Competitive-Framework for Diffusion of Innovative Knowledge in Distant-Learning-Programs: Project-Management & Blooms Taxonomy Perspective

M Asif Rashid¹, Uzma-Muhmood², Ayse-Gulmez³

¹IS-Branch PAF- Pakistan, Annova-Post Canada, ²Gaziantep- Turkey

asi313@hotmail.com, umahmud@canada.com, gulmezayse@gmail.com

Abstract—Cultivating innovative-methods for learning a new Knowledge is a multidimensional and onerous-projectized-activity. It is one of the key considerations in technical training, distant learning(DL) and education industry. The advancement in computer Based training, software, instructional techniques and management systems has changed the dynamics of University-departments and training methodologies. The induction of IT and artificial intelligence-aids and psychometric testing of highly skilled intelligentia in a target focused team environment has tremendously enhanced the performance expectation from Man, Machine and Resources. The enterprise-resource-planning(ERP) implementation at universities for Smart-campuses has further reiterated the target focused team environment coupled with value-based corporate-culture. The concept of competitiveness demands that the dissemination and absorption of knowledge by the intelligentsia, staff and students must be achieved through exceptional effort. Conversely, competitiveness demands innovative methods for improving the Learning-Curves of individuals in technical training and linguistics specifically in an orthogonal team environment. This paper proposes an integrated frame work of implementing a new-innovative university-level-program (Course-Technovation)or bringing innovation in existing academic-program. The framework is based on integrated Systems-Engineering approach in light of diffusion of innovation (DOI) theory utilizing techniques of Project Management & Blooms-Taxonomy. Conversely , academic-project-management as per the dictates of Blooms taxonomy for orthogonal teams is yet another area briefly touched to take its proven advantages for University DL-Course-Technovation.

Key words: Knowledge diffusion Management, Learning curves, knowledge innovation and linguistics, Project Management, Blooms-Taxonomy.

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I INTRODUCTION

Competitiveness is “world’s new order”, much as like the uni-polar world of today, where US-Universities relish the pride of market-leadership. Distant learning programs of these Universities are true manifestation of competitiveness, due to visionary-innovative curriculum & course structure. The developing countries especially in southeast-Asia have started realizing importance of strategic System approach for innovation in their University-level-Programs. The visionary dictates of DOI-Theory, Blooms Taxonomy or Project Management are few of the strategic tools available in this regard. With the advent of distant learning(DL) programs the deliberations in-terms of competitiveness and innovation for orthogonal teams is far less than expectations of a today’s-student. The concept of realization that “Success lies in Understanding how learners learn” is far more undermined than just meeting the course contents with in the stipulated-time-span of a semester. The dictates and passion of total quality management(TQM) to earn continuous improvement (in curriculum) for innovative knowledge and customer focus for quality of education are still a “catch-22-situation” for these developing countries. In today’s world political, social, economical and technological(PEST) factors translate innovation and revision in curriculum. These revisions are not time bound and may occur during a student-life-cycle in a typical three-four year Bachelor degree program. Whereby, students may find the course contents of 1st year program either partially or totally revised or the whole course being replaced with an altogether new program. Such cases are typically cited in Aerospace-engineering, "programming language courses" as well as “language courses. This means that students of highly sophisticated technologies like aerospace-engineering, computer engineering or Nanotechnology may find half of what they learnt in first year as outdated by third year of their study much as same as the student of language department who find new computer based instructional techniques and new literature being continuously added to curriculum as part of dynamics of this very 21st century. This in turn means a volatile, capricious and unpredictable state of entropy. Eventually, University-faculty perpetually faces dictates of such-challenges and actively participates to solve
them in-order to stay competitive and to sustain market leadership. In case of a distant learning programs the student residing in world apart continents are virtually-grouped together in a "global village class-room". Whereby students from all over the world, with multiple intelligences and from diversified culture may attend a program being conducted (may be) at National university of Singapore (NUS) - or (may be) at Istanbul-University, Turkey. In such a scenario the course-instructor may get entangled with frequent instances of elaborative as well as exhaustive brainstorming session which normally may not be the case in conventional on-campus courses with limited intelligences and with limited-cultures. The designing, Planning and implementation of such innovative and technovative DL-programs require a thoughtful strategy to address such intricacies. It is possible to plan & execute such programs through some legitimate learning-model. In the same context DOI, Project-management & Blooms taxonomy are the most influential Models of knowing, applying and implementing creative-cognitive-thinking for inventing new products and services. While DOI and project management may focus at Strategic-level and Blooms taxonomy may focuses at micro level during planning and implementation phase of DL-programs. Hence, same is deliberated in for its application through focus groups research. Since the output of blooms taxonomy is rather intangible hence project management technique is employed for translating intangible project deliverables. The output of this research is an integrated System-approach based on DOI Theory, Blooms Taxonomy, & Project Management for diversified cultures & multiple intelligences.

II LITERATURE REVIEW

Basis of Literature review

The literature review along with general analysis assisted the research in various ways in understanding and applying the research method, setting up theoretical background, approaching the bigger picture (contextual issues), and designing the research methods and tools. Several books, articles, regulatory requirements and official publications were synthesized which are discussed in subsequent paras.

Classical concept of DOI,

The classical concept of DOI, (Technology /Knowledge) has been defined as “the process by which an innovation is communicated through certain channels over time among the members of a social system” It was inferred that academic institute required an integrated system of management for collaborative success, similar to the pioneered Model of diffusion of innovation & Technovation [1].

Project management model

Projects is defined a set of organized activities to achieve organizational goals while staying in normal operational limits. Projects are, employed for earning organization’s strategic plan. The management of project dictates application and integration of the project management processes which are initiating, planning, executing, monitoring & controlling, and closing. Projects management iterates nine(09) knowledge areas and are Project Integration Management, Scope Management, Time Management, Cost Management, Quality Management, Human Resource Management, Communications Management, Risk Management and Procurement Management. [2,12] During DL-Project Integration activities are integrated in various elements of project management. In a typical University setup innovation program is typically managed through Project management techniques. Which require in time completion of academic innovation program i.e. project deliverables ensuring that project constraints, in terms of time, cost, and resources are not exceeded beyond defined constraints.

Blooms Taxonomy theory

The researchers proposed to systematize thinking dexterity and agility into six levels, from the most basic to higher-order-thinking levels which is necessary for critical thinking and creative thinking for innovations and inventions to take place [3,4]. The researchers in the academia have suggested that university activities could be in four dimensions, i.e.; strategy, teaching, research and administration [3,4,11]. Which imply that diffusion of innovation is typically an outcome of research work requiring teacher’s interventions at micro-level for planning and executing a strategy fully-supported by top-management and administration(board of governors). It is hence proposed in this research that for DL programs the 10th dimension or “10 knowledge areas” could be indoctrinated in terms of blooms taxonomy theory for optimum diffusion of knowledge.

Theory of DOI & Rate of DOI

Diffusion of innovation (DOI) has been defined as the dissemination of knowledge from a person, organization or a country to another through suitable means of communications. It has been observed that the speed and path of diffusion of an innovation is greatly influenced by different organizational functions & conflicting objectives [5].

Critical factors for DOI

The interdependencies of institutions and organizations involved in the process of a particular innovation further complicate the process of diffusion. The diffusion or transfer of technovation is considered as directly proportional to the strength of four factors including source, diffusion medium and diffusion environment in any industry [6]. An industry...
with high level of these factors is expected to be able to transfer such knowledge easily as compared to others.

Inherent complexities

The diffusion of innovation involved technical and non technical parameters among the participating organizations and industries. This process got more complex while diffusion was taking place from an advanced organization (Industry/Institute) to a developing country organization (Industry-academia-joint ventures) where the organizational, informational and even the social environment might not be sufficient to adapt this process. Organizational size, centralization, formalization and culture were additional internal factors that could influence the diffusion process in such situations [7].

Non classical Models for Critical Success Factors (Fichman Model) for DOI

The philosophy of, Non classical model elucidated a number of additional factors which influenced the DOI. The model inferred that for complex and multi user technology (like “IT”); communication-channels and social system played a vital role during the process of DOI. Whereas, social system was a product of various partners including government, leadership, management, administration, academia, industry, opinion leaders & change agents, influenced by PEST {political, socio-economical, & technological influences}. This model inferred that level of adaptation, was influenced by resistance due to a number of barriers. [8]

III. Critique of Literature Review

In a competitive world of today stakeholders (students) expect most preferred practices and demand computer based training. This demands management of DOI thorough system engineering approach. System approach integrates fundamental parameters of system and takes more than the activities of scientist and intelligentsia at class room as well as at organizational level. The system engineering approach circumference all the issues and is expected to provide a holistic picture. However, the literature review has been conducted to derive critical success factors for applying systems engineering approach to build up DOI processes and their subsequent mapping over knowledge areas.

The theory of DOI [1] explains four major areas knowledge, communication medium, time and social system. The learning methods for technical training and academia demands collaboration between academia and industry. While DOI theory talks about relative advantage trialability; complexity etc in context to decision making for accepting a new innovation but doesn’t deliberate upon how learning should be managed, monitored and controlled, hence micro-management is considered as domain of Blooms taxonomy.

The activity-control is hence proposed in light of framework of Project Management [2] which itself is just one of the five processes of DOI-processes. DOI at grand- strategic-level elaborates the interaction of all the activities of project at strategic level. The blooms taxonomy plays its role at tactical-level during execution phase of project management. The integration of all three concepts then could provide a much needed holistic-picture of DL-innovative program.

IV DOI-Theory Vs Project Management for University Programs

4.1. Decision making for DOT in light of DOI

The first and the foremost issue faced by academia is the decision for accepting a “new innovative course proposal (Technovation)”. It is proposed and accepted or rejected on the basis of cost benefit analysis and other PEST influences. A rejected decision means either a rejection, or decision to adopt at a latter stage. The proposed variables in line with DOI theory[1,8,10], which may effect the adoption or rejection and latter rate of adoption are

(a.) Innovation relative advantage
(b.) Innovation compatibility
(c.) Innovation complexity
(d.) Innovation trialability
(e.) Innovation observability

This research has made some modification in proposed set of variables. The item (b) has been redefined as “Innovation compatibility Vs adaptability” A successful trialability for a highly complex new course-innovation(technovation) is only possible if sufficient exposure and skills are imparted to an academia-staff & intelligentsia. Hence, complexity, trialability and observability are interdependent, hence are regrouped as one parameter termed as “Course- innovation Complexity & transfusion”. The modified set of factors that influence DOT decision process for academia are as follows:

(a.) Course- Innovation relative advantage
(b.) Course-Innovation compatibility Vs adaptability
(c.) Course-Innovation complexity due to barriers & transfusion.(i.e., Ease of Innovation)

The concept is illustrated in Figure 4.1.
Figure 4.1: Decision process for critical DOI
Phases of -Innovation-process

It is defined as the "process through which an individual or other decision making such as an Academic-institute, Academic society or University) passes through the innovation-decision & implementation process" which consists of five Phases:

1. First Phase of Course-Innovation: This is a problem recognition phase, i.e. Knowledge of innovation is spread through some medium. Competitive leadership and management gets exposure to new technology, and gets influenced due to economical, social, political and personality variables and characteristics and perceives a need to adopt the change.

2. 2nd Phase of Course-Innovation: This is an innovation-methodology selection phase, whereby, attitude forming, towards the innovation. Opinion-leaders and change-agents play a vital role to communicate the objectives and possible advantages, cost benefit analysis, feasibility studies are conducted. The elaborated feasibility plan is devised which provides a bench marking analysis of various Academic courses.

3. 3rd Phase of Innovation: This is a course development phase, decision to adopt, is communicated across the corporation till a more feasible option is surfaced or there exist a state of disenchantment. In case rejection is made it either means adoption at a latter stage or continued rejection till a viable option is sited.

4. 4th Phase of Innovation: Implementation of the Course-innovation is figured out and strategy is communicated to all stakeholders for implementation. A feed back mechanism is at place to refine and improve the Course-Technovation process. The Course-innovation implementation phase is considered as a project, composed of several mini-projects. The in time completion of these mini-projects predicts completion of Course-innovation-implementation phase. The project is composed of various stages, namely, project start, planning, execution, controlling and closing.

5. 5th Phase of Course-Technovation: Confirmation of DOT decision. Feedback is solicited and necessary modification is made to mission and strategy to fully diffuse the innovation. The end product of diffusion predicts growth in technological quality and superior skills of HR.

4.2 Time context for Course-Technovation Processes

4.2.1 As per Rogers DOI (diffusion of innovation) theory [1,8,10] the three time factors are:

   (1) Innovation-decision process (in context of University it implies top-leadership).

   (2) Relative time with which an innovation is adopted by an individual or group (in context of University it implies Departments & students).

   (3) Innovation's rate of adoption (in context of University it implies the organization as a whole).

4.2.2. Project Management Context of Time Process as per PMBOK:

A project is a temporary set of activities undertaken to achieve organizational goals by creating a unique product, service, within allocated time, cost and resources. While not in the direct context but, Project management becomes an enabler to help implement the different methodologies. The project process consists of following five stages which can be mapped over phases of DOI-process:

1. Initiation Definition
2. Planning
3. Implementation (Execution)
4. Monitoring & Controlling
5. Close-out (closure).
V Proposed Framework for DOI

This research has made some modification in proposed phases (Para 4.1) as well as set of variables by various researchers (Para 4.2).

In order to derive a hybrid-time processes for DOI certain modification are proposed in set of time variables (Para 4.2). The integration of concepts defined by project management [2], DOI theory [1] and others researchers [5,6,7,8,10] have been performed based on critical success factors. The microanalysis of time context within these phases has carefully been calculated and following proposed modification has been incorporated commensurate with academic industry. The factors relevant to time-dimension of various researchers and Project management time dimensions have been mapped to define “hybrid time dimension” for Course-Technovation. This approach is expected to cater for weakness of any one researcher but will ensure cumulative strength of all the researchers

1. Phase I: Course-Innovation exposure and realization

2. Phase II: Determination and willingness for Course-Innovation.


4. Phase IV DOI-Implementation phase (Course-Innovation projectized activity comprising of Initiation-stage, Planning-stage, Execution-stage, Controlling-stage and Close-out-stage) For the purpose of clarity the sub-phases of 4th phase are termed as stages and accordingly written with a suffix of “stage”

5. Phase V Course-Innovation -confirmation

First Phase of DOI theory i.e., Problem recognition phase (Para 4.2 item 1) has been redefined as Course innovation -Technovation exposure and realization Phase.

2nd Phase of DOI theory i.e., Attitude forming (Para 4.1 item 2 ) has been redefined as (Leadership) Determination and (Academia-blue colored workers) willingness for Innovation persuasions.

3rd Phase of DOI theory i.e., The Innovation-decision process (Para 4.1 item 3 ) has been redefined as Decision process for technovation and persuasion.

4th Phase of DOI theory i.e., The implementation- (Para 4.1 item 4 ) has been redefined as Course-DOI-implementation phase. Which is composed of subsets of projectized-stages barrowed from project management concept for implementation phase of DOT in an academia industry.

5th Phase of DOI theory i.e., The confirmation (Para 4.1 item 5 ) has been redefined as Course-innovation confirmation phase. Which means either a successful adoption of Course-Technovation or time to switch over to better Course-Technovation due to advancements in an industry.

Rogers DOI time variable (Para 4.2.1 item 1, i.e. Innovation-decision process ) is adjusted in Phase 3 of Course-Technovation implementation phase, in light with proposed decision algorithm at Para 4.1, which is typically based on cost benefit analysis and rate of return on investment(ROI). The relative time (Para 4.2.1 item 2) with which an innovation is adopted by an individual or group is renamed as relative life cycle of a Course. The Innovation's rate of adoption (Para 4.2.1 item 3) has been termed as rate of Course-Technovation. All these are considered as critical success factors(CSFs) for Course-Technovation and are required for understanding significant depth of subject matter.

New dimensions to DOI knowledge areas :

This research proposes two major dimensions to the phase IV of the DOI for University courses. This is because of the argument that in Academic-courses (Typically technical cum linguistic courses) diffusion of knowledge is analogous to a projectized activity. Conversely, implementation phase is more or less a mega-project ,which inherent hundreds of child projects in-terms of innovative-concepts, , market-surveys, industry-visits, conferences, seminars, experimental-Labs, computer based training(CBTs) and brain-storming sessions. These set of activities and tools are considered mandatory to transmit knowledge and diffusion to students for elevating their critical and creative thinking. In the long run this leads to innovation and further iterates the new-inventions and more competitive-solutions to the problems existing in industry.

The very complexity of DL-course implementation phase demands, prior planning for efficient and prolific execution. Each child-project is composed of five (5) explicit sub-stages. Which are primarily derived from the philosophy of project management body of knowledge(PMBOK)[12]. The sub constituents of implementation phase are initiation, planning , and execution, controlling and close out. The same is indicted in figure 5.1. The implementation-phase of DOI houses these 5 sub-stages . The implementation phase has built in feedback mechanism which is bridged with communication circles or project-communication-system. The management analyzes key performance indicators (KPIs) and accordingly intervenes, so as to ensure in time diffusion of technovation. The whole mechanism at grand – strategic-level is elucidated in figure-5.1. Which provides a birds eye view of the time stages integrated with other classical CSFs and renders a holistic project management concept for DOI in University level-Programs
The second new dimension proposed in DOI is in terms of blooms-taxonomy interventions for micro-level management for a DL-program. The planning, execution as well as controlling stages of project management could utilize the strengths of blooms taxonomy for optimum DOI. The rational for blooms taxonomy employment is justifiable in-terms of its valuable contribution for optimum DOI over past 45 years to University-department (specially non-engineering departments). In a distant learning scenario of orthogonal cultures with multiple intelligences stakes are very high. The blooms taxonomy indoctrinates for a well planned course spanning over project management planning & execution stages (as depicted along x-axis in “figure-5.1 & 5.2”) coupled with DOI feedback mechanism for evaluating and improving on the basis of observed deficiencies. Conversely blooms-taxonomy encompasses and elevates knowledge innovation through mechanism of low order thinking to higher order thinking triggering critical and creative thinking circles (as shown in “figure-5.1" along y-axis at top-left). The model proposed is an entry-level-integrated-tool for optimum DOI through curriculum planning & execution utilizing blooms taxonomy instructional & re-assessment techniques for broader student-audience from diversified-cultures with multiple intelligences in a distant learning scenario. This model could be universally applicable to all levels of schooling, learning and innovations. Conversely this is expected to earn benefits to all stake holders involved in a distant learning program, i.e, students & industry-researchers (external customers) university professors and staff (internal customers).

**Mapping of Blooms-taxonomy processes over project management stages:**

The advantages of Blooms-taxonomy ever-since 1960 in planning innovation or designing a course for competitive advantage are enormous. While a major portion of earlier research studies are focused in general-academic-domain but very less contribution has been focused vis-à-vis distant learning and vocational innovative programs. This research now focuses to build up jump-start-knowledge diffusion framework [1] based on Project management model [2] in-light with the perceived advantages of blooms-taxonomy[3] in a distant learning and vocational innovative programs. A typical University has four principal dimensions namely:

1. **University-Industry Global DL-program Social System**
2. **Communication Channels Activities**
3. **Defining Knowledge goals for diffusion of competitive innovation**
   - Blooms taxonomy asks for Synthesis for Creative-Thinking and Evaluation for Critical Thinking (hi-order-thinking) outcome of typical and low–order-thinking mechanism (Knowledge- Comprehension–Analysis & Application)
4. **“Knowledge-diffusion-Implementation-Phase” Activities are to be dealt as a Project**

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strategy teaching, research and administration[4,11]. The following expected project deliverables were considered for implementation of blooms-taxonomy for optimum knowledge diffusion. It was assumed that blooms taxonomy is 10th knowledge areas for optimum & effective DL-DOI Project management. Following tacit-project-scope was implied:

1. To formulate an entry-level-global-authentic-tool for curriculum planning & implementation utilizing instructional techniques and re-assessment.
2. To formulate a model for broader student-audience from diversified-cultures in a distant learning scenario.
3. To formulate a universally applicable model to all levels of schooling, learning and innovations ensuring timely completion and within resources and budget constraints.

A basic Blooms-taxonomy model focuses to systematize thinking dexterity into six levels, from the basic to higher-order-thinking levels which is obligatory for critical & creative thinking [4]. In a typical distant-learning program diffusion of innovative knowledge takes place during various phases of diffusion Process. The “Knowhow & know what” scenario inhibits in initial stages of diffusion of knowledge, whereas creative & critical thinking requires industry-academia joint ventures and falls in higher order thinking domain. The concept of Blooms-taxonomy is mapped over project-processes (i.e 4th Phase of DOI) along X-axis.

**VI APPLICATION OF PROPOSED MODEL**

The new terminologies of Blooms taxonomy solicit “Analysis-evaluation” in-terms of critical thinking and (synthesis) “Creating” through Creative-thinking (hi-order-thinking). Which is a logical outcome of typical low-order-thinking-mechanism, i.e, Knowledge-Comprehension-Application. The low order thinking is utilized in basic language courses & basic computer programming–language courses. The terminology associated with such programs is diffusion of innovation (DOI). Where as the hi-order-thinking for analysis-criticality & creativity leads to research work. This in turn leads to industrial innovations and inventions. The terminology associated with such programs is diffusion of technovation (DOT). Innovation in these programs is paramount for competitive advantage and success of distant learning programs.

Diffusion of innovation (DOI) in University Programs or courses simply means dissemination of knowledge from intelligentsia, Industrial circles or organization to students through suitable means of communications. It is but known that for a new technical cum linguistic-program (Course-Technovation) or bringing innovation in an existing education program optimum speed and shortest path of diffusion of innovation is preferred. Hence it is but important to analyze different critical organizational functions in the same retro-spirit for optimum diffusion of innovation.

A focus-group research was conducted to meditate upon the proposed framework. The course-innovation-methodology of following universities was analyzed to bench mark the status of DL-program:

1. **CAT A Universities**: Istanbul University, literature/cultural programs, NUML-English-Department & Chinese-Confucius linguistic-Department for innovative teaching methodologies.
2. **CAT B Universities**: CASE UET Taxila and Tarkia University Engineering for Technical-Education, distant learning programs and their associated innovation instructional methodologies.

Following observations were made:

1. The input from these universities coupled with focus groups research indicted the dire need of a comprehensive model to plan and implement “education course innovation projects” for orthogonal teams based on DOI theory.
2. Academia Industry environment comprises of numerous interdependent functions regulated by strict university level, national and international standards. These cannot be achieved unless the management systems are completely conversant with the depth of knowledge required for execution of day to day lectures, assignments, experiments, routine industry & market surveys, R&D activities.

3. Planned curriculum models as per Blooms-taxonomy for multiple intelligences can earn optimum results with strong critical creative thinking reflection.

4. In all distant learning programs a well defined state of art tools for diffusion of knowledge via robust- Communication-strategy with absolute quality of service(QoS) is highly desirable. Which was commensurate to the dictates of earlier research[4,11]

5. In CAT A Universities the Linguistic department’s innovative instructional methodologies were based on Blooms-Taxonomy model with very little interventions as per the concepts proposed by project management & DOI.

6. In CAT B Universities, the Engineering departments innovative instructional methodologies were based on project management & with very little interventions as per the concepts proposed by Blooms-Taxonomy & DOI.

7. In both CAT A & B Universities, it was observed that while exceeding customer-knowledge-diffusion expectations was a core objective for innovative and competitive vocational DL-training programs, however the developing countries universities were in a catch-22 situation. This in turn reiterated employment of blooms-taxonomy principals so as to minimize time wastages. Conversely, teaching and industrial research may-employs hi-order-thinking and low-order- thinking mechanism of Blooms Taxonomy for ultimate customer focus, which was in line with earlier research[4,11].

Success lies in Understanding how learners learn

The proposed implementation strategy is based on context of project management [1] for optimum utilization of limited finances, resources and time. Objective is to focus on blooms-taxonomy cognitive domain utilizing project management techniques to implement DOI and not to develop or map step by step process or to meditate upon a detailed & exhaustive blooms taxonomy-methodology. In fact same could not be justified or expected in such a diminutive research. This integrated System-engineering approach is expected to cater for weakness of any one theory but will ensure cumulative strength of all the tools for optimum DOI in DL-project integration management. Thus to deliver and meet challenges of, how to, plan, improve, assess and implement “education course innovation projects”. Since, DOI, Blooms taxonomy as well as project management techniques have answer for all such intricacies and criticalities, hence quality function deployment (QFD) & other TQM-techniques are recommended for further empirical testing of subject model to derive quantitative CSFs.

VII FINDINGS

The literature on diffusion of innovation in university scenario is very limited, though a lot of work is going on in form of collaboration projects among various countries and Industry. The research and review of literature in light with blooms taxonomy and investigations to explore diffusion of innovation in a typical Academic-Industry revealed following in context to innovative and distant learning programs:

(1) The social, organizational culture, work environment and communication factors are the major elements of any diffusion model observed in other industries, the same are equally applicable in an Academic-Industry Figure5.1.

(2) Customer focused universities transform the processes involved in the learning lead to customer satisfaction Normally a well collaborated project with good communication system is expected to earn more learning & DOI.

(3) Academia Leadership and Management interventions during change management Vis-à-Vis DOI and utilization of Project Management are necessary to coup with the defined vision and strategies of blooms taxonomy (Fig 5.2)

(4) System-Approach of processes, mechanism of diffusion of innovation in distant learning courses(technical cum linguistic course) with state of art communication circles can resolves the complex issues leading to uncalled for delays.

(5) Communication circles play a pivotal role in dissemination of DOI.

(6) Research over the last 40 years has confirmed the Blooms-taxonomy as a hierarchy with the exception of the last two levels hence same may be valid in a global village scenario (distant learning environment) with multiple intelligences[3]
VIII Conclusion

The research work is an evolution and innovation process analysis specific to University-educational & Academia-Industrial-collaborated “distant learning programs (DLPs)”. Technological advancements and competitiveness has converged world to a global village where complexity of Academia-Industrial-collaborated DL-programs is described as systems having numerous constraints and functions under extreme pressures to earn peak knowledge diffusion for innovation & technovation. Academia-Industry-Program is an example of what the technologists call an ‘open system’. In an open system HR, Technologies, leadership, management, environment and the social system interact in an unpredictable manner. To achieve in time completion of DOI process complex system requires collaborated interventions of leadership & management. This research made an effort to address Academia- Industry knowledge innovation & its diffusion-process without ignoring the Strategic-picture, presented by DOI-theory as well as micro level interventions proposed by Blooms-taxonomy. While Blooms Taxonomy asks for Synthesis for Creative, Thinking and Evaluation for Critical Thinking mechanism as well as for optimum learning curves however the process of development of university-DL-programs strongly dictates in time diffusion of knowledge or innovative to students may be with in a semester while curtailing costs and resources. In order to deliver and meet all such challenges an integrated model is mandatory for, how to, plan, improve, & implement “program-innovation”. DOI theory coupled with project management & blooms-taxonomy could deliver an optimum-solution. There could be differences in its activities based on the type and objectives of the organizations and the exact nature of collaboration programs. In context of project-management the blooms-taxonomy could be considered as the 10th knowledge-area for effective DL-Project management. This diminutive research for competitive-integrated-framework is expected to cater for weakness of any one technique but will ensure cumulative strength of all the techniques for optimum DOI in DL-university programs.

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