarity with document sharing tools

Document Sharing site	Arts & Humanities (n= 267)		Social Sciences (n=320)		Pure Sciences (n=266)		Applied Science & Technology (n=147)	
	f_{AH}	%	f_{SS}	%	f_{PS}	%	f_{AT}	%
Academia.edu	175	65.54	113	35.31	162	60.90	114	77.55
Slide Share	267	100	320	100	244	91.72	147	100
Research Gate	136	50.93	131	40.93	144	54.13	104	70.74
Google Docs	254	95.13	297	92.81	242	90.97	130	88.43
Scribd	255	95.50	298	93.12	252	94.73	139	94.55

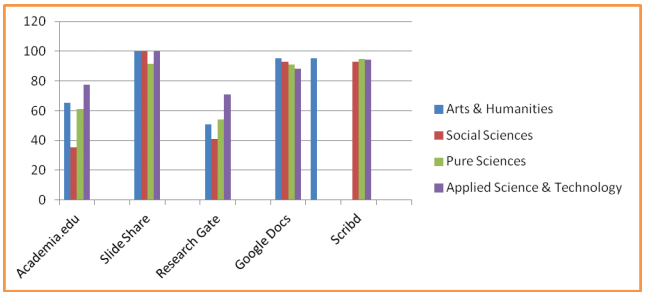

Figure 5. Familiarity with document sharing tools.

Slide Share is the most popular document sharing medium across disciplines. As reflected in Table 6, Scribd and Google Docs are the next most popular tools used by more than 90% students. Academia and Research Gate are also highly familiar tools for Applied Science and Technology. Overall, the students have a fair degree of familiarity with all the five most popular document sharing platforms suggesting that the familiarity of document sharing sites among students of different academic disciplines is not significantly different.

11.1 Experiences in Document Sharing

Document sharing for learning mostly involves use of documents as reading notes, uploading documents, writing content in collaboration, collection of data, etc. Google docs have become very popular in the academic community for its generic features supporting learners (Table 7).

Table 7. Learning experiences on document sharing platforms

	Arts & Humanities (n= 267)		Social Sciences (n=320)		Pure Sciences (n=266)		Applied Science & Technology (n=147)	
	f_{AH}	%	f_{SS}	%	f_{PS}	%	f_{AT}	%
Use in learning	267	100	320	100	260	97.74	147	100
Upload and share	105	39.32	103	32.18	84	31.57	46	31.29
Collaborative writing	05	1.87	00	0	00	0	00	0
Data collection	97	36.32	114	35.62	00	0	00	0

As per Table 8, all the respondents have learning experience with document sharing tools. However, they have not been much exposed to other activities such as uploading, sharing and collaborating. While one third of the students have been uploading and sharing documents online, more than one third of them from Arts & Humanities and Social Sciences have also been using it as a means of collection of research data.

12. Usage of Web 2.0 Tools for Learning

Table 8. Use of Web 2.0 tools for learning

Web 2.0 tools	f_{AH} (n=267)	f_{SS} (n=320)	f_{PS} (n=266)	f_{AT} (n=147)
Blogs	34	30	40	32
Wiki	267	310	265	147
Document Sharing	267	320	260	147

The Fisher's F-Distribution value 0.4113 with degrees of freedom, v1=3 and v2=8 is found to be significant at 0.5% level of significance (CV<TV of F). Therefore, it may be concluded that the usage of Web 2.0 tools for learning among students of different academic disciplines is not significantly different.

13. Findings and Discussion

- Familiarity with and use of Blogs among students is generally of a very low order,
- Among different wiki tools, Wikipedia has the highest level of familiarity and familiarity with other Wikis is very insignificant,
- Interestingly students of all disciplines have been using Wiki for learning purposes. But the use is only as an online source of information content; students do not add new content or modify existing content,
- The students under survey have a fair degree of familiarity with all the five most popular document sharing platforms: 'Academia.edu', 'Slide Share', 'ResearchGate', 'GoogleDocs', and 'Scribd'. 'Slideshare' is the most popular document sharing medium among students,
- All the respondents have learning experience with document sharing tools, but they have not been much exposed to the interactive learning activities like uploading, sharing and collaborating documents with others. Only a third of the students have been uploading and sharing documents online; more than one third of them from Arts and Humanities and Social Sciences have also been using it as a means of collection of research data,
- There is a visible gap between the level of familiarity of the students with different Web 2.0 tools and their application in learning. Although they are familiar with the tools the usage of those tools for learning is not significant, and
- Out of the three Web 2.0 tools studied in the present investigation, wiki and document sharing tools are more familiar to students. But it appears that the students are using these platforms simply as sources of information content for their study.

14. Conclusion

Web 2.0 is not an alien technology for the *Facebook* generation students who use their mobile phones for messaging, twitting, uploading images, etc. However, these technologies have not been widely used for learning. The full potential of Web 2.0 tools for learning activities

has not been used. The present learning environment in universities is still largely non-interactive lecture based centered on teachers. It is important to explore how the learning process could be oriented to make use of Web 2.0 technologies. Thus, it is imperative for the universities to formalize the use of Web 2.0 tools integrating them appropriately into the learning spaces of the students. Learners should realize the potentials of these tools and to choose the application as per their requirement and actively employ these in their learning processes.

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