

Teaching and Learning Online: The Workers, The Lurkers and The Shirkers

Sub-theme: Teaching and Learning Online
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Abstract:

Despite the exponential growth in the availability of online education programs, there appears to be little empirical evidence that could provide a cogent basis to guide the practice of, or judge the quality of, such offerings. The purpose of the current paper is to explore certain elements of existing pedagogical theory that can help provide a framework for empirical research that should ultimately establish instructional design principles that can shape potentially efficacious practice in online teaching and learning. Such research efforts are fundamental to the long-term credibility and viability of distance education theory and practice.

Introduction

New educational technologies tend to encourage innovation based on intuition and tacit knowledge with the result that practice in many respects often leads theory. It works in practice, but it doesn't work in theory! As a field of professional practice, distance education has always been driven by practice rather than shaped by theory. One consequence of this practice driven approach is that new technologies are often used in ways that are strongly influenced by the dominant extant pedagogy, referred to by Laurillard (2002) as the traditional transmission model: "The academic world has called each new technological device – word processing, interactive video, hypertext, multimedia, the Web-into the service of the transmission model of learning" (p. 20). This tendency is evident in many examples of online teaching in which lecture notes, possibly supplemented by PowerPoint slides, are often equated with e-Learning to the disgust of the instructional design intelligentsia, who want to emphasise the socio-cultural, constructivist dimensions of online education through the extensive use of mechanisms for synchronous and/or asynchronous communication available via the Internet. The opportunity for online teaching and learning to enhance pedagogical efficacy through a move from the transmission model to the transaction model has yet to be realised on a wide scale.

The apparent tension between the theory and practice of distance education is a reflection of the common criticism that there is a dearth of meaningful empirical research to guide and enhance practice. At present, this criticism applies especially to online teaching and learning. Despite the exponential growth in the availability of online education programs, there appears to be little empirical evidence that could provide a cogent basis to guide the practice of, or judge the quality of, such offerings. As Garrison (2000) highlighted recently, theoretical frameworks and models are fundamental to the long-term credibility and viability of a field of practice: "While those who are experts in the practice of a variety of forms of distance education may have the tacit knowledge to intuitively guide their educational decisions and effectively facilitate learning, this is not sufficient for the vast majority in the field" (p. 3). He further stressed the requirement for continuous theoretical development in distance education (where the technology and delivery mechanisms are evolving rapidly) and the associated need to adapt current theories and, where appropriate, to create new theories. The purpose of the current paper is to explore certain elements of existing pedagogical theory that can help provide a framework for empirical research that should ultimately establish instructional design principles that can shape potentially efficacious practice in online teaching and learning.

Models of Distance Education

Consistent with Garrison's (2000) thesis that the explicit delineation and communication of theoretical frameworks is essential for the credibility, viability and quality of professional practice in a field, it is worth placing online teaching and learning in the context of the ongoing evolution of the practice of various models of distance education (Taylor, 2001) as outlined in Table 1.

Table 1: Models of Distance Education

Models of Distance Education and Associated Delivery Technologies	Characteristics of Delivery Technologies					
	Flexibility			Highly Refined Materials	Advanced Interactive Delivery	Institutional Variable Costs Approaching Zero
	Time	Place	Pace			
FIRST GENERATION - The Correspondence Model <ul style="list-style-type: none"> • Print 	Yes	Yes	Yes	Yes	No	No
SECOND GENERATION - The Multi-media Model <ul style="list-style-type: none"> • Print • Audiotape • Videotape • Computer-based learning (eg CML/CAL/IMM) • Interactive video (disk and tape) 	Yes	Yes	Yes	Yes	No	No
THIRD GENERATION - The Telelearning Model <ul style="list-style-type: none"> • Audioteleconferencing • Videoconferencing • Audiographic Communication • Broadcast TV/Radio and Audioteleconferencing 	No	No	No	No	Yes	No
FOURTH GENERATION - The Flexible Learning Model <ul style="list-style-type: none"> • Interactive multimedia (IMM) online • Internet-based access to WWW resources • Computer mediated communication 	Yes	Yes	Yes	Yes	Yes	Yes
FIFTH GENERATION - The Intelligent Flexible Learning Model <ul style="list-style-type: none"> • Interactive multimedia (IMM) online • Internet-based access to WWW resources • Computer mediated communication, using automated response systems • Campus portal access to institutional processes and resources 	Yes	Yes	Yes	Yes	Yes	Yes

It is worth noting that many institutions use hybrid combinations of delivery modes, including elements of face-to-face instruction, in so called distance education programs. Naturally, practice is never as clear-cut as theory. To enhance both theory and practice there appears to be a need for a more detailed approach to the description and discussion of the pedagogy underpinning online teaching and learning.

Pedagogical Theory and Practice: A Case Study

It is worth revisiting a fundamental point, which still tends to be overlooked by many practitioners: “It is entirely feasible to surround a teacher with a team of audio-visual technicians, graphic artists and computing specialists to vary the style of the delivery of the educational message without producing a significant increase in pedagogical efficacy. The key process for improving the quality of teaching and learning is instructional design....” (Taylor, 1994, p.184). Using the Internet as a mode of delivery will not *automatically* improve student learning. Further, in efforts to determine an appropriate approach to online teaching and learning, there is a need to acknowledge the importance of the complex interplay of different epistemologies, modes of thinking and associated types of subject matter in different academic disciplines, different educational objectives for courses of study, and not least the extant levels of expertise of the student target audience. It is clear that significant differences in online pedagogical approaches will be necessary for K-12, undergraduate, postgraduate and continuing professional development students. A detailed discussion of all of these issues is beyond the scope of the present paper, which will concentrate only on postgraduate/continuing professional development, an application of online teaching and learning that has proved to be particularly efficacious at the University of Southern Queensland (USQ). The theory–practice interface will be illustrated through reference to Course FET8601 (“Teaching Online”) which is part of USQ’s Master of Online Education degree. It is worth noting that Course FET8601 does not entail a hybrid combination of delivery modes, but is available solely and entirely online.

In Course FET8601, the essential features of the pedagogical environment (which will be demonstrated during the Conference presentation) support a learning process that is interactive, non-linear and collaborative. These features include the use of an interactive study chart as a basic navigational tool, which sets the broad parameters of the subject matter content to be investigated, and lists a number of exemplary references. References are electronic and hot linked via specific URLs. Additionally, the students are free to surf the Web for supplementary teaching-learning resources that meet their specific needs. The interaction with courseware materials is, however, only one element of the interactivity built into the USQ pedagogical approach. Interaction with other students, teaching staff and other experts, who act as mentors, is achieved through the use of Computer Mediated Communication (CMC), primarily through the deployment of asynchronous discussion groups. Students are encouraged, and at times required, to communicate through various electronic discussion groups, established for specific content areas as well as for informal social interaction. Central to this approach is the effective use of asynchronous CMC as the mechanism for facilitating effective social and intellectual engagement among participants. A similar pedagogical approach has recently been reported by Mentis, Ryba and Annan (2002) based on postgraduate study towards a Master of Educational Psychology degree at Massey University, New Zealand.

It is worth noting that there is a qualitative difference between a traditional on-campus tutorial (real-time verbal communication) and computer conferencing (asynchronous written communication) with the reflective and precise nature of the latter being very different from the spontaneous and less structured nature of oral discourse in either a face-to-face, videoconference or audio teleconference context. As Garrison (1997) highlighted, “The reflective and explicit nature of the written word is a disciplined and rigorous form of thinking and communicating it allows time for reflection and, thereby, facilitates learners making connections amongst ideas and constructing coherent knowledge structures” (p.5). Computer conferencing is therefore not just another technology, it has the potential to shift the emphasis in distance education from the essentially *independent* learner of the Correspondence Model to the *interdependent* learner of the Flexible Learning Model. This fundamental shift highlights the potential for ongoing meaningful

social engagement among students, an approach consistent with such theorists as Brown and Duguid (2000), who emphasised the importance of regarding learning as a social act: “Practice is an effective teacher, and community of practice an ideal learning environment” (p.127).

Facilitating the meaningful engagement of students in a reflective community of practice provided the essential theoretical orientation of the pedagogical approach adopted in Course FET8601. This orientation is consistent with Hung and Chen (2001), who delineated a number of web-based design principles derived from an analysis and synthesis of the literature on situated cognition (e.g. Lave & Wenger, 1991); Vygotskian thought (eg Vygotsky, 1978, 1981) and learning through participation in communities of practice (e.g. Brown, Collins & Duguid, 1989). Hung and Chen derived the following four principles of learning to guide the design of web-based e-learning environments: commonality, situatedness, interdependency and infrastructure respectively (Table 2).

Table 2: Selected Instructional Design Considerations for E-Learning

Principles of situated cognition and Vygotskian thought	Instructional design considerations for online teaching and learning
Commonality: <i>Learning is a social act leading to identity formation and associated membership of a community of practice</i>	<i>E-Learning environments should capitalise on social and collaborative communication with others who have shared interests</i>
Situatedness: <i>Learning is reflective, metacognitive and embedded in rich socio-cultural contexts</i>	<i>E-Learning environments should enable students to work on activities and projects that demand reflection on authentic practice</i>
Interdependency: <i>Learning is socially mediated and facilitated through engagement in practice with others</i>	<i>E-Learning environments should generate interdependencies that benefit from the diverse expertise in the learning community</i>
Infrastructure: <i>Learning is facilitated by activity, accountability and associated support mechanisms</i>	<i>E-Learning environments should incorporate facilitating structures, accountability mechanisms, and associated rules of engagement</i>

(Source: Adapted from Hung and Chen, 2001)

From an instructional design perspective, the principles of commonality, and situatedness respectively are essentially functions of the typical cohort of adult distance education students, which often includes many part-time students who are working full-time in contexts related to the area of formal study. These students have a shared interest (commonality) in the selected course of study, and often have the opportunity to work on authentic projects (situatedness) provided the approach to assessment incorporates project-based assignments.

To make the most of the commonality principle, Course FET8601 uses the introductory asynchronous discussion forum topic to get students to introduce themselves and their interests and motivations in opting to study “Teaching Online”. The Communication Centre functionality of the learning management system also enables staff and students to create sub-groups to work together. For example, in FET8601 groups are usually created by students who work in similar contexts (e.g. primary schools, secondary schools, tertiary institutions and industry trainers, as well as specific sub-groups with a shared interest in a particular topic). This commonality often arises from an implicit awareness of the value of situatedness, which is also exploited as a positive pedagogical force through an assessment scheme that demands project-based authentic assessment, peer review and reflection on action (Schon, 1987).

In Course FET8601, the latter emphasis on reflection on action and associated peer review embraces the learning principle of interdependency. As part of the assessment scheme, students

are required to submit reflections to a public discussion forum, which means that every student has direct access to the assignments of all other students. This approach uses the diverse experience and expertise of students to enrich the substantive content of the course consistent with Vygotsky's (1978, 1981) notion of the pedagogical value of having students interact with others operating within their zone of proximal development (ZPD). The public availability of the assignments submitted generates a sense of mutual benefit among students, thereby capitalising on the principle of interdependency.

The requirement to submit assignments to a public arena is part of the infrastructure, which is reflected in the facilitating structures, accountability mechanisms, and rules of engagement that are a manifestation of the instructional design principles underpinning the implementation of Course FET8601. In the online teaching and learning environment, the facilitating structures include not only the curriculum design and associated analysis of the information architecture of the course (Taylor, 1996) and the extent to which it is based on emerging web usability principles (Nielsen, 2000). The explicit delineation of the recommended/required rules of engagement, and the subsequent investigation of actual patterns of student engagement, present significant opportunities for empirical research.

For example, to what extent are students required to contribute to various topics via the discussion forum? Or, are students only expected to contribute? If they choose not to participate initially, are they encouraged to participate, either publicly via the discussion board, or privately via personal email, or are they ignored? Similarly, to what extent are academic staff required/expected/encouraged to participate in the discussion forum? Is there a minimum standard for participation? Is there an optimal level of participation for staff? Is there an optimal level of participation for students?

Lave and Wenger (1991) emphasised the importance of the social context in which the learner is immersed, and learning as legitimate peripheral participation in a community of practice (Lave and Wenger, 1991). In the online context, "legitimate peripheral participation" in general parlance has become associated with the term "lurker", which is defined as one of the "silent majority" in an electronic forum; one who posts occasionally or not at all but is known to read the group's postings regularly (The Jargon dictionary, 2002). Is peripheral participation really legitimate? Or, are all lurkers illegitimate?

There is clearly a significant opportunity for theory development and associated empirical research in this area. Further, one of the benefits of conducting research in an online environment is the record keeping functionality of many web-based applications, including the learning management system used by USQ. The course statistics collected can be a rich source of data for empirical research related to the generation of participation profiles that track the engagement of students and staff. For example, a review of selected descriptive statistics associated with the teaching of Course FET8601 can generate insight into the peripheral participation issue, while at the same time providing a useful perspective on the demands on the teacher to facilitate the engagement of students in the social construction of knowledge through meaningful participation in the discussion forum.

Empirical Evidence

A general overview of the course statistics for Course FET8601 (Appendix 1) for the participation of students throughout Semester 1, 2001, a period of 16 weeks, demonstrates that communication between people accounts for approximately 75% of the interaction, whereas interaction with study materials constitutes about 25% of the interaction. These statistics also demonstrate that the cohort of students made the most of the flexibility of online learning

opportunities by accessing the site throughout the semester each day of the week, and every hour of the day; a genuine 24 x 7 operation.

A more granular analysis of the engagement of individual students with key elements of the online learning management system is presented in Appendix II. It is worth noting that the “Main Page” of the course acts as an access gateway to the other elements, as well as incorporating the “Announcements” facility, which is used regularly by teaching staff to post new messages to all students. By and large, however, the major pedagogical feature of the online teaching and learning environment aimed at creating an effective community of practice is the asynchronous Discussion Board and associated communication features that engender interaction between people rather than interaction with learning materials. In Course FET8601, an overview of access by both students and teaching staff to the key areas of engagement, the asynchronous discussion and study materials respectively, is presented in Table 3.

Table 3: Key Areas of Engagement in Course FET8601

Participant No.	Discussion Board	Post Message	Study Material	Total Interactions (hits)
1	153	14	28	759
2	31	6	13	203
3	80	13	28	401
4	16	3	45	153
5	81	6	33	411
6	196	20	11	787
7	523	49	40	1200
8	10	4	3	25
9	81	9	16	324
10	83	30	30	299
11	191	17	26	532
12	96	35	36	404
13	126	21	30	410
14	325	179	47	992
15	182	12	33	648
16	93	24	87	476
17	218	17	78	1019
18	102	28	49	349
19	185	16	45	407
20	113	8	47	720
21	136	30	39	492
22	321	20	34	951
23	20	3	4	52
24	180	8	32	729
25	30	3	48	268
26	57	16	16	265
27	39	7	16	169
28	83	15	29	406
29	23	1	26	91
30	86	4	25	293
31	131	14	26	552
32	250	9	49	581
33	40	4	27	343
34	184	26	44	652
35	142	13	34	700
36	33	8	23	235
37	267	23	30	817
38	42	6	60	383
39	36	5	81	310
40	81	17	33	376
41	105	31	22	521
42	141	19	47	554
43	12	3	26	111
44	464	87	15	1012
45	782	184	82	1610
TOTALS	6570	1067	1593	22992
Totals Excluding Staff Input	5324	796	1496	20370

As a simple starting point, it is possible to represent the “**General Engagement Ratio**” between teaching staff (participants 44 and 45) and students (participants 1-43) as a simple ratio of

approximately 1:8, with the teaching staff constituting 11.4% of total interactions with the website and students the remaining 88.6%. The meaningfulness of these interactions would, of course, require a more granular, qualitative analysis, whereas the present paper is concerned primarily with gaining insights from a quantitative perspective.

The major pedagogical feature of this course is the required participation in the Discussion Board, including the posting of at least two reflections, and one critique of the work of other students. Such asynchronous communication underpins the “Community of Practice” instructional design rationale of the course. From this perspective, it is also possible to compute the “**Asynchronous Communication Engagement Ratio**” (the ACE ratio), a potentially useful indicator of meaningful participation in the online teaching–learning environment. In the present course context, the teaching staff reviewed the Discussion Board on 1246 Occasions (Course leader: 782, Tutor: 464) a total of 18.96% of all hits, compared to the students, who visited the Discussion Board on 5324 occasions (81.04%), an ACE ratio of approximately 1:4. An analysis of the number of actual messages posted to the Discussion Board demonstrates that staff contributed 271 postings (25.4%) compared to 796 postings (74.6%) by students, a ratio of approximately 1:3. Such descriptive statistics provide an interesting point of departure for a more detailed analysis of different patterns of student participation in online learning.

The Workers, The Lurkers and The Shirkers

A more granular analysis of participation in the Discussion Board can provide useful evidence on peripheral participation by examining the number of times individuals accessed the Discussion Board and the number of times individuals actually posted contributions to the forum. For the sake of analysing various participation profiles, the total group has been divided into the following three sub-groups that differ in terms of their participation patterns in accessing, and contributing to, the Discussion Board: the Proactive Participation Group (N = 14), the Peripheral Participation Group (N = 17) and the Parsimonious Participation Group (N = 12) respectively. Such differentiation between student sub-groups is relatively arbitrary, but is based on genuinely distinctive participation profiles. For example, the Proactive Participation Group (“The Workers”) contained students who contributed an above average number of postings to the Discussion Board and also visited that part of the site regularly. These students were continuously involved in discussions and were often among the first to post a message, and to respond quickly to other messages, thereby creating “threads” of ongoing dialogue between students. In contrast, the Peripheral Participation Group (“The Lurkers”) included students who contributed less than the average number of postings to the Discussion Board, but at the same time participated regularly in the discussion in “read only” mode. Finally, the Parsimonious Participation Group (“The Shirkers”) contributed only one third of the average number of postings or less to the Discussion Board, and similarly visited this part of the site on less than fifty percent of the group average.

Were these extremely variable patterns of participation potential predictors of academic performance? Again, as an initial indicator of the value of pursuing this question in a more inferential manner, the descriptive statistics providing an overview of participation and performance for workers, lurkers and shirkers respectively are presented in Tables 4, 5 and 6.

Table 4: Proactive Participation and Performance in Online Teaching and Learning (The Workers)

Participant No.	Gender	Age	Country of Birth	Discussion Board	Post Message	Study Material	Total Inter-actions (hits)	Grade
6	M	29	Germany	196	20	11	787	A
7	M	57	Canada	523	49	40	1200	B
10	M	39	USA	83	30	30	299	B
12	F	41	United Kingdom	96	35	36	404	C
13	F	44	Australia	126	21	30	410	B
14	M	46	New Zealand	325	179	47	992	A
16	M	43	Canada	93	24	87	476	A
18	F	38	Canada	102	28	49	349	B
21	F	48	Australia	136	30	39	492	B
22	F	37	Australia	321	20	34	951	A
35	M	43	Australia	184	26	44	652	B
38	M	50	Australia	267	23	30	817	HD
42	M	41	Australia	105	31	22	521	B
43	F	44	Australia	141	19	47	554	A
Totals				2698	535	546	8904	
14 participants: 33% of cohort								

Table 5: Peripheral Participation and Performance in Online Teaching and Learning (The Lurkers)

Participant No.	Gender	Age	Country of Birth	Discussion Board	Post Message	Study Material	Total Inter-actions (hits)	Grade
1	F	49	Scotland	153	14	28	759	A
3	F	25	Australia	80	13	28	401	A
9	M	32	Canada	81	9	16	324	A
11	F	49	Australia	191	17	26	532	B
15	F	56	Philippines	182	12	33	648	B
17	M	43	Canada	218	17	78	1019	A
19	M	43	Australia	185	16	45	407	A
20	F	33	Australia	113	8	47	720	B
24	F	46	Australia	180	8	32	729	C
26	M	35	Australia	57	16	16	265	A
28	F	29	Malaysia	39	7	16	169	C
29	F	41	Australia	83	15	29	406	HD
32	M	30	Australia	131	14	26	552	B
33	F	50	Australia	250	9	49	581	B
36	F	31	China	142	13	34	700	A
37	M	43	Australia	33	8	23	235	B
41	F	31	Australia	81	17	33	376	B
Totals				2199	213	559	8823	
17 participants: 39% of cohort								

Table 6: Parsimonious Participation and Performance in Online Teaching and Learning (The Shirkers)

Participant No.	Gender	Age	Country of Birth	Discussion Board	Post Message	Study Material	Total Inter-actions (hits)	Grade
2	F	41	Australia	31	6	13	203	B
4	F	42	Australia	16	3	45	153	F
5	F	52	Australia	81	6	33	411	B
8	F	37	Australia	10	4	3	25	IDM
23	M	43	USA	20	3	4	52	IDM
25	F	55	United Kingdom	30	3	48	268	IDM
30	M	34	Malaysia	23	1	26	91	IDM
31	F	29	Philippines	86	4	25	293	IDM
34	M	28	Australia	40	4	27	343	B
29	M	39	Australia	42	6	60	383	B
40	F	44	Australia	36	5	81	310	IDM
44	F	22	Australia	12	3	26	111	IDM
Totals				427	48	391	2643	
12 participants: 28% of cohort								

A generic overview of the participation and performance of the three sub-groups is presented in Table 7.

Table 7: Overview of Participation and Performance

Student Sub-Groups	Average Number: Discussion Board Hits	Average Number: Messages Posted	Average: GPA
The Workers	193	38	5.43
The Lurkers	129	13	5.41
The Shirkers	36	4	4.30

Discussion

The instructional design rationale of the present case study, which was based on the principles of situated cognition and Vygotskyian thought (commonality, situatedness, interdependency and infrastructure respectively) appears to have engendered meaningful engagement in a professional community of practice for the majority of the present postgraduate student target audience. The instructional design approach appears to have worked both in theory and in practice. It is clear, however, that there are quite different patterns of student interaction, which seem to be related to performance. The 14 workers (Proactive Participation Sub-group) attained an average GPA of 5.43, while the 17 lurkers (Peripheral Participation Sub-group) attained an average GPA of 5.41. Significantly, 7 of the 12 shirkers (Parsimonious Participation Sub-group) did not complete their assessment, while the remaining five achieved an average GPA of 4.3. Given that the academic performance of the lurkers was on average not much less than that of the workers, it seems reasonable to suggest that the notion of learning through legitimate peripheral participation is indeed efficacious. However, it is also clear that students who have a more parsimonious approach to engagement are at risk of failure, since eight of the shirkers did not achieve an acceptable level of academic performance during the semester. Clearly, there is a need to conduct further research to define the parameters associated with minimal and/or optimal levels of participation that will provide students with a reasonable chance of academic success. This work would necessarily entail a qualitative dimension not only to “unpack” the reasons for varying degrees of engagement, but also to analyze the perceived value of particular interactions from a student learning perspective.

Similarly, the minimal and/or optimal level of participation by the teaching staff is an area worthy of further research. Not only does the ACE ratio provide an interesting focus for assessing the efficacy of varying pedagogical approaches based on different instructional design rationales, it will help to tackle some of the industrial dimensions of online teaching (e.g. workload allocation, staff-student ratios) and associated resource considerations to help realise the potential economies of scale that are claimed for online teaching and learning. For example, it would be interesting to monitor the impact of the teaching staff reducing their current participation level in the Discussion Board thereby increasing the ACE ratio (say from the current 1:4 to 1:5) in an effort to define parameters for optimal facilitation of student engagement in the most cost-effective manner. Further, although beyond the scope of the present paper, the focus on reducing the variable costs of delivery has led to the development and deployment of academic productivity tools such as 5th generation reusable learning objects' databases and associated automated response systems (Taylor, 2001). It is worth noting that the apparent success of the lurkers in the present case study augurs well for the use of these productivity tools, and ultimately online teaching facilitated by intelligent databases, given the apparent efficacy of learning as legitimate peripheral participation.

Further, empirical investigations of the variation in the ACE ratio across different disciplines, various instructional design approaches and different target groups (e.g. K-12, undergraduate etc.) could provide valuable insights into the pedagogical efficacy and associated cost-effectiveness of online teaching and learning in a variety of contexts. The scope of such investigations to generate new theory and to provide explicit quality standards for good practice in online teaching and learning should not be overlooked. In particular, the notion of infrastructure is worthy of further elaboration in the online teaching and learning context. Not only in terms of curriculum structure, intellectual scaffolding and the associated application of emerging website usability principles, but especially in the explicit definition of the “*rules of engagement*”. By delineating explicit guidelines for participation in the asynchronous (and possibly synchronous) CMC elements of the course for both students and staff, there will be the opportunity to gather empirical evidence against explicit benchmarks, which could provide precise parameters for optimising the pedagogical efficacy and cost-effectiveness of online teaching and learning. Such research efforts are fundamental to the long-term credibility and viability of distance education theory and practice.

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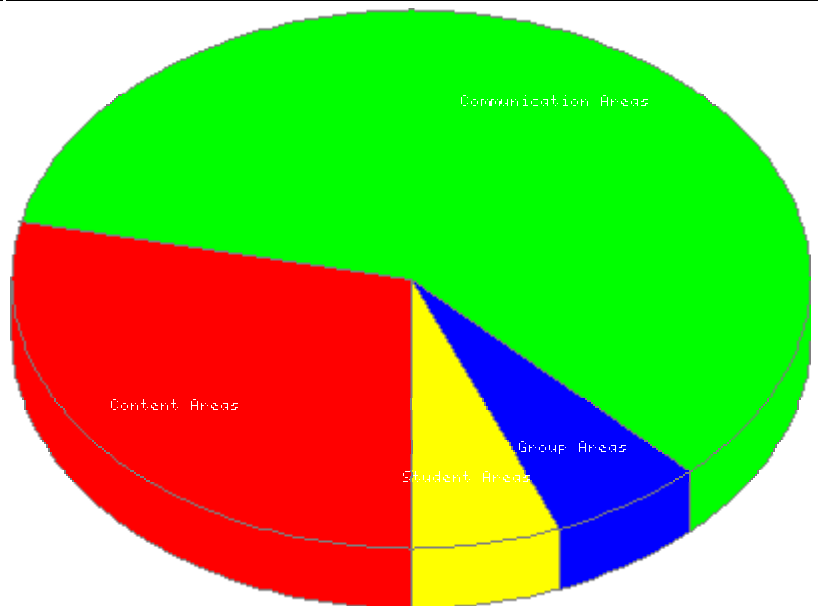
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Total Number of Accesses per Area

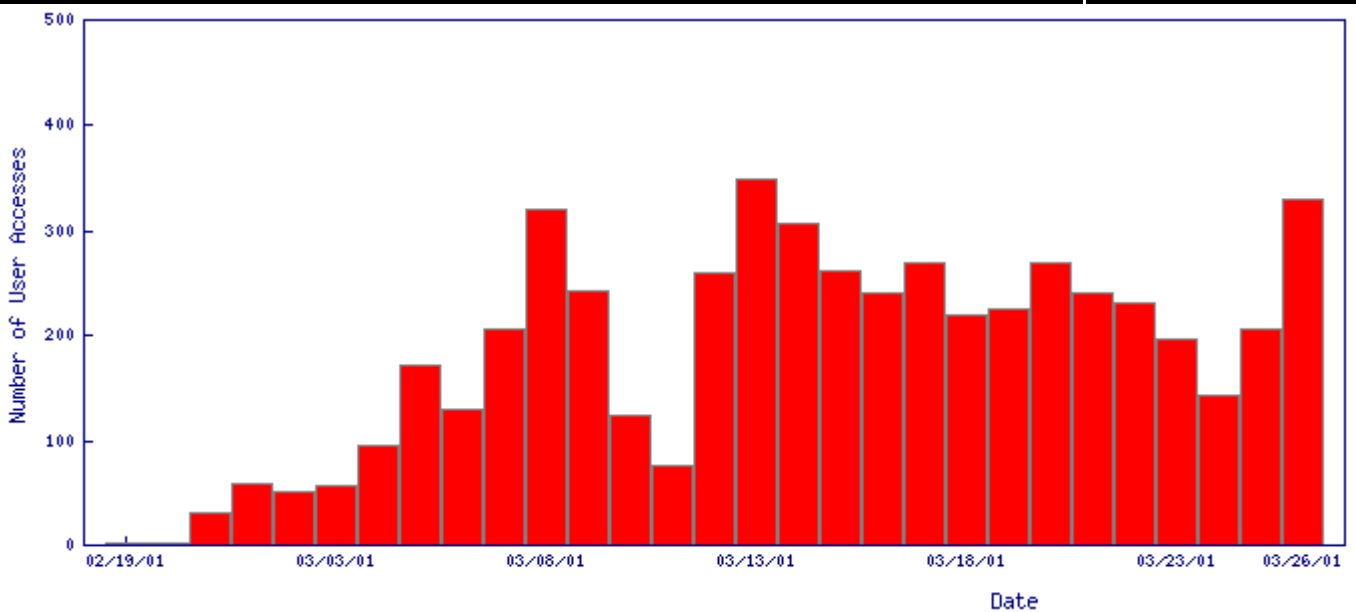
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Area Name	Percent
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Communication Areas	59.3 %
Group Areas	6.20 %
Student Areas	6.08 %
Total	100 %



Number of Accesses over Time

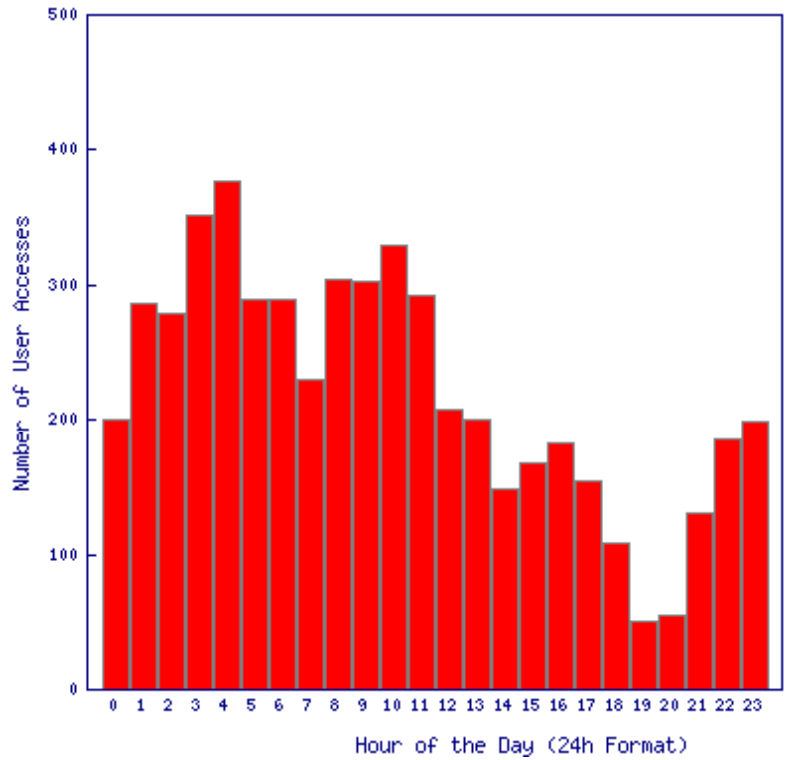
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User Accesses by Hour of the Day

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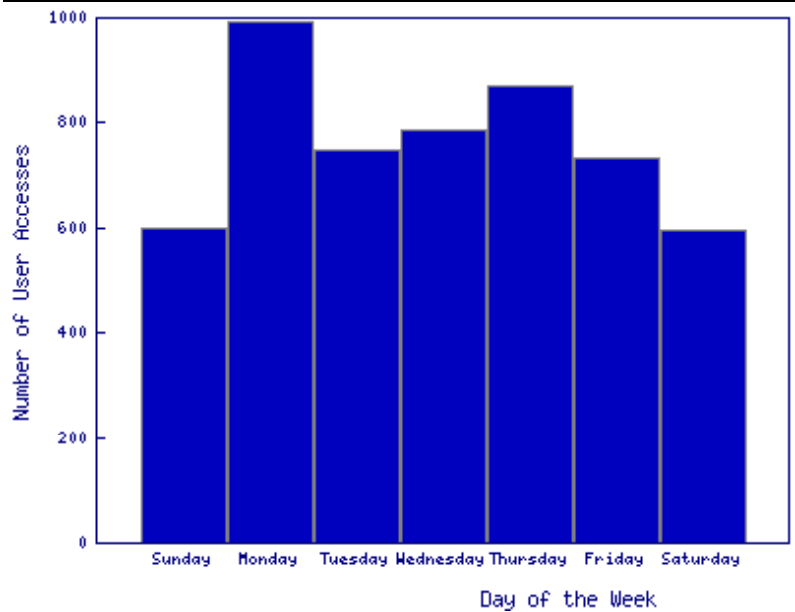
Hour of The Day	Percent
0	3.77 %
1	5.37 %
2	5.24 %
3	6.61 %
4	7.08 %
5	5.43 %
6	5.44 %
7	4.32 %
8	5.71 %
9	5.67 %
10	6.20 %
11	5.48 %
12	3.88 %
13	3.75 %
14	2.79 %
15	3.15 %
16	3.41 %
17	2.89 %
18	2.02 %
19	0.95 %
20	1.03 %
21	2.46 %
22	3.49 %
23	3.73 %
Total	100 %



User Accesses by Day of the Week

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Day of The Week	Percent
Sunday	11.2 %
Monday	18.6 %
Tuesday	14.0 %
Wednesday	14.7 %
Thursday	16.3 %
Friday	13.7 %
Saturday	11.2 %
Total	100 %



Appendix 2: Key Areas of Engagement in Course FET8601

Student	Gender	Age	Age_Band	Country_of_Birth	Access_Group	Assessment	Check_Grade	Discussion_Board	Edit_Home_page	Group_Homepages	Group_Virtual_Chat	Main_Page	Post_Message	Search	Send_Email(s)	File_to_Instructor	Staff_Info	Student_Home_pages	Student_Roster	Student_Tools	Study_Material	Subject_Introduction	Virtual_Chat_Archives	Virtual_Chat_Room	Total_Action_Hits
1	F	49	Over 30	Scotland	23	18	59	153	3	26	1	243	14		4	6	1	17	4	126	28	7	25	1	759
2	F	41	Over 30	Australia		4	12	31	1	1		54	6		3	10	2	9	3	25	13	4	23	2	203
3	F	25	Under 30	Australia	7	14	21	80	7	17		116	13		11	6		21	1	43	28	3	10	3	401
4	F	42	Over 30	Australia		13		16		1		61	3	1		3				9	45	1			153
5	F	52	Over 30	Australia	8	3	27	81		16		110	6		7	6	3		3	82	33	4	18	4	411
6	M	29	Under 30	Germany	48	2	29	196	3	63		236	20		1	6	2	12	2	86	11	1	59	10	787
7	M	57	Over 30	Canada	14	8	62	523		15		315	49	6	5	6		4	1	127	40	5	18	2	1200
8	F	37	Over 30	Australia		1		10				6	4		1						3				25
9	M	32	Over 30	Canada	5	1	12	81	1	8	1	115	9		5	8	1	1	2	39	16	3	16		324
10	M	39	Over 30	USA	1	13	10	83		11		83	30			6			1	31	30				299
11	F	49	Over 30	Australia	28	3	13	191	1	25	1	149	17		5	5	1	9	2	43	26	1	11	1	532
12	F	41	Over 30	UK	10	33	18	96	1	11		102	35	5	1	7	1	5	2	36	36	2	1	2	404
13	F	44	Over 30	Australia	8	9	20	126	1	10	3	99	21		1	6	2	9	1	50	30	3	9	2	410
14	M	46	Over 30	N Zealand	47	18	12	325	2	44		211	179		21	6	2	16	3	49	47	1	3	6	992
15	F	56	Over 30	Philippines	45	8	25	182	1	47	3	156	12		8	9	1	22	2	61	33	1	27	5	648
16	M	43	Over 30	Canada	1	10	23	93		1		157	24	2	3	3	4	2	2	33	87	6	19	6	476
17	M	43	Over 30	Canada	16	19	100	218	4	19		321	17		2	7		9	2	158	78	5	40	4	1019
18	F	38	Over 30	Canada	17	6	8	102		20	1	71	28		13	5			1	23	49	1	4		349
19	M	43	Over 30	Australia	1	3	6	185	1	1		100	16			6	2	4		32	45	5			407
20	F	33	Over 30	Australia	17	11	18	113	10	46		194	8	1	26	7	8	41	13	90	47	7	59	4	720
21	F	48	Over 30	Australia	16	3	13	136	4	15		92	30		5	5	7	13	4	72	39	2	29	7	492
22	F	37	Over 30	Australia	34	16	35	321	11	40		221	20	4	10	8	2	44		104	34	4	43		951
23	M	43	Over 30	USA		4		20				16	3		1		2				4	2			52
24	F	46	Over 30	Australia	23	17	56	180	4	26		209	8	7	6	6		21	2	101	32	15	16		729
25	F	55	Over 30	UK	1	10	1	30	3	8		79	3				1	30	3	19	48	15	6	11	268
26	M	35	Over 30	Australia	14	14	5	57	2	21	1	55	16		1	9		17	1	30	16	3		3	265
27	F	29	Under 30	Malaysia		5	8	39	1	8		38	7		5	6		1	2	26	16	5		2	169
28	F	41	Over 30	Australia	1	7	33	83		19		116	15			6		2		79	29	4	8	4	406
29	M	34	Over 30	Malaysia		2	1	23				25	1		1	2	2			5	26	3			91
30	F	29	Under 30	Philippines	20	7	7	86	1	21	1	84	4		3	2		1		13	25	10	8		293
31	M	30	Under 30	Australia	47	7	28	131	10	50		82	14		14	6	1	27	4	72	26	2	29	1	552
32	F	50	Over 30	Australia	14	12	7	250	1	20		110	9		8	7		12	2	43	49	1	36		581
33	M	28	Under 30	Australia	4	10	11	40		6		127	4		5	5		9	2	64	27		29		343
34	M	43	Over 30	Australia	18	6	28	184	5	20	1	172	26		26	6	3	34	3	55	44	4	34	9	652
35	F	31	Over 30	China	33	22	16	142	2	27		154	13	29	11	6	14	33	6	66	34	15	66	11	700
36	M	43	Over 30	Australia		16	5	33		1		71	8		2	7	2			33	23	10	19	5	235
37	M	50	Over 30	Australia	9	3	76	267		13		194	23	7	1	6	1	8		133	30	6	38	2	817
38	M	39	Over 30	Australia		29	32	42				127	6		1	6	1			62	60		17		383
39	F	44	Over 30	Australia	6	13	3	36		5		91	5		4	6	3	1		26	81	7	23		310
40	F	31	Over 30	Australia	3	14	19	81		7		84	17			6	4	3	1	75	33	4	24	1	376
41	M	41	Over 30	Australia	10	10	21	105	2	10		129	31		12	8	4	16	4	116	22	2	15	4	521
42	F	44	Over 30	Australia	10	2	32	141	8	19	6	129	19			6	1	35	4	64	47	6	15	10	554
43	F	22	Under 30	Australia		13	4	12				36	3			2	1			8	26	5		1	111
Totals					559	439	916	5324	90	718	19	5340	796	62	207	239	79	488	83	2409	1496	185	797	123	20370