

MBA 4.0: Enhancing Student Learning to address Industry 4.0 Needs

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Abstract

The objective of this paper is to understand the existing practices followed by institutions in imparting management education in India and to develop a conceptual model that will enhance learning and thereby address the requirements of skill-based education. This model will have to be tested in future research. The study is descriptive in nature. Existing education practices, particularly those in management education space are studied. The understanding of current status is the used to build a model, with a focus on students as co-creators of knowledge that could help create a work force with skill sets necessary to tackle the challenges and capitalize on the opportunities of Industry 4.0.

The paper suggests that by ensuring effective student participation in the learning process, educational institutions can provide a platform where students can be a part of the knowledge building process. The proposed model, has potential to improve the learning and skill development potential of students undergoing management education. They would develop a mindset of continuous learning and appreciate the rapid changes in the work environment that they would face in future. Equipped with skill sets to adapt to rapidly changing environment, they would be able to contribute constructively in a digitized world

Keywords: Industry 4.0, Volatile, Uncertain, Complex and Ambiguous (VUCA), Reimagining Education, Co- creators, Generation Z

Introduction:

A lot is being discussed about Industry 4.0 and how it is going to significantly impact the economic landscape and prosperity of nations. While the terms Industry 4.0 and fourth industrial revolution are often used interchangeably, Industry 4.0 refers to continuous transformation of industries augmented by Internet of Things (IOT), Industrial Internet of Things (IIOT), Cloud Computing and Artificial Intelligence.

Industry 4.0 focuses on smart manufacturing, smart factory, lights out manufacturing (dark factories), smart cities and use of IOT in manufacturing including 3D Technology. People and machines will be able to communicate with one another via internet of things or internet of people. Large volume of useful data will be available in a transparent manner, aiding process and product improvements and innovation. Assistant systems like cyber physical systems, will help in informed decision making in a timely manner and may even perform tasks that are exhausting and unsafe for humans. Industry 4.0 is likely to result in a confluence of various technologies that will bring a paradigm shift in the way things are made and consumed. Big data, advanced analytics, human-machine interfaces and digital-to-physical transfers will not only improve quality of products and processes but will drive change across the full supply chain.

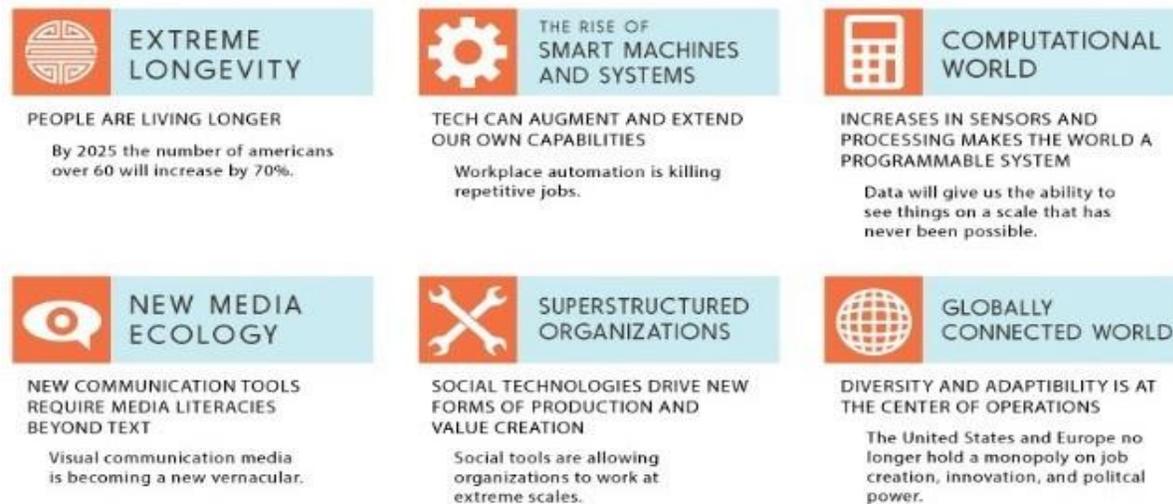
This research aims at understanding the existing practices followed by management education institution and to propose a conceptual model to enhance learning based on creative skills and learning mindset inclusive of MBA 4.0 Curriculum. This study intends to thoroughly check the stepwise progression of the requirement of the industry by analyzing the historical events in the advancement of MBA 4.0 and Industry 4.0.

Opportunities and Challenges of Industry 4.0:

With the advent of superior technologies, productivity and efficiency of operations will improve, adding positively to the value chain. This in turn is likely to improve standards of living. Communication and transportation cost may reduce, robots would be deployed to do hazardous jobs, new products and markets would be introduced and health services would become more advanced, increasing not only the longevity of human life but the quality too (refer Figure 1).

On the flip side, emerging technologies may make many traditional jobs redundant, leading to a lot of strain in the labor markets. Continuously adapting to new ways of doing things and to new avenues that may arise will be challenging. As artificial intelligence and robots displace humans doing repetitive jobs, real income of the working class may decrease. In the absence of an ability to upscale to higher order human jobs, unemployment levels are likely to increase.

Figure 1: Six key elements that will be a characteristic of the future workplace



Graphic Source: <http://www.top10onlinecolleges.org/work-skills-2020>

Skill Sets required to succeed in the Volatile, Uncertain, Complex and Ambiguous (VUCA) World:

Though young people will have many more opportunities in the future, the nature of jobs will be very different. It is likely that people will have multi- task careers and work on more than one job simultaneously. Success in careers will not only require specialist knowledge but will need a workforce which is multi-skilled (refer Figure 2).

The World Economic Forum (WEF) in its' report titled "The Future Jobs" has identified ten skill sets that future employers will seek, namely:

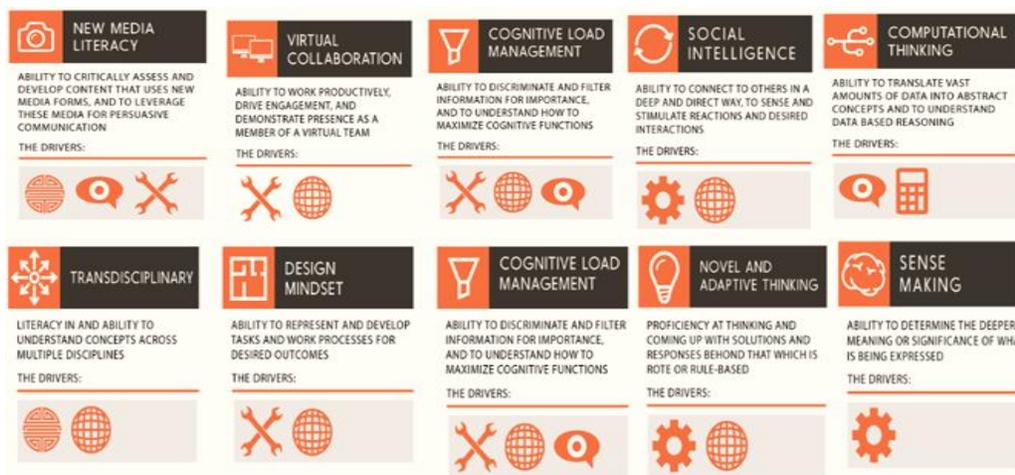
- Complex Problem Solving

- Critical Thinking
- Creativity
- People Management
- Co-coordinating with others
- Emotional Intelligence
- Judgement and Decision Making
- Service Orientation
- Negotiation
- Cognitive Flexibility

Most of the above skills are not subject specific but are skills that can be used across different business scenarios. Knowledge will keep changing because of technological advancements and future employees therefore will have to keep learning, unlearning and relearning in order to be successful.

Higher educational institutions and management schools in particular, therefore need to assess whether their existing models of operation will be successful in providing a platform for honing skill sets that match the requirements of industry as well as fulfil the aspirations of Generation “Z”, to whom the future belongs.

Figure 2: Skill Sets of the Future



Source: <http://www.top10onlinecolleges.org/work-skills-2020>

Traits of Generation “Z”:

Teenagers currently between the ages of 13 years to 19 years have been categorized as Gen “Z”. These youngsters would be the cohort looking at University and Management education and would be the future workforce. Research conducted amongst this generation has indicated that 22% of Gen Z aspires for an education that would help them prepare for future jobs, 38% wanted high growth in the early part of their careers and 32% looked forward to achieving their dreams within 10 years of entering the workforce (Source: Generation Z: Teens, Tech, and What the Future Holds, author Shelly Kramer).

The learning and reading habits of Gen Z are also very different from the earlier generations. Mobile phones and social media play a very important role in the lives of Gen Z. Attention spans are lower, interactions are virtual and multi-disciplinary approach to building careers is important.

This generation is interested in personalized and experiential learning, customizing pace of learning and has a heightened sense of the self.

Objective of this study:

1. To understand the existing practices followed by institutions in imparting management education in India.
2. To develop a conceptual model that will enhance learning and thereby address the requirements of skill-based education- honing creative skills and developing a learning mindset. This model will have to be tested in future research.

The Current Education Setup in India:

The current education system in India lays emphasis on rote learning and marks. Originality and creativity have no importance and in fact students are trained to conform to established norms. The Indian education system is not geared to imparting skill- based education and students who can memorize large quantities of information are rewarded.

The Indian education set up is performance oriented as against learning oriented. Performance is measured in terms of grades earned by the students and grades in turn are equated with intelligence. What is missing is a good balance between learning and performance. Learning needs to be given

importance and at the same time grades should be seen as a measure of current performance and not an indication of intelligence or worth of an individual. Intelligence is a trait that can be developed through education, hard work and taking on challenging tasks. Classrooms that give importance to performance, stifle student desire to learn and make students afraid of challenges. Mindset is very crucial when it comes to facing challenges. Academic success does not necessarily imply that an individual has the ability to tackle challenges.

The brick and mortar colleges and universities are unable to meet the demand for quality education as they are limited by lack of resources in terms of money, quality of educators, political interference and government policies. Technological infrastructure is lacking and this is a limiting factor as far as accessibility is concerned, in semi urban and rural regions of the country.

The education system has only been successful in creating a work force that is a low - quality service provider. A standardized curriculum and standardized mechanisms of classroom delivery fail to recognize differing learning requirements of the student population. Controls put in place by regulatory bodies in terms of syllabus to be followed, the methods of instruction and evaluation, stifle development of innovative courses and teaching methodologies. Reservation in educational institutions also have to a large extent led to migration of the best talent to universities abroad and has limited the access to educational institutions within the country.

Review of Literature:

Hennig Thureau et al., (2001) in their research have stated that students participate in a range of learning activities and do not receive educational services in a passive manner. Students therefore, can be said to co-produce their education. Mills and Morris (1986) go to the extent of proposing that because students actively participate in the process of gaining education, they can be considered as partial employees of the educational institutions.

Claycomb et al., (2001) discuss how the long- term nature of educational services require high student participation and socialization in order to promote active learning. Rodie and Kleine (2000) have discussed that the participation of students could be in three ways that is mental inputs, physical inputs and emotional inputs. The participation of students is said to be effective when the students' have clarity in terms of their roles, they are motivated and have a certain minimum level

of competence. These three aspects are positively related to student's participation in learning activities. When students believe that there is an intrinsic or extrinsic reward, they are motivated to participate actively in the learning process.

Neihoff et al., (2001) discuss how students form expectation with regard to how lecturers should behave in the classroom. These are with respect to what practices need to be followed and what the student obligations need to be in the context of class participation, preparation for class assignments and appropriateness of questions asked. The research has highlighted that students with different cultural backgrounds have different expectations pertaining to classroom practices like group activities and assignments, formal and informal levels of communication to be maintained, mandatory classroom attendance requirements and the freedom to question grade or to debate with faculty. The greater the clarity in these aspects' the better is the learning experience. Research by Cook and Leckey (1999) found that students at times have unrealistic expectations with regard to the amount of work they will be required to do, the size of their classrooms, the type of learning and studying they will come across. Many students are unwilling to take responsibility for their own learning. In this context, socialization – both at the formal and informal levels becomes very important in educational institutions. Govender (1998), state that socialization helps in creating a positive impact about the students' perception about academic quality and academic processes of the educational institute. It also helps in reducing student ambiguity related to their roles and what is expected of them.

Schleier (2011) has discussed the need to prepare students for jobs that do not exist presently for technologies to be invented in future and for unforeseen problems. This would compel management institutions to cater to the needs of digital communities.

Wahid Omar (2017) have emphasized the need to create an environment that would enable learners, academicians and practitioners to imagine, innovate and creatively develop and ecosystem to manage the risks and utilize the opportunities that would emerge as a result of Industry 4.0.

Parag Divan (2017) in his article titled "Is Education 4.0 an imperative for success of 4th Industrial Revolution?" has discussed the evolution of education by referring to the Framework of John Moravec as adapted by Arthur M Harkins. The author has explained how the future of learning

and teaching will change from one where the learner conforms to a set system to one where the systems conform to learner requirements.

Rodney M Schmaltz, Eric Janson et al., (2017) in their report “Redefining Critical Thinking: Teaching Students to Think like Scientists” have discussed the need to encourage students to think like scientists to enable them to distinguish between good information and bad information. They argue that in an era where individuals have access to infinite information, it is important to be able understand what is misinformation or a questionable scientific claim. It is argued that an important role of education is to provide students with tools that would make them informed consumers of information.

Dörner and Funke, (2017) state that complex problem solving is a multidimensional process requiring high level of abstraction. In the business school set up this would imply adopting a cross curricular approach coupled with a range of assessment instruments. Uncertainty can be eliminated through thinking and the problem-solving process and requires cognitive and emotional aptitude, beyond merely acquiring knowledge and application of knowledge. High levels of motivation are required to develop the complex problem-solving capability.

Shahroom and Hussin, (2018) have stated that in the past, information was limited and manageable. Information could be equated with knowledge and individuals could use information to gain competitive advantage. However, in recent time, the volume of information that is available has increased phenomenally and managing such information is extremely difficult. Vast data available to Gen Z students who have advanced intelligence and digital capability leads to numerous challenges for instructors. Mixed instructional methods like MOOCs, flipped classroom are needed to sustain learning in such an environment.

Ahmadi and Besançon, (2017) have suggested that honing creative skills in students can lead to the development of other important skills like critical thinking, communication and collaboration. It is argued that encouraging students to be creative increases the chances of new discoveries and economic growth in future, because it encourages curiosity, openness and communication.

Callahan and Missett, (2011) have identified certain creative traits. They have stated that individuals who have an appetite for risk, who do not want to conform to norms, are attracted to

novelty, desire independence and show greater perseverance in the face of ambiguous situations and obstacles, tend to show creative potential. Amabile (1997) have stated that individuals with intrinsic motivation tend to be creative, while those with extrinsic motivation tend to be conformists. Davis et.al (2014) state that a conducive environment is required for creativity to flourish. Flexible use of space and time, respectful relation between learners and teachers, working outside classroom setting help in developing creative skills.

Methodology:

This research is based on the systematic analysis of the existing literature and is descriptive in nature. The universe of the study relies on the evolution of Education 4.0 and its relevance in this VUCA world. The scope was focused to improve the Indian Education system by improving the quality of education by implementing the MBA 4.0 curriculum in MBA institutions in India. The beneficiaries are the students and other stake holders involved in the successful execution, adoption and practices. Mostly the data was collected from official reports, online resources & syndicated data and is purposive in nature. The analysis of data is mostly qualitative in nature and reliant on the researcher's logical presentation of facts in tabular format.

The formulation of a conceptual model was based on the qualitative analysis and is aligned to a simple procedure of implementation and acceptance.

Qualitative Analysis and Interpretation:

Table 1: The Evolution of Education: 1.0 to 4.0

Meaning is	
"Download" Education 1.0	Dictated
"Open Access" Education 2.0	Socially constructed, usually with aid of Internet access
Knowledge Producing Education 3.0	Socially constructed and contextually reinvented knowledge
Innovation Producing Education 4.0	Built through selective individual and team-driven focused innovations practices
Technology is	
"Download" Education 1.0	Confiscated at the classroom door (digital refugees)
"Open Access" Education 2.0	Cautiously adopted open access (digital immigrants)
Knowledge Producing Education 3.0	Everywhere (digital natives in a digital universe) for ubiquitous knowledge construction and transmission
Innovation Producing Education 4.0	Always changing with the direct input of learners acting as a major source of tech evolution in the service of innovation production
Teaching is done....	
"Download" Education 1.0	Teacher to student
"Open Access" Education 2.0	Teacher to student and student to student (progressivism); Internet resources are a normal part of learning activities
Knowledge Producing Education 3.0	Teacher to student, student to student, student to teacher, people-technology-people (co-construction of knowledge)
Innovation Producing Education 4.0	Amplified by positive innovation feedback loops; ubiquitously and creatively 24/7 in all phases of living, learning, and working;
Schools are located in.....	
"Download" Education 1.0	In a building (brick)
"Open Access" Education 2.0	In a building or online (brick and click), but increasingly on the Web through hybrid and full internet courses
Knowledge Producing Education 3.0	Everywhere in the "creative society" (thoroughly infused into society: cafes, bowling alleys, bars,
Innovation Producing Education 4.0	In the globally networked human body, a continuously evolving instrument innovatively supplementing

Source: Framework of John Moravec as adapted by Arthur M Harkins. Parag Diwan (2017), Is Education 4.0 an imperative for success of 4th Industrial Revolution?

Reimagining Education for Future Needs: The Proposed Conceptual Model

Keeping pace with the challenging time, educational institutions will also have to reinvent their frameworks in terms of curriculum and pedagogy, to develop individuals who are intellectually, emotionally and physically balanced.

The modern economies would focus on creativity for wealth creation. This would be possible only when people collaborate. Social Skills therefore will be a necessary requirement to succeed at jobs in the years to come. Adaptability, Flexibility and ability to handle stress will be key criteria in defining high performing individuals.

Experts have recommended that for the learning framework to be aligned to the requirements of Gen Z, business schools can adopt the 5 I's approach:

1. Imbibe- Students need to develop the ability to acquire information from multiple sources. As students are easily distracted, audio and video sources of information need to be used. The information once obtained also needs to be internalized.
2. Iterative Learning is all about reinforcing fundamental concepts repeatedly through games, simulations and fun assignments.
3. Develop Interpretation Skills- by providing opportunities to learn by doing in the form of project work, internships and on the job training. These can form an important part the assessment mechanism.
4. Make learning Interesting, to inculcate a sense of ownership of the process amongst students
5. Innovation to be encouraged- the focus needs to shift from rote learning to creativity and rigor. Students need to be encouraged to handle open ended questions.

Liberal Studies are non - existent in technical and management educational institutions today. The necessity of Literature, Performing and Visual Arts, Design, Psychology etc. in developing holistic individual cannot be ignored. Forward looking Schools must look at introducing these courses at different stages of their curriculum.

“Rapid economic and social changes will compel educational institutions to prepare students for jobs that have not yet been created, technologies that have not yet been invented and problems we

don't know yet will arrive" Schleier (2011). Knowledge Management will therefore become critical. Management graduates will have to learn to apply concepts to enhance performance of systems and processes. An educational revamp to enable sustained learning in the form of flipped classrooms, MOOCS and Chatroom may be the order of the day. These methods will not only enable personalized and peer learning but will also enable development of problem solving and decision making skills and critical thinking ability. As youngsters transform from being *digital immigrants** to *digital natives*** innovation in delivery of education will become imperative.

The testing and marking systems have to be reoriented towards recognizing originality, problems solving, innovation and original research. The "assembly line" approach followed by educational institutions where the belief is that of "one size fits all" will need to change. The current teaching pedagogy is a top down methodology with the instructor sharing insight and students being passive listeners. Treating the student community as co-creators of knowledge will be the first step towards fostering a culture of change.

*Digital Immigrants- An individual who is born before the emergence of digital technology and therefore has had to adopt to digital technology to some extent, in life.

** Digital Natives- Those born during and after the advent of digital technology and who have greater comfort level using this technology, since they have greater exposure to these technologies from an early age.

Students as Co- Creators of Knowledge:

Students, through their participation in many learning activities can be considered as co - producers of knowledge. Greater participation of students in the learning process facilitates active learning. Business Schools provide many services to students like canteen, recreational facilities, accommodation, transportation, library services, career counselling and placement services, computer facilities, health center and administrative services, in addition to the core activity of teaching. All these, at a formal and informal level aid socialization amongst students. Socialization in turn influences the clarity students get with regards to their roles and responsibilities, affects their motivation and helps in enhancing their academic abilities. Clarity of role, competence and motivation influences student willingness to participate in the learning process and contribute to the body of existing knowledge (Table1). If students are appropriately rewarded for their constructive participation and co creation of knowledge, the rewards help increase student motivation further and even encourages a larger cohort to participate the engagement process. Student participation in the learning process can be categorized into 6 levels. Level 1 has least level of engagement with students passively attending classes. In the level 2 stage students take notes and complete assignments on time. At stage 3 student interaction in the classroom is in the form of asking questions and participating in class discussions. Students at the 4th stage, in addition to all of the above, do pre reading and are prepared for the sessions in advance. Level 5 and level 6 represents the highest form of student participation wherein students conduct a few sessions by making presentations to the class and are actively involved in writing research papers (*Fritschner, L.M., "Inside the Undergraduate College Classroom: Faculty and Students Differ on the Meaning of Student Participation," The Journal of Higher Education, 2000, 71(3), p. 342-362*). Student participation and co creation can be a result of out of classroom activities or inside the classroom activities, requiring emotional, mental and physical input from the students. The activities could be individual contribution or group activities.

When students are considered as important stakeholders in a business school, actively participating and contributing to enhancing knowledge, the educational institution could benefit in terms of improved perception about quality of teaching amongst student community, affective commitment*** of students towards the institution and overall satisfaction of students with the

educational institution. This would result in developing loyalty and a sense of belonging towards the alma-mater, leading to tangible and intangible benefits for the academic institution.

***Affective commitment can be defined as a positive emotional attachment to the educational institution. Students who are affectively committed to the educational institution will be able to identify with the goals of the educational institution and would want to be a part the institution even after graduation in some form or the other.

Conceptual Model:

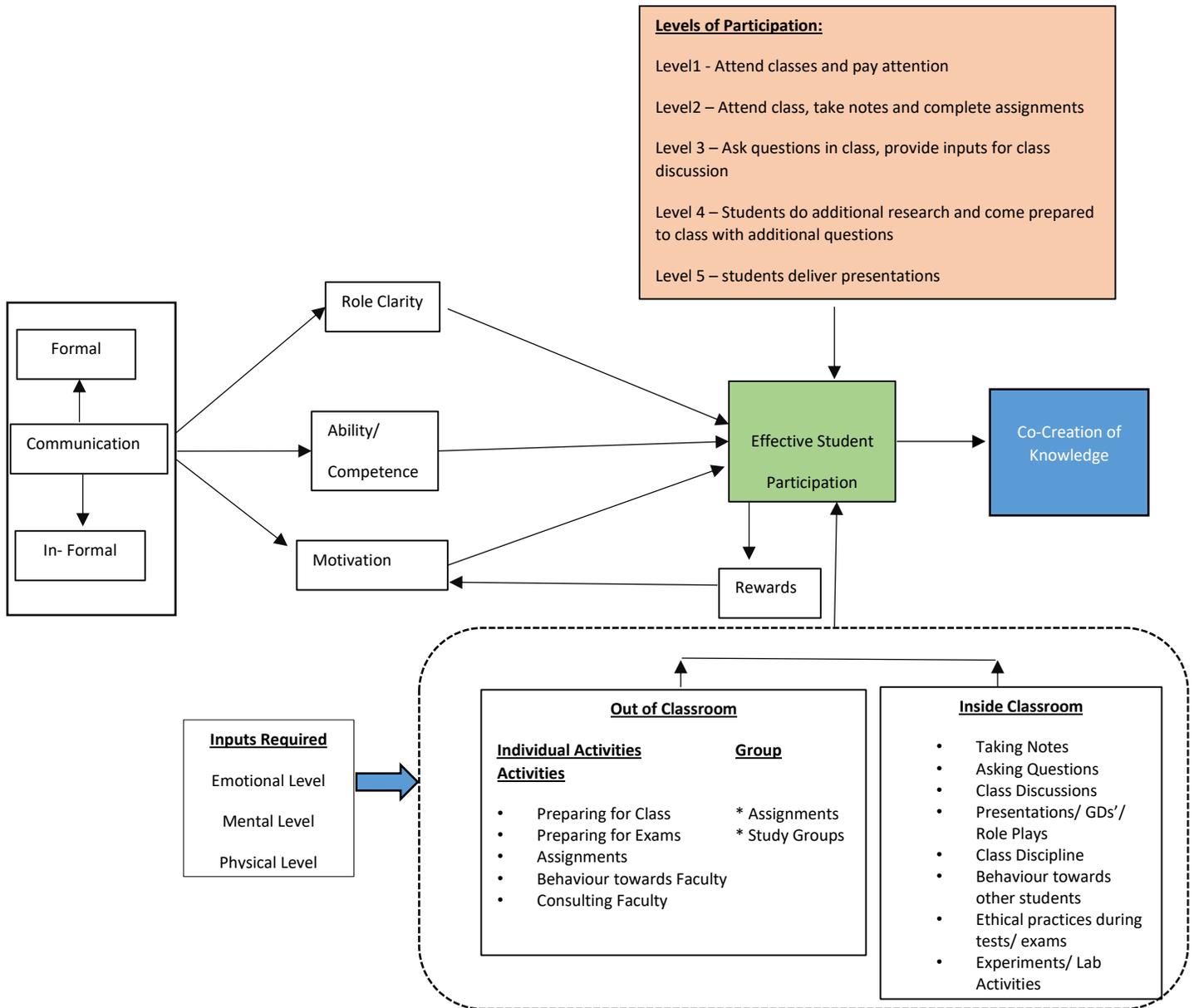


Figure 3: Proposed Model of Effective student participation and Co- Creation of Knowledge

Source: Model prepared by drawing inputs from-1. Models of antecedents and consequences of customer socialization and participation in service setting from the paper titled- students as “co-producers” of education: a proposed model of student socialization and participation at tertiary institutions. 2. Fritschner, L.M., “Inside the Undergraduate College Classroom: Faculty and Students Differ on the Meaning of Student Participation

Discussion:

The competency gap between what skill sets industry requires and those that management students' processes has been widening. This is primarily because the methods of imparting education adopted by management institutions have not evolved and kept pace with the rapidly changing work environment. The importance of flipped classroom, blended learning and integrating MOOCs into the course curriculum is only being realized in the present time, by educational institutions in India.

For effective learning, students need to play an important role of contributing to the body of knowledge and even creating new knowledge in a collaborative manner. The management school environment needs to be made conducive for student participation in the learning process. An environment that facilitates formal and informal communication helps in effectively engaging the student community. Integration of outside classroom and inside classroom activities helps take care of students' physical, mental and emotional needs. Regular and timely rewards for work well done helps increase student motivation and commitment to the learning process.

The conceptual model proposed in this study considers all these direct and indirect aspects that could facilitate greater student participation in the learning process. It is proposed that when student participation is ensured on a sustained and continuous basis it can lead to an environment where students can play the role of co-creators of knowledge.

The model proposed is conceptual and needs to be tested and refined further. The impact of demographic factors like gender and work experience on co creation of knowledge have not been considered and future studies could be extended to cover these aspects. The underlying assumption made is that effective student participation and co-creation of knowledge will to a large extent address the skill gap that challenges the workforce today. Remodeling the management education practices will go a long way in developing a workforce that can adapt, reinvent and be on a path of continuous learning.

Conclusion:

The problem that plagues many business schools in India is the fact that most of these academic institutions view their students as customers and not as stakeholders who have an important role to play in the process of learning, sharing and creation of knowledge. These institutions have failed to understand the importance of adapting to the dynamically changing environment and needs of the new generation work force that they aim to make industry ready. It is important to understand that the new generation will learn by experiencing and not by merely attending lectures, rote learning and writing examinations to earn grades. It is important that students are provided platforms to discuss what they are learning, relate these learnings to the experiences that they have had as also to their daily lives. Internalizing the learnings is the key to effective knowledge building, innovations and future specializations.

As traditional jobs lose relevance and new industries throw open new opportunities, the future workforce will need skills to multi task, upgrade and collaborate. Those who take initiative, responsibility and are able to adapt are likely to succeed.

Institutions imparting higher education will be under pressure to keep pace with the requirements of digital community of students. These institutions must therefore revisit their traditional models of imparting education. Challenging the status quo and fostering an environment of continuous learning will be needed to achieve the transformation required by Industry 4.0. Those who are willing to adapt to the new realities quickly and with an open mind will be better placed to survive and grow.

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