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Industry 4.0 – An Educational Perspective

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Abstract:

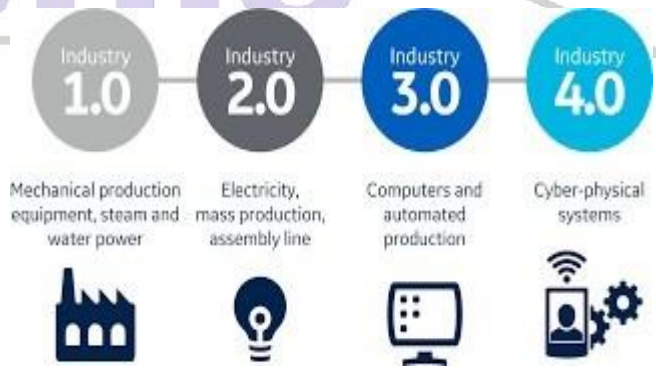
Industry 4.0 is focused on digital transformation of physical system. It allows better collaboration and access across departments, partners, vendors and product and people. Industry 4.0 empowers business owners to better control & understands aspects of their operations, allows them to utilize digital data to increase productivity and improve process. To achieve this goal industry requires skilled staff and this is the right entry point for education sector. It is high time when universities and institutions reform their education structure and create new horizons for student with the help of industry to create concordance between people, process and technology.

Keywords: *Industry 4.0, Smart Campus, Technology Aptitude Test, Artificial Intelligence, Machine Learning, Deep Learning, OBE*

Introduction

According to survey conducted by i-Scoop [1], Industry 4.0 is the digital transformation of manufacturing/ production and related industries and value creation processes.

Industry 1.0 to 4.0



History of Industry 4.0

In 2006, the German Government presented its "High-Tech Strategy" at Hannover Messe. Industry 4.0 was first mentioned in a clear relationship with the advent of a fourth industrial revolution, driven by the Internet and the Internet of Things (IoT).

In 2011, Dr. Kagermann, Dr. Wolfgang Washlster of the German Research Center for AI (DFKI) and Dr. Wolf-Dieter Lukas from the Federal Ministry of Research &Education presented the results of the work of the advisory group across various domains, including Industry 4.0.

Industry 4.0:

According to IBM, Synonymous with SmartManufacturing, Industry 4.0 is the realization of the digital transformation of the field, delivering real-time decision making, enhanced productivity, flexibility and agility.

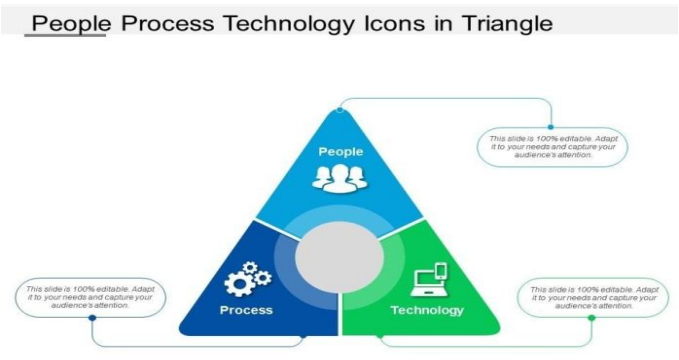
Industry 4.0 is revolutionizing the way companies manufacturer, improve and distribute their products. Manufacturers are integrating new technologies, including IoT, IIoT, cloud computing & analytics and Artificial Intelligence (AI) and Machine Learning (ML) into their production and throughout their operations.

These smart factories equipped with advanced sensors, embedded software androbotics that collect and analyze data and allow for better decision making.

Smart Campus:

At every step of technological evolution, the industry has passed through change in its generation which we now classify as Industry 1.0 to 4.0. However there were two common things at each of these transitions of generations. First, learning curve of people, i.e. human resource to industry and second, tuning of processes to adopt latest technology.

While industrial processes are being evolvedto adopt latest technological trends, the people shall be trained as per latest processes to create skilled work force.Considering the recent demand of skilled people, the time has come where these training timeframes shall be overlapping with educational timeframes to adopt paceof technological evolution. This paper concentrates on how these overlaps can be managed through proposed mechanism to develop synergy between demand of skills by industry and supply of skills by educationsystem.

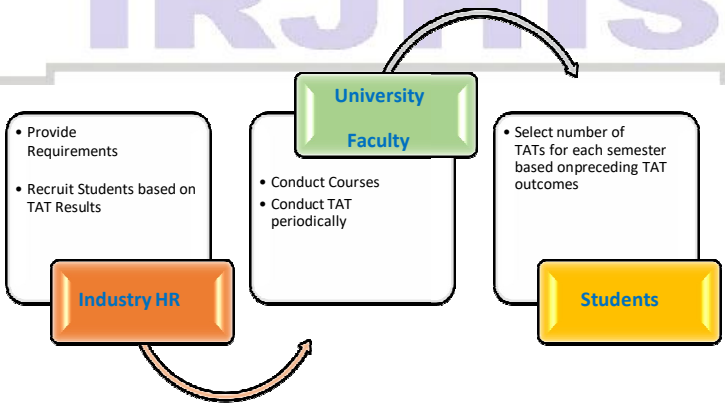


At this point the concept of Smart Campus isto be implemented and fostered by institutional organizations to develop smart habits [2] to support smart infrastructure [2] such as Smart Cities and Smart Industry.

Industrial organizations shall be effectively engaged with institutional organizations by means of their contribution to education program/curriculum set by universities and educational institutions to *update* skill level and expertise of students to match industry requirements. Universities and educational institutions along with industrial input/requirements need to reshape their teaching and learning model to cover latest trends and evaluate students' aptitude in latest technological trends.

TAT Mechanism:

This paper proposes a Technological Aptitude Test (TAT) mechanism to engage industrial organizations effectively with the institutional organization. As Industry needs fresh talent to cope with Industry 4.0, they The above settings will bring direction and conical approach to the way students grasp and think about the technology and also they can help universities to develop will try and understand the interfaces Technological Aptitude Tests for various between various technologies. industrial sectors based on their revised processes and skill requirements. Every industrial setup has Human Resource Such TATs shall be reviewed continually by HR representatives and Institution faculty members to keep it latest and complying to (HR) function handled by HR Skill requirement register for department. The given industry requirements. enterprise is tracked by HR function for The TAT outcomes will help industry HR recruitment as per their business targets. Such HR representatives from every industry can pass on general aptitude requirements to the target institutions to cell to identify the talent readily suitable for their business functions and help shortening the learning curves of fresh hires. develop required technological aptitude in This should be ongoing p ocess as we are students. Moving towards digital world where ***Artificial Intelligence***, ***Machine Learning*** the general aptitude requirements receivedfrom industry shall further be processed by and ***DeepLearning*** necessities.



Canclusion:

Such type of educational model will help industry to shorten the learning curves of students after hiring. Skilled and upgraded resources will help industry to reduce time and cost of training and improve synergies. On the other hand, universities will be upgrading themselves as per changing skill levels of industrial organizations. Effective implementation of this mechanism will help universities to attract more and more students and creating employable talent for required work force. From student's point of view, they get updated skill set to learn which help to upgrade themselves and perform in digital world with ease. This will prove as new approach of growing with Industry 4.0. This model is ongoingprocess will last till industry revolutions.

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