

# **Integrating IP Teaching in the Educational System**

**African Conference on the Strategic Importance of Intellectual Property (IP) Policies to Foster Innovation, Value Creation and Competitiveness**

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# Integrating IP Teaching in the Educational System

- Presentation will focus on answering these questions:
  - Should we seek to integrate IP teaching in the educational system ?
  - What do we seek to achieve by doing so ?
  - How might we go about introducing IP teaching into the education system?
  - When should IP be introduced in the education system?
- Focus is not IP teaching to lawyers
- But rather IP teaching to other disciplines



# Knowledge economy and teaching IP

- Its only been in the last 20 years that:
  - phrases like “innovation economics” and “knowledge economy” have entered the business and political lexicon
  - There has been
    - a shift in thinking that economic growth is driven not by the accumulation of capital, but instead by the capacity generated by new knowledge
    - a greater emphasis on science and technology, its protection, and its commercialisation
    - a greater emphasis on IP education for students to be equipped to work in and contribute to this knowledge economy



# Knowledge economy and teaching IP

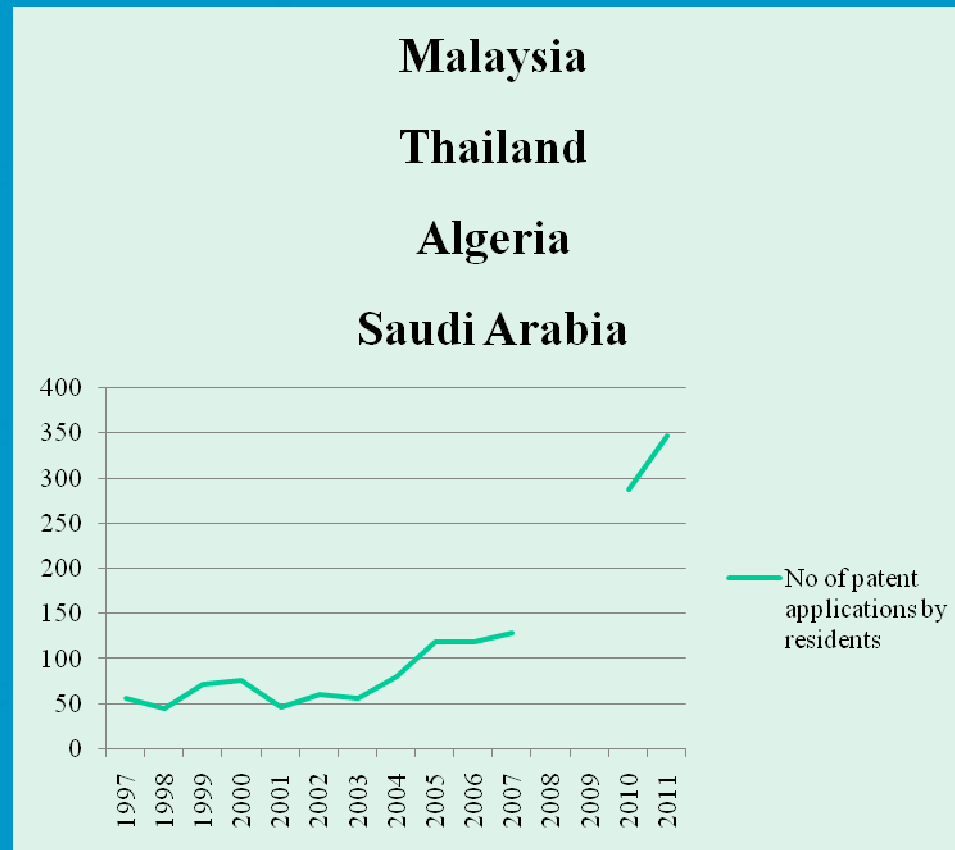
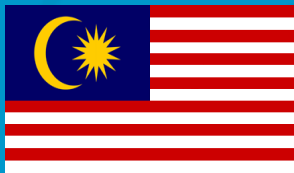
- Lots of ways of illustrating the growth of the knowledge economy, and its connection to IP
- 140 years from 1836 to 1976 USPTO granted 3,930,271 patents
- Took only 36 years 1976 to 2012 for as many again to be granted, (4,156,823)
- Last 20 years in particular an enormous jump in the number of patents granted by USPTO

10 year period	# of patents - USPTO
1970 - 80	693,397
1980 - 90	709,468
1990 - 00	1,119,220
2000 - 10	1,631,043



# Knowledge economy and teaching IP

- This trend is not just in the US. eg





# Knowledge economy and teaching IP

- This growing knowledge economy relies on people who are innovators and entrepreneurs
- The knowledge landscape and tools that innovators and entrepreneurs need are broad
  - Science, engineering
  - Business
  - IP
    - to enable informed and prudent decisions to be made about
      - the opportunity to protect innovations
      - whether to protect innovations
      - ways to protect innovations
      - how IP fits into entrepreneurship
      - how to benefit economically from IP



# Beyond the knowledge economy

- But its not just innovators and entrepreneurs in the knowledge economy that might benefit from a teaching of IP
- Who else might benefit from the teaching of IP ?
  - Anyone who might be disadvantaged by lacking that knowledge.

Who may benefit	How might they benefit
Manufactures	Protection of manufacturing secrets
Retailers	The marketing value of trade marks and geographical indications
Designers	Protection of new products and their innovative designs
Software developers	Protection of their innovations and software code
Journalists and writers	Copyright protection of their works
Artists and photographers	Copyright protection of their works



# Are science and engineering graduates well informed already ?

- **27 November 2012** issue of Forbes magazine had this story:

Intellectual Property Awareness  
At Universities: Why Ignorance  
Is Not Bliss

- Describes some of the alarming results of a survey undertaken at UCLA of graduate engineering students:

Survey question	Unable to respond
What is a trade secret	68%
What is a patent	21%
What is copyright	32%
What is a trade mark	51%





# Are science and engineering graduates well informed already ?

- The UCLA results are unexceptional.
- They might even be described as encouraging, compared to the results of the same questions if asked at other universities
- From their first day at work, scientists and engineers
  - become aware of their employer's IP
  - contribute to the development of that IP, or to new IP
  - will be faced with many questions

*can I share this knowledge with my joint venture partner colleagues*

*is this Confidentiality Agreement a suitable agreement*

*I complimented the technicians in the plant about their good idea – there wasn't anything else I was supposed to do was there ?*

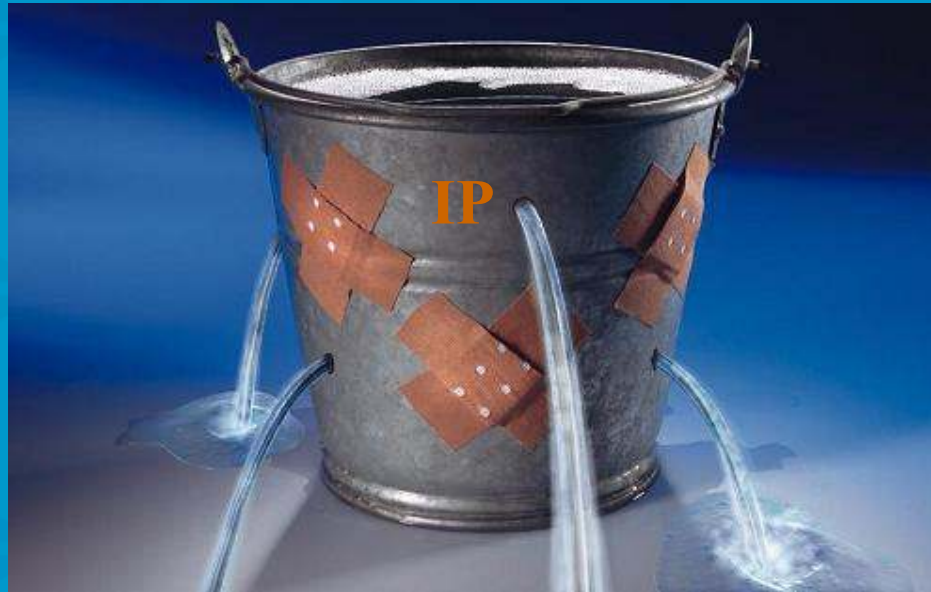
*can we write a paper about this good idea?*

*there's no reason I can't just copy over this code is there ?*



# Are science and engineering graduates well informed already ?

- If these questions are being asked, *and they are*
  - There is loss of economic value taking place
  - There are lost opportunities to capture economic value
  - There are risks being unknowingly assumed





# Are science and engineering graduates already well informed?

- [http://ipmall.info/hosted\\_resources/Teaching\\_IP/S\\_Jimmy\\_Gandhi\\_2009.pdf](http://ipmall.info/hosted_resources/Teaching_IP/S_Jimmy_Gandhi_2009.pdf)

**Exhibit 4.** Analysis of the results

<b>Question #</b>	<b>Analysis for the question</b>
1	75% of the Deans of Engineering Surveyed said that they considered a fundamental understanding of IP to be a necessary part of an undergraduate engineer's education
2	75% of the Deans of Engineering surveyed said that they rated I.P to be an important part of the undergraduate engineering curriculum.
3	None of the schools surveyed required their undergraduate engineering majors to take any courses in I.P.
3a	Not Applicable because none of the schools had a required IP course.
3b	Only 25% of the schools surveyed said they planned on introducing any new I.P. courses at the undergraduate level for engineering majors.
4	All the schools said that their undergraduate engineering majors received a miniscule amount of I.P education.
4a	75% of the schools surveyed reported that their undergraduate engineering majors receive 3 – 5 hours of I.P education in their entire program.



## Why isn't IP taught in non law courses ?

- There are at least three reasons
- Firstly, the vocational curriculum approach of many universities focuses on what is needed for their students to qualify to enter the profession
  - Lawyers are taught law
  - Accountants are taught accounting
  - Architects are taught architecture
  - Dentists are taught dentistry
  - Doctors are taught medicine... etc
  - And so,
    - Scientists are taught science, and
    - Engineers are taught engineering
- There isn't room, so it is said, for anything else – the syllabus already being too crowded



# Why isn't IP taught in non law courses ?

- Secondly, professional organisations that set the requirements for entry into a profession don't require IP training
  - UK Standard for Professional Engineering Competence (UK-SPEC)
  - <http://www.engc.org.uk/ecukdocuments/internet/document%20library/UK-SPEC.pdf>

*A2 Engage in the creative and innovative development of engineering technology and continuous improvement systems. This could include an ability to:*

- *Establish users' needs*
- *Assess marketing needs and contribute to marketing strategies*
- *Identify constraints and exploit opportunities for the development and transfer of technology within own chosen field*
- *Promote new applications when appropriate*
- *Secure the necessary intellectual property rights*
- *Develop and evaluate continuous improvement systems.*

- But UK-SPEC permits IP skills to be substituted with at least 5 alternative skills



## Why isn't IP taught in non law courses ?

- Thirdly, science and engineering schools don't have the staff with the skills to teach IP
- That should be the easiest problem to solve
  - Visiting lecturers from the patent attorney and legal professions, as well as innovators and entrepreneurs
  - Lecturers from other faculties teaching in science and engineering faculties
  - Lecturers in science and engineering faculties skilling up
- For all three, specially prepared materials are available to help them teach
  - EPO's "Patent Teaching Kit"
  - IP Australia's similar teaching resources available on line



## Teaching IP in non law courses

- There are at least two traps that might befall the IP teacher in a non law course
- The first is teaching “law”
  - This is dry and unlikely to make students attentive
  - It also leads to the teaching being labelled as “legal”, with students struggling to see the relevance to them
- It leads to the second problem
  - Students might perceive IP teaching to be an intrusion into their “real” studies



# Teaching IP in non law courses

- The teaching of IP to non law students should be approached differently to the teaching of IP to law students.
- Like all teaching, it must be presented from the perspective of the students studies
- The way you might teach IP to a student of molecular biology is different to its teaching to a materials engineer
- IP needs to be taught as a relevant tool, drawing on its multidisciplinary components
  - Legal,
  - Economics,
  - Business,
  - Finance,
  - Management,
  - Science, Engineering





# Teaching IP in non law courses

- It needs to be taught to non law students in an engaging way that highlights its relevance
  - Some essential “law” but this should not be the emphasis
  - More emphasis on use of IP as a tool with problem solving, simulation, case studies etc
  
- It could be taught as a set of rules, and the consequences of non compliance
  - If you publish, do destroy novelty
  - If you infringe a patent, you can be liable for damages
  - If you copy a copyright work, you can be liable in damages
  
- Or preferably, IP teaching can focus on the positive
  - The marketing power of a trade mark
  - The leveraging and secondary (license) income from patents, etc



## Focus on IP teaching only at universities?

- Japan Patent Office 2008
  - “Intellectual Property Education as a Means of Nurturing Creativity”
- JPO funded Tokai University to undertake research into the introduction of IP education into the education system
- Tokai started by designing IP courses and content for undergraduate and graduates in the science and engineering schools
- Tokai realised that the implementers of creativity were entrepreneurs
- Tokai concluded that IP / entrepreneurship needed to be taught at an earlier stage
- Tokai suggests that IP education should at the least start in high school, where IP is taught in the context of what it describes as the Intellectual Creation Cycle
- And continues to university where IP in the context of science, the economy etc is the focus



# Teaching IP to schoolchildren

- UK IP Office
- Think Kit
  - Resources for teachers to teach IP to school children 14-16 years
  - Cracking Ideas Competition
    - Competition for schoolchildren
    - 2013: contribute ideas on patents, copyright, trade marks and design, to a moon buggy
    - Winners in 3 age groups: 4-7  
8-11 and 12-16

## Teacher notes and lesson plans

### Business studies

- Craig Johnston's Pig® PDF (76Kb)
- Picse!® Browser PDF (81Kb)
- Swatch® Fun Scuba Watch PDF (79Kb)
- Solio solar recharger PDF (87Kb)
- Music copyright featuring Jamelia PDF (79Kb)
- Yo! Sushi PDF (76Kb)
- Zorin Post Pump PDF (75Kb)

### Design & technology

- Craig Johnston's Pig® PDF (78Kb)
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# Teaching IP to schoolchildren

- IP Australia: Teacher resources to teach IP to schoolchildren, and Case Studies



## Art Exhibition

This unit helps students focus on the characteristics of a particular artist, and to use those characteristics as a trade mark that identifies that artist. The artist is Henri Matisse, but teachers could use the approach as a model for exploring any artist that they choose.



## Can you manage a rock band?

This unit helps students understand many Intellectual Property concepts- especially copyright and trade mark issues.



## IP protection for a beach chair

When Katherine Drayton realised that her innovative beach chair could be marketable, she researched her IP rights and took out protection in the form of an innovation patent, a design registration and a trade marked logo.



## IP strategy for a children's clothing brand

Since founding her children's clothing brand at the age of 19, Clair Jennifer has built up a distinctive brand with some 50 retail stores in Australia, and taken an active approach to protecting, defending and commercially exploiting her IP.





## Conclusion



- If innovators and entrepreneurs are to be successful in today's knowledge economy, they need to have not just accounting, finance and management tools etc, they need IP tools as well
- Just as the education system will equip them by teaching them accounting, finance and management tools etc, so also the education system needs to teach them about IP tools as well.