

Educational institutions globally are facing major challenges, a function of tectonic shifts in the techno-socio-economic landscape and the digital revolution occurring in Industry 4.0, ushering in the shift from an industrial to a knowledge economy. **Atish Chattopadhyay** explains what might be in store

Curriculum 4.0 for Industry 4.0



IFIM Business School, Bangalore, India, in association with National Human Resources Development Network (NHRDN) undertook an exhaustive initiative in 2018 to reach out to 292 industry executives to identify the skills required for Industry 4.0. They organised three round-table discussions in Bengaluru, Mumbai and Delhi in India. Participants included 43 senior executives and 18 chief executive officers.

The study identified the following needs for Industry 4.0

1. Learning orientation and analytical mindset
2. Integration of data, communication and technology
3. Solution orientation and problem solving
4. Dealing with change and uncertainty (unstructured situation)
5. People and team orientation
6. Innovation and creativity – entrepreneurial orientation
7. Social sensitivity and cross-cultural orientation
8. Managing self (self-awareness, self-development including wellness)
9. Business orientation – multidisciplinary approach
10. Globalisation

The findings showed that future professionals will be “T-shaped”, combining both a liberal mind-set covering a wide breadth of knowledge across disciplines and in-depth knowledge in a specialised area.

The research also revealed a need for re-skilling at various levels, the emergence of a multi-generation workforce, wellness as an important element of self-management, and solutioning or problem solving as the critical skill set required for Industry 4.0.

The study pointed out that technological disruptions may result in professionals finding themselves becoming “irrelevant”. Hence, “learning to learn” or learning orientation will be key for future professionals to remain relevant.

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This skill set can be achieved only when institutions make major initiatives in education that will prepare students for the “future of work”. This will entail educational institutions investing in education that prepares graduates to embrace change and be life-long learners. Institutions will require a rebooting of their curricula pedagogy of teaching/learning and faculty.

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Holistic development: a multi-disciplinary orientation

The curriculum must facilitate the “holistic development” of students. As the “100-year life” becomes a reality, most of that life is anticipated to be spent working. Students will need to be exposed to multiple disciplines across functions and areas. Institutions may consider exposing students to multiple disciplines across humanities, performing arts, design, languages, and science, including natural sciences.

This exposure will enable a student to discover his or her potential and possible choice of profession. A holistically developed graduate is expected to be prepared to embrace change with an ability to respond effectively to changing career options at different stages of life.

Technology integration

As data becomes the “new oil”, the pressing need will be the integration of technology across courses and platforms. Today, AI and Big Data are being used across diverse professions ranging from medical science and healthcare to sports and entertainment. Universities will need to develop in their graduates an appreciation of technology integration with their areas of professional expertise.

Social responsibility

In a developing country such as India, institutions will need to inculcate in their students social responsibility and sensitivity to the issues of distributive justice. No professional will be able to function in the future, without an understanding of the impact of their actions on the environment and society.

Interventions, which expose students to the issues of social reality including the SDGs (UN Sustainable Development Goals) will be a requirement in planning the curriculum for the future.

Managing “self” including “wellness”

The essence of “leadership development” lies in “self-management” and “self-development”. The findings of the IFIM-NHRDN survey clearly indicated “wellness” and “fitness” as integral elements of managing ones-self. As institutions prepare their graduates for the “future of work”, there will be an urgent need to integrate “wellness” and “fitness” as part of the required curriculum. In India, IFIM Business School is the first institution to have a credited course, “Personality Enhancement Program” involving “lifestyle” and “life-skills”.

Dealing with uncertainty, problem solving and solutioning: integration of research

The study identified uncertainty, problem-solving and solutioning as important skills for management graduates. Employers worry that while teaching students using conventional classroom-based courses does help professionals prepare for the future, students are most often trained to address structured problems with very little ambiguity or missing data. This approach does not adequately prepare students to solve unstructured problems.

Business schools globally are trying to find ways to impart problem-solving skills and many believe that real-time research experience can provide students with an edge.

Internationally, many schools, particularly the top ones, require students to carry out their own piece of research as part of their course – either on a business problem they have brought with them or on a live problem posed by a company. Sometimes students even get a chance to get involved in longer-term research projects that the school is carrying out.

“Learning by Solving”, a unique pedagogy introduced by IFIM Business School, is a step in this direction. Students work in teams to solve problems provided by industry partners.





Innovation and creativity – entrepreneurial orientation

Many forward-looking schools have considered introducing courses in the areas of Design Thinking and Innovation as required courses. Students work either on their own business ideas or on innovation projects supported by industry.

For example, at IFIM Business School student groups present their innovations in an exhibition supported by industry sponsors.

Pedagogy

As solutioning and problem solving assume more significance, institutions will need to develop a close interface with “practice” (industry, governments and social organisations) to take up real-life problems for students and faculty to work on. This will be the fourth change (with faculty, students and practitioners) to develop an association of mutual interdependence to remain relevant, creating a virtuous cycle of value creation.

In the years ahead, most of the repetitive tasks and easily deciphered problems will be handled by machines. Human beings will be more involved in decision making and imagining future possibilities. Our pedagogy of teaching learning will need to move away from information dissemination to imagining the future.

A typical in-class case discussion will no more be about “what happened?” but will be about “what can happen?”. This will imply a change both in content and in delivery. Institutions will need to travel that extra mile to re-ignite the imaginative ability of its students. Such an approach to learning can facilitate self-learning and make students learn “how to learn”.

With the availability of technology to facilitate remote learning, both synchronised and asynchronous, the “pedagogic mix” going forward will evolve into a combination of in-campus, online and on-site.

Faculty – as coach and mentor:

As the curriculum for Industry 4.0 undergoes a metamorphosis, the pedagogy of teaching/learning will also undergo a makeover. With most of the content being available online, the role of faculty will shift from the traditional task of lecturing to more one of coaching and mentoring. This shift will aid the process of “self-discovery” and “self-learning” among students.



Faculty will be required to have a probing mindset to foster an ability of imagination among the students. Classroom experience will undergo a shift from students being mere passive listeners in the class to becoming active co-producers of new insights.

This highlights the rising importance of group work, simulations, games, role plays, industry interactions, industry-relevant problem solving as compared to earlier roles. Faculty will be playing the role of an athletics coach providing individualised guidance and mentoring to each student. The shift will be from “one-to-many” to “one-to-one” facilitated by data and technology platforms.

Practice orientation:

In today's ever-evolving world, there is a need to develop an active interface between academia and practice to create the virtuous cycle of value creation involving all the three stakeholders: namely, students, faculty, and practice.

Implementation of curriculum 4.0 will depend on the active participation of all the stakeholders. The careful and thoughtful intervention of practitioners at important junctures in the curriculum is much needed to achieve a fit between their needs and skills imparted.

At the same time, proactive engagement and networking of faculty and students with practice expands the boundaries of the classroom settings beyond the premises of the institutions, thus achieving synergy across the three stakeholders.

However, this is easier said than done. Tomorrow's successful institutions will be those who can facilitate the process of “discovery”, who can inculcate in its graduates, responsibility towards self, environment and society, who can combine the apparent contradictions of “professional” skills with a “multi-disciplinary foundation”

Peter Drucker had said that “management is a liberal art”; in today's context, this statement has become more relevant than ever before and is applicable across professions.

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Postscript

The COVID-19 crisis, particularly the way it has unfolded has put to the test each of the skills identified by the IFIM-NHRDN study, cutting across boundaries, across industries and institutions. The winners will be those who can deal with this uncertainty -- learning quickly, leveraging technology, working in teams and innovated in finding feasible solutions to ensure business continuity.

IFIM Business School was quick to embrace the “new normal” and to run its functioning as per schedule – teaching-learning, assessments and meetings.

Teaching: We used an interactive video learning solution (Impartus) to enable synchronised interactive delivery of courses by the faculty to the students at home. The learning management system (Moodle) allowed the students to access course outlines, reading material, class presentation, recorded lectures, and the digital library.

Assessments: Online assessment solutions (Mercer Mettl) allowed students to appear for exams from home with AI proctoring combined with live proctoring and a chat facility with human invigilators. The platform also allowed online test creation and evaluation reports for the benefit of the faculty.

Meetings: We used Teams as the hub for teamwork, where all stakeholders – students, faculty, staff and industry partners could actively connect and collaborate in real time to get things done. We could have a conversation right where the work is happening, whether co-authoring a document, holding a meeting, or working together on projects.

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