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DEVISING AND ANALYZING NEW IT LEARNING MODEL MULTILEVEL ASSISTED INSTRUCTIONS- (MAI) IN DISTANCE EDUCATION

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ABSTRACT: The research focus is into proposing a new IT learning pedagogy Multilevel Assisted Instructions- (MAI) to be used in Distance Education. The aim of the new devised pedagogy MAI model is to transform today's outmoded education system, teaching and learning, to a vibrant learning ecosystem that puts learners at the center, especially in the distance education. The research study will investigate and integrate all of the following research questions: What triggers in the new pedagogy? What are the new demands of a Knowledge-Based Society? What are the new student expectations? What new technologies impose into teaching and learning? What are the advantages and pitfalls of new technologies? Can combinations of learning resources, experiences, and supports to help each learner succeed? Insights and recommendations are stated, augmented and discussed.

Key words: Instructional technologies, new pedagogical model, distance education

INTRODUCTION

New technologies are constantly arising and they influence the way how people interact and learn. Recent developments in digital technologies, especially web 2.0 tools such as blogs, wikis and social media, and mobile devices such as smartphones and tablets, have given the end user, the learner, much more control over access to and the creation and sharing of knowledge. This empowers learners, and innovative instructors are finding ways to leverage this learner control to increase motivation and relevance for learners.

How nw pedagogies are transforming teaching and learning

These new developments are not emerging as neatly as the above analysis suggests, with many initiatives combining the methods listed above. Professors and teaching and learning specialists in post-secondary institutions, have been re-thinking pedagogy and designing resources, courses, and programs that benefit from new approaches to teaching and learning.

What triggers in new pedadogy

What drives the development of this new pedagogy? Changes in society, student expectations, and technology are motivating innovative university and college faculty and instructors to re-think pedagogy and teaching methods.

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Three emerging Pedagogical trends

Underlying these developments are some common factors or trends:
1.A move to opening up learning, making it more accessible and flexible. The classroom is no longer the unique centre of learning, based on information delivery through a lecture.
2. An increased sharing of power between the professor and the learner. This is manifest as a changing professorial role, towards more support and negotiation over content and methods, and a focus on developing and supporting learner autonomy. On the student side, this can mean an emphasis on learners supporting each other through new social media, peer assessment, discussion groups, even online study groups but with guidance, support and feedback from content experts.
3. An increased use of technology not only to deliver teaching, but also to support and assist students and to provide new forms of student assessment.
It is important to emphasize that these are emerging pedagogical trends. More experimentation, evaluation, and research are needed to identify those that will have lasting value and a permanent effect on the system.

New Demands of a Knowledge-Based Society

There are several separate factors at work here. The first is the continuing development of new knowledge, making it difficult to compress all that learners need to know within the limited time span of a post-secondary course or program. This means helping learners to manage knowledge - how to find, analyze, evaluate, and apply knowledge as it constantly shifts and grows.
The second factor is the increased emphasis on skills or applying knowledge to meet the demands of 21st century society, skills such as critical thinking, independent learning, knowing how to use relevant information technology, software, and data within a field of discipline, and entrepreneurialism. The development of such skills requires active learning in rich and complex environments, with plenty of opportunities to develop, apply and practice such skills.
Lastly, it means developing students with the skills to manage their own learning throughout life, so they can continue to learn after graduation.

New Student Expectations

Even the most idealistic students expect to find a good job after several years of study, a job where they can apply their learning and which will also provide a reasonable income. This is especially true as tuition increases. Students expect to be actively engaged and see the relevance of their learning to the real world.
Today's students have grown up in a world where technology is a natural part of their environment. Their expectation is that technology will be used where appropriate to help them learn, develop essential information and technology literacy skills, and master the technology fluency necessary in their specific subject domain.

SURVEY ANALYSES OF LEARNING MODELLING APPROACHES

In Software Engineering mobile learning software there is evidently a lack of support for instructional techniques and pedagogical learning models, as well as procedures or guidelines how, when and for what particular situation each pedagogical learning model should be supported in the software development process and its conjunction and correlation with the instructional strategies (Fetaji et al, 2008). Instructional strategy is a very important concept that needs to be addressed because the main purpose of any learning activity should be clear to the learner (Fetaji et al, 2008). Instructional design models typically specify a method in using the technology that if followed will facilitation of the transfer of knowledge, skills and learning process (Fetaji et al, 2008). This learning dimension should provide the context of instruction and desirable outcome. The learning environments require high level of self-organization and metacognitive abilities from the learners engaged in the process of learning that should be captured by the instructional techniques. There are several instructional strategies that are currently considered: Problem Based, Project based, Inquiry-based Learning, Task based and Game based learning and (Marjanovic, 2005).

Problem based learning represents the learning that results from working with problems that needs solving. The entire learning process is set around a problem introduced and the knowledge is developed as a consequence of trying to solve the problem. Official description offered by (Lin & Tallman, 2006) generally describe it as "an instructional strategy in which learners confront contextualized, ill structured problems and strive to find meaningful solutions and learn in the process of doing it". Problem-based learning is a general approach of learning focusing primarily on solving a problem and acquiring knowledge; with project based learning students creating an end-product (Roschelle, et al 2003). Many research studies have focused on aspects of problem-posing and problem-solving as a way to motivate and teach students about science and math. Problem-based learning (PBL) is collaborative where students work in small groups learning through solving problems and reflecting on their experience.

The approach is also inquiry-based when learners are active in creating the problem. The learners are elevated to the position of analyst and problem-solver and have specific objectives and deadlines to meet. According to (Lin & Tallman, 2006) there are two critical issues involved in presenting the problem. First, if the learners are to engage in authentic problem solving, then they must own the problem. A second critical issue in presenting the problem is to be certain that the data presented does not highlight critical factors in the case. Either the problem must be richly presented or presented only as a basic question. Learning should be synthesized and organized in the context of the problem.

Project-based learning (PBL) is a model that organizes learning around projects. Definitions of "project-based instruction" include features relating to the use of an authentic ("driving") question, a community of inquiry, and the use of cognitive (technology-based) tools (Powe et al, 2009). Project-based learning is a student-centered approach to instruction in which students work in teams to complete an open-ended project. It is ideally suited to the teaching of analysis, design and implementation, especially when using object-oriented analysis and design methods (Fernandez & Williamson, 2003), but not to e-learning that provides instructional material for multiple diverse courses of a University study program which needs to be conducted via small pocket mobile devices. It is a student-centered approach of instruction in which students work in teams to complete an open-ended project. It is closely related to problem-based learning (Fernandez & Williamson, 2003). It promotes higher-order thinking skills which is not appropriate for classes of students with different knowledge and skill levels that is common for university environments. Project-based instruction is an authentic instructional model or strategy in which learners plan, implement, and evaluate projects that have real-world applications beyond the classroom (Helic et al, 2005). Projects sometimes go off track, with teachers and students pursuing questions that are peripheral to the subject matter of interest. The solution, according to (Helic et al, 2005) is to find ways for projects to centre on "learning appropriate goals."

In University environment, with class groups of vast variability and diversity of cognitive abilities, literacy level, skills and educational background of students, in order to complete the project the active students will work versus passive once will just stay without engaging themselves in the project and wait for the active once to do it. In Problem based learning, the same will occur. Passive students will just passively wait to end class without doing anything and loosing the time.

Project Based learning is instructional method that motivates learning and provides learning experiences; but, it is not appropriate for learning system accessed from a mobile device with many physical constraints to support University education.

Inquiry-based Learning according to (Lin & Tallman, 2006) represents an instructional strategy were involvement in learning implies processing skills and metacognitive abilities in order to seek answers to questions and issues while at the same time constructing new knowledge. "Inquiry" is defined as seeking information by questioning. According to (Lin & Tallman, 2006) it usually begins with posing a problem or question, followed by generating and pursuing strategies for investigating, collaborating, reflecting, and justifying the solutions of the problem or answers to the question, and communicating the conclusions.

Task-based learning is an educationally sound, effective and efficient instructional strategy for learning focusing the learning activities around tasks (Harden et al, 1996). The term "task-based learning" originated primarily from the work done in language education. The traditional way that teachers have used tasks is as a follow-up to a series of structure/function or vocabulary based lessons (Harden et al, 1996). Tasks have been 'extension' activities as part of a graded and structured course [13-what is task base]. Tasks are defined as activities that are meaning-focused and outcome-evaluated and have some real-world relationship (Venkatesh et al, 2005). Tasks can be considerate as a curricula unit so TBL perfectly suits to a university study program learning method. TBL facilitates vertical integration of the curriculum (Marjanovic et al, 2005). Tasks can be used to model activities in a subsequent work. As (Venkatesh et al, 2005) states that 'task' has generally been used not as the organizing principle of courses but as a methodological device for implementing the final step of a well-established methodological sequence. In TB learning, the learning activity is task-centered. Originally developed by (Venkatesh et al, 2005) in Bangladore, southern India (cited in Knight,), it is based on the belief that students may learn more effectively when their minds are focused on the task. TBL is learner centered where learners can work through their needs and interests and selecting materials, activities and tasks accordingly.

According to (Helic et al, 2005) the learning tasks play a fundamental role in determining the learning outcomes. According to (Venkatesh et al, 2005) it has three advantages:
1. TBL is learning built round tasks is more *effective* than traditional didactic memory-based or purely apprenticeship-type learning;
2. TBL is learning structured round the tasks is an *efficient* approach to learning;
3. TBL is likely to lead to more *relevant* and appropriate education;

4. TBL links theory with practice. The practical task becomes the starting point for the theory: in turn, theory informs and leads to a better understanding of the task (suits to curricula study program);
5. TBL provides an appropriate framework for planned education (curricula driven) where it makes explicit what is to be achieved and how the learner should do this (efficient learning);
6. A TBL approach is likely to result in greater relevance of curriculum content (appropriate for curricula learning).

TBL offers a focused and structured approach to learning and increases the learners' satisfaction and motivation, and at the other side is consonant with current theories of education (Helic et al, 2005). This is the reason we decided to implement a task-based model for the prototype.

Task-based learning offers action and reflection, while in contrast, rote learning is low in action and in reflection. According to (Helic et al, 2005) incidental learning, such as occurs in on-the-job learning, is rich in action but may be low in reflection. Classroom, or formal, learning is frequently high in reflection but low in action.

Game based learning or also lately referred to as digital game-based learning (Marjanovic, 2005) goal based scenarios and instructional games and simulations are alternatively used to describe the instructional strategy were learning activities are organized around a game or simulation. The academic community regarded game based learning as part of problem based learning using simulations and did not give much of attention in its research, and still today there are a lot of opinions in this regard (Marjanovic, 2005). Educational games and simulations are defined as activities that have rules and constraints, a goal, and an emphasis on competition and also has the additional feature of having a primary objective of enabling a student to learn either facts, skills, attitudes, or all three. (Marjanovic, 2005) suggests that transfer of knowledge is aided when students actively construct explanations for events. Perhaps the biggest benefit for game -based learning is the fact that it involves students who need to learn complex skills and need to transfer these skills to real life.

The design and development of m-learning cannot be based only in the existing practice of technology, it is necessary to understand the relation between theory and practice to ensure that the design of practice is founded on the learning theory. This concept is given in the figure below:

It describes that the different learning activities that are driven in the learning environment are supported by the m-learning instructional technologies stated above. The learning principles are formed by the learning activities to be done to produce the learning outcome. The learning activities are crucial to define the features and abilities the learning environment has to support and are supported by the technology.

Proposed Model Multilevel Assisted Instructions- (MAI)

The proposed Multilevel assisted Instructions (MAI) Model should incorporate the following attributes and is provided as Template to incorporate within the online courses.

Teaching /Learning Activity	**Instructions**
Engaging Opening / Writing	Has that something that compels attention.
The Task	Clear Question and Task. These naturally flow from the introduction and signal a direction for sophisticated learning.
Background	Clearly calls attention to the need for a common foundation of knowledge and provides needed (Web?) resources.
Roles / Expertise	Roles match the issues and resources. The roles provide multiple perspectives from which to view the topic.
Use of the Web	Uses the Web to access at least some of the following: interactivity, multiple perspectives, multimedia, current information, etc.
Transformative Thinking	Higher level thinking is required to construct new meaning. Scaffolding is provided to support student achievement.
Real World Feedback	A feedback loop connecting learners to the Real world is included in the Web page and an evaluation rubric is probably provided (early on!).
Conclusion	Clear tie-in to the intro. Makes the students' cognitive tasks overt and suggests how this learning could transfer to other domains/issues. Probably calls attention to the assumptions

CONCLUSION

In this study, the research focus was into proposing a new IT learning pedagogy Multilevel Assisted Instructions- (MAI) to be used in Distance Education. The aim of the new devised pedagogy MAI model is to transform today's outmoded education system, teaching and learning, to a vibrant learning ecosystem that puts learners at the center, especially in the distance education. The research study investigated and integrated all of the following research questions: What triggers in the new pedagogy? What are the new demands of a Knowledge-Based Society? What are the new student expectations? What new technologies impose into teaching and learning? What are the advantages and pitfalls of new technologies? Can combinations of learning resources, experiences, and supports to help each learner succeed? It is known that motivation has an important role in learning and science instruction. And also Personal beliefs affect from various fact. Research shows that designed systems used in science laboratories don't influence students' motivation toward science learning. New research design should be considered to thoroughly investigate the time of MAI multilevel assisted instructions in classroom, and teachers' strategies using the system, and students' preferences. Additionally, a well-designed instrument should be implemented to precisely measure even the minuscule effects.

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