

# To Explore Different Learning Behavior Patterns in Post Graduate Students Using Educational Data Mining and Analyze Andragogy Techniques in Classroom and Online Environment

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## **ABSTRACT**

This Article explores feasibility of Andragogy techniques for Post Graduate Students in our Education System. The growing interest in the field of Andragogy and E-learning Systems has made way as a potential solution to address many of the issues we are currently facing in our Education System. The impact of internet has been tremendous in this era. However, when we compare usage of internet in education with other fields, we will notice a huge difference. Not everyone find e-learning appealing.

This Article proposes Andragogy as one of the feasible ways to go for adaptive e-learning environment, where we can utilize the instructor's aid as well as student's experience as an implementation strategy where the students will not only learn but also share their knowledge and experiences with their peers.

## **Keywords**

Education System, EDM, E-Learning, Andragogy, Pedagogy, Learning styles

## **INTRODUCTION:**

As a professor, what intrigues me the most is how different students exhibit different classroom behavior. I have noticed difference in student behavior within the classroom for the same subject, within the classroom for different subjects, same subject in different course classrooms, same student exhibiting different behavior patterns for different subjects and so on. Technical students are avoidant when it comes to management subjects, participative when it comes to technical subjects whereas management students show similar behavior patterns for both technical and management subjects. Within the management stream, two different classes show different behavior patterns for the same subject. These behavioral patterns tend to change with

changes in the time slot allocated for the specific lecture. Students are more enthusiastic in the beginning of the day, but their energy level and interest in subject keeps declining through the day. When we are focused on student-centric teaching, we need to adapt according to the needs of the students. Conventional teaching would not be sufficient to cater to these needs of students. Adoption of a new technique is the need of the hour.

### **ANDRAGOGY VS PEDAGOGY**

The first issue that needs to be addressed is the methods followed to teach students. This research mainly focuses on post graduate students. The main problem with our education system is the conventional style of teaching that we have adopted for teaching the students. We still are following the teacher-centric method. We are still following the principles of pedagogy. We cannot use the same principles to teach school students as well as college students. An adult's learning behavior cannot be paralleled with children's learning behavior. The teaching method and behavior needs to evolve with the student's learning pattern and behavior. In traditional learning, we always employ pedagogical principles to teach the students. The content, syllabus, evaluation patterns everything follows the pedagogical principle. It is a rigid system and adult learning behavior is totally different and cannot be aligned with the learning patterns of children. The discipline of pedagogy mainly targets children at school level and not college students. Pedagogy comes from a greek word, where peda refers to 'child' and gogy refers to 'leading' making it the art and science for teaching children. Pedagogy does not fulfill all the needs of a college student. To evolve with the new and advanced management practices, we need to advocate adoption of the term Andragogy. 'Andra' is the form of the word that refers to adults making Andragogy the art and science of teaching adults. An adult learner possesses lot of different characteristics when compared to a child learner. Andragogy focuses on creation of an independent adaptable individual.

### **DIFFERENCE BETWEEN ADULT LEARNING STYLES AND CHILDREN LEARNING STYLES**

Children are more accepting when it comes to learning. They need motivation from their instructors. They are willing to learn whatever has been assigned to them. An adult learner is

self-directed. He is self motivated. He learns because of the fact that he needs to know. He is solely responsible for his learning. In pedagogy, the instructor assumes full responsibility of what is being taught. The instructor evaluates the students. But, when it comes to Andragogy, the learner has the ability to take responsibility of his learning and self evaluation is one of the main characteristic of this approach. Children have very little experience and they have very limited source of knowledge. In a school setting, the instructor is the one who is the most experienced and hence has total authority over the class. Adults, however, possess great volume of experience. They have already learnt a lot from their experience and can share this experience with each other and expand the knowledge base among themselves. Here, the instructor may not be the most influential person, because the instructor may be an expert in one of fields, whereas a learner might have a collective knowledge of various fields. In this classroom, there is certainly more exchange of knowledge from both the instructor as well as the learner. The wealth of knowledge present in this classroom can be well utilized if tapped as a resource for learning. In pedagogy, the student is motivated by the instructor to learn as that becomes the criteria for him to move to the next level. Adults are more eager to learn, as they are application oriented. They would want to reach a particular level or fill some gaps between where they are now and where they want to be. The readiness factor is engrained in adults as they focus to achieve more. Children generally are focused on subject matter, the content that has been prescribed for their syllabus by the Board. Adults, being more application oriented, they like performing tasks and retrieving results. They are more inclined towards problem solving and learning around work situations rather than subject matter. In Pedagogy, the students are motivated by external factors like ranks, grades, fear of failure etc. In Andragogy, intrinsic factors play a major role in motivating adults, these factors being self esteem, self confidence, self actualization, recognition, better quality of life etc.

## **REVIEW OF LITERATURE**

Malcolm S Knowles is known as the Father of Andragogy. He was one of the world's leading scholar- practitioner of Adult Learning. The concept of Andragogy was introduced by Knowles in the early 1970's. Ever since, lot of research conducted on this idea of adult learning. Knowles, in his book 'Adult Learning' has used Questionnaire and KJ method to support his concept of adult learning. The six principles of andragogy are (1) The learner's need to know,

(2) Self-concept of the learner, (3) Prior experience of the learner, (4) Readiness to learn, (5) Orientation to learning, and (6) Motivation to learn. Using this model as a framework, he proposed that education should assume responsibility for four key aspects of development for their graduates beyond the task-related knowledge currently provided. These key aspects are (1) develop the individual domain, (2) teach basic skills in the people and organizational domain, (3) build awareness of the entire scope of learning tasks, and (4) develop organizational learning skills. Aura Codreanu, Cezar Vasilescu[1] in their paper E learning behaviours and their impact in Andragogy focused on delineating the basic concepts that is used: traditional learning, e-learning, learning behavior, e-learning behavior, andragogy, andragogic principles. It also focuses on the basic andragogic principles employed in traditional learning contexts and on their relationship with adult learning behavior. Comparison and contrast between traditional environments and methods of teaching and learning on one hand and online environments for learning is made in this paper. Stephen Paul Forrest III, Timo Peterson[2] stated that Management educators already use techniques that take advantage of the andragogical assumptions in their paper 'It's called Andragogy'. Cindi H Fries[3] has used two variables Philosophy of Adult Education Inventory (PAEI) and Principles of Adult Learning Scale (PALS) in her paper 'Teaching style preferences and Educational Philosophy of Teacher Education Faculty at a State University.' She has used the Online survey method and found that the majority of teacher education faculty held the progressive educational philosophy and their preference for teacher-centered teaching style did not match which may indicate that they believe in it, but are not utilizing the concepts of learner-centered teaching styles. John A Henschke[4] in his paper 'Considerations regarding the Future of Andragogy' established Andragogy as a scientific academic discipline. Moore, Michael G.; Kearsley, Greg in their book 'Distance Education: A Systems View of Online Learning' studied the role of Instructors and learners in distance education. They concluded that when organizations adopt a systems approach to distance education, there will be an impact on teachers, learners, administrators, and policy makers. Laurie C. Blondy[5] in her paper 'Evaluation and Application of Andragogical Assumptions to the Adult Online Learning Environment' mentioned that Andragogical assumptions should be used to guide the online course facilitator to understand the realities of adult learners, and to foster a collaborative online environment. In order to make e-learning more appealing to the students enhancing learner self-esteem through acknowledgement of

contributions to the course is essential and will serve to further motivate learners to succeed in their coursework. Pirjo Moen in her paper 'Problem based learning in Data Mining' explored this strategy which has been widely used in many fields. Such teaching is also student focused and follows the Principles of Andragogy. Judith Marie Moore[7] designed and implemented a professional learning program, grounded in adult learning theory, which sought to shift teacher's instructional paradigm from that of didactic information provider to student-driven learning facilitation in her paper 'Shifting teacher paradigms: a study of andragogical professional learning structures.' This study supports the notion that delivering professional learning programs through andragogical instruction holds promise. The participants' in this study responded consistently and positively to the professional learning structures that were grounded in andragogical principles. Keefe(1991) [8], in his paper 'Learning style: Cognitive and Thinking Skills' has experimented on the Learning Style in Student Characteristics. He stated that, 'Learning style could be instructional strategy informing cognition, context and content of learning.' Reefe (1992)[9], in his paper 'Learning Styles' proposed that Learning style influences how students learn, how instructors teach and how they interact. Rovai, Ponton, Wighting and Baker[10] in their paper 'A Comparative Analysis of Student Motivation in Traditional Classroom and E-Learning Courses' proposed that instructional methods more suited for self-directed learners represent a better approach in facilitating successful e-learning. They concluded that E-learning students manifested significantly stronger intrinsic motivation than traditional classroom students on all three intrinsic motivation measures: (a) to know, (b) to accomplish things, and (c) to experience stimulation. Knowles (1980) described the primacy of motivation in adult learners with his paper 'The modern practice of adult education'. Tzu Chi Yand, Hwand and Yang[11] in their paper 'Development of an adaptive learning system with multiple perspectives based on student's learning styles and perspective styles' have developed an adaptive learning system based on student's dependent and independent cognitive style model and eight dimensions of Felder Silverman's learning styles. Learning styles have been categorized as Active, Reflective, Sensing, Intuitive, Visual, Text, Sequential and Global. This paper concludes with experimental results that show that the proposed system could improve the learning achievements of students. Merisotis and Phipps 1999 [12] explained in their paper 'What's the difference? A review of contemporary research on the effectiveness of distance learning in higher education' that student motivation is the major influential factor. Threlkeld

and Brzoska,1994 [13] in their paper ‘Research in distance education’ stated that maturity, high motivation and self discipline are the major factors for success in e learning.

### **OBSERVATIONS IN CLASSROOMS**

Technical students are more comfortable in a technical subject classroom. They are more interactive and try and answer questions. They are familiar with all the technical jargons and they are comfortable using these jargons while framing sentences. However, when these student’s are asked to speak on a general subject matter, they are avoidant. When the students are asked to introduce themselves to the class, they don’t participate. They find it difficult to frame sentences when they are removed from their comfort technical area. The behavior of management students is totally opposite. They are more familiar with general subject matter and are always willing to speak to the class, but when it comes to technical subject, there is a loss of interest from their side. Technical students possess good aptitude in their subjects but fail to present themselves well when it comes to interviews. Management students show more confidence while presenting themselves to the panel. The eagerness to learn what they are lacking also seems to be missing both areas. Many students come from vernacular background and are not confident in conversing in English. So, they avoid communication with the instructor and appear to be non participative. It seems that they avoid being interactive even when they know the right answer just because they are not confident of presenting it well.

This works when it comes to pedagogical view of evaluation based on tests. Since, they just have to write whatever they have learnt from the book, they don’t try improving other skills other than their academic performance. Since, they are stuck to pedagogy; they still rely on the instructor to follow the teacher centric approach and leave them to just perform well in their exams. To improve the quality of students and to motivate them for the global competition is the responsibility of the teacher. Approaching each and every student according to their needs and polishing them to be a better employee is the responsibility of the teacher. Technical students generally feel that they will be coding all their life, so there is no need to possess other qualities apart from programming skills. There is a necessity to break this perspective, and encourage every student to be an all rounder excelling in different fields.

**HOW PEDAGOGY IS AFFECTING ADULT LEARNING?**

Even though the students are in their post graduate levels, they are still treated the same way they were treated in schools. The instructor prepared the subject matter based on the syllabus, prepares a lecture and delivers it to the class. Assignments are given to be solved at home. At the end of the session, exams are conducted and the students are moved to the next level. Classroom sessions and laboratory sessions are not sufficient to make a student employable. The students have to be application oriented by now, but due to the conventional teaching methods, they still remain subject oriented. Their only motivating factor is going to the next level. Adults, by nature are self motivated. Pedagogy principle has forced the students to still rely on their instructors and exams for motivation. Though they possess vast knowledge through experience, they are not motivated to learn from their experiences. Readiness to learn should stem from the desire to know more based on their life and work situation problems. This also is missing because the students are so used to traditional methods that they fail to adapt to apply what they have learnt to their real life problems. The analytical mind, the problem solving skill, the areas that need to be self-explored are ignored owing to their dependency on the instructor to solve it for them.

**HOW E-LEARNING CAN BENEFIT FROM ANDRAGOGY?**

The students are used to pedagogy so much that they find it difficult to adapt to the Andragogy principles. Adults are by nature self motivated. Self motivation is the major requirement while studying online on an e-learning module. Lack of motivation is one of the major reasons why students drop out of an e-learning course. The student sits in the classroom with an expectation that everything will be provided by the instructor. He is ready to absorb the instructions that are provided by the instructor. He is totally dependent on the instructor and this behavior of dependence totally contradicts the adult nature of being independent. This is the result of getting used to the pedagogy techniques throughout his learning phase. If the student is motivated to learn by experience and only rely on Instructor as an aid whenever he needs help, he can easily adapt to the online environment. Willingness to learn, another principle of Andragogy is also a major requirement when the student is studying online. Research shows that the doctors provide the patients with basic information who have been diagnosed with breast cancer. The patients on their own learn majority of the facts. As they yearn for more information about the disease

and try to learn methods and techniques to cope up with this illness, they do most of the research through books and Internet. They also become part of support groups and help each other by sharing the information they know. This is a perfect example of learning through Andragogical principles. Willingness to learn and add to the knowledge they possess can be a strong motivating factor for online students. Most of the principles in adult learning aid a student learning online on an e-learning module. Therefore, if Andragogy is adopted as a technique in education, students will grow gradually from pedagogy to andragogy in the classroom environment and apply these techniques when they learn online. Adaptive learning based on the student's learning capability is more feasible online than in a classroom environment. Thus, training in Andragogy techniques can promote e learning, which has been neglected over the years due to the student's attachment to the pedagogy techniques in the traditional classroom environment.

## **CONCLUSION**

This study demonstrates the benefits of incorporating Andragogy in our education system. Implementing Andragogy techniques in our education system provides us with the opportunity to groom our students to become responsible adults who add value to the society. The approaches and techniques described in this paper can contribute for further research in the field of E-learning using Andragogy. This paper only deals with comparison of pedagogy and andragogy techniques at post graduation level. Further studies can be done to analyze student behavior in a virtual classroom environment using Andragogy implementation tools where there is no direct involvement between the student and instructor. Student-centric learning in an e learning module and developing adaptive learning methods can further add to the knowledge in the field of E-learning.

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