The importance of intellectual property (IP) in the modern world goes far beyond the protection of the creations of the mind. IP is a powerful tool of economic growth by stimulating creativity and innovation, generating revenue, promoting investment, enhancing culture, preventing 'brain-drain', and nurturing over-all economic health. It affects virtually all aspects of economic and cultural life. It has become an important component of business transactions. The developments in international telecommunications have increased its importance and put new challenges to the protection of intellectual property.

Since the coming into force of the WTO Agreement and the conclusion of the Trade-Related Intellectual Property Rights (TRIPS) Agreement, the role of intellectual property in international trade has increased significantly and with this the demand for IPR professionals is also increasing. The entry into force of the TRIPS has led to the revision and/or adoption of new legislations in many countries, particularly in developing countries and countries in transition. Prior to TRIPS, there already existed a number of intellectual property conventions, which have laid down the broad principles on the IPRs. Under these conventions, it is left to the member-states to enact the legislations based on those broad principles. These conventions allow members wide discretion to give effect to their convention obligations under their national laws. But with the conclusion of TRIPS and its becoming part of WTO/TRIPS, a prescriptive regime of the WTO/GATT has come into force. Uniform standards on protection and enforcement of intellectual property rights have been laid down, with a precise dispute settlement mechanism, which are to be effected by the members.

Along with the TRIPS dispensation, the need has been created for a well qualified legal professionals, consisting of law officers in the various government ministries (viz., commerce, trade, information technology, human resource development etc.), judges and legal practitioners who should be able to understand the importance of intellectual property and the challenges presented by the new technologies and technological means of communication of information and ideas and their impact on industry and commerce and on the quality of life. It means that there will be increasing demand of trained man power in IPRs to cater the needs of business and industry which will be faced with the challenges of globalization. It also means that the range of students that would benefit from intellectual property education has been broadened. It includes the students of business, law, engineering, journalism, sciences, fine arts etc.

This invariably draws the attention to the training institutes and the universities where these professionals are to be trained. The starting of intellectual property education at the university level is of increasing relevance in educational programs. But the pertinent

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question in this context is whether the universities are well equipped to meet the growing needs of intellectual professionals, particularly in India? If not, what measures should be taken to satisfy the need of the industry and business so that the country can play a meaningful role in an increasingly inter-dependent world?

The answer to the former question cannot be in affirmative at present. There is an overall scarcity of resources to produce well-qualified professionals in adequate number to cater the needs arisen out of the new dispensation of the WTO/TRIPS. There is a shortage of well qualified teachers, study material and the non-availability of modern tools of education, which are necessary to create a band of professionals to meet these challenges.

Types of IP Programs

In the emerging scenario, the range of students that would benefit from the intellectual property education is very wide, which includes students from different disciplines. Keeping in view the needs of different disciplines, well-crafted IP courses required to be devised, out of which, some of them are more relevant than others for the professionals, viz., law, business and engineering programs. Even in science courses, some knowledge of IP will help in creating the scientific temper for innovation and innovative activities and how to reap the benefits of one’s own creation among the students.

In law, a course on intellectual property as a part of basic law degree will make the students familiar with rights protected under intellectual property law. It will help in preparing the practitioners/professionals, who will be well-versed with the intricacies of the rights and can help their clients with the requisite knowledge to protect their rights in the ever-increasing global competitive market. More specialized post-graduate programs will help in providing a more comprehensive specialized knowledge of the theory and practice of intellectual property law. Such programs, with detailed and comprehensive information, are intended to supplement the often-fragmentary knowledge that a practitioner acquires in his practice, by covering all the issues that are of importance to the protection of intellectual property. Specialized courses, of shorter-duration, are necessary not only for pursuing the profession but they are necessary for training the prospective law teachers and the researchers in intellectual property. The courses are required to enhance the skills of the law professionals, which need not necessarily be leading to any degree. Certain courses may be devised for IP practitioners in the acquisition and enforcement of intellectual property rights. However, these courses are primarily designed for specialists and practitioners whose daily work consists of the acquisition and protection of IPRs. Experienced practitioners and experts in the field may be drawn to run these courses, as they have good knowledge of the actual techniques of prosecution, filling of applications for IPRs and litigation to enforce those rights.

In business programs, a “survey course” on IPRs, giving an overview of the basics of intellectual property is necessary. It is important for students who hope to go into business or government to get a basic understanding of the role IP plays in the modern concepts of economics and trade and IP laws’ significance in furthering business
interests. A course for business students should emphasize on IP relating to business, i.e., trademarks and goodwill, confidential information and trade secrets, unlawful competition and maintenance of competition, passing-off, public disclosure problems, procedural aspects of patents such as patent searches, patent filing etc. In other words, IP management needs to be focused, involving drafting and negotiation of transfer of technology agreements, licensing of intellectual property and technology, kinds of transfer of technology agreements. Restrictive clauses in these agreements is another area of importance. But these courses should not heavy on “prosecution” part (filing and examination of IP applications) and “litigation” part, which are of primary concern and interest of law practitioners.

The engineering programs equally require an overview of the basics of intellectual property. Students must be introduced to legal aspects to protect their inventions, designs and importance of the know-how, copyright, trademark etc. if they are exploiting their invention. Particular emphasis should be placed on interpretation of claims in assessing infringement and the procedure in obtaining patents, preparation of documents, law relating to trade secrets, the rights of “employed” inventors and academic inventors working under government or industrial grants, ownership issue, utility model etc. Particular importance to them are the technical aspects of IP rights. Hence, the emphasis has to be more on patents, industrial designs and IC circuit layout protection.

Valuation of IP is now an important issue for business and industry. The law student must be told about its relevance in the transfer, assignment and sale of technology or of patents as they will be involved in drafting the agreement. With the growing importance of knowledge-based industry and with that of IPRs, it is necessary that this aspect must be included in the syllabus. This aspect requires a full economic analysis, but few teachers are fully equipped to deal with such an issue. There is, also a need for accurate teaching materials on this issues, which again requires qualified teachers to provide necessary inputs under different programs. Since the need to educate different sectors is urgent and as there is a minuscule qualified man-power, it is essential to introduce short-term courses as a part of continuing education of those who are already gainfully employed or in the profession. Beside running the courses in a class-room teaching, courses need to be constructed and offered through electronic medium as a part of distant learning on the line of WIPO Academy. This requires, of course, a well built infrastructure.

Curriculum Development

As it is evident, there cannot be a common course for students of different disciplines, as their needs differ, though of course an inter-disciplinary approach is very much needed. It is important to note that the non-law students must be taught the basic elements of IP since all students are the users, and possibly the future owners of IP protected products. They are usually unaware of how frequently they infringe others rights through plagiarism and pirating or counterfeiting. While they must be vigilant about their own rights, they should not step-over others’ rights. It is also necessary to keep the litigation at bay.
The law students should similarly be introduced to certain technical and scientific concepts. They need to understand how the legal and scientific and technical approaches contribute to and work together in the area on intellectual property rights, and especially in relation to patents. Intellectual property rights are, by their very nature, exclusive rights. This means that they necessarily interact or conflict with the concept of free competition in the market. For this, the law students need to be introduced to the social and economic background to IPRs and their economic justification.

The students should be trained to think interdisciplinary and to see the impact of law on technology and business. The reason for this is that many law graduates end-up as company attorneys or as managing directors or legal advisors or lawyers to an industry. They should be trained how to use the IP laws strategically in order to gain benefits for their companies or industry. Thus, from a very practical point of view, on patents students need to know:

- the relevance of searches in the patent office libraries, in various databases and on the Internet, which should precede all developments and marketing efforts, otherwise their invention will be a waste of resources,
- the relevance of searches to monitor the development trends in a particular field of technology or to find out their prospective or existing competitors or potential licensees of their patents,
- the importance of IPR strategies to secure exclusive rights to new technology, which can be used as a preventive measure to avoid conflicts and potential litigation,
- necessity of strategies in motivating employees and keeping them enthusiastic about the development of the enterprise, and
- greater contact in "borderless world", i.e. skills and higher level capabilities for managing complexity and more skillful methods of resolving disputes.

In curriculum development, modeled to the needs of business and industry, the main objectives should be as follows:

(i) Assertion of right - course should be so structured that the students acquire knowledge of IPR enough to protect the interest of their establishment. If an industry keeps an in-house lawyer, he/she should be well-equipped with the intricacies of the IP law, i.e., nature and extent of IPRs, the mechanism and procedure of protecting and litigating the right.

(ii) Non-disclosure - student should be trained how and why he should not abandon his right, i.e., an exposure to law related to trade-secrets, undisclosed information, employer-employee relationship.

(iii) How to exploit the right - either industrially (of a patent) or through licensing. It means licensing laws need to be made part of the curriculum; negotiation of licensing agreement - what aspects must be kept in mind.
(iv) Litigation – how to keep it at the minimum, the chances of infringement, defenses and remedies. They must be told not to resort to piracy or step-over the rights of others while protecting their own.

Above all, they must be told about the economic significance of IPRs in general and for business and industry in particular.

There are three main aspects of intellectual property practice: (1) the nature and extent of rights that are available to protect intellectual property; (2) the process of obtaining and registering intellectual property rights (i.e. the procedure of filing and examination of an application); (3) the process of protecting and enforcing intellectual property rights once acquired, i.e., through “litigation”, and by other, more conciliatory means. Although skills can be developed on these aspects, for managing complexity and more skillful methods for resolving disputes, higher level capabilities must be developed. These new skills must be reflected in legal education, for example, on conflict of laws, on-line dispute resolution and on the IP aspects of global information networks.

Whereas the law students are required to be educated on all these aspects, for business and engineering students, the educational programs on IP need to focus more on the first aspect with additional emphasis on subjects outlined above and which are more relevant to them.

In India, so far, very little has been done on course development. Whatever has been done so far is primarily for law students. In the past, there was no demand for courses on IP in the law schools. With the conclusion of the TRIPS Agreement, however, the significance of intellectual property courses in the law schools has been realized and all-out efforts have started to introduce intellectual property as a subject for the basic law degree and specialized courses at the post-graduate level.

In the last few years while the number of universities and institutions at which intellectual property law is taught has increased dramatically, the fact remains that intellectual property law has not been introduced as a full fledged course in the curriculum. In India, the Delhi University is the only university, where intellectual property law has been taught as a part of its graduate degree (LL.B.) since 1968 as a survey course, titled as “Trademark and Copyright law”, which practically had no component of patent law till 1990. The course was intended to give an overview of the IPRs. It had been an optional course for the students. Advance courses at post-graduate level were introduced since 1993. After 1990, few of the law faculties have introduced the course. The Bar Council of India, which oversees the legal education in the country and lays down the curriculum for under-graduate studies in law, has now made it an optional course.

But there has been very little efforts to do so for the business and engineering programs. The Indian Institutes of Technology (IIT) and Indian Institutes of Management (IIMs) have initiated steps to teach IPRs. However, the over-all picture is not very encouraging. Those institutes which have started these courses are ill-equipped on many fronts. There are number of reasons for this beside the scarce resources.
In fact, there is still a general lack of awareness about the actual import of intellectual property rights. In this matter, the Government of India and other governmental bodies with the assistance of WIPO have arranged some introductory courses or workshops on IPRs. Such programs have gone a long way to create some awareness among the existing professionals in general, particularly students, teachers, researchers, government officials, legal practitioners and businessmen, and even members of the public, having particular interest in intellectual property law. The industry bodies such as FICCI, CII and ASSOCHAM hold meetings with a purpose to review the IP laws to ascertain their impact on economic, technological and social developments and their impact on the industry.

But mere awareness is certainly different than training the professionals, which require a well trained teaching faculty, expert consultants, the right kind of syllabus, a good library, relevant reading materials and modern technical facilities. The importance and relevance of these resources is self-evident in training the professionals. The business and industry, which are the end users of trained professional in IP have not taken any significant initiative so far in the field of teaching and research in intellectual property. There is no industry-academia relationship in devising these courses. Time has come when they should work in tandem. How can teachers produce industrial leaders when they themselves have no perception of industrial problems, including their commercial implications. Better job opportunities for university graduates will help in generating the interest among them for IP courses.

**Intellectual Property Faculty and Infrastructure**

The most important component of quality education in intellectual property is the well-qualified faculty, who should be able to train the professionals, prepare the syllabus, develop the curriculum and compile and prepare the reading materials. Unfortunately, in India, there is an over-all scarcity of well-trained and motivated teachers in IP courses. Since IP is in vogue, every teacher, with no preparedness, wants to dabble with the course teaching, leaving students high and dry. The reasons of this pathetic state is the lack of infrastructure, the well laid-out libraries and practically non-existent study materials.

Even if some teachers are being sent for training to developed countries with the financial assistance of WIPO, they are unable to do their job efficiently in the absence of basic infrastructure on their return. Beside, the number of such trained teachers is miniscule compared to the need of professionals in the country. There are also very few practicing lawyers who can be inducted as “adjunct professors” in the universities. They are non-available because of scarcity of time and the universities inability to pay them according to their demand. Moreover, university teaching is not attractive to them in terms of remuneration. Hence it is a complex problem, which have to be dealt in a comprehensive manner. The piece-meal efforts made by the WIPO so far, though significant, but are not enough to confront the increasing demand of well-qualified IP professionals. The universities / institutes lack any policy formulations on IPRs.
Most of the universities and institutes in the country lack basic infrastructure to run IP programs effectively. They lack modern facilities. Computers are particularly non-existent in the law faculties except for the new law universities, which are fast coming-up. These facilities, however, exist in engineering institutes and in many of the business faculties. Same holds true about Internet. With the Internet facility available, students/teachers can access the IP related material from web-site. But most of the time, the material available at the web-site is not related to national IP laws but to the IP laws of other countries or international conventions, which is, though, important not so relevant at the national level. Furthermore, it is for the IP teacher to encourage students to use the web-site and give web-site based training. For this purpose, it is necessary that the teacher should herself/himself be computer/Internet savvy. This is not possible at the present juncture as there is lack of such facilities.

This aspect again becomes pertinent in starting or running distant learning program in IP. It is particularly important for students from business and industry or those who want to acquire knowledge while in service/job. Technical facilities for distance learning are either available or envisaged in the developed jurisdictions, but no such facility is currently available in India. Efforts are on to start such facility at certain select places by the initiatives of few institutes, viz., shortly the Indian Law Institute will embark upon such a programme. As a part of e-learning, such a programme will also give due exposure to students regarding online dispute resolution.

In the absence of these facilities, primary but difficult responsibility falls on the teachers to construct their course for different professionals. They must prepare the accurate teaching materials for their students. But before that they should also have adequate insight into the subject and the needs of their students belonging to a particular profession, which will be manifested in the proper laying down of the syllabus. Adequate and relevant material on each topic should be made available to the students. Material should be coherent with the syllabus drawn by the teacher. It is also necessary to have a text book on IPRs which is easily comprehensible to the teacher and the students.

At present, there is a general paucity of books and reading materials in India. The books written by the local authors are practically non-existent and available books are not of requisite quality. In this scenario, teachers generally refer and recommend the books authored by foreign professors, which, because of their price, are practically non-affordable. Hence, enough books by different authors could not be purchased nor could they be circulated in time before the class. Even the teachers don’t have the access to good teaching materials. Furthermore, there is a need to “train the trainers”. They should have the access to necessary documentation on IP, which it can use not only to enhance its own knowledge to do research, but it will also help in preparing the right kind of syllabus and reading material. Such an access will also help academics to prepare the books / treatise on the subject for students. Thus, due to an over-all scarcity on this front, the quality education suffers. One, can hire top class faculty and attract brilliant students if the infrastructure and incentives are superior.
Conclusion

Since the resources for IP teaching and research in India are scarce, it is not advisable to introduce the IP courses in each and every university. The Bar Council of India's endeavour to make it a part of the basic law degree course is a welcome idea but necessary supporting steps need to be taken by the funding agencies to these universities/colleges. In this context, thrust should be more on distance-education. It is also advisable to set-up research institute for IP laws, which could act as a focal body for individualized research in IP. In this scenario, WIPO, apart from helping the universities, should help in setting up research institute for IP laws. It will help the teachers/professors in getting deep insight into the subject, in preparing the reading materials for their classes, and keeping them up-date on the developments in this field. Such an institute could be a positive step in training the IP professionals. The business and industry should also help in this endeavour.