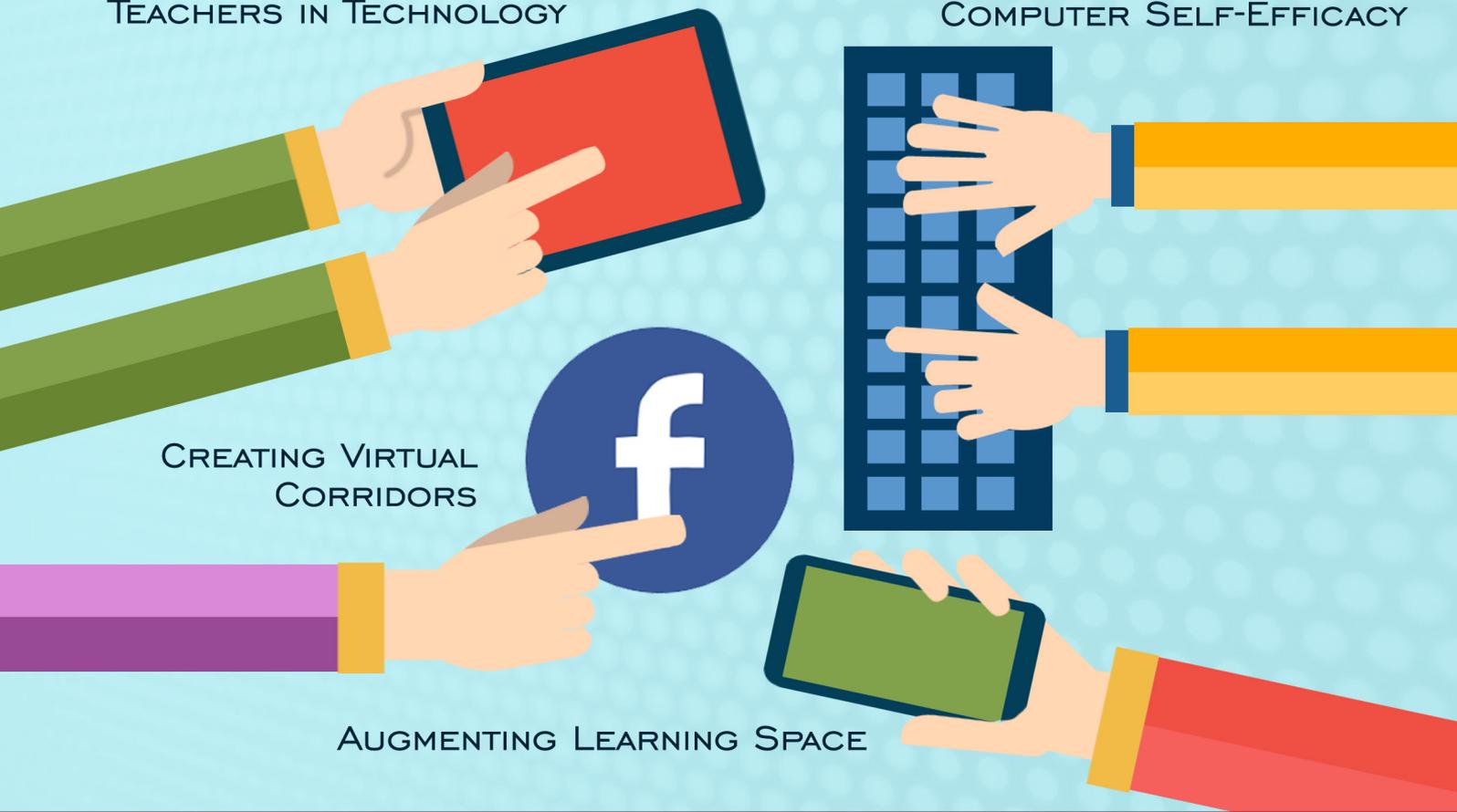


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## **Vision and Mission of the IJODEL**

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To be a leading international academic journal that publishes and disseminates new knowledge and information, and innovates best practices in open and distance electronic learning.

### **Mission**

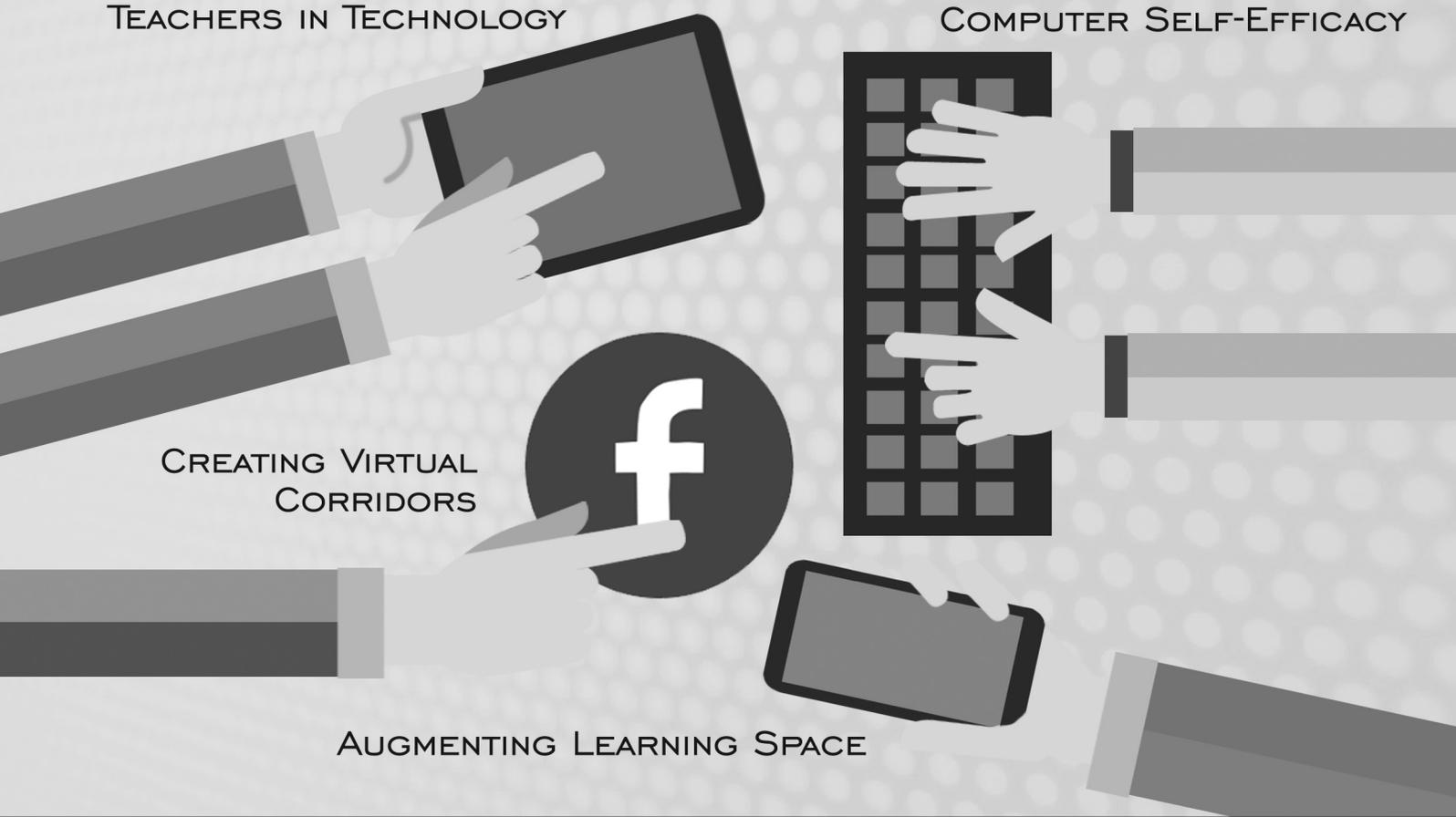
The IJODEL shall publish and disseminate new knowledge and information based on original research, book reviews, critical analyses of ODeL projects and undertakings from various researchers and experts in the Philippines, the ASEAN Region, and the world, and concept articles with the intention of presenting new ideas and innovative approaches to interpreting and implementing best practices in open and distance e-learning as alternative delivery mechanism for quality education.

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## International Journal on Open and Distance eLearning



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**Editorial**  
**Volume 3, Issue No. 2**

The University of the Philippines Open University (UPOU) started publishing its academic journal, *The International Journal on Open and Distance e-Learning (IJODEL)* in 2015. Our latest issue, Vol. 3, No. 1 (June 30th) has just been completed and shall be online shortly.

Why are we publishing this journal? There are many reasons we can cite why we are publishing this journal, but I wish to focus on the almost mundane. In the developing world, there are countless experiences in undertaking distance e-learning activities mainly because we have seen this approach as a reasonably efficient approach to mass education in our environment. True, we are following the examples from developed countries, but we in the developing world are engaged in distance e-learning for survival-type reasons rather than just merely employing innovations as experienced by others. When we employ innovative ways of providing mass education to the teeming millions in our country sides, we are talking of social survival of our children. In this process, we have amassed wealth of experience that have hardly been learned by our educational planners and experts. This is understandable because such experiences have not been put on the table for serious discussion. This is perhaps one of the most important reasons why we feel very strongly about getting our colleagues to talk about their experiences in pursuing innovative ways of educating huge masses of humanity in our part of the world. We are as certain about our colleagues in developed countries wanting to learn from our experiences in the developing world as we in the developing world would want to learn from the experiences in the developed countries. The best way to do this, for now, is to present our experiences to academics of the world in an academic journal. This is what we are doing at IJODEL.

This is an open invitation to our colleagues in the developing as well as developed world to send us your articles for publication consideration in IJODEL. Please refer to our article submission procedure for the IJODEL (toward the end of this issue).

**Felix Librero, PhD**  
Chief Editor



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## Augmenting Learning Space in Post Graduate Courses in Literature Studies Through ODeL: A Critical Overview of NSOU Learning Praxis

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### Abstract

Literature studies at an advanced level require open space for dialectical deliberations, which alone can provide benchmark quality assurance; but its horizontal expanse must perforce factor the vertical depth of the discipline with specific learning objectives. The analytics of learner responses while conducting Post-Graduate literature programmes fruitfully within the domain of ODL posits blended learning - a conjunction of direct interaction and ODL praxis, as a pre-requisite. This paper is premised on the proven results of an experiment at augmenting learner super structured upon the existing SIM's and exhaustive Personal Contact Programmes (PCP), by means of basic ODeL, through ICT enabled social networking support services adopted by Netaji Subhas Open University (NSOU). The support is aimed for more than 8,000 learners of Post Graduate English(PGEG) and Post Graduate Bengali(PGBG) courses, enrolled in various Study Centres located far and wide from the University Headquarters. In its search for enhanced learner support services with a view of constructive academic feedback, the School of Humanities experimentally added a module of direct e-interaction between faculty and learners of Post Graduate literature courses through platforms like Facebook and Google chat. This empirical paper shows how the learner has availed this service to resolve their curricular academic issues on weekdays during University working hours. Concerned faculty on their part have, by way of answering queries mainly evolving out of existing study materials provided to learners, been able to dynamically identify areas that require development. This paper carries the authorial conviction that ODeL is best seen as an extension of the classical pedagogy of ODL, wherein a graded system of blended learning can be the panacea to reach out to the heterogeneous learner community.

**Keywords:** *open and distance elearning, blended learning, literature studies, PG programme, curricula augmentation, student support service, PCP, online support*

### Introduction

The experience of reading literature in curriculum-based domain is not at par with the experience of general reading of literary texts. When we enter into a discipline-based course structure of literary studies, we see reading and re-reading creates lots of shades in our mind. Particularly in higher level studies like Post Graduate work, learner becomes reader and literary reception happens actively. In this reception process, learners are in need of interactive space and learning process in which his/her self-understanding can be upgraded. In classroom teaching, we have mere lecture methods to create such polemic environment of learning process. But communications through different medium and sharing of differential interpretative arguments cannot be systematized in closed institutional domain of conventional mode of teaching; not only that, the learner at far geographical distance is unable to reach to that option of availing conventional mode of teaching.

Here ODL has gained its relevance; specially ICT-enabled virtual teaching and the creation of proper Self-Instructional Material (SIM) has shifted the paradigm of curricula based literary studies in higher learning arena.

In ODL system, we have tremendous advantages of open space of knowledge sharing. Even though the distant learners are loosely connected with the peers and experts of their own institutions, they have options of flexi learning support service. In literature studies, this kind of openness can generate creative knowledge, while they peruse their course effectively. Augmentation of curricula of literature studies can be seen in this way, where real openness of argument and interpretation could enrich literature teaching in higher level through ODeL. This paper discusses how Netaji Subhas Open University is augmenting its course curricula in Post Graduate level studies in different courses it offers.

### **Literature Review**

In ODL system, the designing of course curricula is immensely important. It requires well-structured, well-designed curricula as many experts have mentioned so far. Designing of curricula in ODL system needs to be flexible and accommodative in nature because of the very nature and status of learner it caters to. Glennie (1996) argues for a learner centric approach to curriculum designing. Rumble (2000) has observed that the distance education institutions have been instrumental in the development of new arena of student support service which help the learner to perform well, while Anderson (2008) pointed out that the understanding of learners is the prerequisite component of an learner centric support service system. The specificity of learners knowledge, their cultural attributes and social milieu are the starting component of this system. We find an interesting note of Harasim (2000) that the ODL is no longer peripheral or supplementary, "it has become an integral part of mainstream society." While reviewing all these notes in ODL perspective of developed countries, we need to contextualise these views as per our settings and stipulations. While posing towards a study of literature curricula in ODeL, we have cited the article written by Anastasia Natasina who has done a comparative survey of literary education in nine European Universities (Natsina, 2007).

### **Overview**

#### **Background**

Studying humanities is still an easy and worthy option for the learner in West Bengal. The state has a historical background of renaissance and development of educational pedagogy in its trajectory of modern age. From the very beginning of colonial rule, Calcutta as well as Bengal were the centre of culture and education. The development of modern Bengali language & Literature is also connected with the progress of western modernity unleashed by the British rule in India. In Bengal, largely; the acceptance of enlightenment, its joyful prosperity and the emergence of elite middle class constitutes the whole gamut of literature reading as simultaneous to learning English as a language and its glory of literature. In a sense, acquiring the knowledge of English language and skills shows social status and power one can dream of. Parallel to this observation, there is a huge space of Bengali speaking people who not only constitutes the major readership of Bengal, but largely of school education domain. After the formation of Bangladesh as a nation (in 1971), which precedes a historic movement for its mother tongue Bengali, the orientation of Bengali

psyche got sharp departure from colonial knowledge pedagogy. Learning spaces were created in Bengali from school education to higher education arena. Language teacher/trainer, especially in Bengali and English, are constantly being engaged to shape the whole gamut of education.

The demand of acquiring a degree in any of the traditional discipline is a factually known phenomenon of Bengal. After passing 12 standard examination, learners normally get enrolled in any of such courses. In humanities or social science subjects like Bengali, English, History, Political Science, it happens in a large number. This demand for academic degree from any of the higher education institute/university has many reasons most likely related to high rate of pass in primary and secondary levels. Historical as well as socio-political developments of Bengal may be considered in this discussion. The contention behind huge enrolment in language subjects definitely shows the social psyche in general.

### **Objective Reality**

Since 2010, there has been 14 State funded open universities and 242 Dual Mode Universities/Institutes in India who are practicing ODeL in their teaching learning process. They are working under the aegis of University Grant Commission. Indira Gandhi National Open University(IGNOU), the fastest growing mega university of the world, has already made history in inclusive education and ODeL on the whole. The share of Distance Education in Gross Enrolment Ratio(GER) of India is about 22-23% which is notable (University Grants Commission). Netaji Subhas Open university is the only Open University of West Bengal funded by the Govt of West Bengal as well as the Govt of India. Teaching learning pedagogy of ODeL is constantly being engaged in new explorations of teaching methodologies that are taking place in this country which corresponds to divergent cultural milieu of India.

West Bengal is a state which has high demands for higher education in general. The state, with an area of 88,752 square kilometers and population of 91.3 million (with density of 1000/Sq.KM). Literacy rate is 77.08% which is higher than the national rate of 74.04% (Office of the Registrar General & Census Commissioner, India, n.d.). The official language of the state is Bengali which has a close geographical proximity to another 168 million Bengali speaking people of Bangladesh. In West Bengal there are 18 Universities and 515 degree-granting colleges, aided by the Central or State government, which award higher education degrees. About 12,000 teachers are appointed in these institutions. In the school education scenario, there are 49,893 primary and 4,582 secondary or higher secondary schools which has covered the whole geographical area (Department of School Education, Government of West Bengal, n.d.). No doubt, this huge volume of state funded educational institutions is in practice of an effective and modern educational pedagogy. It also shows that a sizable corpus of learner in higher education as well as in primary and secondary education are included in the traditional mode of teaching.

In India, until 2015, the internet penetration was 18% on the whole; but it is increasing very fast. In 2013, 2014 and 2015 the penetration percentages were 15.1, 21 & 26%, respectively. While the total internet users of India is 37.5%, it is interesting to find that the active mobile internet users (30.3%) and active social media users(13.6%) are increasing very rapidly (Statista: The Statistics Portal). Data in 2011 shows that in West Bengal, the households having computer comprise 8.3% in which 2.2% is with internet connections (Biswas, 2012). However, things are changing rapidly. In 2015, the Telecom Regulatory Authority of India (TRAI) published its Telecom Service Performance Indicator Report which indicated that the total internet subscriber per 100 population is 24.09, which included rural internet subscribers comprising 12.89 per 100 population. It also highlighted

that among the total count of internet subscribers of 302.35 million, the broadband subscribers were only 99 million (one third of the total count) who's majority lives in urban areas. (Telecom Regulatory Authority of India)

### **Social of Psyche**

In the West Bengal, degree awarded by the Open and Distance Learning University is still not acceptable to many, in spite of a clear notification from the University Grant Commission (UGC), since 2013. Today, all the 13 OU of India are within the ambit of UGC, which is a statutory body to look after the accreditation of higher learning institutes/universities under the purview of Government of India. Traditional system of imparting education is so deeply rooted that without institutional absence or physical non-existence of Face-to-Face mode or physical absence of teacher is still not completely acceptable in the social psyche of the people. Most of the people engaged in educational domain in university level came from conventional education system. Their psyche are also involved in it. For the last two decades, after the establishment of National Open University (IGNOU), Open Educational System actually expanded in terms of inclusiveness. Quality in higher education has not attained such height that one learner can cherish upon. It was a forced attempt to reach the unreached. NSOU has also faced such unavoidable social psyche in its trajectories of a decade.

Now, while modern information technology has taken off a phenomenal growth in India, societies are changing, the educational paradigm and mindset are also changing. Open Universities are in the front of these changes. It innovates, customizes the educational methodology of teaching different disciplines of core subject area. Pedagogies of ODeL are interlinked with the basic knowledge it imparts to the learner. In the process of ODeL praxis, NSOU has evolved such blended model of curriculum based, purpose oriented studies in humanities subjects to overcome such psyche. The involvement of teachers of conventional system, institutions is important in this regard.

### **About NSOU**

Netaji Subhas Open University is a premier State Open University of India, funded by the Government of West Bengal and the Government of India. The university, established through State Legislation Act (WB Act XiX) of 1997, was recognized by the UGC in 1997. It recorded a phenomenal growth in terms of learner enrolment in the last fifteen years. The university has 105 Study centres across the state covering geographical area of about 8000sq km, and more than 300,000 learners enrolled in different post graduate, under graduate and vocational courses. After the issuance of UGC notification in 2013 (University Grants Commission) regarding the equivalence of degree conferred by any State Open University of India with conventional university, the demand for NSOU has raised considerably. The other important aspect of NSOU lies in its forced attempt to expand higher education in suburban, rural and remote areas of Bengal through its study centres, which are actually degree-granting colleges of the conventional system. Mostly,

the basic infrastructure of these colleges is used on weekends for this purpose. So blending of two different educational endeavours has been enacted from the very beginning of NSOU.

### Enrolment of Learners in NSOU

The enrolment trend of learners in post-graduate level is shown in the following chart.

Table 1. Enrolment at NSOU (2013-2015)

Year	2013 July		2014 July		2015 July	
Total enrolment in PG Level (in 11 subjects)	8,650		11,473		17,926	
Enrolment in Humanities subject (Bengali & English) (Two year course)	Bengali	English	Bengali	English	Bengali	English
	2519	880	3233	1219	5052	1948

It may be observed from Table 1 that the demand for these two subjects (Bengali and English) in post-graduate level is high, compared to any other subject. It is almost the one third of the total enrolment in PG level at NSOU. Compared to other conventional universities, PG Bengali and PG English enrolment are also quite high; though both degree programs are equitable in purpose as per UGC regulations are concerned. Following are the findings of data regarding the enrolment of Bengali and English in PG level of different conventional universities having only face to face mode of teaching:

Table 2. Number of annual enrollees for Bengali and English in PG level of different conventional universities

University	Number of Annual Enrollees for Bengali	Number of Annual Enrollees for English
University of Calcutta(CU)	363	250
Jadavpur University(JU)	110	50
Rabindra Bharati University(RBU)	160	
University of North Bengal (NBU)	80	
University of Gour Banga(UGB)	110	
Burdwan University (BU)	245	200
Vidyasagar University(VU)	475	145
Thakur Panchanan University, Coochbehar	70	

<b>Total</b>	<b>not more than 1,500</b>	<b>not more than 800</b>
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### **Methodology**

This paper argues for a blended learning model that transpires from the general practice that has been offered by NSOU regarding Student Support Service (SSS) under the School of Humanities for Post Graduate(PG) Courses of English and Bengali. It is noteworthy that there are 15 government-sponsored universities in West Bengal where these two courses are offered; and out of these 15 universities, five have their statutory provision to run the Directorate of Distance Education (DDE). The curricula, offered by NSOU, are at par to all these conventional universities.

Quantitative analysis of learning analytics have been made to explore the additional inputs in teaching humanities subjects in regard to conventional mode of teaching. It's a known fact that the orientation of teaching, especially in language and literature disciplines, is non-linear. According to its multiplicity of approach in ODeL, the study of literature, in general, can evolve as an effective one. Blending of learning methods is therefore obvious. The experience of NSOU can be seen as an example of hybridized teaching-learning methods compared to conventional university system. Teacher-student contact and technology enhanced teaching pedagogy can be seen as an effective model of teaching humanities discipline. In this paper, the scenario of study of the humanities courses in West Bengal is contextualized, in which the praxis becomes demanding for a state-funded open university like NSOU.

### **Discussion**

The blended learning model is always case specific and customized upon the educational environment and learning space. In Netaji Subhas Open University, we have seen a customized model of blended learning in PG level. The physical existence of counselor and facilitator are the important components here to impart effective teaching in literature studies. Here, we have also seen the juxtaposition of conventional university teaching model and in ODL as well. The learners 'psyche' to the reception of direct teaching is important here. We have noted that the learner enrolled in such courses are aspirant of higher degree and need to earn the eligibility for getting job in highly competitive market. The inclusion of remote area, backward caste, ethnicity and economically backward class are major factors behind such high enrollment in humanities courses which are essentially non-lab discipline of study. Therefore, learner entering into area of higher education through this state funded ODL institution, are in need of regular monitoring. Blended model of learning is relevant in this intervention. Innovative learning praxis developed by the NSOU especially in Post Graduate Literature studies under the School of Humanities, has taken the key role in augmentation process of curricula.

### **NSOU**

The augmentation of PG curricula of Bengali and English is very important component to the learner enrolled in these courses. It shows that the academic standard of curricula is at par to any other conventional university, which promotes its accountability to the learner coming from different social milieu.

There are four major components of Student Support Service under ODeL and NSOU in general; which are i) Self Instructional Material (SIM), ii) Personal Contact Programme (PCP), iii) Online SSS through social networking, iv) Internal evaluation or Assignments.

### Curricula Augmentation

There are eight papers in total for each subject Bengali and English which is divided into two parts each consisting of four papers to be completed by the learner within a year. The design of content for PG curricula has been developed by the Board of Studies (BoS) of concerned discipline. The following (Table 3) are the course wise content distribution which needs teaching support for enrolled learner.

Table 3. Course content distribution needs of the enrolment support services

Course	Course Content nature		Reading of texts			Conceptual Topics (referential reading)	No of papers & Marks
	Objective reading	Subjective reading	Selective reading	Referential/ analytical reading	both		
PGB	40%	50%	60%	40%	80%	30%	8papers @100marks 800marks
PGEG	60%	40%	70%	30%	70%	30%	8papers@ 100marks

### Self Instructional Material (SIM)

The major distinction between conventional and open university underlies in the educational material they have produced to cater to their learner activities. It is of utmost importance for an open university to prepare good, purpose-based and effective educational material, either in print or in audio-visual /electronic form. Printed SIM is basically the identity of a traditional open university through which it reaches to the learner. Netaji Subhas Open University has developed quality self learning material (SIM) in print form. In the last 15 years, the NSOU has made enormous effort in this field. Study notes, references, assignment guide, audio-visual lectures etc. are the components of this educational resources.

At NSOU, the design and production of educational material follows the procedure provided in Table 4.

Table 4. Educational material production process at NSOU

Subjects Under SoH, NSOU	No of Module		SIM in Print (Study Module)	References in print (in book/ photocopy form)	Audio-Visual SIM (in DVD/CD form) In 2014-16	
	Module	Unit			Lectures	DVD/CD
Bengali	32	190	14 Books	3 (for compulsory paper) low priced edition 2 (for optional paper)	40	15(DVD) 3(CD)
English	32	128	8 Books	1 photocopy reference (52 pages)	27	8 1(CD)

These curricula based materials have been written or developed by the resource persons identified by the Board of Studies of the concerned subject. Language is lucid and the approach is purpose-based. It actually replaces the role of a face-to-face teacher of conventional system. No doubt this is a challenging task for the course writer and the coordinator as well. The subjective or interpretative portion of the syllabus(as mentioned in Table 3) have been developed in such a way that one learner can get breath upon. Critical endeavours of literary study have been promoted by the SIM itself. Since 2014, School of Humanities has started Curriculum based AVL preparation programme from April to September each year ; which is a continuous process. Experts from other conventional universities has taken an important role in this regard.

### Personal Contact Programme (PCP)

After getting enrolled in a PG course like Bengali or English, the learners are offered PCP (Personal Contact Programme) once in a week which is not mandatory. The PCPs' are normally arranged on Sundays in different Study Centres which as mentioned earlier, are all State funded/aided Degree colleges located far away from head quarter of Kolkata. Learners are offered 6 hours of PCP per day(Sunday) in four slots of 1.5hrs. For humanities group subjects in PG level, NSOU offers 30 counselling hours in 5 consecutive Sundays. It can be noted that all the study centres are not fixed as PCP centre. As per enrolment of learner in different Study Centres across the state, they are clubbed into some suitable PCP centres which has proper infrastructure to hold PCP on Sundays.

These PCP sessions are taught by the full time college teachers appointed in substantive post in nearby colleges and universities. It is an arrangements that can be seen as effective use of human resource in ODeL to maintain the quality of teaching in PCP's. There is one academic coordinator per PCP centre engaged by the Director, School of Studies of NSOU. Most likely they are senior college or university professor of concerned subject. Here are the findings of PG PCP shown in

chart form.

Table 5. Participation rates according to PCP distribution

Subjects		No of PCP Centres (Centre code)	No. of Counsellors (Approved by the School of Humanities, NSOU)	Distribution of learner (Average)	Percentage of attendance (Average)
Bengali	2013	13	90	150 - 200	50% - 60%
	2014	14	120	200 - 250	60% - 70%
	2015	14	125	250 - 300	60% - 65%
English	2013	5	45	150-200	75%
	2014	5	45	250 - 300	70%
	2015	6	60	200 - 250	75%

The attendance of the learners in PCP is high though it is not mandatory. In the case of English PCP, it is observed that the percentage is a bit higher than the Bengali PCP. In PG curricula, as shown in the Table 4, the portion that needs subjective reading, are discussed in PCP sessions. The learners usually take part in interactive counselling programme in good numbers though it is not mandatory to sit for the examination.

### Internal Assessment & Evaluation

Internal assessment and evaluation system is another component of student support service of NSOU, that is very useful to the learner. It confirms the re-reading of texts and other references covering entire syllabus of the course. Each paper of 100 marks has an assignment paper containing critical questions and topics to be answered by the learner himself from their home. Basically this is an open book home assignment which forces them to find the answer from their SIM and other reference book mentioned therein. The preparation of assignment papers are made centrally by the approved academic body of the subject concerned and the same is uploaded into the website of NSOU. Learners are used to take print out of the assignment paper and work them out. The answer scripts submitted by the learner in their respective study centre within the stipulations laid down by the competent authority of NSOU, are checked and back to them with detailed comments and marks. The weight of marks is 20%, while the Term End Examination holds 80%..

Home assignment helps a learner to check his/her performance over the syllabus. It also engages them to have critical reading of texts and to assimilate their reading with other references. In this process, one learner enrolled in a study centre can connect himself / herself with the evaluator, who is also a designated teacher of the college of conventional system. This arrangement evokes more interactive space between the teacher and the learner.

### Online Student Support Service (SSS)

Online support to the learner is important and essential in ODeL. It requires basic computer knowledge of the learner and networking infrastructure of our society. As mentioned earlier, the internet access and average speed of connectivity has not reached to that extent in Bengal as well as in India as a whole; by which one OU can plan to expand its educational planning to rural or suburban areas. But surely it is growing day by day. Innovative planning in learner support service can yield results. Young people are using android cell phones and social media like Facebook, Twitter, etc. which can be accessible in low bandwidth connection.

The school of Humanities of NSOU has planned to extend online student support service through Facebook and Google chat using Trillion software. The support has been extended for three months, 15th February to 30th April in weekdays. Subject wise Fb account and Google ID has been created. Faculty members have been allotted to be present as per schedule in their respective cubicle of place of work. They have prepared themselves to answer the query of the learner, make ready the academic content needs to be shared in soft form (JPG files, PDF files etc.). Learners get online chat facility with the core faculty of concerned subject located at Academic Campus, Kalyani which is 70 KM away from Kolkata. All the chat threads have been routed through the Director/Officer-in-charge, SoH located Headquarter, NSOU at Kolkata through Trillion software. It is seen from the findings that the demand of this online support service has increased in about 50% in 2015-16 than it is in the last year 2014-15.

The following chart shows how the learners has been engaged themselves in this virtual online interaction in NSOU

Table 6. Learners' engagements in virtual online interaction

Year (Google & Facebook)	Subject wise ID (Google & Facebook)	Core faculty of NSOU involved	Hour of online support	No of hits	Learner supported
2014-15	nsou@wbnsou.ac.in	Bengali 1 English 1	150 hrs @3hrs (5days x12weeks)	1645	500 (approx)
2015-16	soh.bengali@gmail.com  soh.bengali (Facebook) soh.english2016@gmail.com soh.english (Facebook)	Bengali 3 English 3	150hrs @3hrs (5days x 12 weeks)	3556	1200 (approx)

### Conclusion

Thus the findings coming out from the experience of NSOU in Open and Distance praxis, illustrates how divergent and purposed-based approach can be adopted. ODI pedagogy is not closed and fixed. It can be customized with the necessity or settings of any given societal milieu. The array of planned multi-layered approach can yield good results. Especially in the field of Humanities Studies, where the face-to-face mode of teaching has a historical root, this ODeL praxis can be posed in a different way. The heterogeneity of learner in ODeL is a challenge before us to plan any comprehensive academic approach in teaching humanities. As there is no instructor present physically before a learner, the criticality of study or learning in ODeL become more challenging.

The paper illustrates five important aspects of learning analytics of literature studies under NSOU. Compare to conventional mode of teaching it illustrates four major component that can generate more learning space. Beside that, the human resources of state funded higher education institutes or universities can be utilized in more effective way. It is assumed that the blended approach in teaching literature studies could bring trust and mutual reciprocation in a learner centric model of education. Moreover, the experience of SSS of Netaji Subhas Open University shows that where the technology enhanced learning pedagogy has not gained enough objective basis in the society, can float such hybrid model of teaching to deal with such large number of enrolled learner.

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## Creating Virtual Corridors: Social Network Discovery and Landscape Patch Connectivity of Permaculture Projects and Initiatives on Facebook

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### Abstract

Permaculture is a design system conceptualized in Australia in the 1970s in response to urgent environmental issues at that time. Mainstreamed via social media in recent years, permaculture is being practiced around the world on diverse landscapes. The study aimed to discover socio-spatial permaculture landscape networks based on a permaculture designer's Facebook social network. Using social network theory and landscape ecology, the study simulated and predicted how permaculture designers would be able to create invisible landscape corridors called "virtual corridors." Virtual corridors are determined by computing for the Percentage Linkage Strength (%LS) metric derived from data obtained from two scoring systems developed for the study: the Social Score (SS) and the Permaculture Score (PS). Two hundred eighty six network nodes were initially discovered to be potential permaculture designers via Facebook Group membership. The two scoring systems revealed the top ten network nodes with the highest computed %LS that created virtual corridors. A Meerkat Lite-generated sociogram overlaid on a Google Earth topographic map animated in Camtasia Studio were used to illustrate the discovered network. Then NetLogo was used to simulate and predict the virtual corridor creation process. In the future, the methodology could be used to determine potential study sites for transdisciplinary permaculture research and study the environmental impact of permaculture projects and initiatives on landscape patches. It would also provide practitioners and researchers a framework to better understand how a network of individual solutions could lead to macro-scale landscape patch management.

**Keywords:** *virtual corridors, landscape ecology, organic agriculture, environmental management, sociology, virtual communities*

### Introduction

How does Facebook enable people to practice permaculture in real life? This question was inspired by Facebook users' posts showing photos of their personal garden projects and the countless gardening stories, blogs, and memes shared on Facebook newsfeeds nowadays. With increased online activity mostly documenting the daily lives of people, one has to wonder how such activities impact the real world. More specifically, how do these activities translate to the actual practice of permaculture?

Permaculture is a design framework used by individuals and communities with green and progressive worldviews (Hillis, 2011) in the alternative farming systems movement. It is a perfect example of 'feral ecology'-- ecological discourse outside of the academe as coined by Morris (2012). And in the context of the study, ecology discussed on Facebook. With widespread access to Information and Communication Technologies (ICT), permaculture designers have relied on communication channels and social media platforms, such as Facebook, to disseminate

permaculture educational materials, how-to guides, do-it-yourself projects, and training courses to netizens (Hillis, 2011). Permaculture provides accessible and practical solutions to food security (Ferguson Lovell, 2013) and small-scale landscape patch management. Undocumented and often under-the-radar from scientific research in the Philippines, the environmental and socio-ecological impacts of permaculture remain a mystery.

The idea for “virtual corridors” was borrowed from landscape ecology’s concept of a “corridor”—a landscape element that resembles a linear strip of land or an elongated landscape patch (Chen, et. al. 2006) that physically links patches together while administering species movements from one habitat to the other (Bennet, 2003). Corridors are important because it increases landscape connectivity among patches and thus allowing landscape heterogeneity and biodiversity via the exchange of plant and animal species, materials, energy, and resources. Adding the word, “virtual” to the concept of landscape corridors indicates the online and intangible nature of the corridor which can only be seen in a social network map (called a sociogram) graphically represented as a line called a network edge. Though the corridor exists outside of physical reality, the numerical expressions that make up the network edge are based on the existence of social relationships and physical landscapes. The study defines “virtual corridors” as referring to a network edge, acting like a landscape corridor, which virtually links and facilitates the “movement of permaculture” (transfer and exchange of information, technology, and energy) from a focal node to a network node in a social network. Creation of virtual corridors enables network nodes to form a network of virtual and physical spaces or a socio-spatial network.

Social networking and community-building have reached a whole new level thanks to widespread internet access via wireless fidelity (WiFi) hotspots and mobile data packages. Through this virtual world, individuals can easily exchange information with peers without spatio-temporal restrictions while online communities are being organized as we speak with just a click of a button. For researchers, social media introduced a new ‘world’ to explore and mine for data. Welcome to Society 2.0 (Morris, 2012).

## Objectives

### General Objectives

1. To find existing permaculture social networks;
2. To study these social networks and learn how they relate to ecological landscapes; and
3. To create a foundational study for future permaculture research.

### Specific Objectives

1. To develop a methodology to discover network nodes in a permaculture-based socio-spatial network;
2. To create new metrics that could measure socio-spatial connectivity of network nodes; and
3. To simulate and predict the virtual corridor creation process.

## Theoretical Framework

The theoretical framework of the study explains landscape ecology theory as it relates to the practice of permaculture and the sharing of permaculture on Facebook as feral ecology using social network theory.

The framework recognizes four socio-ecological phenomena as it transitions from the ecological dimension to the social network dimension of the study:

1. When ecological discourse goes feral and becomes permaculture.
2. When permaculture is mainstreamed in social media (Facebook).
3. When an individual and a landscape are discovered and represented as a single node in a social network.
4. When social networks simultaneously create spatial networks.
5. And when social linkages (or ties) act as “virtual” landscape corridors.

Landscape ecology is a sub-discipline of ecology and geography that highlight four core themes: 1) the influence of spatial patterns on ecological processes (Turner, 1989), 2) the importance of landscape heterogeneity (Pickett Cadenasso, 1995), 3) the interaction of different types of landscapes (McGarigal, n.d.), and 4) the importance of spatial and temporal scales in analyzing landscapes (Turner, 1990). Landscape ecology is a transdisciplinary science (Naveh, 1999) that extends its scope beyond natural systems to socio-ecological systems recognizing the impact of human activities in creating and influencing landscape patterns and processes (McGarigal, 2001 n.d.). According to Sanderson Harris (2000), the landscape ecology theory emphasizes the role of humans in affecting landscape structure and function. It was determined in the analysis of socio-ecological systems that social systems are intricately linked with their respective ecological systems and thus are co-evolving and self-organizing to create a single landscape (Leser, 1991; Naveh & Lieberman, 1984; Naveh, 2000). Therefore, in landscape ecology analysis, human activities in social, cultural, political, and economic spheres are viewed as not separate from the reality of natural landscape processes and vice versa.

Landscape ecology theory includes the landscape stability principle (Forman & Godron, 1986) which states how landscape structural heterogeneity, or uniqueness, can help in resistance to and recovery from landscape disturbances and how heterogeneity contributes to the total stability of the system.

Permaculture incorporates systems thinking (Peeters, 2011) into a design framework that includes landscape ecology theory and the landscape stability principle together with other disciplines from the natural and social sciences and the humanities. In principle, the practice of permaculture in small to large-scale landscapes should lead to positive changes in the structure and function of socio-ecological landscapes. It is also believed to create a “permanent culture” (hence the term) of system stability and sustainable practices (like energy and nutrient cycling, creating microclimates, and organic agriculture) consciously designed by humans to work with nature (Mollison, 1988). One significant problem though is the lack of substantial scientific research (Ferguson Lovell, 2013) on the topic which hinders permaculture’s perceived effects on landscape from being conclusive.

The concept of what Morris (2012) calls “feral ecology” in Society 2.0 does not help justify the credentials of permaculture, though science-based, in the academe. Rather, it takes the discussion further away from the grip of academicians and tossed up for grabs into the collective hands of the masses in the virtual arena of the online social network, Facebook. Though “feral” is not a desirable word to be referred to, it does, however, describe how permaculture was shared from user to user expanding the geographical extent of its landscape management practices.

This is where the transition from the ecological dimension to the social network dimension begins. When a complex discipline, like landscape ecology, is packaged in a way that is comprehensible (permaculture) and accessible (via social media) to people, they begin to take ownership and action toward issues concerning ecology and the environment (Morris, 2012).

A study by Hillis (2011), “The Wired Village,” revealed that most of the respondents in the study spent a good amount of time on cyberspace (or online) and that they were heavy users of Information and Communication Technologies (ICT) such as mobile phones and laptops. With the internet and new gadgets, practices and social values were better shared and transmitted without spatio-temporal bounds.

Studying permaculture designers are worthy of research because their activities within their respective landscapes are potentially impactful on landscape structure and function given their shared knowledge and social values based on permaculture.

As permaculture spreads rapidly on social media, the application of social network theory and social network analysis could provide valuable insights into how the relationships of these people (represented as nodes in a sociogram) in an online social network translate into a pattern of offline spatial networks wherein individual permaculture designs (Peeters, 2011) in their inhabited physical spaces were virtually linked across landscapes patches.

The discovery of network nodes, ties, and the creation of virtual corridors, though not literal physical corridors in a landscape ecology sense, provides an invisible linkage that connects individuals and their corresponding landscape patches (together represented as a single node). Nodes become homophilous, meaning that nodes with strong linkages are more similar to each other (Borgatti Lopez-Kidwell, 2011) in terms of shared values, practice, and inhabited physical spaces. Therefore, virtual corridors are invisible landscape corridors based on strong homophilous online relationships and shared permaculture practices.

### **Methodology**

The study was conducted to identify influential respondents, referred to in this section as network nodes, with high Percentage Linkage Strength (%LS) which created virtual corridors within the focal node’s (one of the researchers who was a permaculture designer) social network. Virtual corridors were “invisible” digital highways where permaculture experiences were effectively shared and manifested as actual projects. The %LS could only be measured if the focal node was a permaculture designer.

The population for the study was taken from the focal node’s current roster of Facebook friends as of January 2016. The focal node has been a member of Facebook since 2011 and has a total of 1,267 friends at the time this report was written.

## Methods of Node and Tie Discovery

To determine the sample size of the network nodes to be studied, the Facebook Group feature was utilized to determine which friend (or network nodes) were either interested in or practicing permaculture.

Facebook groups were classified by accessibility and can either be public, closed, or secret groups that a user could join upon request or invitation from a designated “group administrator.” A user could also create and manage his/her own Facebook group. The feature enables users to create and join groups that cater to a specific interest, hobby, organization, business and just about any purpose anyone could think of.

For the research’s purpose, the Facebook group feature conveniently clustered the focal node’s Facebook friends into specific areas of interest or themes to identify ties or the similarities between network nodes. For this study, eighteen (18) Facebook groups that revolve around permaculture-specific or permaculture-related themes (specifically agriculture and food) were identified to draw samples from. Three of these Facebook groups were created by the focal node who was also a member of the other fifteen (15) groups. Table 1 shows the Facebook groups used for this study and the number of his friends included in each group (friends could be members of more than one group).

Two hundred eighty six out of 1,267 friends (22.57%) were identified as members of the eighteen Facebook groups selected for the study (with 69 friends or 24% being members of at least two or more groups). The 286 friends who qualified as network nodes could also potentially create virtual corridors based on similarity of Facebook group affiliation.

## Relationship and Role Identification

To determine which network nodes could create virtual corridors, a metric called Percentage Linkage Strength (%LS) was developed specifically for this study to describe shared permaculture experiences or “permaculture-based” relationships of the respondents to the focal node. The metric used a combination of quantitative data mined from Facebook and firsthand qualitative data provided by the researcher to compute the %LS.

It must be noted that the %LS metric, as used in this study, was limited to the theme of permaculture only. It did not measure or describe the complete relationship of the respondents to the researchers.

There were two scoring systems developed for the computation of the %LS: 1.) the Social Score (SS) and 2) the Permaculture Score (PS).

## Computation of Social Score (SS)

The SS referred to the number of interaction and similarities that respondents had with the focal node on Facebook. It was the summation of quantified attributes derived from Facebook data, specifically Social Distance (SD), number of Likes (nL), number of Comments (nC), Permaculture Awareness (PA) and Effective Awareness (EA). The SS is 40% of the total %LS score.

**Social Distance (SD): Using a Modified Bogardus Social Distance Scale**

Social Distance scores were determined using a modified Bogardus Social Distance Scale based solely on common Facebook Group memberships with the researcher-node. The Bogardus Social Distance Scale is a tool used in psychology to measure people’s willingness to participate in social contacts (Bogardus, 1926). Social Distance is categorized by the “degree of closeness” of the respondent to the researcher. Each degree in the scale is defined by a corresponding number of Groups with equivalent numerical scores. The more common Groups a respondent had, the higher degree of closeness he/she had with the researcher-node. No common Groups were categorized as a “Common FB friend” entailing an SD score of zero. At the other end of the spectrum, a “Perfect Relationship” category represented membership in all Groups with a perfect SD score of ten (10). The typology is as shown in Table 1.

Table 1. A modified Bogardus social distance scale was used to quantify Facebook group affiliations.

Scale	Number of Common Facebook Groups	Score
Common FB Friend	0	0
Acquaintance	1-2	5
Affiliate	3-5	6
Close	6-8	7
Very Close	9-12	8
Extremely Close	13-17	9
Perfect Relationship	18	10

Joining a Group implied that the respondent shared a common interest with the researcher-node although it was not an indicator that guaranteed personal interaction between the two. They may have a Perfect Relationship of 10 but may not necessarily interact online or in real life. Being clustered in the same Group could only increase the likelihood of the two interacting with one another.

**Number of Likes (nL) Determined Using Programming Language R**

The “like” button is a Facebook feature that enables a user to conveniently express approval, appreciation, or interest by clicking a “Thumbs Up” icon located below another user’s post. The post could either be a “status update,” a photo, or a video. “Likes” are a good indicator of interaction between users. Though “likes” can only represent limited interaction because it only conveys passive responses from users. This means that “liking” a post is subject to interpretation by the researcher (though Facebook has recently added emoticons/emojis to the “Like” button to specify reactions) but for the study, it was assumed that the respondents approved of what the researcher has posted.

Since “liking” posts have been a pastime for most Facebook users (an activity colloquially known as “auto-liking”), the study used this feature to determine the number of passive responses to the focal node’s Facebook posts. The methodology worked on the assumption that most of the focal node’s posts from 2012 to 2016 were about permaculture or were related to permaculture. To justify this assumption, the researcher utilized another social media platform, called Blogger,

to streamline and put a timeframe on which posts to consider for the study.

The concept of permaculture was first encountered by the lead researcher while he was taking the Organic Agriculture course at the UP Open University in 2012. Since then, the lead researcher has been regularly writing about his permaculture-related activities on his Blogger website, Backyard Thinking: The Organic Plot to the Story of Laguna's Backyard Gardens (<http://www.organicbackyardthinking.blogspot.com>). His first article entitled, "The Path to Good Health is Social Just as Much as it is Physiological," was posted on September 24, 2012. And his latest article titled, "The Rise of Alternative Farming Systems: Feral Ecology (first of a 5-part weekly blog series)," was posted in January 5, 2016. The consistent blogging proved essential for determining the timeframe for the study.

To determine the timeframe and retrieve the number of "likes" on Facebook, the researcher used R, a programming language for statistical computing that data miners use for data analysis.

The first step was to manually post each of the blog articles' web URLs (or web addresses) from September 24, 2012 to January 5, 2016 as a "Status Update" on Facebook's dialogue box. The dialogue box has a "time and date" icon below it to specify when the post was made. This helped determine R at the starting point and the end point of which Facebook posts to search for "likes."

Access to the Facebook account was given to a Facebook application which gathered its status updates. The application was written in a code in the R programming language, which used the Rfacebook package. Once the data set was downloaded, the data has been sorted in terms of the publishing date of the status updates.

Once the status updates have been gathered, the number of individuals who logged comments and persons who liked for each status update were also gathered. The number of "comments" and "likes" that each person had made were also recorded. The output generated by R was a list of Facebook users (a total of 2,620) and their corresponding number of "likes." From the R-generated list, the number of "likes" by each respondent were recorded.

After the number of "likes" of each respondent was determined, the range of number of "likes" was categorized and assigned corresponding numerical scores. The scores were determined and shown in Table 2. It should be noted that all respondents were given an equivalent nL score.

Table 2. Number of Facebook "likes" were given an equivalent score

Number of Likes (nL)	Min-Max Likes per Month	Score
0	0	0
1 to 10	0.025 - 0.250	3
11 to 20	0.270 - 0.500	5
21 to 30	0.525 - 0.750	7
31 to 40	0.775 - 1.000	9
41 and above	1.000 and above	10

### Number of Comments (nC) Determined Using Programming Language R

Aside from “likes,” Facebook also offers a function where users could “comment” or leave a text-based message on a specific Facebook post. The “comments thread” (the series of comments made on a post) could be an online forum for users to elaborate on a posted topic. More than just passively “liking” posts, users could interact more and exchange ideas and opinions with the poster and other users.

“Commenting” is an active response to a post. The methodology assumed that by posting a comment, the user (the respondent) was engaging the poster in a conversation. The same process to identify the number of “likes” was used to determine the number of comments from each respondent. A key difference though was that two lists were generated by R: 1) the total number of comments a user had made; and 2) the total number of status updates a user had commented on. For the purposes of the study, the latter list was chosen because this was considered more representative of the diversity of topics commented on at different times.

A slightly higher total score of fifteen (15), which was arbitrarily determined, was given to the nC score due to its more interactive nature compared to the passive nature of “liking” a post (Table 3).

Table 3. Number of Facebook comments was given an equivalent score.

Number of Comments	Min-Max Likes per Month	Score
0	0	0
1 to 7	0.025 - 0.250	3
8 to 14	0.270 - 0.500	6
15 to 21	0.525 - 0.750	9
22 to 28	0.775 - 1.000	12
29 and above	1.000 and above	15

### Permaculture Awareness (PA) and Effective Awareness (EA) scores

The final component of the Social Score was Permaculture Awareness (PA). It was a metric developed specifically for this study to determine if the sum of Facebook-based online interactions (SD, nL, and nC) with the poster (also known as the researcher-node) is sufficient to assume if the respondent have become indeed aware of permaculture.

PA is computed as follows:

$$PA = SD + nL + nC$$

where: PA = Permaculture Awareness  
 SD = Social Distance  
 nL = number of “Likes”  
 nC = number of “Comments”

Each of the 286 respondents’ PA scores was computed. Being simply aware of permaculture does not necessarily make a respondent an effective channel for information dissemination. To make the scoring process more accurate, another metric called Effective Awareness (EA) was developed

to determine if the PA score was sufficient to make the assumption that the respondent would disseminate information to others. EA was a numerical incentive score given to Facebook users based on the total PA score. Respondents with a total PA score of twenty (20) and above were given plus five (+5) points on the total SS while those who had a score of 19 and below were given zero points. Based on a tool developed for this study, called the Table of Scenarios, those with a PA score of 20 points were at least “Active” to “Very Active” on Facebook.

### **Final Social Score (SS)**

The SS was the online component of %LS. It was 40% of the total possible %LS score.

The final SS was computed as follows:

$$SS = SD + nL + nC (+ 5 \text{ if PA is } > 20)$$

where:           SS = Social Score  
                       SD = Social Distance  
                       nL - number of “Likes”  
                       nC = number of “Comments”

### **Computation of Permaculture Score (PS)**

The Permaculture Score (PS) quantifies the actual or real-life permaculture-related activities of the respondents. It is based on two qualitative attributes identified by the researcher based on information deduced from real-life interactions and personal encounters with the respondents. The two attributes were Actual Project score (aps) and Permaculture Training score (Pts). The PS was the sum of the aps and the Pts. The PS was the offline component of the %LS. It comprises 60% of the %LS score.

### **Actual Project Score (aps)**

The aps was a numerical expression of a respondent’s Permaculture Project or Initiative. This was determined by the researcher answering a simple YES/NO question regarding the existence of the respondent’s project based on his knowledge of the respondent. A YES answer had an equivalent of thirty-five (35) points while a NO answer had an equivalent of zero (0) points. The large point differential between the YES and NO scores emphasized the importance of having a tangible project or initiative in the scoring system.

### **Permaculture Training Score (Pts)**

The Pts was a numerical expression of a respondent’s permaculture training. This was also determined by the researcher answering a simple YES/NO question regarding the actual participation or attendance of the respondent to a training session.

Training sessions considered for the study were limited to those which both the researchers and respondents had attended. It must be noted that trainings attended by a respondent on his/her own were not considered in the determination of the Pts.

A YES answer had an equivalent of twenty-five (25) points while a NO answer had an equivalent of zero (0) points. The large point differential between the YES and NO scores emphasizes the importance of having actual training in the scoring system. Though the scoring system allows for having a high SS (maximum of 40 points) compensate for the lack of permaculture training (maximum of 25 points) in some scenarios.

### **Final Permaculture Score (PS)**

The PS was the offline or real-life component of %LS. It is 60% of the total possible %LS score.

The final PS is computed as follows:

$$PS = aps + Pts$$

### **Determining Percentage Linkage Strength (%LS)**

The Percentage Linkage Strength (%LS) is a unique individual measure of relationship strength of a network node to a focal node in a social network based on online and offline permaculture experiences. It also translates to the strength of connectivity of one landscape patch to the other (Note: connectivity in this study refers to the ability of two landscape patches to share similar physical characteristics and design features without necessarily being geographically close to each other). The value of the relationship is based on online interactions, as represented by the Social Score (SS) and offline commonalities, as expressed by the Permaculture Score (PS). The %LS determines if a network node can create a virtual corridor where permaculture knowledge can be disseminated effectively through a social network and at the same time manifest actual landscape patches employing permaculture design principles.

Based on the SS and the PS, %LS is computed as follows:

$$\%LS = [SD + nL + nC (+5 \text{ if } PA > 20)] + [aps + Pts] / 100$$

### **Final Data Set and Scores Tabulation**

The study used an MS Excel spreadsheet to input all of the computed scores and other necessary data gathered from the respondents' Facebook profiles. These included "location" (city and/or province) and "friend since"--a Facebook feature that indicates when users became friends on Facebook (month and year). The layout of the spreadsheet is described as follows:

The first column contains the Facebook name of the respondents labeled as "Name." For later purposes, the second column contains the geographic location (province) of the respondents labeled as "Cluster." This comprises the spatial component of the study. The third column contains the month and year when the respondent became friends with the poster on Facebook. The column is labelled as "Friend Since." This comprises the spatial component of the study. Columns 4 to 9 contain the SD, nL, nC, PA, +5, and EA scores respectively. These columns comprise the social component of the study. Columns 10 to 13 contain the ats, Pt, PS, and % LS scores respectively. And column 14, the last column, indicates whether the respondent creates a VC or not (NVC).

Table 4. Sample score sheet

Name	Cluster	Friend Since	SD	nL	nC	PA	+5	EA	ats	Pt	PS	%LS	Category
A	Metro Manila	13-Nov	6	7	6	19	0	19	35	25	60	79	NVC
B	Metro Manila	14-Mar	7	7	3	19	0	19	35	25	60	79	NVC
C	Metro Manila	14-Oct	6	9	6	21	5	26	35	25	60	86	NVC
D	Metro Manila	14-Mar	6	9	6	22	5	27	35	25	60	87	NVC
E	Laguna	12-Aug	6	10	9	25	5	30	35	25	60	90	VC
F	Laguna	11-Dec	5	10	15	30	5	35	35	25	60	95	VC
	Laguna	12-Jan	6	10	15	31	5	36	35	25	60	96	VC
	Metro Manila	14-Jan	6	10	15	31	5	36	35	25	60	96	VC
	Metro Manila	13-Jul	6	10	15	31	5	36	35	25	60	96	VC
	Pampanga	13-Sep	6	10	15	31	5	36	35	25	60	96	VC
	Rizal	12-Jan	6	10	15	31	5	36	35	25	60	96	VC
	Laguna	13-Jul	7	10	15	32	5	37	35	25	60	97	VC
	Laguna	13-Dec	7	10	15	32	5	37	35	25	60	97	VC
	Nueva Ecija	14-Mar	8	10	15	33	5	38	35	25	60	98	VC

Out of the two-hundred eighty-six (286) respondents who were initially selected to potentially create virtual corridors at the beginning of the study, only fourteen (14) respondents had %LS scores that were able to meet the final criteria to qualify as virtual corridors.

### Identifying Virtual Corridors

A virtual corridor is created when a network node (respondent) has a qualified %LS score with the focal node (the researcher). Qualified network nodes have an SS of at least 30 points and a %LS of at least 75% (75 points). The scoring system showed that respondents needed to be “Active” or “Very Active” (See Table 5. - Table of Scenarios) on Facebook but at the same time have a permaculture-related project or initiative to create a virtual corridor

Interpretation of % Linkage Strength using the Table of Scenarios

The Table of Scenarios present sixteen (16) possible real-life scenarios that interpret the %LS score of each respondent. The scenarios, with equivalent score ranges, are as follows:

### Social Score (SS) Scenarios

1. Very Active on Facebook (34 to 40 points)
2. Active on Facebook (20 to 33 points)
3. Moderately Active on Facebook (12 to 19 points)
4. Not Active on Facebook (0 to 11 points)

Permaculture Score (PS) Scenarios (with Project)

1. With Project;With Training (60 points)
2. With Project;Without Training (35 points)

Permaculture Score (PS) Scenarios (without Project)

1. Without Project; With Training (25 points)
2. Without Project; Without Training (0 point)

Total Score = SS + PS = 10 points

Table 5. Table of Scenarios

Social (40%)			Sub-total			SS	Practice (60%)		PS	TOTAL	%LS	VC
Scenario	SD	nL	nC	PA	EA		Pts	aps				
Very Active on FB w/ Training & Project	10	10	15	35	5	40	25	35	60	100	1	YES
Active on FB w/ Training & Project	7	9	12	28	5	33	25	35	60	93	0.93	YES
Moderately Active on FB w/ Training & Project	6	7	6	19	0	19	25	35	60	79	0.79	NO
Very Active on FB w/ No Training & w/ Project	10	10	15	35	5	40	0	35	35	75	0.75	YES
Not Active on FB w/ Training & Project	5	3	3	11	0	11	25	35	60	71	0.71	NO
Active on FB w/ No Training & w/ Project	7	9	12	28	5	33	0	35	35	68	0.68	NO
Very Active on FB w/ Training & No Project	10	10	15	35	5	40	25	0	25	65	0.65	NO
Active on FB w/ Training & No Project	7	9	12	28	5	33	25	0	25	58	0.58	NO
Moderately Active on FB w/ No Training & Project	6	7	6	19	0	19	0	35	35	54	0.54	NO
Not Active on FB w/ No Training & w/ Project	5	3	3	11	0	11	0	35	35	46	0.46	NO
Moderately Active on FB w/ Training & No Project	6	7	6	19	0	19	25	0	25	44	0.44	NO
Very Active on FB w/ No Training & No Project	10	10	15	35	5	40	0	0	0	40	0.40	NO
Not Active on FB w/ Training & No Project	5	3	3	11	0	11	25	0	25	36	0.36	NO
Active on FB w/ No Training & No Project	7	9	12	28	5	33	0	0	0	33	0.33	NO
Moderately Active on FB w/ No Training & No Project	6	7	6	19	0	19	0	0	0	19	0.19	NO
Not Active on FB w/ No Training & No Project	5	3	3	11	0	11	0	0	0	11	0.11	NO

The scoring system implies that having a high PS score is vital to create a virtual corridor, although a high PS score does not automatically qualify a network node to create a virtual corridor. It has to have a high SS score as well. A high Total Score results in a high %LS which is an indicator of the likelihood that the respondent would create a virtual corridor. Respondents or network nodes that qualify to create virtual corridors are those that are:

1. Very active on Facebook; who had training, and maintain a Project
2. Active on Facebook; had training, and maintain a Project
3. Very active on Facebook even if they had no training; provided they maintained a Project. (This essentially means that a high SS can compensate for lack of training.)

### **Construction of Sociograms using Meerkat Lite for the Top 10 Respondents**

A social network map called a sociogram (Moreno, 1934 in Carington & Scott, 2011) is a graphic representation of social linkages in a social network. The study utilized sociograms as a way to illustrate how the respondents are socially connected to one another and to the researcher. Meaning, which network nodes are linked to the focal node. Unlike the %LS metric (which only illustrates a dyadic relationship of the focal node to another network node using a single line) a sociogram provides a larger picture of the whole network to conduct social network analysis.

To construct a sociogram, the researcher used a downloadable research tool called and Meerkat Lite.

Meerkat Lite (developed at AICML, Department of Computing Science, University of Alberta, under the leadership of Dr. Osmar Zaiane) is a social network analysis software developed specifically for social network analysis. It uses a programming language and commands to construct a sociogram. The software has several tools for social network analysis, metrics, and statistical tests.

### **GIS Animation using Google Earth and Camtasia Studio**

Spatial and temporal data obtained from Facebook were used to create the GIS animation using Google Earth and Camtasia Studio. The spatial data based on the “location” section of a Facebook profile (Note: Personal verification of location was done for Facebook users who refrained from posting their actual location on their public profiles) was used to identify where to “pin” the network node on the map. Since Facebook can only provide provincial location, the network nodes were grouped into provincial “clusters” and then randomly pinned in an area within their respective clusters. The network nodes chronologically appear on the topographic map according to the “friend since” data provided by Facebook.

### **NetLogo Rumor Mill Simulation**

A simulation study for rumor mill per year as time step has been done in NetLogo to emulate the spread of permaculture in a social network. The simulation was repeated via a NetLogo experiment in 1000 trials. This assumes a closed environment which stops if all people in an environment has heard the rumor. This scenario happens if the researcher and his friends suddenly stop accepting and making friend requests on Facebook.

The spread of a rumor happens for a random population of the four nearest neighbors of the rumor-spreader (north, south, east, west), as well as four randomly selected people in the environment.

### Results and Discussions

The Percentage Linkage Strength of the top 10 respondents who were able to create Virtual Corridors (with a %LS of 90% and above and a Social Score of 30 and above) are presented in Table 6. For privacy purposes, only the initials of the respondents were used for the study.

The study revealed the respondents to be young organic farmers, urban gardeners, entrepreneurs, advocates, a student, and a musician.

Table 6. Computing for the % Linkage Strength of each respondent and Identification of Virtual Corridors.

%LS Rank	Respondent	Cluster	Friend Since	SD	nL	nC	PA	EA	SS	aps	Pts	PS	SS +PS	%LS	VC or NVC
1	GI01	NUEVA ECIJA	March 2014	8	10	15	33	5	38	35	25	60	98	0.98	VC
2	MS02	LAGUNA	July 2013	7	10	15	32	5	37	35	25	60	97	0.97	VC
3	KL03	LAGUNA	December 2013	7	10	15	32	5	37	35	25	60	97	0.97	VC
4	TM04	RIZAL	January 2012	6	10	15	31	5	36	35	25	60	96	0.96	VC
5	PS05	LAGUNA	January 2012	6	10	15	31	5	36	35	25	60	96	0.96	VC
6	LM08	METRO MANILA	July 2013	6	10	15	31	5	36	35	25	60	96	0.96	VC
7	DC07	PAMPANGA	September 2013	6	10	15	31	5	36	35	25	60	96	0.96	VC
8	CG08	METRO MANILA	January 2014	6	10	15	31	5	36	35	25	60	96	0.96	VC
9	DR09	LAGUNA	December 2011	5	10	15	30	5	35	35	25	60	95	0.95	VC
10	EF10	LAGUNA	August 2012	6	10	9	25	5	30	35	25	60	90	0.90	VC

### Sociogram and Computed Metrics

The sociogram was constructed according to actual Facebook friendships (how respondents met each other in real life and not based on the % LS score) with the researcher as the focal node in the network.

Actual friendships denote whether a network node formed a dyadic or a triadic relationship. The dyads illustrate that each network node is connected via the focal node while the triads illustrate that vertices 9, 6, 5, and 4 are connected via more than one network node.

Table 7. Dyadic and Triadic Relationships

Respondent	Vertex ID (node)	Dyad (edge)	Triad (edge)
Researcher	1		1 – 4 – 9
			1 – 5 – 6
			1 – 6 – 8
Gl01	9	1 – 9	1 – 4 – 9
MS02	6	1 – 6	1 – 5 – 6
			1 – 6 – 8
KL03	5	1 – 5	1 – 5 – 6
TM04	11	1 – 11	
PS05	3	1 – 3	
LMD6	8	1 – 8	1 – 6 – 8
DC07	7	1 – 7	
CG08	10	1 – 10	
DR09	2	1 – 2	
EF10	4	1 – 4	1 – 4 – 9
TOTAL	11 nodes	10 edges	3 edges

The Meerkat-generated sociogram (Figure 1) illustrate an egocentric network with 11 nodes (or vertices in Meerkat's language) and 13 edges (undirected graph) that includes the researcher as the focal node.

Using the analysis function of the software, the network was computed to have a density of 0.118, an average degree of 2.364, a clustering coefficient of 0.43, an average shortest path distance of 1.764, and an assortativity coefficient of -0.72. The network was displayed using an Egocentric PageRank metric layout.

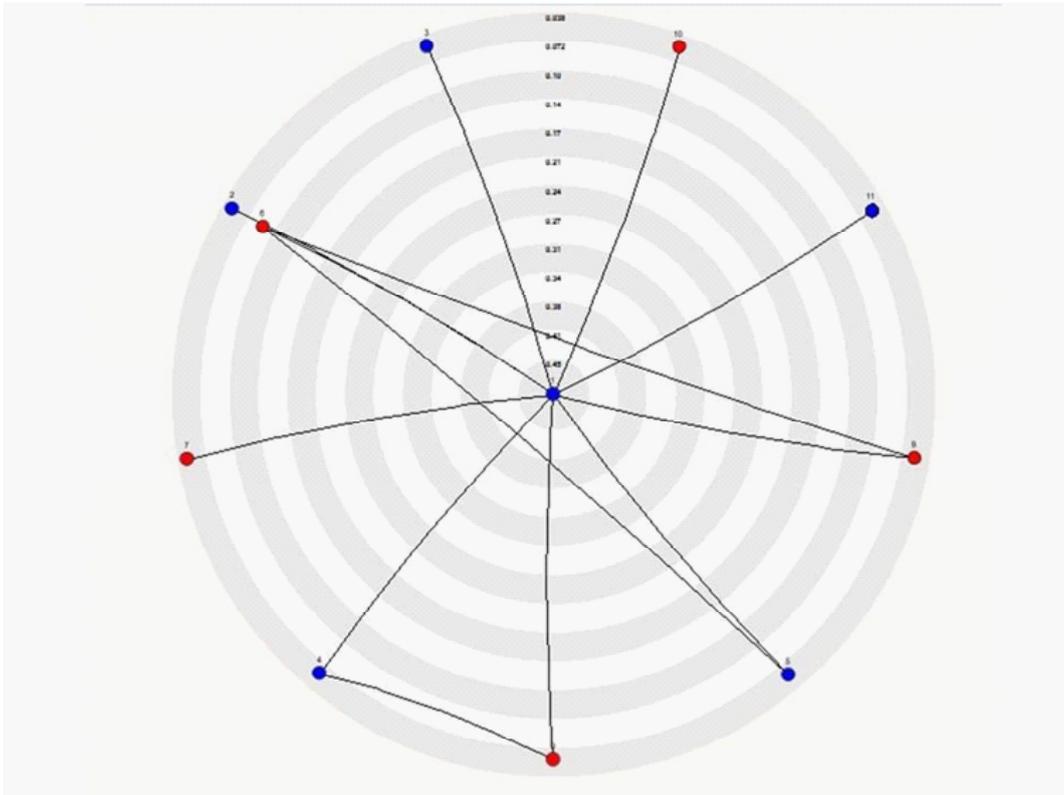


Figure 1. The Meerkat Lite sociogram displays 11 nodes with 13 edges in an undirected egocentric network

### GIS Animation

The GIS presentation using Google Earth and Camtasia Studio illustrated the increase of network nodes in a geographic area per year using the “Friend Since” and location information gathered from Facebook profiles.

The first frame illustrated how the focal node (the researcher) was grouped with other nodes that are his Facebook friends since 2011, forming a cluster. The succeeding frames for 2011 to 2016 showed how the other clusters chronologically appeared on the Philippine map, based on the timeline by which they became Facebook friends with the focal node. Then, all 286 network nodes appeared as clusters on the Philippine map pinned on their respective locations. It should be noted that the clusters were made up of one or more nodes.

After illustrating where the network nodes are on the map, the next frame highlighted the top 10 network nodes that created virtual corridors linked to the focal node by a line to illustrate linkage strength and socio-spatial connectivity. The camera then hovered and zoomed into each network node, revealing a Facebook photo of the permaculture project of each. Figure 2 shows the final frame of the GIS animation, showing all 10 network nodes stemming from the focal node.

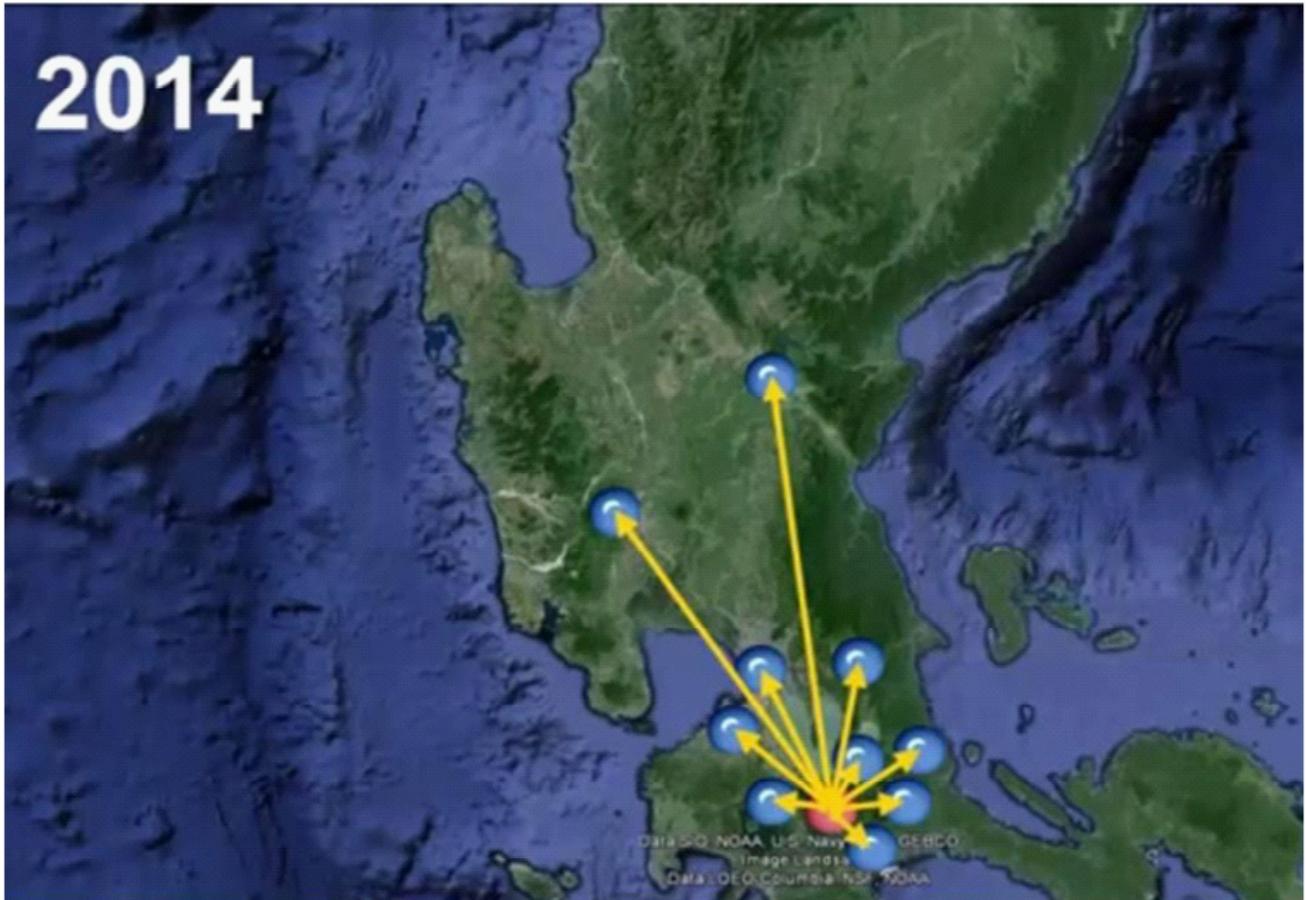


Figure 2. Final frame of the GIS animation showing all 10 network nodes stemming from the focal node

### Rumor Mill Results

Using a graphic called “turtles” to represent network nodes, the NetLogo rumor mill simulation illustrated how the discovered socio-spatial Facebook network can replicate network nodes, and thus the practice of permaculture, for the next two years.

Modelling the spread of permaculture after a “rumor”, NetLogo produced the following results of the rumor mill simulation:

1. Percentage number of people who heard the rumor:
2. First Year to Second Year
3. Per month: 4.1812% to 8.3385%
4. Percentage number of people who practiced permaculture
5. First Year to Second Year
6. Per month: 0.3482% to 0.5210%

The next step was to produce the same experiment for the eight nearest neighbors. The spread of a rumor happened to a random population of the four nearest neighbors of the rumor-spreader (the focal node located in the north, south, east, and west directions) and to the eight nearest neighbors (i.e. considering secondary directions), as well as four randomly selected people in the environment.

The following results transpired for a 4-neighborhood connectivity:

1. Percentage number of people who heard the rumor:  
 First Year to Second Year  
 Per month: 41.8124% to 83.3249%
2. Percentage number of people who practiced permaculture  
 First Year to Second Year  
 Per month: 0.3482% to 0.5210%

The following results transpired for an 8-neighborhood connectivity:

1. Percentage number of people who heard the rumor:  
 First Year to Second Year  
 Per month: 40.9200% to 83.3332%
2. Percentage number of people who practiced permaculture  
 First Year to Second Year  
 Per month: 0.3432% to 0.5207%

As an experiment in a controlled environment, the limitation of the model is that it assumes that the current number of friends of the focal node remains the same for two years. The virtual corridor creation process only occurs within the existing social network.

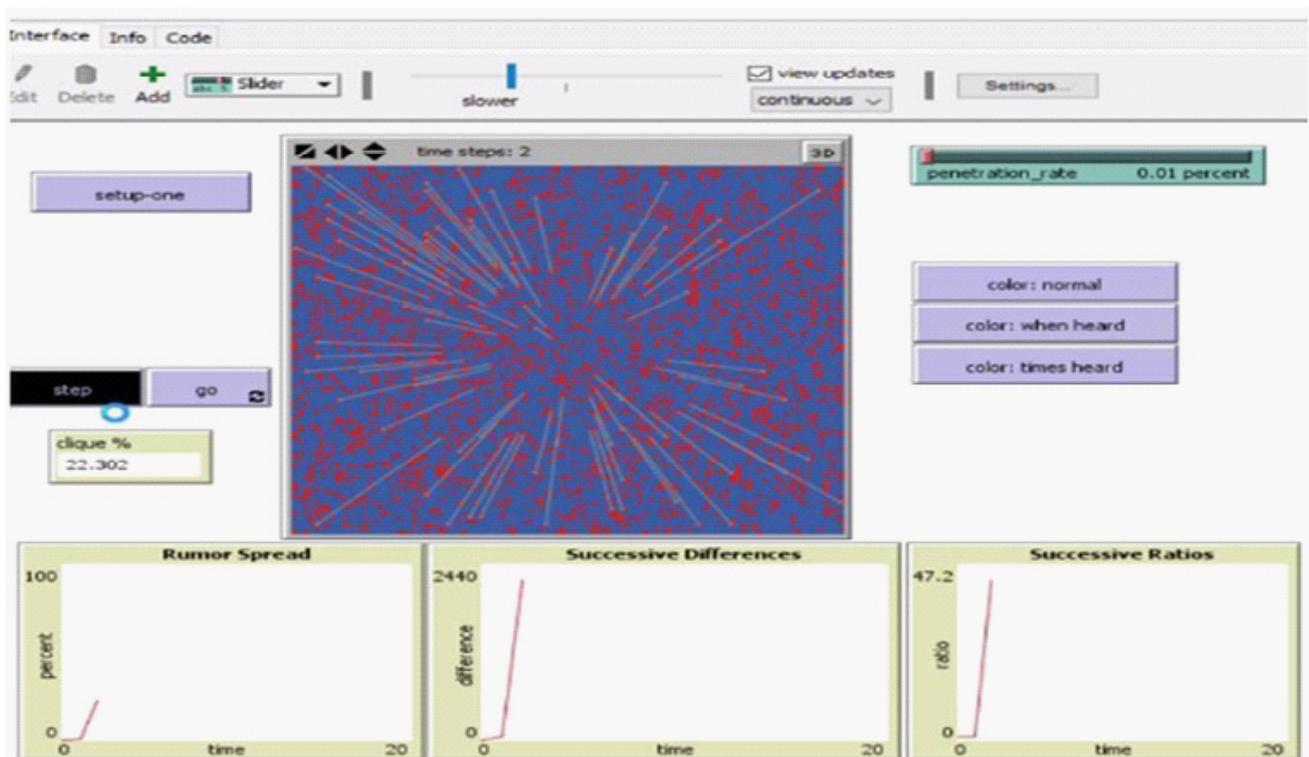


Figure 3. Screenshot of the NetLogo rumor mill simulation.

## Synthesis of the Results

Computing for the Percentage Linkage Strength of each respondent provided actual values to the lines connecting each node to the focal node in the sociogram. Aside from illustrating the connections, the numerical values provided a detailed representation of the relationships based on offline and online activities. The GIS animation then puts into perspective where and when the relationships actually occurred. It demonstrates the extent of the effect of the virtual corridor creation process in the context of a map. Finally, the rumor mill simulation models how the virtual corridor creation process may continue based on the current level of activity of the respondents.

### Summary of Findings

Fourteen out of the 286 network nodes were discovered to have created Virtual Corridors in the researcher's Facebook social network. Ten out of those 14 network nodes have a Percentage Linkage Strength of 90% and above and a Social Score of 30 points and above, indicating frequent Facebook usage.

The top 10 network nodes have an average of 4.9 common Facebook group affiliations, with Good Food Community and the Philippine Permaculture Association having the most number of common memberships.

An average of 280 Facebook "likes" or 9.66 Facebook "likes" per month were made by the top 10 network nodes from September 2012 to January 2016

An average of 43 Facebook "comments" or 1.49 Facebook "comments" per month were posted by the top 10 network nodes from September 2012 to January 2016.

All 10 network nodes have a permaculture project or initiative (mostly home gardens) in their respective geographic locations.

All 10 network nodes have attended at least one permaculture training session or workshop with the focal node.

### Implications of Virtual Corridor Creation

#### 1. On Social Networks

- A socio-spatial network was created.
- Socio-spatial homophily of network nodes was discovered using the methodology.
- The high % Linkage Strength of the 10 network nodes illustrates their ability to be effective channels of information sharing and practice.
- Virtual corridors can be created over time as network nodes interact more with each other.
- Virtual corridor creation is dependent on the online activity and permaculture experience of a focal node.
- Discovered network nodes can be focal nodes themselves.
- Focal nodes have a potentially vast network to share permaculture information with.

## 2. On Landscape Patches

- Similarity of specific permaculture practices can now be compared and studied.
- Socio-spatial homophily indicates that landscape patches are likely to feature permaculture design characteristics such as creation of microclimates, application of organic agriculture, energy cycling, and use of renewable energy.
- Permaculture projects can either be located in diverse urban or rural landscape patches.
- Virtual corridor creation may lead to the discovery of energy zones— areas with the most permaculture activity.

The emergence of alternative farming systems has been gaining popularity in the last decade and making its way into mainstream culture much faster than in previous decades. Thanks to “digital highways” (Morris 2012), such as social media, ecology-based farming systems challenging the dominant industrial agriculture model (Diver, 1994) have found its way in the hands of individuals outside of the academe. Permaculture, in particular has achieved international fame (Diver, 1994; Ferguson & Lovell, 2013). Morris explains how permaculture has spread in today’s Society 2.0:

“Now in terms of techniques spread virally through YouTube videos, support and information exchange bulletin boards, blogs, national societies and local networks; its businesses and courses proliferate” – (2012)

With issues such as climate change, food security and biodiversity loss headlining the news, individuals and communities are searching for ways to address these issues by themselves. Alternative agriculture gives common people the power and knowledge to challenge the prevailing model of conventional (also called industrial) agriculture.

Despite alternative farming and permaculture’s rising popularity in popular culture, there continues to be a lack of scientific research in these disciplines (Veteo & Lockyer 2008 as cited in Haluza-DeLay & Berezan, 2010). A so-called “feral ecology” (Morris, 2012) has come out of the confines of the gated scientific community and into the hands of the public thanks to the knowledge-sharing power of the internet. The perception of the scientific community towards permaculture continues to be negative due to its “feral” nature and the credibility of the people who practice it—those outside of the academe as demonstrated by the results of the study.

In spite of permaculture’s online popularity, it has yet to gain significant attention in the scientific community (Haluza-DeLay & Berezan, 2010; Ferguson & Lovell, 2013). Most research can be based on what Morris (2012) calls “feral feedback”—feedback provided by individuals working with and within alternative farming systems such as permaculture. These feedbacks pass through social networks that create virtual corridors.

## Conclusions and Recommendations

It must be pointed out that 10 out of a possible 286 network nodes is a small sample size to conclude anything regarding how virtual corridor creation can significantly shape and influence landscape patches, especially on a macro-scale. But the important take away from this study is that online social networks have an equivalent spatial network when it comes to permaculture and its designers. The study was able to provide a glimpse of what virtual corridors are and what they are capable of doing when created.

A deep understanding of permaculture and the social values it promotes is critical to the appreciation of the study. If permaculture is viewed simply as another alternative approach to conventional agriculture, then the study will have nothing new to contribute to scientific knowledge.

Permaculture's strong emphasis on design, ethics, and the intrinsic values it imparts to its practitioners demonstrates that a change in perspective manifests into positive actions that would benefit both the environment and society. This is so because intrinsic changes in one's self (intangibles) are much more difficult to quantify, observe and measure in comparison to geophysical or natural phenomena (tangibles). An important feature of this paper's framework is the assumption that the management of landscapes is not just an ecological issue. Rather, it is a personal and social issue being discussed and shared within and across social networks.

The field of landscape ecology gives permaculture the scientific backbone it needs to warrant attention in the academic and scientific realms. Landscape ecology also opens the door to discuss and investigate the validity of the technical aspects of permaculture design methods and its impact on landscape structure and function. Social network analysis, on the other hand, provides the tools to study complex relationships of both people and places.

Relying on the strength of socio-spatial relationships between permaculture designers via virtual corridors, Facebook relationships can theoretically translate into the connectivity of landscape patches. Though not connected physically, permaculture designers and their respective projects are virtually connected to each other creating a network of permaculture sites -- sites that mindfully and consciously transform landscapes for the better. In other words, Facebook, or social media in general, can be used as platforms where permaculture values and practices can be shared, expressed and manifested into actual ecological landscapes.

Permaculture designers are increasing in number thanks to the courses being offered worldwide both on-site and online. Individual practices (Jensen, 2009) have been reviewed but the overall effects of these projects working in sync have not been studied yet. The movement has created an "ecological culture" (Morris, 2012) an ecological habitus (Haluza-DeLay & Berezan, 2010), and a connectivity between and across individual designs and communities that stimulate cooperation among its members (Peeters, 2011)

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## Role of Teachers in Technology-mediated Distance Education: A Preliminary Synthesis

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### Abstract

Technological advances in distance education have transformed the teaching learning processes. It has been realised that there are innumerable possibilities of using educational technology as a crucial pedagogical resource during teaching and learning. Technology has expanded the opportunities for students to access higher education but on the other hand it has presented challenges before the teachers to devise creative methods of teaching. Distance education today demands a change in the role of teachers so that meaningful learner-centric interactions and discussions take place. However, at several occasions it is feared particularly in distance education systems that technology would replace teachers. In this context, it is necessary that teachers in distance education make use of the latest educational technologies as a resource to carry out effective teaching. In view of this, an attempt has been made in the current paper to explore the role of teachers in technology mediated distance education. The paper finally asserts that effective faculty participation is the key driving factor towards the success of technology-mediated distance education.

**Keywords:** *technological resources, teachers, distance education, learning*

### Introduction

The nature and delivery of distance education has changed like never before. For example, previously, distance learning institutions sent study materials to students by post and received assignments back in the same way. Later, e-mail was used and content was merely dumped in a digital repository for students to access. The integration of social media tools and interactive platforms like blogs, wikis and discussion forums have enriched the learning experience of the learners.

The ever-evolving nature of technology continues to push distance educators to use new tools to create learning environments that will prepare students to be life-long learners, who can continue to acquire new set of skills and collaborate with diverse groups to achieve their objectives. In view of this, the teachers have to remain updated with the latest know how of the technologies and to carry out effective teaching process using technologies.

Educational technology has played a central role in improving teaching and learning and has been instrumental in bringing about educational reforms around the world. Numerous scholars argue that integrating technology and education can enhance teaching and learning activities in ways that can support student-centred teaching with more active student involvement in the learning process (Cope & Ward, 2002; Edelson, 2001; Jonassen, Hernandez-Serrano & Choi, 2000). Nowadays, because of the advent of technology, students are not viewing distance education as the last resort but are attracted to it because of associated benefits.

The benefits of technology are fruitful only when teachers make full use of it. University faculty in distance education are facing challenges in the areas of course design and development, delivery mechanism, communication media, creation of an engaging learning environment, assessment and evaluation, and use of new technologies. Due perhaps to lack of training and dearth of resources, distance education systems are not fully utilizing these technologies.

This paper probes the influence of technology on the distance education system and how the role of faculty has changed with the emergence of the technologies in distance education. The paper also emphasizes the role of professional development needed to update teachers regarding the use of technology in education.

### **Objectives of the Paper**

This paper was prepared with the following objectives in mind:

- To explore the influence of technology on a distance education system.
- To explain the changing role of teachers in distance education.
- To identify the challenges faced by distance education teachers in adopting latest educational technology.
- To emphasize the role of professional development needed to update distance education teachers regarding the use of technology in distance education

### **What the Current Literature Says**

The journey of the advent of technology in education has been well researched by scholars. The traditional correspondence or TV based style of distance teaching was enriched with (interactive) educational media, Web-based courses, Internet-enabled synchronous and asynchronous communication and collaboration (Qu & Nejd, 2001). A number of studies have been conducted on the impact of technology on the quality of distance education. The usefulness, ease of use and effective delivery has attracted large numbers of fresh students and working professionals towards this mode of learning. Researchers have studied the various types of technological tools and their applications. Internet and other wireless communication facilities support the seamless continuation of interaction when the learner is away from his computer.

A lot of studies have also been conducted on the attitude of teachers towards the use of technology in teaching learning process. Chai & Khine (2006) argue that teachers' technology use is influenced by factors which can be classified in two broad categories, external environmental factors and the personal teacher characteristics.

Sadik (2006) in his study in Egypt reported that the more positive teachers' attitudes were towards technology the more likely they were to integrate it in classroom. Various studies on teacher attitudes conducted in different countries have revealed positive attitudes toward technology and computers (Hong & Koh, 2002). This study of Hong and Koh (2002) concluded that attitudes were more strongly influenced by prior computer experiences than by gender. Sadik (2006), in another study, also established a gender relationship with positive attitudes towards computers in favour of males.

It has also been found that distance education teachers are hesitant to use newer educational technology and are resistant to changing their style of teaching. For example, studies in various countries have indicated interesting ways educators use technologies of learning. Ball and Levy (2008) investigated the impact of self-efficacy, computer anxiety, and technology experience on instructor intention to use emerging learning experience in a small private university in the US and found that self-efficacy was the only major determinant of instructor intention. Teo (2009) found that computer self-efficacy directly impacts pre-service teacher's perceived usefulness, perceived ease of use, and behavioural intention in Singapore. Liaw et al. (2007) found that perceived self-efficacy determines instructor behavioural intention to use e-learning in Taiwan. Albirini (2006) investigated the perception of school teachers regarding the use of ICT in education in Syria, and the results highlighted the importance of teachers' vision of technology, their experiences and the cultural conditions on their attitudes towards technology. Mahdizadeh et al. (2008) found that a teacher's previous experience with e-learning environments and ease of use explain teachers' perception of the usefulness of e-learning environments and their actual use of these environments. Instructor innovativeness is important to the satisfaction of e-learning (Van Raaij & Schepers 2008). The notable work has been carried out by O Niel (2006) where he has observed that the teacher is no longer the "dispenser of information", with the increase access to resources on the Web. Similarly Sellers (2001) writes that the traditional classroom teacher is often viewed as the initiator of all classroom activities, and as such is held responsible for students' learning opportunities. It has also been mentioned in his study that the role of teachers and learners is changing with the advent of technology. In her research on the role of teacher and learner in technology-mediated learning Vaghela (2015) mentions that the teacher is not actually teacher in the traditional sense of the term, but an instructor of technology-mediated learning which is not based on traditional teaching method but on method of giving instruction for use.

In recent years, technology and computers require lesser financial resources, thus spreading at faster rates (Cepni, Tas & Kose, 2006; Newhouse & Rennie, 2001), and the teachers have always been the central agents in the utilization of any reform based innovation. Even if the school has sound technological infrastructure, and the teachers have no willingness or attitude to learn new technology, there is no use of technological support. If the goal is to promote technology enhanced education, it is of primary importance to investigate what teachers perceive of technology and its use in education, what their knowledge and skills are or what skills they need to further develop (Kahveci, et.al., 2011).

### **The Process of Synthesizing Relevant Research Results**

A review-based research was undertaken for 50 research papers which were evaluated and for which an attempt was made to establish the impact of technology on changing the role of distance education teachers. The inferences have been drawn based on taking the conclusions of these research papers. An attempt has also been made to figure out what prevented the faculty from giving away their traditional roles and what were the chief motivating factors for them. The information was collected from various secondary sources like reports, articles, journal papers, books, and other sources. The source of primary data was through informal interaction with the distance education teachers in various state and national open universities.

## **Distance Learning and Use of Technology**

Openness and flexibility has made distance learning a viable quality alternative to full-time contact study. A number of programmes are designed and are on offer in distance mode because the learners find it more convenient to study in distance mode than in conventional classrooms. Earlier, distance education was considered as an option only for those who could not get admission elsewhere. However, the interference of technology has transformed the distance learning process. Moreover, the need for skill based courses requires more technological support to provide real time experience to the learners.

There are certain advantages of the use of technology in distance learning. The comfort and user-friendliness of digital media has reduced the load of faculty in several ways. For instance, faculty can upload the content of their lecture on a server or send through group mail and thus relieve students from the burden of taking notes during the lecture. The student who has missed any class also remains informed through this. Further, the distance learners come from different backgrounds and therefore learn in different ways and at different pace. Technology creates an environment in which potential of the individual learner is utilized in the best possible manner. The self-organized learners take an active role and personal responsibility in the development of their skills and competencies with the help of available technology.

In the past, there was only interpersonal contact between the teacher and learner in distance learning. There was no peer group interaction. But today with the use of technology, the learners are able to interact with each other in spite of being geographically separated. Moreover, the 21st-century learner wants to stay connected with peers and receive prompt feedback from the instructor. With the emergence of technology, participation and contribution from diverse students has become more equitable and widespread. The learner may access the information in real time while actively collaborating, or delayed time at the learner's convenience.

## **Changing Role of Teachers**

There is no question that the role of the teacher is changing (T.H.E. Journal, 2000). It is expected that distance learning enrolments within the next decade will increase and therefore it will have profound impact on faculty members' instructional roles. For instance, Beaudoin (1990) recognized that faculty would have to adjust monitoring and evaluating the work of geographically distant learners rather than transmit information in person. Electronic technologies have increasingly changed the interaction between instructor and student. For most of the 20th century, distance education involved pen and paper, the typewriter, and the postal service, which provided the sole link between the individual instructor and the individual student. With the development of the radio and then television, it became possible to transmit educational courses, programs and content widely using these mass media distribution channels. (Moore & Anderson, 2003). Likewise some organisations are doing away with traditional buildings, providing flexible hours, making available large amounts of multimedia, etc. to accommodate the changing the role of the distance teacher in today's times. The teacher no longer has to be in charge, but can give some of the control over to the students and the technology. The task for the teacher is to arrange the learning environment in such a way as to provide situations in which students use their own knowledge to construct meaning of a particular problem.

Teachers should themselves be well-trained in order to guide the students on the right path of Technology Mediated Learning. It doesn't mean that there is no place for the teacher in the classroom but it means that the teacher has to play different and multiple roles. Most of the time teachers may continue with their traditional roles of lecturer, information giver, or discussion leader. The new teacher roles are in the areas of instructional design, training, collaborative partner in learning, and team coordinating. "Each role is associated with specific set of activities and is made possible by the use of technology a project-based learning in inquiry-based instructional methods." (Daithí Ó Murchú, 2015).

Technology-mediated learning is not based on teaching method but it is based on how the teachers are giving instructions in the classroom. As the teaching becomes more learner-centred, the faculty fear that their role would be replaced by technology and ultimately they would lose their authority over the classrooms. To come out of this anxiety, it is essential that the teachers have a keen understanding and appreciation of their changing role. They must stay motivated and enthusiastic about the intrinsic and extrinsic motivating factors (Lee, 2001; Schifter, 2000). Personal motivation to use the technology is an intrinsic motivator and chances of promotion and increment are the extrinsic motivators for the faculty to use technology in preparing their lessons and taking classes. Likewise there are intrinsic and extrinsic barriers too. Intrinsic barriers are that the faculty feel threatened by the technology and are concerned that online courses and programs will replace the on-campus learning experience. They worry about their career and the changes within the field and what those changes may do to their job security (Dooley & Murphrey, 2000). According to Levy (2003), faculty members are faced with a number of new situations when teaching an online learning class as opposed to a traditional class.

The most important role of the instructor these days is to model effective teaching and accept "the responsibility of keeping discussions track, contributing special knowledge and insights, weaving together various discussion threads and course components, and maintaining group harmony" (Berge, 1995). The desired role of distance education teachers are discussed below:

1. **Team Member.** Sellers (2001) wrote that the traditional classroom teacher served as the initiator of all classroom activities, and as such, he/she was responsible for students' learning opportunities. Technology mediated learning is ultimately student-centred and student-driven. It encourages student-centred learning in which intellectual attainment replaces the didactic force of the teacher as the main impetus of learning. As evidenced by various studies mentioned, the most critical issue in this educational revolution is the role of the instructor. The distance instructor loses a certain autonomy common in the traditional classroom. In technology driven learning, the instructor becomes a member of a team; subsequently, the instructor no longer has total control of the learning environment. For a number of years, teachers have managed classes by virtue of their control on information. Now, with instant access to vast resources online, students are no longer dependent on the teacher alone for knowledge.

The Office of Technology Assessment (OTA) states that, "...teachers have to be allowed to choose, willing to make choices, and qualified to implement their choices effectively. OTA finds that, just as there is no one best use of technology, there is no one best way of teaching with technology. Flexibility should be encouraged, allowing teachers to develop their personal teaching approach utilizing the variety of options offered by technology" (US. Congress, 1988, p. 17).

One of the important areas that affect the change of the role of the instructor in distance education is the Transactional Distance Gap. Moore's Theory of Transactional Distance defines the role of faculty in distance education. This concept of "transactional distance" defined the relationship of instructor and learner. (Moore & Anderson, 2003) According to Moore, transactional distance is the gap of understanding and communication between the teachers and learners caused by geographic distance. It is filling this 'gap' of understanding and communication between the teacher and learner that defines the role of the instructor. The instructor must be the one to bridge that gap through special teaching techniques, distinctive procedures in instructional design and the facilitation of interaction. (Moore & Kearsley, 2005).

- 2. Team Coordinator.** "Team coordinator" was another teacher role that is identified in this paper. The focus of this role was on the active assignment of individual students to project or portfolio teams. In addition to opening up opportunities for collaborative and social learning activities, teachers who assumed the "team coordinator" role created opportunities for peer tutoring, apprenticeship modelling, and support between students with mixed ability levels." (Daithí Ó Murchú, 2015).

Muirhead & Min (2001) wrote that distance education would demand changing the traditional role of teachers from information transmitters to guides who arrange meaningful learner-centred experiences. A good classroom teacher is not necessarily a good online teacher (Davis & Roblyer, 2005). Distance educators have more options than just wikis, blogs, or podcasts to enhance interaction. The teacher is no longer the "dispenser of information", with the increase access to resources on the Web. Sellers (2001) writes that the traditional classroom teacher as such is held responsible for students' learning opportunities. Online learning is ultimately student-centred and student-driven. As evidenced by various studies mentioned, the most critical issue in this educational revolution is the role of the instructor. The distance instructor loses a certain autonomy common in the traditional classroom. In technology mediated learning the instructor becomes a member of a team; subsequently, the instructor no longer has total control of the learning environment. A learning environment is created in which students are active participants in the learning process. (Sellers, 2001).

New models of teaching can accommodate the needs of the 21st-century learner by including activities that allow students to contribute to the learning process at any time, from anywhere. Students may take on the role of the instructor by sharing expertise, presenting sections of the course content, and using the file-sharing capabilities to share documents with the instructor or peers. Learning "on the go" is more commonplace than ever before. The ability to conveniently add one's contribution to a collaborative project or connect with peers at any time facilitates access to education.

The 21st-century learner requires educational opportunities not bound by time or place, yet allow interaction with the instructor and peers. Voice and videoconferencing, whiteboards, live presentation tools, application sharing, chats, and emails are just a few of the many tools available for interaction and collaboration. Blogs, wikis, and podcasts, as well as social software are emerging technologies that foster the sense of connectedness between the members of a group.

3. **Partner in Learning.** Emerging technologies that foster different forms of interaction may also affect the role of the instructor. Evolving theoretical frameworks and paradigm shifts may no longer support the role of facilitator. Formerly a deliverer of knowledge, the instructor's role changed over the years as technology advancements presented different kinds of responsibilities and new theoretical perspectives emerged. By the use of collaborative technologies such as wikis, blogs, and podcasts, the role of facilitator has now converted into an active partner. The instructor must view the students as contributors of knowledge, and thus allow them to participate in the creation of content. This radical change in view is supported by the contribution-oriented pedagogy used by Collis and Moonen (2005).

Emerging technologies afford new opportunities as well as responsibilities. It is the responsibility of the instructor to maximize student interaction. As emerging technologies are implemented to support interaction, the instructor's role will include not just monitoring and facilitating the interactions, but also actively participating in the exchange of knowledge and reflection. As a partner in learning, both learner and instructor will benefit from the mutual learning process.

4. **Trainer.** "The role of "trainer" is also emerging as the technology widens its scope. "Trainers" give individual instruction to enable skill development. This training or mentoring was accomplished through modelling the use of multimedia and technology, and helping the students to see how they might use software tools to accomplish unique language learning tasks." (Daithí Ó Murchú, 2015)
5. **Technology Savvy Mentor.** As distance educators seek to incorporate technology in their classrooms they face the challenge of meeting the needs of a varied learner segment that is more mobile and technology-savvy than any previous generation. The teachers must understand that Gen Z kids will grow up with a highly sophisticated media and computer environment and will be more Internet savvy. Students usually adapt more quickly than their teachers to new technology. On the other hand, teachers who have begun to feel comfortable with the equipment don't mind having their students teach those new tips and tricks (Apple Classrooms of Tomorrow, 1992). Research on the educational uses of these emerging technologies is limited, yet the information available demonstrates their versatility. Wikis are flexible enough to serve different purposes and can be adapted in different courses. Researchers and practitioners are recognizing emerging technologies as powerful tools for building social interaction among teachers and learners. Higher levels of technology will make significant inroads in academics and customized instruction can be provided to the learners.
6. **Content Developers.** Content development is a critical area that is too often overlooked when it comes to the application of technology. Latest technologies can be used to develop the content in such a way that it becomes more informative and interesting for the learners. There is voluminous educational material which is mostly in English. With the help of technology, the print based content can be converted into digital media. Interactive learning materials on CDs-, DVDs can be used to develop educational content. In this way the teacher in distance education has to play the multiple roles of scriptwriters, audio and video production specialists, programmers, multimedia course authors, and web-developers also. However, to provide the technical support many universities with distance education programs have dedicated technical support and content development units.

- 7. Instructional Designer.** “Instructional designer” is one of the more common new roles taken on by distance education teachers. Just as the students in distance education are termed as self learners, the teachers are also free to design and plan their lectures as per their choice by effectively utilizing the technology. Depending upon the topic, they can use A/V tools and design the instructions in their own unique ways. This is also rightly said that “technology does not teach students; effective teachers do.” (Palloff & Pratt, 2000). It has been found that many times, the instructors do not design their lessons to take advantage of the technology presented. This affects the quality of the instruction.

### Challenges Faced by Teachers

Proactive implementation of emerging technologies is dependent on comfort level, monetary resources, and visionary leadership of faculty. Revising course design and delivery structures is a time-consuming and a costly endeavour. However, time and money may not be the only factors that would inhibit the integration of emerging technologies. Visionary educators seeking to improve current practices face the conflict between the freedom afforded by emerging technologies and the administrative control enforced for legal reasons. Others are confined by lack of funds or support from government agencies. Many educational institutions are looking for ways to improve their current practices in regard to technology integration and how it enhances student interaction.

Many institutions are restricted by legal concerns and administrative control, other institutions around the globe face monetary or political constraints that may prevent them from integrating new technologies. Integration of emerging technologies is also difficult for countries that lack the connectivity. Lack of support from government is responsible for delaying the advancement of distance education in Brazil, forcing institutions to adopt a hybrid method of delivery only (Litto, 2002) Litto acknowledges that this is a frustrating problem for educators who recognize the need to revise the outdated educational system and see asynchronous delivery as part of the answer. In the meantime, it may be necessary to choose emerging technologies that extend face-to-face collaboration for those students participating in mixed-mode delivery.

Proactive leadership can minimize the limitations imposed by administrative control, lack of infrastructure, or lack government support. Some other limitations of the use of technology in distance education are lack of staff training, lack of expertise in course designing, development and delivery, lack of knowledge of technology, lack of support for distance learning, inadequate faculty selection for distance learning courses, inappropriate courseware, programme implementation and evaluation strategy.

Undoubtedly, the use of technological resources is rapidly expanding, but this takes place in contexts where the expectation is often highly ahead when possible technological solutions are directly experienced. Too often the opportunities and advantages of the use of technology in the learning process are poorly exploited. To effectively use the technology, the professional development of the teachers towards teaching tools is of prime importance. The teachers must be trained with particular skills to provide suitable applications.

Ideally, these should be addressed in pre-service teacher training and built on and enhanced in-service. In some countries, like Singapore, Malaysia, and the United Kingdom, teaching accreditation requirements include training in ICT use. ICTs are swiftly evolving technologies, however, and so even the most ICT fluent teachers need to continuously upgrade their skills and keep abreast of the latest developments and best practices.

Unfortunately, most teacher professional development in ICTs talks more about “teaching the tools” and less on “using the tools to teach.” The integration of emerging technologies into new models of teaching must also take into consideration cultural differences and learning tendencies, respecting the individual.

### **Conclusion**

For distance education to be successful, faculty needs to be trained in the technology as well as the pedagogy of distance learning. Teaching through technology is a new experience, different from teaching in the classroom. It requires a different set of skills and a different pedagogy. Training for teaching via distance education is essential (Wolf, et. al.,2005)

Faculty development workshops to introduce faculty to distance education technology and to the changes in pedagogical approach needed to effectively conduct distance education classes are a must. Through these types of workshops, faculty can learn, among other things, strategies to improve the interpersonal dimension of distance learning, a concern of many educators. Designers and administrators must understand how the technology tool selected will aid interaction and which types of interaction it will promote.

Emerging teaching models will undoubtedly integrate new technology tools, yet those tools that foster interaction must be deliberately integrated into the design process to ensure appropriate application. The possibilities are as varied as the tools themselves, the impact and implications of technology on new ways of learning and new models of teaching are far-reaching. Although administrators have identified student–student interaction as a weak area, they consider many of the emerging technologies explored in this article to be “unsafe” practices and therefore do not authorize their use.

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## **Computer Self-Efficacy and Attitude Towards e-learning: A Study Among Graduate Students in Nursing in an Open University in the Philippines**

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### **Abstract**

With the advent of computer technologies and Internet, the University of the Philippines Open University (UPOU) has adopted online teaching and learning making education more accessible to students using the Internet. This study investigated the computer self-efficacy and attitudes of Master of Arts in Nursing graduate students towards e-learning. Results showed that the students' computer self-efficacy skills were high in their beginning skills and rated fairly in their advanced skills. The students were also very confident in using their computers and had a positive attitude towards their learning through the Internet. The findings also revealed that there was no significant relationship between the students' computer self-efficacy skills and attitude towards e-learning with a p-value of 0.902. This means that the students' positive attitude towards e-learning does not affect their computer self-efficacy skills. It was concluded that even if the students have beginning skills in using their computers, they still feel positive in their studies.

**Keywords:** *online teaching and learning, attitudes on e-Learning, computer self-efficacy*

### **Introduction**

Online teaching and learning emerged through the fast growing information and communication technologies nowadays. This allows students to choose from different forms of education such as the conventional form, blended learning, online mode of teaching and others.

The UP Open University is a pioneer in online teaching and learning in the Philippines with a mission to provide wider access to quality higher education through innovative methods of teaching and learning. One of its graduate programs is the Master of Arts in Nursing, which uses the blended form of learning, through its discussion forums, online quizzes and exams, and its face-to-face clinical practicum for clinical courses.

Some students may find online learning difficult and hard to cope with and some students may find it easy, enjoyable and motivating. Thus, students enrolled in this form of education may exhibit different attitudes to e-learning and self-efficacy in using computers and the Internet. According to Compeau & Higgins (1995) as cited by Brown J. H. (2008), "computer self-efficacy (CSE) is a judgment of one's capability to use a computer". Computer self-efficacy has an impact on an individual's expectations towards using computers. Attitude, according to Anastasi (1976) as cited by Bhuvanewari & Padmanaban, et al (2012), is defined as a tendency to react favourably or unfavourably towards a designated class of stimuli. It is a dispositional readiness to respond to certain situations, persons or objects.

A study by Khorrami-Arani O. (2001) showed that at the start of the IT course, students have little anxiety towards computers and are quite confident, but are indefinite in terms of liking computers. It also showed a high comfortableness about their ability to use computers (computer self-efficacy) at the start of the course. Moreover, the students' previous computer use and computer experience is also quite high. Overall, students' attitudes towards computers and their degree of confidence in their use of computers are quite high.

In a study by Sam, Othman, and Nordin (2005) on the undergraduates' computer anxiety, computer self-efficacy, and reported use of and attitudes toward the Internet, results showed that the undergraduates had moderate computer anxiousness, medium attitudes toward the Internet, and high computer self-efficacy and used the Internet extensively for educational purposes. It also showed that the undergraduates studying computer related disciplines appeared to have higher self-efficacy towards computers and the Internet. However, higher level of Internet usage does not necessarily correspond to better computer self-efficacy and may not feel more comfortable using the Internet. Other possible factors that could influence CSE and CA are the types of application used, the purpose for using them, and the individual satisfaction gained from using them. Higher usage of the Internet does seem to decrease the levels of computer anxiety among undergraduates, which in turn displayed a more positive attitude toward the Internet.

In a study conducted by Vrana, Zafiroopoulos and Drogalas (2005), the results revealed that e-learning for secondary education was both considered important and could be used as an alternative. However, the ability and familiarization for both students and teachers to implement e-learning effectively seemed to be an issue.

Mehra and Omidian (2011) have examined the post graduate students of University of Panjab, India regarding their attitudes towards e-learning. Students attitude towards e-learning were significantly positive. It was explained by variables such as perceived usefulness of e-learning and intention to use.

Another study conducted by Suri and Sharma (2013) which studied the effect of age to students' attitude to e-learning. The results showed that age did not significantly affect the attitudes to e-learning. Students' view in e-learning depended on two attitudes. Positive affective attitude was observed when e-learning served as useful tool through the design of an e-Learning webpage. On the other hand, negative affective attitude was attributed in the difficulty to cope up (Alhabahba, Ziden, Albdour & Alsayyed, 2012).

The purpose of this study was to describe the computer self-efficacy and attitude towards e-learning of graduate students in nursing in an open university and the correlation between these two variables.

### **Methodology**

Online survey was conducted among Master of Arts in Nursing (MAN) students enrolled to gather information and data needed in the preparation of this paper. A total of 33 MAN students participated in the study.

First, the respondents were requested to answer a consent form which also included some socio-demographic questions about the participants. Then, they were requested to answer both the questionnaire on Computer Self-Efficacy Scale for Adults and Attitude Towards e-Learning, respectively. To measure the computer self-efficacy of students, the questionnaire created by Murphy (1989) was adopted.

Descriptive analysis was used to discuss the socio-demographic profile of the participants. For the results of the used instrument, mean and standard deviation were computed. SPSS was used to determine the relationship of the two variables.

## Results and Discussions

### Profile of Research Participants

Table 1 shows that 82% of the participants in the study belong to the 21-40 age group while 18% belong to the 41-60 age group. Almost all of the students who participated are female (70%). In terms of civil status, 76% are single while only 24% are married. With regards to location of respondents, it can be seen that 61% are based abroad while 39% are residing in the Philippines.

Table 1. Socio-demographic Profile of Participants

Socio-demographic	n = 33	100 (%)
Age		
21-40	27	82
41-60	6	18
Sex		
Male	10	30
Female	23	70
Civil Status		
Single	25	76
Married	8	24
Location		
Offshore	20	61
Local	13	39

### Computer Self-Efficacy Skills of Participants

The computer self-efficacy skills of the participants were interpreted as beginning, advanced and mainframe skills. Table 2 below shows computer self-efficacy skills of the students ranked from highest to lowest based on their mean scores. The highest ten mean scores indicate that the students have beginning skills of computer self-efficacy except for item #8 with a mean score of 5.31 where students have mainframe skill. The lowest five mean scores indicate the students' advanced skills in computer self-efficacy.

Table 2. Computer Self-Efficacy of Participants, Mean and Standard Deviations

Statements	Mean	Std Dev	Skill
12. I feel confident handling a computer disc or USB correctly	5.53	0.80	B
17. I feel confident using a printer to make a “hard copy” of my work	5.50	0.98	B
21. I feel confident moving the cursor around the monitor screen	5.50	0.98	B
1. I feel confident working on a personal computer	5.47	1.02	B
6. I feel confident entering and saving numbers or words into a file	5.38	0.71	B
9. I feel confident choosing file to view on a monitor screen	5.38	0.94	B
19. I feel confident copying a file	5.38	0.79	B
20. I feel confident adding and deleting information to and from a file	5.34	0.83	B
8. I feel confident logging off the mainframe computer system	5.31	0.82	M
22. I feel confident using the computer to write a letter or essay	5.29	1.07	B
23. I feel confident describing what computer hardware does (keyboard, monitor, disk drives, processing unit)	5.28	0.92	A
7. I feel confident escaping/exiting from a program	5.28	0.92	B
5. I feel confident using the user’s guide when help is needed	5.25	0.76	A
15. I feel confident choosing items from an onscreen menu	5.25	1.02	B
4. I feel confident working on a mainframe computer	5.19	0.93	M
29. I feel confident organizing and managing files	5.19	0.93	B
3. I feel confident logging onto a mainframe computer system	5.16	1.02	M
13. I feel confident learning to use a variety of programs	5.09	0.96	A
2. I feel confident getting the software up and running	5.09	0.93	B
18. I feel confident copying a disk	5.09	0.93	B
27. I feel confident using the computer to organize information	5.09	0.89	A
24. I feel confident understanding the three stages of data processing: input, processing, output	5.06	0.98	A
25. I feel confident getting help for problems in the computer system	5.03	1.14	A
28. I feel confident getting rid of files when they are no longer needed	5.03	0.97	B
11. I feel confident understanding terms/words relating to computer software	4.97	1.03	A

14. I feel confident learning advanced skills within a specific program	4.94	1.05	A
16. I feel confident using the computer to analyze number data	4.84	0.99	A
10. I feel confident understanding terms/words relating to computer hardware	4.81	0.97	A
26. I feel confident explaining why a computer program does not work on a computer	4.50	1.08	A
30. I feel confident troubleshooting computer problems	4.19	1.31	A

Note: B = Beginning

A = M  
Advanced = Mainframe

The results illustrated that the students' computer self-efficacy skills were high in their beginning skills and rated fairly in their advanced skills in computer self-efficacy. According to Brown J. H. (2008), computer self-efficacy is a judgment of one's capability to use a computer. The results suggest that the students are not fully confident in using their computers or are not fully familiar with the intricacies of using their computers. Considering that the students are studying via distance education and the computer as well as the Internet is their only means of communication with their virtual classmates and teacher, the results have great implications to the way the courses are held and approached.

The results also indicate that the students are not utilizing the Internet extensively for educational purposes. This may not be surprising since according to the study done by Sam, et al (2005), undergraduates studying computer related disciplines appeared to have higher self-efficacy towards computers and the Internet compared to non-computer related disciplines. This suggests that MAN students need to spend more time exploring the Internet for educational purposes, such as utilizing the data bases for research and other assignments.

### Attitude towards e-Learning of Participants

Table 3 presents the students' attitude towards e-learning. Based on the results of the study, the total mean score is 4.01. This indicates that the students have a positive attitude towards e-learning.

Table 3. Attitude towards e-Learning of Participants, Means and Standard Deviations

	Statements	Mean	Std Dev
1.	Is very demanding and it will be hard for the students to manage	3.32	1.30
2.	Is a fashion, which will diminish shortly	1.71	0.90
3.	Is to access course material electronically	4.23	0.80
4.	Is very demanding and it will be hard for the teachers to manage	3.55	1.31
5.	Gives the same opportunity for participation to both shy and extrovert students	4.32	0.83
6.	Supports group work and collaboration among students	3.74	1.06
7.	Is useful for the improvement of continuing education	4.77	0.76

8.	Saves time and effort for the students	4.30	1.02
9.	Makes students to be more consistent regarding course obligations	4.19	0.87
10.	Is an efficient supplement of the traditional classroom educational process	4.39	0.80
11.	Facilitates communication with the teachers	3.97	0.80
12.	Improves the quality of student participation in the educational process because students have all the time to think and get prepared before they answer	4.32	0.83
13.	Affects positively the quality of education and the performance of the students	4.19	0.83
14.	Broadens the number of references in other educational material sources through Internet	4.42	0.81
15.	Offers flexibility since it delivers educational material anyplace, anytime	4.58	0.81
16.	Demands significant technological infrastructure (Computers, Internet, etc)	2.55	1.59
17.	Facilitates communication with other students	4.03	0.80
18.	Thrills me with the idea of participating in e-classes	4.32	0.70
19.	Performs self-evaluation exercises regarding educational material	4.23	0.62
20.	Within its context everybody is equal and social inequality is reduced	4.13	0.88
21.	Sends my assignments electronically (on-line) and receive teachers' comments electronically	4.45	0.85
22.	Educators are well prepared for educational approach	4.42	0.81
TOTAL		4.01	0.91

The results also indicate that the students are very confident in using their computers although this does not suggest that they are using their computers and Internet extensively to aid them in their online studies. The results are also similar to the done by Mehra and Omidian (2011), who have examined the post graduate students of University of Panjab, India regarding their attitudes towards e-learning. Students attitude towards e-learning were significantly positive.

### **Relationship between the Participants' Computer Self-Efficacy and Attitude towards e-Learning**

Based on the results of the study, there is no significant relationship between the students' computer self-efficacy skills and attitude towards e-learning with a p-value of 0.902. This means that the students' positive attitude towards e-learning does not affect their computer self-efficacy skills. This indicates that even if the students have beginning skills in using their computers, they still feel positive in their studies.

### **Conclusion and Recommendations**

The study revealed that the MAN students have a high level of beginning skills of computer self-efficacy and moderate advanced computer skills. It also showed that they have a high level of attitude towards e-learning. This means that the students have good self-efficacy and confidence in their computer skills and feel positive towards e-learning. However, it is still recommended that students be supported by encouraging them to use the Internet and databases extensively for their studies. E-counselling may be put up in the program for students having difficulty with their studies.

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### **Call for Articles**

We call on colleagues, such as academics, researchers, technology developers, and open distance e-learning experts to submit their articles for publication in the International Journal on Open and Distance e-Learning. The IJODEL is a semestral journal, hence it comes out every June and December of the year.

The preferred articles are those reporting original research, articles based on critical analyses of e-learning undertakings, book reviews, evaluation studies, and original think pieces such as concept papers.

Please visit the IJODEL website and familiarize yourselves with the process of submitting your articles online.

### **Call for Article Proposals**

Article proposals are those that still need to be developed and researched. They are just ideas. You may submit your proposals to the IJODEL for consideration. Send it to the Chief Editor. If your proposed article is found by the Board of Editors of IJODEL to be worth pursuing, we shall encourage you to proceed with your idea at your own expense. The commitment that IJODEL can make is to consider your article as priority article for publication provided it goes through the standard procedure for which articles go through at the IJODEL.

For both the articles and proposed articles, follow the templates for articles.

Template for Quantitatively-Oriented Articles

**Title of Article**

**Author 1<sup>1</sup>and Author 2<sup>2</sup>**

<sup>1</sup>Position, Institutional Affiliation, Country, Email address

**Abstract**

*Abstract in 150-250 words.*

**Keywords:** No more than five (5) keywords.

**Introduction (Center Heading 1)**

This section contains a clear historical background of the study, showing why the research had to be undertaken. In this section, the author(s) shall have the opportunity to expound on what the research says about the research problem, and show clear support for the need to undertake the research, through appropriate research gap analysis.

**Objectives (Center Heading 2)**

This section provides a clear statement of the goals and objectives of the research.

**Conceptual/Theoretical Framework (Center Heading 3)**

The conceptual or theoretical framework would be expected for research studies that dealt with empirical procedures and methodologies. A framework of this nature would provide for clear interrelationships and direction of interactions of variables which the researcher expects to show by his/her data and data interpretations. It should be noted that variable interactions may be easier to understand if they were to be presented in illustrated model formats.

**Methodology (Center Heading 4)**

This section includes brief discussions of data collection procedures and analyses. Data must be presented in appropriate tables.

## **Results and Discussions (Center Heading 5)**

Analytical discussions must present possible relationships of the results of the study and the findings from other studies specifically reviewed for this purpose. Post analysis data may be presented in both statistical tables and appropriate models and figures.

Include subheadings as are necessary.

## **Conclusions and Recommendations (Center Heading 6)**

Conclusions must be according to the objectives of the study.

Recommendations must reflect the objectives and conclusions of the study.

## **References**

General format must follow the suggestions for authors, but generally must follow the APA Style for publications.

**Template for Qualitatively-Oriented Articles**

**Title of Article**

**Author 1<sup>1</sup> and Author 2<sup>2</sup>**

<sup>1</sup>Position, Institutional Affiliation, Country, Email address

**Abstract**

*Abstract in 150-250 words.*

**Keywords:** no more than five (5) keywords

**Introduction (Center Heading 1)**

This section contains the historical background of the study, including specific reports and studies that provided direct support to the research problem. Some relevant part of the literature shall be included in the discussion of the research problem to establish more strongly the need to undertake the study.

**Objectives of the Study (Center Heading 2)**

This section contains both the research over-all goal and the specific objectives to be attained.

**Relevant Studies or Review of Related Studies  
(Center Heading 3)**

Review of studies that are highly related to the current study. After the relevant studies have been presented, a synthesis of these may be presented and the relationship of such synthesis must be related to the study under consideration.

Subheading may be determined as necessary. In these subheadings, specific observations may be noted and statistical tables presented as well as figures and models.

**Discussions (Center Heading 4)**

In this section shall be inserted full discussion of results and finding, discussed more deeply in relation to the related studies already reviewed. Subheads may be determined and included in the discussions.

### **Conclusions (Center Heading 5)**

The conclusions of the study must reflect the objectives of the research.

### **Recommendations (Center Heading 6)**

All recommendations must appropriately correspond to the conclusions, and therefore the objectives of the study.

### **References (Center Heading 7)**

Follow the APA Style Guide.

## Style Guide for Full Paper Submission

The paper should be 15-25 pages long (including tables, figures, and references) and prepared preferably in Microsoft Word format. The author(s) should provide a title, the name(s) of the author(s), position(s), institutional affiliation(s), institutional address(es), email address(es) and key words (no more than five). You may make use of the template for preparing your paper: Journal Article Template (Qualitatively-Oriented); Journal Article Template (Quantitatively-Oriented). Detailed guidelines are as follows:

1. **Font type**

The whole text should be in Arial.

2. **Margins**

The paper should be A4 size (21 x 29.7 cm). All margins (top, bottom, left, and right) should be 1 inch.

3. **Line Spacing**

The whole text should be single-spaced.

4. **Title**

The title of the paper should be 14-point, bold, in capital and lower case letters, and centered.

5. **Author Information**

Use 12-point and centered for the author name(s). The Western naming convention, with given names preceding surnames, should be used.

The author name(s) should appear below the title, with one blank line after the title.

Use 10-point for author(s)' position(s), institutional affiliation(s), country, and email address(es).

The author(s)' position(s), institutional affiliation(s), institutional address(es), and email address(es) should appear below the author name(s), with one blank line after the name(s).

6. **Headings**

- Heading font (with the exception of the paper title and the abstract) should be 14-point Arial and in bold.
- Headings should be centered and in capital and lower case letters [i.e. nouns, verbs, and all other words (except articles, prepositions, and conjunctions) should be set with an initial capital].
- There should be two blank lines before each heading and one blank line after it.

7. **Subthemes**

- Subtheme(s) should be 14-point Arial, in bold capital and lower case letters, and flushed left.
- There should be one blank line before and after each subtheme.

**8. Abstract**

- The abstract heading should be 14-point Arial, bold, centered.
- The abstract should be in 150-250 words.
- The main text of the abstract should be 12-point Arial, italicized.
- Alignment of the main text of the abstract should be justified, no indent.

**9. Key Words**

- Include at most five keywords.
- Use 12-point Arial. The keywords should appear below the abstract, with one blank line after the abstract.

**10. Main Text**

- In general, paragraphs should be separated by a single space.
- All paragraphs must be in block format.
- Text font should be 14-point Arial, single-spacing. Italic type may be used to emphasize words in running text. Bold type and underlining should be avoided.
- The first line of each paragraph should not be indented.

**11. Tables and Figures**

- Tables and figures should be numbered and have captions which appear above them.
- Graphics and pictures should not exceed the given page margins.
- Captions should be 14-point centered.
- The tables and figures of the paper should follow the APA citation style.
- There should be no space between the caption and the table/figure.

**12. Footnotes**

- Footnotes may be used only sparingly. A superscript numeral to refer to a footnote should be used in the text either directly after the word to be discussed or – in relation to a phrase or a sentence – following the punctuation mark (comma, semicolon, or period)
- Footnotes should appear at the bottom of the page within the normal text area, with a line about 5 cm long immediately above them.
- Footnotes should be 10-point and aligned left.

**13. References**

- The author-date method in-text citation should be used. Following the APA format, the author's last name and the year of publication for the source should appear in the text.
- All references that are cited in the text must be given in the reference list. The references must be in APA format and arranged alphabetically at the end of the paper.

**Sample:**

Surname, A. A. (year). Article title. *Title of Journal*, volume number(issue number), inclusive page numbers.

Surname, A. A. (year). *Title of book*. Publisher location: Publisher Name.

Surname, A. A., Surname, B. B., & Surname, C. C. (2000). Title of article. *Title of periodical*, volume number(issue number). Retrieved from URL/web address.

Surname, A.A. (Year, Month). *Title of paper*. Paper presented at name of conference, city, country.

**14. Length**

The paper should be 3,000-7,000 words including tables, figures, and references.

## Author Guide

The International Journal on Open and Distance e-Learning (IJODEL) welcomes original research articles, book reviews, theories, and best practices pertaining to ODeL worldwide. Articles should be 3,000-7,000 words including tables, figures, and references.

A publishable quantitatively-oriented paper should contain the following:

1. Abstract
2. Objectives
3. Conceptual/Theoretical Framework
4. Methodology
5. Results and Discussions
6. Conclusions and Recommendations
7. References

Go to: Quantitatively-Oriented Journal Article Template (page 62)

A publishable qualitatively-oriented paper should contain the following:

1. Abstract
2. Objectives of the Study
3. Relevant Studies or Review of Related Studies
4. Discussions
5. Conclusions
6. Recommendations
7. References

Go to: Qualitatively-Oriented Journal Article Template (page 64)

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