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Factors Relating to the Design of Effective Third Level Learning Environment

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Abstract

The number of students attending University in Ireland is at an all time high. Therefore it is essential to ensure that learning environments are well established and that they help deliver the most important aspects necessary to the students. This paper looks at what the most important factors are when it comes to learning and teaching environments, and what learning environment best delivers these factors. Three learning environments are discussed, Traditional Learning, Blended Learning and Distance Learning. The type of factors that are examined range from aspects to do with the material and resources available to the students to areas such as class atmosphere and interaction between students and staff.

Introduction

With the number of students attending third level education in Ireland at an all time high learning and teaching strategies need to be effective and successful. The quality of student learning, theoretical understanding and achievement, is said to be closely related to how students perceive and understand the teaching and learning environment¹. There are many different learning environments available to lecturers and students today. They vary from the traditional classroom based learning to entirely online learning. Each method has its advantages and disadvantages and there are different factors associated with evaluating these learning and teaching environments. Traditional face to face learning environments typically occur in a teacher directed environment with person to person interaction in a live synchronous environment. There are many different types of traditional teaching methods. Such as:

- “Talk and Chalk” this is using the board all the time while pupils take down notes
- “Jug and mug” this is giving the students information but the students are not active
- Active learning and assessment: Where the students are active and responsive in discussions to give feedback and provide information.

The term blended learning is being used with increased frequency in both academic and corporate circles. In 2002 The Chronicle of Higher Education quoted the president of Pennsylvania State University as saying that the convergence between online and traditional instruction was “the single greatest unrecognised trend in higher education today”. Also quoted in that article was the editor of the Journal Of Asynchronous Learning Networks who predicted a dramatic increase in the number of hybrid courses in higher education possibly to include as many as 80 – 90 % of all courses. There are two definitions when it comes to blended learning: 1) Blended Learning: combining instructional methodsⁱⁱ and 2) Blended Learning: combining online and face-to-face instructionⁱⁱⁱ.

The first definition suffers from a problem of defining blended learning so broadly that it includes nearly all learning systems. It would be very hard to find any teaching method that did not involve multiple instructional methods. The second definition is a more accurate reflection on blended learning and it is the definition that will be used throughout this project. Definition: Blended learning systems combine face-to-face (F2F) instruction with computer mediated instruction. Figure 1 shows the progressive coming together of traditional F2F and distributed environments allowing the development of blended learning systemsⁱⁱ.

Blended learning is the convergence of two learning environments. On one side there is the traditional face to face learning environment that has been around for centuries. On the other there are the distributed learning environments that have begun to grow and expand in huge ways as new technologies have expanded the possibilities of communication and interaction. Osguthorpe and Graham^{iv} identified six reasons why one might choose blended learning environments:

1. Pedagogical Richness
2. Access to knowledge
3. Social Interaction
4. Personal Agency
5. Cost effective
6. Ease of revision

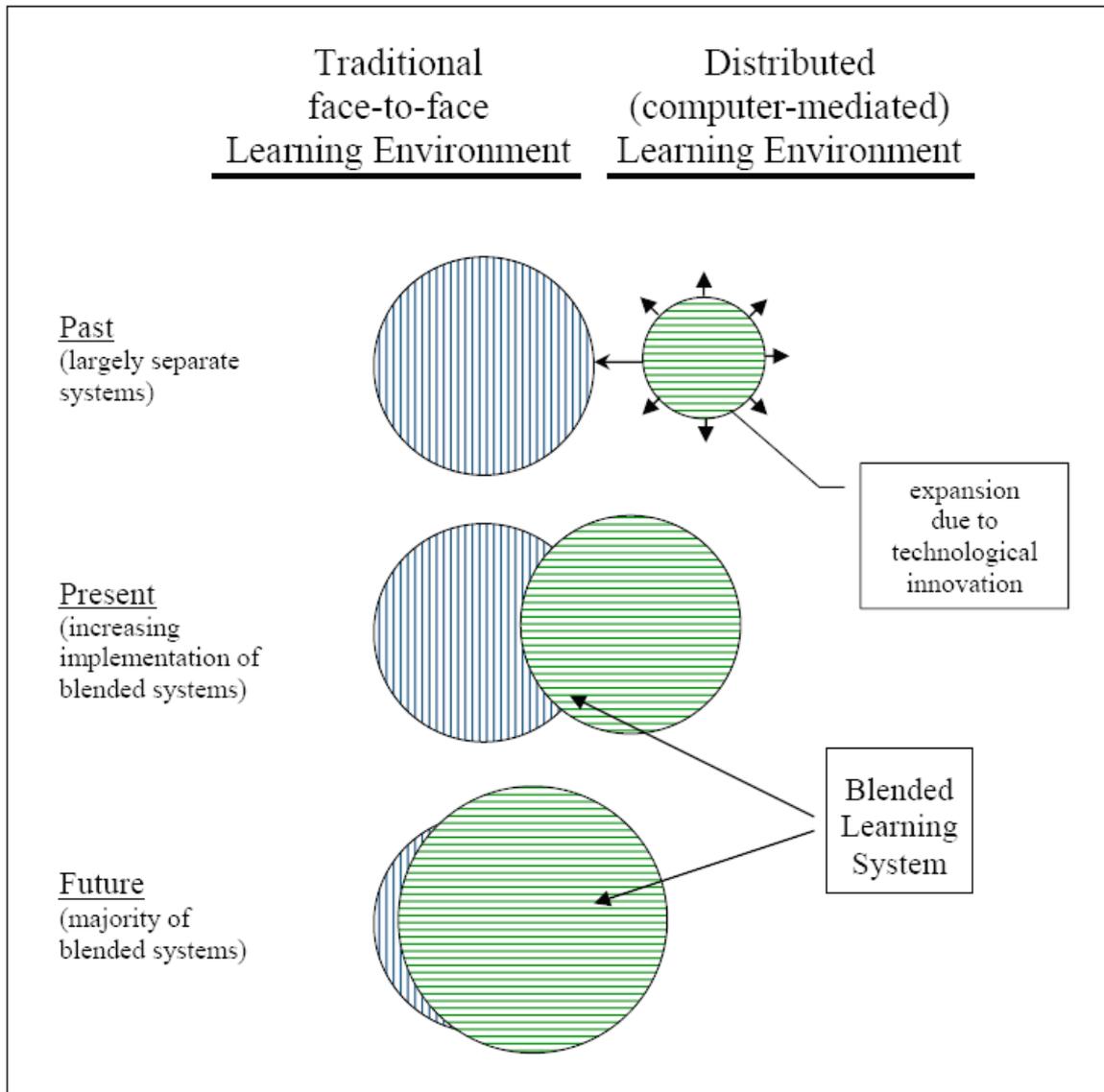


Figure 1: Progressive coming together of traditional and distributed environmentsⁱⁱ

In literature on blended learning it is said that blended learning “combines the best of both worlds”. But it must be designed well, if not it can also mix the least effective elements of both worlds. Distance Learning is another type of learning technique which emphasizes self paced learning and learning materials and interactions that typically occur in asynchronous environments.

E-learning

E-Learning has developed significantly in the past 10 years. In the beginning there were poor products and a very high cost associated with E-Learning. There was also a lack of

understanding of learning and teaching. These issues have all been addressed and there are new cheaper products available and more interest from students in using online learning. Online learning has now been promoted as being cost effective, more convenient and providing more opportunities for learners. It has demonstrated several advantages over a traditional learning environment, especially with the idea of “learning anytime and anywhere”. Student access to online course material can now be time and place independent^v. There are many ways that this online learning can be implemented. For students this new way of learning can be a very welcoming alternative to traditional methods and the classroom setup. Online learning can allow students more flexibility to their learning and can be applied in many different ways.

E-learning can improve the flexibility and quality of learning by:

- providing access to a range of resources and materials which may not otherwise be available or accessible, for example graphics, sound, animation, multimedia;
- giving control to students over when and where they study;
- allowing students to study at their own pace;
- providing a student centered learning environment which can be tailored to meet the learning needs of individual students;
- creating an environment that promotes an active approach to learning;
- supporting increased communications between staff and students, and amongst students;
- motivating students through appropriate use of interactive courseware;
- supporting and encouraging students;
- collaborative learning;
- supporting economic reuse of high quality, expensive resources;
- encouraging students to take responsibility for their own learning;

The key features of online learning are time-independence, text format, and computer mediation, multiple threads of conversation and identifiable participation patterns. Online learning design tends to be based on learner-centered principles that increase learners’ control, facilitate the sharing of multiple perspectives, and encourage individual learners to create their own meaning^{vi}.

Although there is also some down sides to this online learning, asynchronous conversations for example can be hard to adjust to. A few of the qualities to

asynchronous learning such as the time lag between interactions, the frequent lack of clear “norms” of communication, and the absence of visual/auditory conversation cues can create anxiety or unease for some students^{vii}. The time lag can make it difficult to remain focused because students can be distracted by activities in between communication. It may be frustrating for students to have to wait for a response when you are engrossed in a topic and are interested in discussing it at that moment and by the time the response arrives (which may be a few days later) the excitement may diminish. Another aspect of online learning is the accountability of the class, in traditional learning all class members are to be present in the one location and they can be accounted for, in online learning this is not the case. Also in online learning some course members may not participate in the online discussions but may benefit from others participating. The lack of social interaction in an online learning environment can be a big barrier to online learning. There are also some who believe that online learning is not more effective than traditional learning. They believe that technology does not influence learning it just makes it more accessible.

An Enhanced Learning Environment

When it comes to learning, for a student there are certain criteria that need to be present that will help create that enhanced learning environment. These criteria can range from a sense of belonging within the group that they are learning with, ease of communication, a good lecturer, and good resources available. Past research on student learning in higher education has shown that student learning outcomes are closely related to how students experience and approach their studies. Figure 2 summarizes the results of some of this research in terms of a model of student learning in higher education. It shows that student learning outcomes are closely related to how they say they approach their studies. How they approach their studies is in turn related to how they see and understand the teaching and learning framework.ⁱ Some factors related to approaches of study and outcomes of teaching are:

1. Quality of teaching
2. Clearness and nature of the goals of the study
3. Nature of the assessment in class
4. Workload
5. Level/Amount of independence in learning

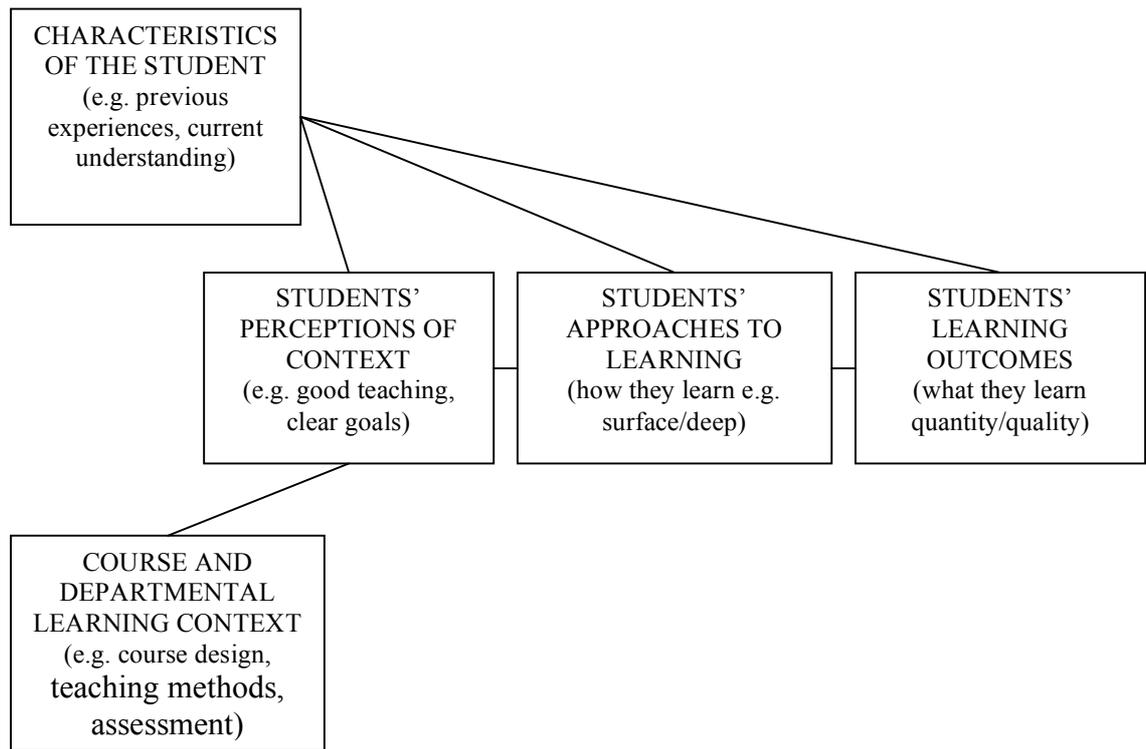


Figure 2: Model of Student Learning

The factors associated with learning are similar whether the learning involves the use of technology or not. Some students may find they have different needs and these may be addressed differently in the diverse learning environments such as distance learning or by traditional classroom learning. Factors such as the need to have comprehensive up to date material, whether the lecturer is present or not or maybe the need for social interaction, all differ for different students and are each addressed in certain ways depending on the learning environment. Technology may be able to influence learning in a positive way. From the day technology first entered the area of higher education there has been debate over its effectiveness. Three camps have established themselves with regard to the introduction of technology into higher education classrooms^{viii}:

- 1 There are the proponents, who cling to the claim that technology improves education.
- 2 There are the opponents, who complain that technology degrades educational quality.
- 3 There are those in the middle, who maintain there is no significant difference between traditional education and that facilitated with technology.^{ix}

In 1992, Thomas L. Russell^x, set out to find an answer to this debate. He sought out comparative studies that showed that technology had a measurable impact on educational outcomes. His work then and since reveals that, for every study that found a measurable benefit, there tends to be a counter study that found no benefit or even a negative impact^{xi}. In addition, Russell determined that the majority of research in this field has found no significant difference in learning outcomes. Nonetheless, comparative studies continue to grow. In another recent review of the literature,^{xii} Welsh and her fellow researchers demonstrated the validity of Russell's findings, identifying almost equal numbers of studies in which teaching with technology outperformed traditional teaching methods as there were studies in which traditional teaching outperformed teaching with technology. Greenberg^{ix} said the following: "When we accept that, in the final analysis, technology suitably and properly deployed yields no significant difference for learning outcomes; we can stop expecting it to be the be-all and end-all to education". There are some main important factors when it comes to learning in higher education; these are what should be aimed for in any learning environment^{xiii}:

- Give out up to date knowledge
- Develop the capability to use ideas and information
- Develop the student's ability to test ideas and evidence
- Develop the student's ability to generate ideas and evidence
- Facilitate the personal development of students
- Develop the capability of students to plan and manage independent learning

In order to make sure that students are accomplishing each of these it is up to the lecturer to review their own teaching techniques ensuring they help the student to achieve each goal. After extensive reading of the literature available on this topic a composite list of factors will be established, this list will then be used for further research. A survey will be created and sent to a wide variety of students and lecturers. This survey will establish the most important factors according to the students and lecturers and will see if these factors are present in the courses examined. At the end of the project an evaluation framework will be established for evaluating teaching strategies with the most important factors in mind. In recent years teaching methods

have moved higher up the agenda within institutions of higher education. They are likely to move higher still as emphasis on teaching quality continues to rise.

Many research studies have shown that cognitive factors such as learning, performance, and achievement in distance education classes are comparable to those observed in traditional classes^{xiv}, however, perceptions and satisfaction levels of instructors and students of distance education have not shown the same consistency^{xv}. Factors such as accessibility to materials, other students, instructors, control of time, and cost can influence individuals' perceptions of distance education^{xvi}. Petracchi^{xvii} found that students were pleased with the performance of their instructor, availability of materials, and performance of technological tools used for conducting the class, while Carr^{xviii} found that undergraduates enrolled in an introductory psychology course performed better in distance education courses, but were generally less happy with them. Students in the web based course consistently scored an average of five percentage points higher on the final exam than did those in the lecture course, but they consistently reported less satisfaction than the students in the lecture course. Carr surmised that one of the reasons for less satisfaction could be more time required to complete assignments.

In a study of adult distance education students, Carter^{xix} found that most students did not find that technical equipment used in distance education interfered with the instruction. Carnevale^{xx} found that distance education students look for many of the same things found in traditional courses including a knowledgeable professor, interaction with the professor, and additional features that create a feeling of community within the class.

Online Learning Software

In addition to web based courses consisting of an instructor created web site; many instructors are now using course delivery platforms such as WebCT, Moodle or Blackboard. Kendall^{xxi} reported on a study in which courses taught through traditional means were converted into units using WebCT software as the primary means of delivery. Results indicated overall satisfaction with the WebCT software and the organization and content of the units.

Wernet, Olliges, and Delicath^{xxii} reported on a survey examining the satisfaction levels and perceptions of thirty nine social work students regarding the use of WebCT in

social work education course. All students responded that they found the course materials on the course Web site helpful. Graduate and nontraditional students' responses indicated greater use of the course management tools and nontraditional students responded that they were not disadvantaged by, and preferred access to, Web based courses.

Sanders and Morrison-Shetlar^{xxiii} hold that student attitudes toward the Internet and web based courses can influence the future use of the web based instructional materials and how educationally beneficial web based resources are for students. Instructor attitudes toward web based instruction also affect student's experiences with web based courses. The National Education Association administered a survey in which 75% of the instructors surveyed indicated that they were positive about distance education. Inman and Kerwin^{xxiv} also found that most instructors currently teaching a distance education course indicated they would be willing to participate in a distance education course again. However, when asked about the quality of the distance education course, nearly 50% of the instructors who indicated they would participate in a distance education course again reported that the quality of the distance education course, when compared to a traditional course, was lower. Additionally, not one instructor indicated that the distance education course was of higher quality.

Successful Learning

The principles that lend themselves to quality face to face learning environments are often similar to those found in web based learning environments. No matter what the environment the factors to successful learning are the same^{xxv}.

- *The learning experience must have a clear purpose with tightly focused outcomes and objectives.* Learning designs must consider the nature of content, specific context, desired learning outcomes and characteristics of the learner. Learner-centered strategies include modular, stand-alone units that are compatible with short bursts of learning. Learning modules may also be open, flexible and self-directing.
- *The learner is actively engaged.* Active, hands-on, concrete experiences are highly effective. Learning by doing, analogy and assimilation are increasingly important pedagogical forms. Where possible, learning outcomes should relate to real-life experiences through simulation and application.

- *The learning environment makes appropriate use of a variety of media.* Various learning styles are best engaged by using a variety of media to achieve learning outcomes. Selection of media may also depend on nature of content, learning goals, access to technology, and the local learning environment.
- *Learning environments must include problem-based as well as knowledge-based learning.* Problem-based learning involves higher order thinking skills such as analysis, synthesis, and evaluation while knowledge-based learning involves recall, comprehension and application.
- *Learning experiences should support interaction and the development of communities of interest.* Learning is social and sensitive to context. Learning experiences based on interaction and collaboration support learning communities while building a support network to enhance learning outcomes. Multiple interactions, group collaboration and cooperative learning may provide increased levels of interaction and simulation.

"Knowledge becomes a function of how the individual creates meaning from his or her experiences; it is not a function of what someone else says is true."^{xxviii} There are also many other factors that influence student learning which also need to be examined. These can be present in any type of learning environment and different types of students may lean towards a different form of learning environment as it may appeal to them more, such as a shy or self-conscious student might choose online learning as they find it easier to participate, factors such as course content and assessment can influence student learning.

Figure 3 shows some of the factors that influence student learning, these factors can be very important when it comes to evaluating a learning environment.

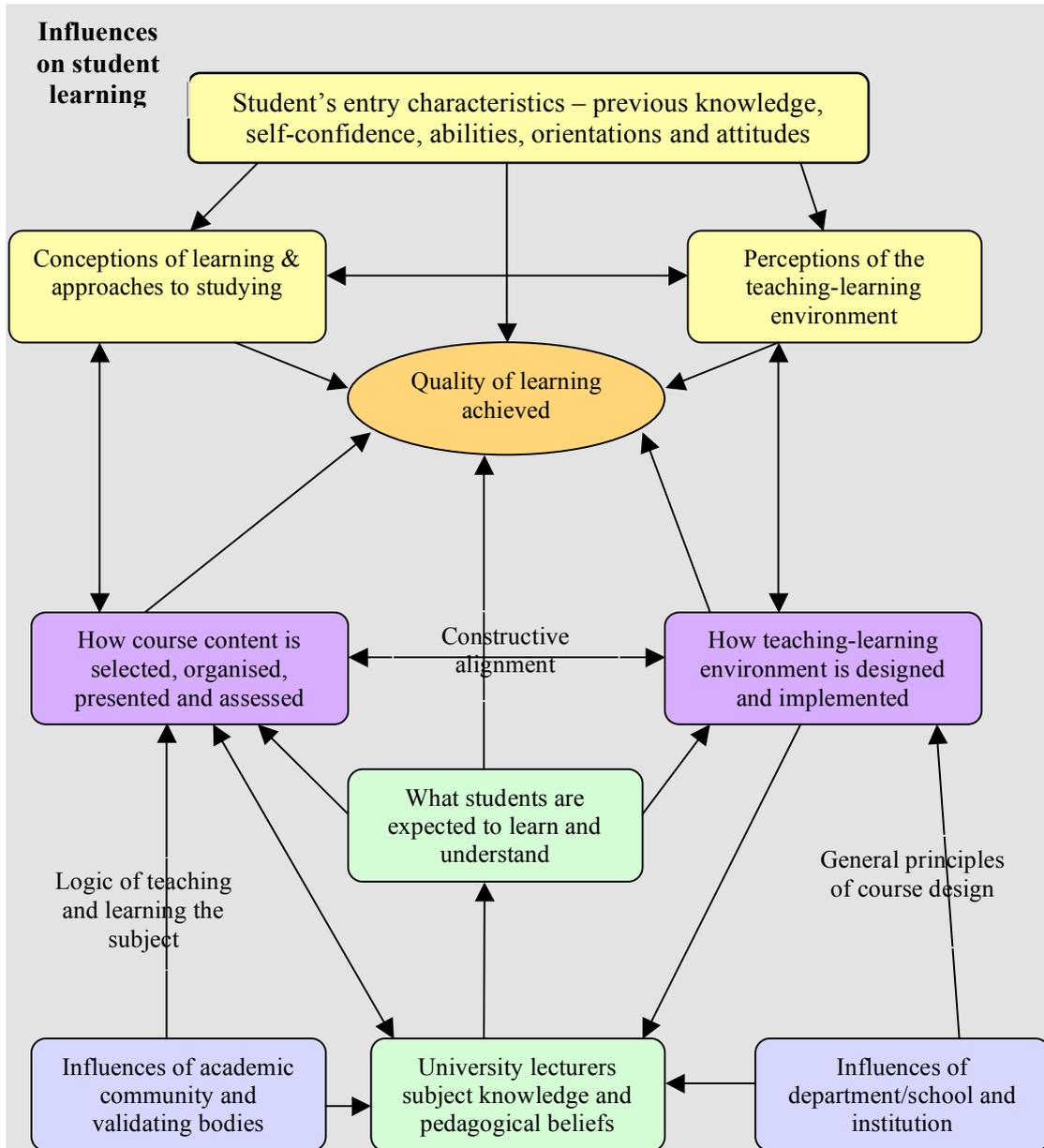


Figure 3: Influences of Student Learning^{xxvii}

The Learning Environments

There are many articles, books and web sites available which document the benefits and drawbacks to the different learning environments. In particular they provide some insight into the concept of distance learning and also the place that technology has in our educational environment. Jegede, Fraser and Curtin^{xxviii} identified eight components of effective learning environments these were: interactivity, institutional

support, task orientation, teacher support, negotiation, flexibility, technological support and ergonomics. It is thought that by building on these basic, valid and reliable measures of effective learning environments, more significant learner satisfaction outcomes can be obtained^{xxix}. Some factors that affect learning in any learning environment are:

- Cognitive abilities and developmental potential of the learner
- Previous experiences with a learning environment
- The arrangement of the environment itself, including the level of message abstraction, the motivational strategies employed the clarity and effectiveness of the message.
- The type and degree of interactions that is possible with the instructional media present.
- Social interaction within the learning context
- Motivational level
- Personal learning style

Traditional Learning

Traditional Learning is based on the classroom style of learning and teaching where both student and lecturer are present. In the traditional framework, teachers come to class with highly structured syllabus and activity plans, sometimes referred to as "scope and sequence." They act as the source of knowledge and as the person who determines which information is important. There is creativity and flexibility in how each teacher runs his or her class, but the topics and projects are driven and evaluated based on what a lecturer, administrator or school board have decided what students should know and master.^{xxx} There are advantages to the lecture approach to learning. These are:^{xxxi}

- To give students a shared learning experience
- To clarify expected learning outcomes, and standards
- To provide a focus where everyone (especially where large groups of students are concerned) gets together regularly
- To give students the opportunity of learning by doing, where they can get feedback from an "authority" and from each other
- To add the power of tone of voice, emphasis, facial expression, and body language to printed words, helping learners see what is important, and what is not

- To provide material for later discussion
- To challenge assumptions and beliefs
- To change or develop attitudes and perspectives
- To give students the chance to make sense of things they already know

And there are also disadvantages such as:

- In lectures students are often passive because there is no mechanism to ensure that they are intellectually engaged with the material.
- Students' attention wanes quickly after fifteen to twenty-five minutes.
- Information tends to be forgotten quickly when students are passive.
- Lectures presume that all students learn at the same pace and are at the same level of understanding.
- Lectures are not suited for teaching higher orders of thinking such as application, analysis, synthesis, or evaluation; for teaching motor skills, or for influencing attitudes or values.
- Lectures emphasize learning by listening, which is a disadvantage for students who have other learning styles.

Blended Learning

Blended learning is an important building block of the new schoolhouse that offers students both flexibility and convenience which are important characteristics for working adults who decide to pursue postsecondary degrees. According to Colis and Moonen^{xxxii}, blended learning is a hybrid of traditional face-to-face and online learning so that instruction occurs both in the classroom and online, and where the online component becomes a natural extension of traditional classroom learning. Blended learning is thereby a flexible approach to course design that supports the blending of different times and places for learning, offering some of the conveniences of completely online courses without the complete loss of face-to-face contact. The result is potentially a stronger educational experience than either traditional or fully online learning can offer.

Martyn^{xxxiii} described a successful blended learning model. It consists of an initial face-to-face meeting, weekly online assessments and synchronous chat, asynchronous discussions, e-mail, and a final face-to-face meeting with a final examination.

Distance Learning

Distance education traces its origins to mid-19th century Europe and the United States. The pioneers of distance education used the best technology of their day, the postal system, to open educational opportunities to people who wanted to learn but were not able to attend conventional schools. Distance education increasingly uses combinations of different communications technologies to enhance the abilities of teachers and students to communicate with each other.

Distance education also makes use of computer conferencing on the World Wide Web, where teachers and students present text, pictures, audio, and video. File sharing and communications tools like email, chats and audio and video conferencing are integral to the Internet model. Several key features define distance learning:

- The separation of teacher and learner during at least a majority of each instructional process
- Separation of teacher and learner in space and/or time.
- The use of educational media to unite teacher and learner and carry course content.
- The provision of two-way communication between teacher, tutor, or educational agency and learner, and
- Control of the learning pace by the student rather than the distance instructor.

The importance of the teacher — learner communications cannot be overstated. Distance education is already an important element of higher education and it continues to rapidly expand. Research, however, suggests that online courses are not suitable for all types of students and faculty. Collins^{xxxiv} noted that students and teachers react to new educational technologies with varied emotions, ranging from enthusiasm to disabling fear. Abrahamson^{xxxv} reported that distance education required students who were self-regulated and independent. Marino^{xxxvi} also discovered that some students experienced difficulty adjusting to the structure of online courses, managing their time in such environments, and maintaining self-motivation.

Sikora and Carroll^{xxxvii} reported that online higher education students tend to be less satisfied with totally online courses when compared to traditional courses. Fully online courses also experienced higher drop out rates^{xxxviii}. The research is mixed regarding the

reasons for these higher attrition rates. Hara and Kling^{xxxix}, conducting a study of online courses, found that feelings of isolation were an important stress factor for online students, but not the primary factor as frequently mentioned in the professional literature. Rather, “students reported confusion, anxiety, and frustration due to the perceived lack of prompt or clear feedback from the instructor and from ambiguous instructions on the course website and in e-mail messages from the instructor”. Thus, it may be that the reason some online courses suffer more dropouts is less related to the course delivery medium and more related to the online course design and pedagogy employed by some online faculty who have limited skills in using computers to facilitate learning and to foster sense of community.

To have an effective online course, Hines and Pearl suggested that there are four levels of learner interactions to incorporate. These levels of interactions include interfaces with content, instructors, classmates, and self. Students need “to be involved in the process of activities”.^{xlv}

Comparative Study of Online versus Traditional

In a study comparing traditional and online education programs, Althaus examined the academic performance of students who had face-to-face discussions versus those who used on-line discussions. Althaus found that students who were involved in online discussions created responses that were more thoughtful because they had more time to read and think about their responses compared to students in a face-to-face setting. Althaus also found that the student in the online class earned higher grades than that of the student in the traditional classroom^{xl}. However, there is a scarcity of scientifically sound research regarding student perceptions of learning in an online environment versus a more traditional face-to-face setting. The exploration to date indicates variation in the study results. Traditional education programs do not fit into the schedules of adult learners. The use of an online forum appeals as an alternative way to complete a degree^{xli}. According to Kearns, Shoaf, and Summey^{xlii}, most students were satisfied with the flexibility of an online education platform. The “convenience, flexibility, and course quality were the primary motivators for taking online courses”. In addition, accessibility of content resources, the frequency, and timeliness of faculty feedback, and the use of innovative learning environments were other advantages over traditional face-to-face learning modalities.

Leasure, Davis, and Thievon^{xliii} discovered that the traditional classroom afforded students the opportunity for direct interaction with decreased procrastination and immediate feedback fostering more meaningful learning experiences than that which is found in an online forum. However, Leasure et. al also discovered that an online forum afforded the student flexibility with various methods of communication, which increased student confidence. The higher education sector is changing rapidly mainly as a consequence of its response to the various pressures associated with widening access, commercialism and developments in information and communication technologies. The adoption of the concept of flexible delivery has been a key initiative in many institutions although this concept has been interpreted in many ways.

Students learn in different ways and the learning environment can influence both the student and the lecturer. Effective learning environments have a combination of dimensions:^{xliv}

- Students work socially well together
- Teacher is present
- Resources are available in print and also online for flexibility
- Students purposively interact with the computer

There are key factors that affect the perceptions of the experience from both the student and the lecturer. For faculty responding to student demand for online environments requires them to venture to a non traditional classroom. Multiple issues can surface which are not present in a traditional setting. These issues are broadly included under the pedagogical paradigm shift.^{xlv} Online learning can require the instructor to facilitate extensive written communications. This can lead to extra work posting and responding to threaded questions, evaluating students work and answering concerns and questions, the upside is “the learning appears more profound as the discussions seem both broader and wider”^{xlvi} The effectiveness of online instruction has been criticized from many perspectives one being whether or not it is as effective as traditional fact-to-face instruction. The research in some studies show that student satisfaction with their learning experience tends to be more positive for students in a traditional course format although there is no difference in the quality of the learning that takes place. These

support the argument that online instruction can be designed to be as effective as traditional face-to-face instruction^{xxix}

In traditional learning environments students have the ability to dialogue with the lecturer about the content being presented; they also have the opportunity to receive multiple examples and illustrations from the lecturer to help in understanding a topic or problem. In online learning this dialogue or discussion is in the form of email, asynchronous chat, synchronous chat, IRC (Internet Relay Chat) and phone calls. Face to face classes can meet once a week they can talk out problems, work out differences of opinion, and build social relationships. Online environments may lack the strong social dimension that is beneficial in face to face learning experiences. It can be a difficult transition to make going from one learning environment to another. Various criticisms of traditional classrooms appear frequently, such as lack of teacher attention, boredom, outdated knowledge, and inappropriateness for a diverse population^{xlvi}. Many researchers advocate new concepts such as active learning, student-centered principles, effective use of technology, and collaborative learning^{xlvi}. There are high expectations that technology will transform higher education. The classroom environment has changed significantly during the 20th century. Classrooms are evolving from the one room school house to learning opportunities available in an online virtual cyberspace environment in many cases.

Principles for Higher Education

Research regarding teaching in an online environment versus a more traditional face to face setting indicates that there are key factors that affect perceptions of the experience and key factors associated with the experience from both a faculty and student point of view. Angelo^{xlvi} articulated a well supported list of general research based principles for improving higher education that can be applied to traditional and web based learning.

Some of the most important factors are:

1. Active learning is more effective than passive learning.
2. Learning is more effective and efficient when learners have explicit, reasonable, positive goals, and when their goals fit well with teachers' goals.
3. High expectations encourage high achievement.

4. Motivation to learn is alterable; it can be positively or negatively affected by the task, the environment, the teacher, and the learner.
5. Learning requires focused attention and awareness of the importance of what is to be learned.
6. To be remembered, new information must be meaningfully connected to prior knowledge, and it must first be remembered in order to be learned.
7. Information that is organized in personally meaningful ways is more likely to be remembered, learned, and used.
8. The ways in which learners are assessed and evaluated powerfully affect the ways they study and learn.
9. Interaction between teachers and learners is one of the most powerful factors in promoting learning; interaction among learners is another.
10. Learners need feedback on their learning, early and often, to learn well; to become independent learners, they need to become self-assessing and self-correcting.

Research has shown learning occurs when students are actively engaged, have opportunities for interaction with others, are presented with challenging situations or questions that require critical thinking skills, and are surrounded by a nurturing learning environment^l. There are different teaching strategies that are effective in helping students develop in depth understanding of new concepts. Structuring group discussion is a useful method of helping students explore concepts and share their experiences or understanding of the information. Two examples of these teaching methods from Kogan's^{li} cooperative learning strategies are "Think, Pair, Share" and "Numbered Heads Together". In *Think, Pair Share* students are given a challenging question relating to the lecture that they must first think about; and then pair up with another student to discuss, and then share their ideas with the class. When using *Numbered Heads Together*, students are put in equal-sized small groups to discuss a topic or put their "heads together" to make sure they all understand the concept. Each student numbers off in the group, and after the discussion, the instructor calls out different numbers for the students with that number to stand and share answers, thus requiring individual accountability within the group. These modes of learning and teaching are not possible in an online learning environment to the same extent as they are in the classroom face-to-face environment.

Community of Inquiry

In the research for this project a model was examined that dealt with the theory of “*Community of Inquiry*” established by Garrison and Anderson^{lii}. In this model shown in Figure 6, deep and meaningful learning, the central goal of higher education, takes place within a *Community of Inquiry* composed of teachers and learners as the key participants in the educational process. The model assumes that within this community, learning occurs through the interaction of three components: cognitive presence, social presence and teaching presence.

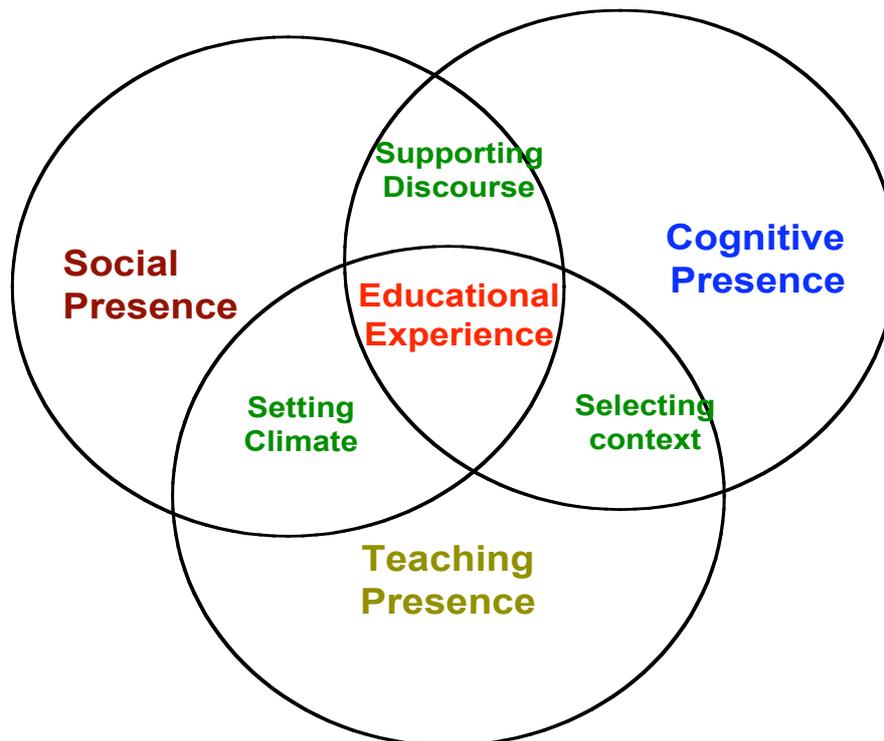


Figure 4 Elements of an educational experience

The first element in the model is the development of *cognitive presence*, which Garrison *et al.*^{liii} define as “the extent to which the participants in any particular configuration of community of inquiry are able to construct meaning through sustained communication”. This is particularly important when the medium of communication changes, as in adoption of online learning for education purposes. The second element is *teaching presence*, which includes designing and managing learning sequences, providing subject matter expertise and facilitating active learning. Teaching is an obvious function in higher education, whether traditional or online. In either case, it represents a means to support and enhance social and cognitive presence for the purpose of realizing educational outcomes^{lii}. Teaching presence can include factors

such as course management and teaching techniques. The role of the lecturer can also be very important for the students, this aspect is equally as important in both traditional and online learning, but it may be harder to convey in the online environment. The third element is *social presence*, defined as the ability of learners to project themselves socially and emotionally in a community of inquiry. The function of this element is to support the cognitive domain through its ability to instigate, sustain, and support critical thinking within a community of learners. It supports affective objectives by making group interactions appealing and rewarding, leading to an increase in academic, social and institutional integration (and increased course completions).

When there are affective educational goals, as well as purely cognitive ones, then social presence contributes directly to the success of the educational experience. The most important factor in social presence is the communication and interaction in the learning environment. Communication among students and with lecturers should effectively assist students to develop critical and high-order thinking. In the traditional model, students are used to authoritarian practice, and are willing to accept what their teachers say without question, continuing the passive approach of their traditional schooling.^{liv}

In a study performed by Pannee Suanpang^{liv} communication in the traditional mode was face-to-face, and few students were willing to ask questions of teachers. Online study is very beneficial for this reason as students gain advantages from using synchronous (chat) and asynchronous (discussion board and e-mail) communication methods. In particular, the discussion boards open up opportunities for shy students to reflect on their opinions and use it for communicating in learning and collaborative group working on their project, and students can receive interactive feedback. A very important factor that influences students learning is the class atmosphere and this is not present in online learning. Although some people think that the formal nature of classroom environments can hinder learning, while the expansive nature of online interaction enhances the learning environment and enables students to construct personal knowledge. Some other factors that are also of importance for students are mutual respect and tolerance, trust, being kept informed of aspects of the course and being informed of the course instruction format from the beginning of the course. Comprehensive and complete content are also of major importance to students as well

as accessibility to tutors or lecturers, and of course feedback from lecturers with regard to progress in the course.^{lv}.

In a review of recent literature on online learning, it was found that the majority of studies focused on the outcomes of learning rather than the process of learning^{lvi}. While quantitative methods are often appropriate for investigating the medium of learning^{lvii} or student characteristics, qualitative methods can provide more insight into the process of learning, including the quality of interaction and the relationship between interaction and knowledge construction^{lviii}.

Analysis of Results

Descriptive Statistics:

Gender: The categorical variable Gender divides the respondents into either Male or Female groups.

Table 1: Frequency Table

Gender			
Environment	Male	Female	Total
Distance	14	5	19
Traditional	47	51	98
Blended	15	15	30
Lecturer	12	8	20
Total	88	79	167

Age: The age variable is also a categorical variable with 4 categories.

- 18-25
- 26-35
- 36-45
- 50+

Table 2: Percentages of the age groups of the students for each survey

Age	Distance	Traditional	Blended
50+	5%	1%	3%
36-45	32%	9%	17%
26-35	53%	29%	30%
18-25	11%	61%	50%
Total	100	100	100

Most of the participants were between the ages of 18-35; this was as expected as this is the stereotypical age group that usually attend college. An overwhelming amount

(61%), of the respondents from the Traditional survey were between the ages of 18-25 and 50% of the Blended Learning students were in this category. This is because most third level students in Full Time education are at this age. The majority of the Distance learning students were between the ages of 26-35 this is mainly due to the fact that most distance learning students have jobs, families or other full time commitments and they sign up for Distance Learning as it suits their learning style to be Independent in their studies and not to be tied down to a time and place for classes. Distance learning has become an important factor in maintaining competitiveness in the current economic environment. Ireland is increasingly coming under competition from countries like India and China which have a larger well educated low cost employee sector. If Ireland is to maintain a competitive advantage with these countries it has to increase the skill set of their current work force and this phenomena has led to an increased participation in college courses such as Masters. Most people who are working will try and do these courses part time or through Distance Learning. Figure 5 shows a line graph focusing on the categorical variable "AGE". Looking at the graph below shows that as the participants age increases the traditional and blended learning attendants decline with low numbers especially in the categories 36-45 and 50+. The distance learning peaks for the age group 26-35 which is as expected.

The first section of the survey required the students and lecturers to rate certain factors based on their level of importance in their learning and teaching environment. On analyzing the results, each survey was firstly evaluated separately and the "Very Important" percentages were examined. The top five from each survey was extracted and have been highlighted below and are visible in Table 5.

Traditional Learning Survey

1. Material Available is comprehensive complete and up to date 80%
2. Resources available to you (PC's, printers, Library) 74%
3. Lecturers Enthusiasm for the topic/subject 71%
4. Encouragement and Support from the Lecturer 60% / Having an active approach to learning (Learn by doing) 60%
5. Increasing Communication Between Students and Staff 58%

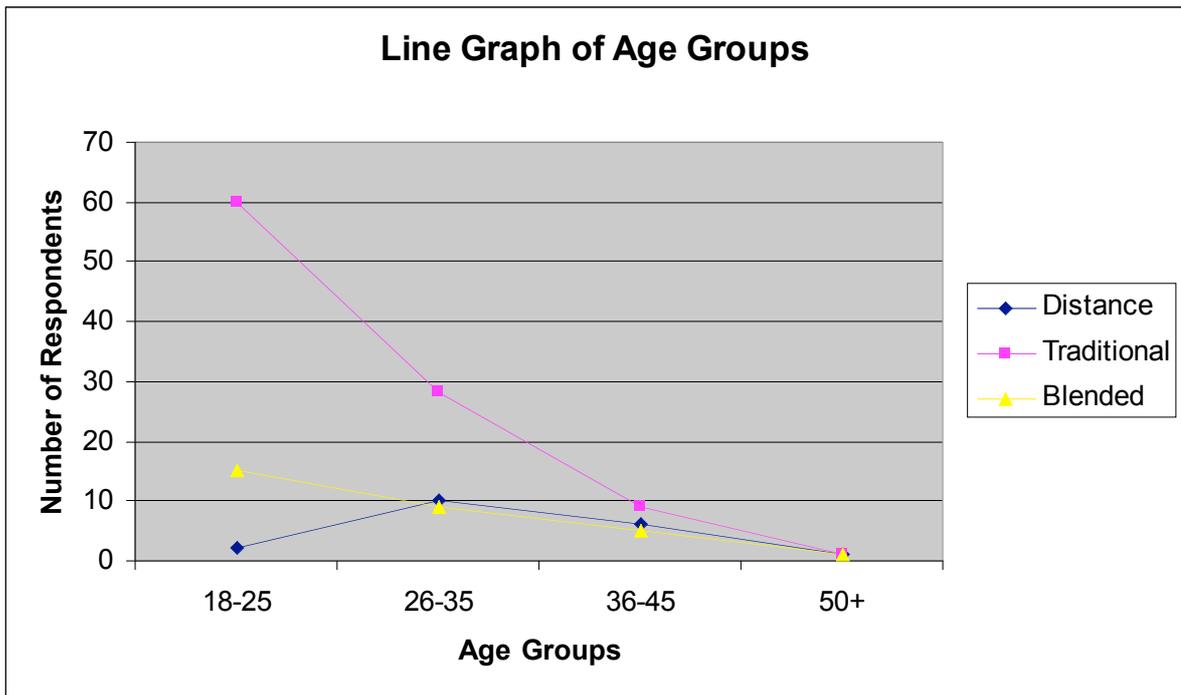


Figure 5: Line Graph to show the trend of the Age Variable

Blended Learning Survey

1. Material Available is comprehensive complete and up to date 87%
2. Resources available to you (PC's Printers, Library) 73%
3. Lecturers Enthusiasm for the topic/subject 67% and the way media available (print, online, CD) 67%
4. Clarity and Nature of goals 63%
5. Encouragement and support from lecturers 55%

Distance Learning Survey

1. The way media is available (Print, Online, CD) 74%
2. Material Available is comprehensive complete and up to date 68% and lecturers enthusiasm for the topic 68%
3. Resources available to you (PC's, Printers, library) 63%
4. Clarity and Nature of goals 53%
5. The way Class Assessment takes place 47% and Independence in your learning (Time and Place Independence) 47%

Lecturers Survey

1. Material Available is comprehensive, complete and up to date 80%

2. Class Atmosphere 70% and social interaction 70%
3. Student centred learning environment 65% Resources available to you (PC's Printers and Library) 65%, Being able to express and contributes individual thoughts and ideas 65% and the clarity and nature of goals when learning.
4. Having an active approach to learning 60% Student Participation within the class 60% and a sense of belonging within the group where you are learning 60%.

Table 3: Matrix of the Most Important Factors and their percentages

Factors	Traditional	Blended	Distance	Lecturer
Material Available	80%	87%	68%	80%
Resources	74%	73%	63%	65%
Lecturers Enthusiasm	71%	67%	68%	-
The way media is available	-	67%	74%	-
Clarity and Nature of Goals	-	63%	53%	65%
Encouragement and Support from the Lecturer	60%	55%	-	-
Having an Active Approach to Learning	60%	-	-	60%
Class Atmosphere	-	-	-	70%
Social Interaction	-	-	-	70%
Student Centred Learning Environment	-	-	-	65%
Student Participation within the class	-	-	-	60%
Sense of belonging within the group	-	-	-	60%
The way class assessment takes place	-	-	47%	-
Independence in your learning	-	-	47%	-
Increasing communication between students and staff	58%	-	-	-

Red: First Most Important Factor
Blue: Second Most Important Factor
Green: Third Most Important Factor
Purple: Fourth Most Important Factor

It became apparent that the three student surveys yielded similar results however the results from the lecturer survey differed slightly. The following factors are the ones that were taken to be similar in each group or to be the most important for a certain group:

- a) The **Material** Available is comprehensive, complete and up to date.
- b) The way **Media** is Available (Print, Online, CD)
- c) The **resources** available to you (PC's, printers, library)
- d) The **lecturer's enthusiasm** for the topic/subject
- e) The **clarity and nature of goals** when learning

- f) **Social Interaction** in the class
- g) **Class Atmosphere**
- h) Having an **active approach** to learning (learn by doing)

Within the student surveys the **Material, Resources and Lecturers Enthusiasm** appeared in the top three of each environment. Material was also the top most important Factor for lecturers.

Conclusions

Traditional classroom learning continues to be the principle method for course delivery in universities throughout Ireland. However with the upsurge of Information Technology there seems to be a place in Irish Universities for the Blended Learning and Distance Learning approaches. In the results of this survey it was observed that the lecturer's most important aspects focus more on the classroom and what way the class should be with a strong influence on focusing on the students and ensuring that they are comfortable and confident in the class environment. This differs from the students whose main concern is on the material and the resources available to them and that the information is relayed to them by an enthusiastic lecturer. The notes/documentation and how they are distributed is more important to students than the atmosphere of the class or even the social interaction in the class. The lecturer on the other hand is focusing on how the class is held and how the students learn, such as learning interactively within a group and participating within the class. The students do place such a high value on the above aspects they emphasize that having up to date notes, good resources and a wide variety of ways to acquire these notes as being essential

The results of this survey showed that the most important factors to students are:

- 1 The **Material** Available is comprehensive, complete and up to date.
- 2 The **resources** available to you (PC's, printers, library)
- 3 The **lecturer's enthusiasm** for the topic/subject
- 4 The way **Media** is Available (Print, Online, CD)
- 5 The **clarity and nature of goals** when learning
- 6 **Encouragement and Support** from the lecturer
- 7 The way **Class Assessment** takes place
- 8 **Increasing Communication** between students and staff

- 9 Having an **Active Approach** to learning
- 10 **Independence** in your learning

The most important factors to lecturers are:

- 1 The **Material Available** is comprehensive, complete and up to date.
- 2 **Class Atmosphere**
- 3 **Social Interaction**
- 4 **Student Centred** Learning Environment
- 5 The **resources** available to you (PC's, Printers, library)
- 6 Having an **active approach** to learning
- 7 **Sense of belonging** within the Group where you are learning
- 8 **Student Participation**

All three learning environments have positive and negative aspects, but it has been observed that students in all three environments want the same things and want to achieve the same goals, all of the environments seem to achieve certain objectives in a different way, and the student seems to choose the environment depending on their needs. The environment that seems to be the most effective for achieving everything that a student does need is the Blended Learning Environment, this is because it has both the online and the classroom aspects and it also leaves a certain level of independence in the learning environment as it is not completely classroom based. The level of the blend seems to be what is important to most students and if there are the correct balances to suit the needs of the individual then this is when the environment works at its best. The reasons identified by Osguthorpe and Graham^{iv} as to why one might choose blended learning environments seems to be true here also. Especially the top three:

- Pedagogical Richness
- Access to knowledge
- Social Interaction

As mentioned earlier blended learning is said to “combines the best of both worlds”. This statement also seems to be true as all areas of requirements seem to be covered in Blended Learning. Students in this environment are not missing out on Social Interaction or having the benefit of being able to build social relationships with other students, and having broad and wide discussions, these are all areas that are covered in

blended learning more so than Distance and it also has the advantage of time and place independence to a certain extent. Some of the down sides to online learning that were mentioned were the fact that there were time lags between interactions, a frequent lack of clear “norms” of communication, and an absence of visual/auditory conversation cues. These can all be addressed in Blended Learning as when students get to meet the lecturers and other students they get to counteract these negatives. The lack of social interaction in an online learning environment can be a big barrier to online learning, but when using blended learning students get to meet other students and lecturers and to build a relationship with them.

In the study that was previously discussed that was carried out by Pannee Suanpang^{liv} communication in the traditional mode was face-to-face, and few students were willing to ask questions of teachers. It was said that online study is very beneficial for this reason as students gain advantages from using synchronous (chat) and asynchronous (discussion board and e-mail) communication methods. But in this study when students were asked if they participated more because part of their course was online they did not seem to agree, this shows that the students that took part in this survey that were in Blended and Distance Learning courses did not seem to think that this influenced their participation to discussions.

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