

Teaching intellectual property to technology management students: challenges and learning approaches

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ABSTRACT: Intellectual property (IP) rights play a pivotal role in the economic growth of a country. Intellectual property education is significant in the support of creativity and innovation in society. Intellectual property is a multifaceted and complex subject, which requires a deep and clear understanding, especially related to substantive requirements for protection. The purpose of this study was to examine the challenges faced by technology management students in learning IP and to suggest various approaches to learning. Interviews were conducted with ten technology management students from the Universiti Teknikal Malaysia Melaka (UTeM). This study identified that the main challenges are with respect to the general appreciation of intellectual property, understanding legal jargon and the complex nature of IP. As a result of this study, it is recommended that various types of learning approach be applied to teaching IP, so as to keep students more interested and engaged.

Keywords: Learning approach, intellectual property, technology management, innovation

INTRODUCTION

Intellectual property (IP) plays an important role in contributing to the economic growth of a country. To support economic, social and cultural advances by the year 2020, Malaysia introduced the National Intellectual Property Policy (NIPP) in 2007. This aimed to strengthen national IP by promoting the commercial exploitation of IP. Furthermore, the Malaysian Innovation Agency Act 2010, which came into force on 15 April 2011, was introduced with the aim of stimulating innovation in Malaysia. As a consequence of the Act, the government has developed a statutory body, the Malaysia Innovation Agency, which has the responsibility to formulate national policies, strategies and directions related to innovation. The Agency is also responsible for promoting a culture of innovation in the public, private and education sectors of Malaysia.

This initiative has emphasised that IP education is significant to enculturate innovation among students. Since IP has played an increasingly important role in the global economy in the past decades [1], teaching and learning IP is critical for various disciplines, including technology management. Furthermore, universities are now producing innovations with the potential to be exploited; thus, it is crucial to protect the IP rights of the universities. Recently, IP education has spread beyond law schools and is considered a intricate subject, especially for non-law students [2]. Moreover, IP is complex, multifaceted and interdisciplinary, which poses challenges for students in grasping its real meaning, especially for non-legal students.

Education is important for society as it confronts future challenges. It is a means for disseminating knowledge and developing skills to bring about changes in behaviour, values and lifestyles [3]. There are many reasons why IP education is important for students. Intellectual property rights (IPRs) are key to stimulating innovation and enhancing creativity by providing to owners exclusive rights over their creations [4]. Intellectual property education enables students to become familiar with IP, with its potential for generating income, and hence to appreciate the importance of IP to individuals and groups [4]. In essence, IP education provides students with skills and competences acquired in the classroom that can benefit them in income generation later [4]. In the context of technology management, IP is important in addressing the issues of technology in enterprises.

The teaching of IP should not be focused on law students only. Intellectual property has the potential to affect many disciplines including technical, engineering, accounting, business and management. As well, IP has the potential to be

integrated into other mainstream subjects and can easily be adapted to cross-curriculum teaching [4]. With the exception for law students, undergraduates are not normally offered in-depth courses on IP [5]. For non-law students, it is sufficient that they be equipped with sufficient knowledge and able to use IP resources [6]. Intellectual property is also the starting point for academic cross-disciplinary collaborations in learning, teaching and research [2]. While IP law is only available for law programmes, IP should be included in other curricula, such as business, fine arts and engineering science [7].

There are many uses of IP that can benefit students; for example, business students will benefit from understanding the role of IP in the economy and trade; IP is significant for engineering students in the context of research and development (R&D) and technology projects [7]. Since engineers and scientists may become inventors, IP education and the use of IP tools will benefit them through protection of their ideas [5].

However, there are various impediments to teaching IP, such as a lack in:

- a) updates to programmes to keep pace with rapid changes in IP law;
- b) up-to-date IP teaching materials;
- c) an interdisciplinary approach to the role of IP in areas, such as business, trade, science, the economy, engineering and the arts [7].
- d) Some IP concepts are difficult to grasp and some practical aspects are not easy to learn [5];

and a lack in:

- e) teaching and research activities focused on IP;
- f) IP knowledge among professors and lack of trainers for IP-related activities [8].

The professors admit to facing difficulties in teaching IP in line with international standards for IP education. Also they have a limited understanding of legal-judicial matters [8]. Thus, the professors need to train and equip themselves with a more in-depth IP knowledge, through the assistance of experts, such as lawyers or technical advisers [8].

There are many approaches that could be adopted for the teaching and learning of IP at university. Industrial visits and internships in industry can be helpful and are a supplement to the normal setting of learning in the classroom. Internships and industrial visits provide students with new approaches to learning, which can be useful to students in later life [9].

A conducive environment of innovation could be promoted to incorporate the teaching of IP at basic, intermediate and advanced levels. This would provide students with a set of specific skills to foster creativity in the context of the knowledge economy [8].

The teaching could use the IP teaching resources databases from Georgetown University, USA [10]. This allows students to comprehend cases better than by just reading a verbal description. This encourages students to consider specific aspects of a case and apply IP principles to concrete examples. Simulation can be useful for non-law students provided it is directly related to the content of the course [6].

In summary, various approaches are available for the teaching and learning of IP. However, teaching IP still relies on the individual and is not the general orientation of the university [8].

RESEARCH METHODOLOGY

There are many challenges for the teaching and learning of IP by university students. The work reported in this article addressed the following research questions:

- a) What are the challenges for learning IP, for technology management students?
- b) What learning approaches should be used for teaching IP by technology management students?

In order to answer these questions, a qualitative research approach was adopted in this study, with semi-structured interview questions. Ten technology management students from the Universiti Teknikal Malaysia Melaka (UTeM) were selected to be interviewees. All were male and for the purpose of anonymity they are identified as TMS1, TMS2 ...TMS10. The face-to-face semi-structured interview questions were designed based on the structure developed by Patton [11]. The interviews were conducted by the researcher and each session lasted approximately one hour. The interviews were recorded and transcribed verbatim. All data gathered from interviews were analysed based on axial coding.

CHALLENGES FOR LEARNING INTELLECTUAL PROPERTY

An aim of this study was to identify and examine the challenges for teaching and learning IP among technology management students, which can be categorised into three aspects:

- a) the general appreciation of IP;
- b) understanding the legal jargon;
- c) the fragmentary and complex nature of IP.

Another aim of this study was to suggest approaches to be adopted for the teaching of IP to technology management students.

Most of the interviewees stated that although they have at least some exposure to, and understanding of, IP the general appreciation of IP was the most challenging aspect when learning it. General appreciation of IP refers to various aspects, such as protection, rules and regulations, non-protectable subject matter, duration of the protection and substantive requirements for the protection.

It was noted that some elements of IP have been embedded in various non-IP subjects, such as marketing, entrepreneurship, new product development and technology transfer. This was emphasised by TMS3, who stated that *...we have studied IP more on a basic and general term. At least we have a basic understanding of IP, which gives the protection of your works.* Similarly, TMS4 stated that *...before attending this class, I did not know much about IP. What I know was only the basics of IP and the right to protect a product. I also cannot differentiate different types of IP, I do not have any idea of the subject matter of IP protection.* Their understanding of IP is more on the basic level, which might not be sufficient for them to recognise what is the most appropriate form of IP protection, the identification of relevant subject matter, rules and requirements for the protection and IP commercialisation pathways.

The finding of this study also showed that students' understanding of IP is limited and confined to IP related to business and management, particularly trademarks. Thus, when asked the question of what was their understanding of IP, this was the answer from TMS4 *...IP is just a matter for business only, particularly related to trademarks.* Similarly, TMS10 also gave the same response when he said that *...IP is just related to trademarks.* So, that is why they have difficulties in differentiating IP and its function generally. As TMS5 stated *...for me, I just understand IP basics. Although we have studied IP in most of our subjects, we thought that IP is just for big companies as they will be able to register the IP. But specifically, we do not fully understand how it impacts us as management students.* TMS5 further stated that *...the most challenging part that I encountered while learning IP is to differentiate between different types of IP. I have difficulty in understanding the role played by intellectual property rights and their functions.* In a similar vein, TMS8 claimed that *...I cannot differentiate between registered and non-registered IP. I also do not know the different statutes for IP. I thought that IP just referred to the brand and idea only.* TMS9 agreed and said he encountered difficulty understanding and differentiating between IP rights. He further stated that *...it is so difficult to see how what has been understood theoretically in the classrooms can be applied in real life.*

Most of the ten interviewees admitted that they were challenged to understand the legal terms related to IP. This is because IP-related documents, such as policy documents, were prepared by legal drafters using legal jargon, which has created difficulties for technology management students. TMS4 commented that *...IP is relevant to lawyers only. Before joining the class and learning about IP in detail, for me IP involves a lot of legal terms including the statutes. Only lawyers have the capacity to understand the statutes.* Similarly, TMS7 agreed that *...IP is related to law and regulation. IP is also related to the protection of works, technology, invention and much more. Thus, the most challenging part of understanding IP is the legal part. The legal part is always confusing in terms of the rights involved.*

Although IP is usually presumed to involve legal aspects, it is not always a concern of legal people, as TMS10 stated *...IP is not only for lawyers. For me, lawyers mainly work to assist in protecting IP.* Interestingly, TMS5 found that IP is not a matter for lawyers only. He said that *...I do not think that IP is relevant to lawyers only. As to my early understanding, it is something that the owner can protect an invention. As a technology management student, IP is very useful for our future career and to start businesses in the future. We need to know which IP is appropriate and how to manage and maintain IP.* TMS8 observed that *...IP is used widely and every person can apply for IP, if their idea or creations have a commercial value. For me, lawyers only handle certain procedures including IP infringement and if there is a need to contest a case in court.* TMS6 believed that IP is important for everyone, including technology management students, as he claimed that *...IP is useful for technology management students, because they can get exposure to business set-ups and how to manage the technology. IP can be a useful tool to protect their business ideas and products.*

Intellectual property is fragmentary and complex in nature and students may find it difficult to differentiate between different types of IP. This was agreed by TMS4 who opined *...I found it hard to differentiate different types of IP, because we cannot see how it can be applied in real life. Since we are not law students, we have never been exposed to this kind of problem. We also encountered difficulty in memorising the terms, types and subject matter of protection related to IP. We also have a problem in identifying which particular right is relevant for a product or service.* This fragmentary and complex nature of IP was also agreed by TMS7. TMS8 stated that *...IP is complex and broad. I have got tangled up on IP, especially on copyright.* Generally, the complex and interdisciplinary nature of IP make it even more challenging, especially for technology management students. Thus, various approaches of learning style should be adopted to encourage students to focus on IP as a subject.

In this study, it was found that there are various types of learning approach that could be useful for teaching IP to technology management students. Most of the interviewees agreed that in teaching IP it is important and paramount to assist students to understand the fundamental aspects of IP. However, conventional teaching in the classroom should be combined with other approaches, such as using videos, case studies and industrial visits to make the studying of IP more interactive for the students. Regarding lectures, TMS2 stated that *...lectures allow students to understand more, especially related to IP terms. Sometimes you cannot rely on information found on Web sites. For me, I believe that through a lecture, knowledge can be conveyed accurately.* This is also admitted by TMS5 *...from the lecture, we can gain a basic understanding of IP, different types of IP and their function. The examples used during the lectures enhance our critical thinking and emphasise the concepts of IP. Besides, the lecturer also gave us a chance to ask questions directly and we can also be involved in group discussions.* With emphasis on the lecture, TMS8 also stated that *...lectures are important, because they highlight the theory and fundamental elements of IP for students. Another technique, which I think is useful is problem-based learning, where students will be given a question to which they have to provide a solution.* TMS3 highlighted that *...discussion is the best method and an interesting approach for learning IP, because we are able to share our knowledge with other students. It also strengthens our understanding of difficult aspects of IP.*

Apart from lectures, there are various approaches suggested by the interviewees to make IP teaching more compelling. TMS10 suggested a combination of lectures and videos; he said that *...the lecture is still relevant for us, to strengthen our understanding of IP. In supporting this, I think videos would be useful to give a real understanding of IP. It provides a very good atmosphere to study IP.* TMS7 agreed *...for me, the lecture is important for understanding IP, as the lecturer will be able to explain clearly about IP. However, focusing on lectures per se would not make the class more interesting. So, sharing some related videos with other students, will definitely create a different mood. Videos will help students to understand more about IP. Not only that, I think videos make students more focused.*

Interestingly, TMS6 stated that *...videos can give better insights into what has been taught earlier during lectures. Videos can provide a visual attractiveness and offer different perspectives of the learning material.* TMS4 stated that *...a video allows students to concentrate and focus more on the lecture. Videos also are entertaining during learning IP.* This is also agreed by TMS1 *...video provides a different platform, to create a lively and interesting classroom. If the class is too focused on the lecture alone, students will get easily distracted. Thus, there should be a blend of the lecture with interesting videos for discussion.* In emphasising the visual appeal of videos, TMS4 stated that *...we think that this technique [video] provides more visual insight on how to understand IP. Videos are creative and provide knowledge of IP. Video can be imagined, created and then modified as a creative activity.*

The case study approach looks interesting as a way to teach IP. TMS9 suggested *...it gives us the real situation, so that we can further understand about IP, and we can share and exchange ideas and opinions with other students.* TMS6 stated *...the case study approach can be used to immerse students in real world knowledge of IPRs. If this approach can be fully utilised, it can give us a major motivation and inspiration to learn IP.* TMS6 further clarified that *...a case study exposes a real life situation. Students can easily understand how and when suitable types of IP could be useful. A case study may also simplify the complex concepts in IP. A case study provides added value to all students through discussion and improves analytical, communications and critical thinking skills.*

It is interesting to emphasise how the role play approach might impact on learning IP, as suggested by TMS6 *...role play should be adopted in teaching and learning IP. This technique allows students to explore a real situation by interacting with other students in a systematic way. This method can stimulate students' imagination and enhance their social development. Through the role play technique, students can apply content in a relevant and real context. Furthermore, students are encouraged to develop an understanding from different points of view. This situation will create an interesting environment in the classroom.* TMS3 agreed on the role play *...learning and teaching IP will become more interesting. This is because, in role play, we need to understand first the fundamental concepts, so that we could share them with the classmate. Furthermore, it could increase our confidence in the class.*

Industrial visits to a relevant agency or industrial organisation provide good exposure for IP students. One such agency is the Malaysian Intellectual Property Corporation (MyIPO). TMS10 stated *...it is especially important to have a clear view about the licensing process for IP and the procedures that need to be followed by the firm or company to protect their ideas and technology. I believe that the visit to MyIPO managed to help students relate to real life and this is effective in term of teaching and learning IP.* Industry engagement through IP seminars or IP talks with people from industry will enable students to have practical insights into IP as emphasised by TMS5. TMS4 has also suggested having an IP expert to share their knowledge, when he stated that *...It is good to invite an external IP expert or IP practitioner, especially from MyIPO. This technique is useful, because those people can give a clear view and interesting experience of IP. Those persons can educate us on the importance of IPRs for business and for technology management students. We can obtain knowledge on how to apply IP protection for our future products.* Industrial visits provide additional information as emphasised by TMS9 *...through industrial visits, we can compare the theory learnt in the classroom to its application in a real industry. It is a kind of additional information for us that we receive directly from industry experts.*

CONCLUSIONS

Discussed in this study were the challenges in teaching IP to technology management students. From the study, it was found that challenges for teaching and learning IP are related to the general appreciation of IP. Furthermore, since all documents were prepared using legal terms, it was quite difficult for technology management students to grasp the real meaning of IP. The complexity and fragmentary nature of IP also posed a difficulty for technology management students in differentiating various types of IPRs that could be available and useful in different situations.

In considering the issues from this study, it was found there are various teaching approaches that could be adopted in teaching IP. It is suggested from the study findings that the conventional lecture is still fundamental and should be combined with other approaches, such as using videos, case studies and industrial visits. These provide an extra flavour to the classroom and an interesting exposure for students in learning IP.

ACKNOWLEDGEMENTS

The author would like to express her sincere gratitude to the Universiti Teknikal Malaysia Melaka for supporting this study.

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BIOGRAPHY



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