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I still love IP: a spotlight on 10 years of designing the student experience

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Topic

There is a broad range of Intellectual property rights (IP) ; trademarks, patents, designs and copyright, designed to ensure that innovators are rewarded for their endeavours and to stimulate a competitive market (EPO/OHIM, 2013). The World Intellectual Property Office, observe that IP education should support learners to become IP creators, advocating that ‘their creativity should be developed, and they should be educated to respect the IP rights of others’ (OHIM, 2015, 11). Industries using Intellectual Property Rights intensively account for 1 in 3 jobs in Europe and seventy six per cent of Europeans feel that innovation and intellectual property go hand in hand (OHIM, 2014) and yet, in their UK study of HEI’s, Soetendorp et al (2016, 35) observe that less than a third of students surveyed had received any information about the topic whilst they were in school, college or University and moreover, that only 40% of students consider their current awareness of IP to be enough to support them in their future career (IPAN/IPO/NUS, 2012).

Aim

This study responds to calls within the entrepreneurship education literature, policy and guidance for students to have an understanding of intellectual property, to protect their own creativity and to avoid infringing the rights of others (QAA, 2012, Bacigalupo et al, 2016). The paper considers the evidence for integrating intellectual property into the entrepreneurial curriculum, addressing two specific questions, if entrepreneurship is seen as applied creativity (Rae, 2007), what are the implications of IP for educators? What approaches can be taken to incorporate IP in the enterprise educators’ toolkit, as an enabling strategy for developing the nexus between creativity and business?

Method

This is a single case study (Yin, 1994) using multiple sources of evidence to support a holistic investigation (Feagin et al, 1991) into the educational landscape in order to contribute to construct validity (Stake, 1995, Yin, 1994). The study was initiated by drivers and pedagogic approaches that were designed and developed 20 years ago by two educators, within a UK HEI, for raising awareness of Intellectual Property amongst students across all disciplines. Subsequently two of the papers authors have been advising UKIPO in a range of educational approaches and bring these insights to the debate.

The evidence comprises; a review of entrepreneurship literature and policy for intellectual property to theoretically underpin the study, which are considered alongside anecdotal and observational contributions (Marshal and Rossman, 1989), from learners, graduates, educators and policy makers. Emphasis is placed on evidence collated within the past 10 years

Contribution

If IP is a key driver of innovation (Wang and Chang, 2005) and we accept the view that a sense of ownership is a critical factor in entrepreneurial success (Kirby, 2003, Gibb, 1993) a responsibility lies with those taking forward the entrepreneurship agenda to embed of awareness of IP within the curriculum. There are examples of good practice across the HE sector for integrating IP education, many of which are supported by the UK’s

Intellectual Property Office (IPO, 2014, 2015) and Enterprise Educators UK (2017). However, the synergies between IP education and the enterprise educator have yet to be fully articulated. The study updates findings and discussions presented to the ISBE Conference in 2007, and then further contribute in terms of:

- Evidencing the need for enterprise educators to raise awareness of intellectual property as a feature of their provision
- Proposing potential ideas for intellectual property education, including considerations relating to adaption for educators' own contexts.

Introduction

Intellectual Property (IP), trademarks, designs, patents and copyright, afford people the rights to own their own their creativity and innovation, just as they would own physical property. The owner of IP can control and receive reward for its use, encouraging further innovation and creativity for the benefit of society.

IP assets are referred to as intangible assets because they can't be seen and touched, and despite acknowledgement that they are 'widely important and in some cases vital to the success of a business' (HMRC, 2010, 3) the role of IP and intangible assets in business is insufficiently understood (King, 2003, Gowers, 2006). To put this into an economic context, in their research commissioned by the Intellectual Property Office, Goodridge et al, (2014, 3) report that in 2011 investment in the wider definition of intangible assets (IP assets and investment in Non-scientific R & D, Mineral exploration, Training and Organisational Investment) was £137.5bln, as compared to tangible investment (mainly building, plant, machinery and vehicles) of £89.8bln. Of the 65.7bln UK investment in IP, it is estimated that 10% of assets were protected by patents, 46% in copyright, 3% in design and 21% protected by trademarks (Goodridge et al, 2014, 4).

Yet, despite recommendations such as from Vesper and McMullen (1988) (almost 30 years ago) that 'ideas protection' be incorporated within entrepreneurship programmes this has yet to be recognised by many curriculum developers and deliverers (Penaluna et al, 2012, Soetendorp et al 2016). The UK Intellectual Property Office acknowledges this deficit and is pro-actively seeking out ways to nurture and develop appropriate knowledge (IPO, 2014).

This study engages with some of the focal issues in this emergent debate – namely the value and competitive advantage that knowledge of IP can offer the entrepreneur, and the educational implications that such a proposal presents to the University sector. This paper's intention is to provide an overview of contemporary discourse and respond to the call for research papers that provide replicable examples of teaching practice (Starkey and Madan, 2001). Specifically it addresses the observation of Ghafele, et al., (2007,1) that 'interdisciplinary training on IP is vital if the full potential in IP rights is to be realised (...) that helps to overcome current educational shortcomings'. Moreover, across the Atlantic Villasenor (2014, 1) suggests 'Intellectual Property: Valuable for every Discipline', observing

'Intellectual property, at the highest level, addresses the creations of the mind. It is why writers, architects, filmmakers, and musicians can pursue a living practicing their crafts. It provides protection for the individual entrepreneur who pours his or her life savings into developing an invention that could change the world. And it drives investments to develop the technologies and medicines that have improved the lives of billions of people' (Villasenor (2014, 1).

Whilst appreciating that there is considerable discourse surrounding the appropriateness of current IP law, such as; impact on creativity (Vaidhyanathan, 2001), relevance for emerging sectors created through digital opportunity (Hargreaves, 2012) and implications of globalisation and gender (Stiglitz, 2004, Ghafele, 2008), it is beyond the scope of this paper to engage in a critique of IP legislation, or University Policy for the commercialisation of research (Lambert, 2003; Wellings, 2008; Gibb, 2012).

Method

This is a single case study (Yin, 1994) using multiple sources of evidence to support an holistic investigation (Feagin et al, 1991) and contribute to construct validity (Stake, 1995, Yin, 1994), into the drivers and pedagogic approaches that have been designed and developed by two educators, within a UK HEI, for raising awareness of Intellectual Property amongst students across disciplines.

The evidence comprises; a review of entrepreneurship literature and policy for intellectual property to theoretically underpin the study, alongside anecdotal and observational contributions (Marshall and Rossman, 1989), from learners, graduates, educators and policy makers. The study is informed by over 30 year's engagement with IP education, with a spotlight and subsequent emphasis on evidence collated within the past 10 years. Thereby reflecting the pragmatism of Dewey (1916), usually associated with insider action research, as the evidence has been used to plan, take action and evaluate, which in turn led to further planning and so on (Garrison, 1994, Holian and Coghlan, 2013). Two of the authors have been engaged with the UKIPO as consultants since 2007 and bring further insider insights gained from this experience.

A qualitative methodology, the phenomenological approach (Conklin, 2007, Moustakas, 1994) is adopted, to enable theory building through an analysis of narrative and interpretation of data, designed to identify discerning themes and their implications for educators (Goulding, 2005). The researcher's assert that their reflexive (Delamont, 2006) and collaborative interpretation of the findings mitigate for bias and, in turn, that their knowledge as researcher/educator's acquired through learning 'within' the practice, rather than 'about it' (Lave and Wenger, 1991, Fuller and Unwin, 1998), offers richer contextualisation and more meaningful epistemological approaches. Additionally, knowledge has been provided that would take someone external to the interventions a long time to acquire (Smyth and Holian, 2008).

Potential tool's for educators to use within their own contexts, together with a pedagogic model offering a tried and tested method for educators across disciplines to deliver IP awareness raising sessions is proposed.

Background history of IP in the UK

IP is not a new topic; the earliest known English patent for an invention was granted by Henry V1 to John of Utynam in 1449. The patent provided John with a twenty year monopoly for a method of making stained glass, required for the windows of Eton College (Gowers, 2006, 14).

Copyright was first established in the Statute of Anne in 1710, which declared 'copyright comes into existence with the act of composition by an author' (St. Clair in Gowers, 2006, 14).

Within an educational context, in considering development of the management curriculum, almost 20 years ago Teece (1998) asserted

'Management is always confronting new challenges (...) from time to time new challenges emerge that have no close precedent. Managing intellectual capital in the information age is possibly one such challenge, as advanced industrial economies have entered a new epoch. (...) the context in which knowledge assets are created and exploited is today truly global' (Teece 1998, 55)

Drivers for development

The key issues are discussed from stakeholder perspectives, explored within the themes of:-

1. The Government imperative
 2. The Higher Education imperative and pedagogic challenges
 3. The synergies between entrepreneurship and intellectual property education
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1. The Government imperative

In December 2005, Andrew Gowers (Editor of the Financial Times from 2001 to 2005) was appointed to lead an independent Review of the UK's intellectual property regime for HM Government. The Government's decision to commission the Review was 'an explicit recognition of the growing importance of IP and of the challenges brought by the changing economic environment' (Gowers, 2006, 1). The review highlighted that whilst IP affects everyone general awareness in the UK is fairly low, with many people not knowing what IP meant. The greatest understanding was for trademarks that are observed as a part of everyday life (i.e. Coca Cola, McDonalds) as opposed to the more abstract forms such as copyright and patents. The general lack of understanding makes it difficult for consumers to respect such rights. Subsequently, copying and counterfeiting were seen by many as 'victimless' crimes.

Fast forward 10 years and in 2014, UK investment in branding totaled £15.1 billion with an estimated 1 million people are employed in their creation and building (IPO, 2017).

In his 'Review of Intellectual Property and Growth' Hargreaves (2012) observed the challenges for SME's in accessing IP, to which the IPO subsequently responded with their plan; 'From ideas to growth: Helping SME's get value from their intellectual property' (IPO, 2012). Within that plan are sources of evidence that highlight the lack of understanding amongst businesses, by way of example; only half of the businesses participating in their 2010 studies 'recognised the benefits of checking the Trade Mark Register prior to deciding on the name for a new product or service' and that 'only 6% of SME's obtain patent protection for their innovations, compared with 13% of large firms (IPO, 2012, 8). Leading the IPO (2012, 8) to observe 'consequently, many SME's are inadequately exploiting their ideas and at risk of being copied'. The most recent IP awareness survey restates this position (IPO (2016a).

Whilst other countries were seen to have raised the profile of IP more effectively than in the UK (Gowers, 2006) the problem of a lack of understanding is widespread and manifests itself globally (Ghafele, 2008). Most Europeans appreciate intellectual property for its contribution to the economy and to society, but from an individual perspective can be perceived differently. By way of example, 34% of Europeans agree that buying counterfeits can be justified as a 'smart purchase', and 42% of EU citizens tolerate illegal downloading when it is for personal use (EUIPO, 2013).

2. The HE imperative and pedagogic challenges

In the UK the timing and development of entrepreneurship education parallels that of Intellectual Property education gaining an increased interest within law schools. Entrepreneurship courses were launched in the late 1980's in the UK with the intention of encouraging students to start their own businesses upon graduation (Brown, 1990. Kirby, 1992). Government-led initiatives intended to support an entrepreneurial culture within Universities by encouraging collaboration with industry, necessitated discussions on intellectual property to establish who would own what from the partnership, were introduced in following years (Lambert, 2003).

However, whilst entrepreneurship education is seen to have received a considerable amount of research interest with a proliferation of journals and best practice workshops, law schools do not appear to have generated such levels of research or proposed models of good practice that inform improved teaching and learning strategies for Intellectual Property across the curriculum. Of note is the challenge in the US by law professors who echo the consideration of Ghosh, (2012, 64) asking 'How can law schools speak about entrepreneurship when they exhibit little of this quality?' and, moreover, advocating the need to 'invoke creativity in the training of lawyers' (Ghosh, 2012, 77).

In order to explore a particular discipline, the spot light is shone on the discipline of engineering to provide an appreciation of the imperative and pedagogic challenges. In their research for the HEA Engineering Subject Centre, Roach and Soetendorp (2008) observed that non law academics have not always been enthusiastic about introducing intellectual property to curriculum. Their research into the barriers for integrating IP into the engineering curriculum identified the following:

- engineering academics' belief that IP content is not as important as other engineering content
- that the engineering curriculum was already overcrowded and could not support any new subjects
- no established pedagogy for creating well planned, integrated, sequenced and cumulative learning experiences to integrate relevant material from other disciplines into the core engineering curricula. (Roach and Soetendorp, 2008, 5)

The academics involved considered that the syllabus was already crowded and that as aspects of intellectual property did not appear as an explicit benchmark or accreditation requirement they were not a priority issues.

Across the Atlantic and in 2012, following his informal survey amongst graduate engineering students Villasenor (2012, 1) observed that 68% didn't have sufficient knowledge to answer the question 'what is a trade secret?', 21% insufficient knowledge to answer 'what is a patent?' . The percentages of students unable to provide answers to 'what is copyright?' and 'what is a trademark?' were 32% and 51% respectively. The results and the consequent negative impact for industry led him to assert 'Intellectual Property Awareness at Universities: Why Ignorance Is Not Bliss', advocating that all STEM students should have a basic understanding of IP.

Fast forward now almost 10 years from Roach and Soetendorp (2008) findings and intellectual property is explicit within the QAA benchmark statement for Engineering (QAA, 2015, 6).

'Engineering relies on three core elements, namely scientific principles, mathematics, and realisation. Scientific principles underpin all engineering, while mathematics is the language used to communicate parameters, model and optimise solutions. Realisation encapsulates the whole range of creative abilities which distinguish the engineer from the scientist; to conceive, make and actually bring to fruition something which has never existed before - and to create **Intellectual Property**, associating invention with commercial or social value. This creativity and innovation to develop economically viable and ethically sound sustainable solutions is an essential and distinguishing characteristic of engineering, shared across the many diverse, established and emerging subjects within the discipline'.

Student responses within the IPAN/IPO/NUS (2016) survey would suggest that the engineering disciplines have subsequently responded, with patents, trademarks and design rights a feature of the program of study, frequently delivered by the program leads.

Such findings are not reflected in other programs, whereby the same study in asking what IP topics were included in their course, the most common response was plagiarism (73%), with getting advice on IP matters just 6% (IPAN/IPO/NUS, 2016, 26).

A challenge of note is that only 52% of students (IPAN/IPO/NUS, 2016, 32) felt their lecturers were well informed about IP, with 9% considering they were uninformed.

The UK Student and graduate perspective

According to NUS/UKIPO/IPAN (2012), students want a better education in relation to intellectual property, though enhancing the student experience with innovation protection requires a pedagogical strategy for integrating intellectual property into the enterprise (and beyond) curriculum.

'It is concerning how little is known about the attitudes and experiences of IP education within the UK student body. Intellectual property is a significant issue for many UK students, not only for the successful completion of their academic course, but as importantly, to ensure students understand how ideas are recognised and protected, to prepare them for the growing world of enterprise and innovation beyond graduation. Students believe knowledge of IP is important and those who have some experience of IP education view it positively and express a desire for more. However, the extent of IP teaching is currently very limited and many students are not even aware of the potential scope of IP education. Even where it does take place, IP education is frequently restricted to plagiarism, is not included in assessment, and makes little use of external experts' (NUS/UKIPO/IPAN, 2012, 5).

Moreover,

'Many students want to see improvements to IP teaching. In particular, they want the teaching of IP issues to be more closely-related to their course discipline. They also called for coverage of IP to extend beyond plagiarism. Overall, only 40% of students consider their current awareness of IP to be enough to support them in their future career' (NUS/UKIPO/IPAN, 2012,

3. The synergies between entrepreneurship and intellectual property education

Entrepreneurship education is a pan University subject or approach, either as a full degree/post graduate award, a discrete module within a discipline (as an elective or core) and/or a way of teaching any topic (QAA, 2012). The university educator/ curriculum manager taking forward the enterprise/entrepreneurship agenda supports their students and graduates to develop services and products, adding value for others for a commercial, cultural or social context. In doing so, developing what the World Intellectual Property Office describes as 'creations of the mind: inventions, literary and artistic works and symbols, names and images used in commerce' (OHIM, 2015, 21).

Within both the QAA guidance for Enterprise and Entrepreneurship Education (QAA, 2012) and the European Commission's framework of entrepreneurial competencies 'EntreComp' framework, links with intellectual property are implicit. The QAA guidance advocates that to support entrepreneurial effectiveness education should include 'learning about legal requirements including health and safety, employment law, and intellectual property rights' (2012, 8). Within EntreComp, a tool offered to improve the entrepreneurial capacity of European citizens and organisations, 'Valuing Ideas' is one of the 15 competencies within the conceptual model (Bacigalupo et al, 2016, 11).

So, if we are to consider that the results of the survey by IPAN/IPAN/NUS (2016, 32) are representative, and that only 52% of lecturers are well informed about intellectual property, might the entrepreneurship educator be best placed to address this shortfall?

Within European schooling there are clear alignments between IP education and entrepreneurship education, with examples of integration into the national curriculum (Sweden) and school competitions and contests that include aspects of IP (Denmark, Germany, Portugal and Romania) (OHIM (2015, 57). The only evidence of IP as an integral part of the creative and value generation process is reported in the US and in Hong Kong (OHIM, 2015, 65)

For most people the term intellectual property conjures up patents, and consequently the inventive step that readily sits within the science disciplines. However, HE students across all disciplines could be involved in creating the intellectual assets of a brand, including the product name, logo and slogan, the design of the product itself, and maybe the less obvious aspects such as the distinctive colours of the packaging, the distinctive sounds and smells associated with the product and or campaign. Elements that would be protected by trademarks, trade secrets – know how, copyright and design.

To consider this in economic terms for the UK, the Investment in branding amounted to £15.1 billion in 2014, and an estimated 1 million people are employed in the creation and building of brands (IPO, 2017).

To view this from the perspective of two Stanford student start-ups; Google, formed in 1995, , according to Millward Brown Annual Brand Report, 10 years on had a brand value of \$100 billion (Chasser and Wolfe (2010, 1) and 'Yet Another Hierarchical Official Oracle' (Yahoo) is consistently one of the world's top ranking brands (Miners, 2013).

What support is there?

The UKIPO have a host of free education resources to support educators across all levels, For Primary and Secondary education, there is the [Cracking Ideas website](#) and [Think Kit](#), and for Further and Higher Education [IP Tutor](#). There are [university case studies](#) providing examples of how universities are engaging students with IP along with [business case studies](#) to support relevance and importance for students now and in the future.

From a research perspective there is the [University and business collaboration agreements: Lambert Toolkit](#) and for management of the universities IP portfolio [Intellectual Asset Management Guide](#) (IPO, 2016b)

Design and delivery of IP – strategies to adopt

The authors assert that you don't have to be an expert to raise awareness of Intellectual property. Nguyen (2011) echoes the perspectives of Penaluna and Penaluna (2007) in as much as the primary need is to simply make students curious. In preparing students for a career in writing, Nguyen (2011, 306) states it thus;

'Can one ever really be sufficiently prepared? Copyright and intellectual property law is very complicated and continues to evolve in tandem with digital communication. The nature of the subject is constantly changing, so basic principles learned in the first year of college may never be wholly sufficient. The goal here, I think, is to instil a spirit of curiosity, awareness, and ethics that would lead a responsible student, to, at least, think about either or not there are IP/copyright considerations to make in their work – and to continue to think about these issues once they graduate and are part of the work force'.

By way of an example, using the Continuous Conceptual Review model (Penaluna and Penaluna, 2009) (see appendix 1), industry-based alumni can share their experiences and examples of IP issues. The use of alumni examples gives direct resonance to the material when it is delivered to students from the same educational establishment. Context and relevance to the student is vital, facts and figures can follow a practical experience. Such an experience can be a discussion over who owns their work and the importance of correct referencing to avoid plagiarism.

The facilitator can likewise discuss what is in the room in terms of intellectual property, the projector, the computer, the trademarks, clothing, jewellery, power point slides and the notes the students are taking. By way of example, at its most elementary (arguably), but relevant for all stakeholders of an institution, are the copyright implications that surround the basic task of photocopying. If the delivery method encourages individual or small group responses that are elicited through thoughtful questions from the lecturer, the levels of interest and curiosity have been shown to be raised.

Pedagogic Model – a case study exemplar

I love IP: Protect your Ideas - Avoid Being Sued

The interactive workshop discussed in this study has been delivered for 10 years, across disciplines, for over 5000 undergraduates, post graduate students and alumni, within timetabled classes to support the delivery of a module, such as 'entrepreneurship' and/or as an extra curricula event. It has been seen to be effective with numbers of 1 – 240, with a norm of 30. The duration of the workshop is usually one and an half hours, tailored to include examples from the particular discipline. Evidence of its success includes observations of the engagement of participants, with their questions and discussions, which invariably extend the duration of the workshop, feedback forms, and invitations from students and lecturers to provide workshops for additional cohorts.

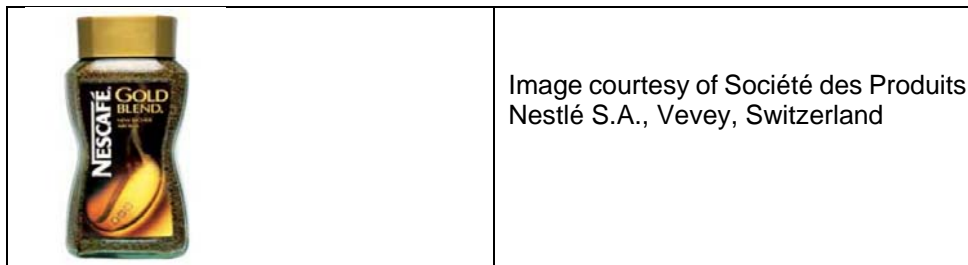
The workshops have evolved and the bank of examples from alumni increases as their experiences are obtained as per the Continuous Conceptual Review model (Penaluna and Penaluna, 2009), in appendix 1.

The educator asks for or identifies a volunteer; the facilitator in greeting their audience can create instant attention by observing that they will take looking at the floor to be volunteering for an activity. They then provide the volunteer with paper and pen and ask that they draw anything of their choice. The drawing is then passed to friend in the room, who doesn't like it and discards it. Someone else finds it and sells it to an entrepreneur. The scenario is discussed with considerations about the rights and wrongs of this, i.e. it was the educator resources of the pen and paper that enabled the 'artist' to produce the 'artwork', yet the person who benefited commercially was the one who found it. The story moves on, with the purchaser of the artwork producing prints to sell, with a local journalist publishing a feature in the local newspaper about the entrepreneur's latest venture and including an image of the artwork. Again, the question is asked about whether this is right or wrong and any legal considerations to be taken into account. A question from the educator at this point as to whether the participants want to know the answers/potential answers, has without exception drawn a resounding 'yes'. As with all educational environments the experience within cohorts varies and leveraging this expertise for maximum benefit of all participants adds additional impetus to discussions. The educator moves from sage on the stage to guide on the side (King, 1993), frequently positioning themselves as meddler in the in the middle (McWilliam, 2008)

For many disciplines such as art and design the scenario has direct resonance with them, especially when the artwork is considered in terms that it might be used as a brand, such as the Nike tick. The facilitator highlights that whilst the current discussions are about a drawing, the considerations would be the same if it was a photograph, music, or film script, with an emphasis on the most salient for the cohort. The scene is set for a conversation about copyright, whether the artwork was original, whether there was an employer relationship between the facilitator and the artist and what could have been done to protect the work. The principle of 'fair dealing' is raised with the newspaper article, by asking if you can buy today's newspapers tomorrow. Invariably within the room there is someone in the room who worked for a newsagents/supermarket who has witnessed the packaging of newspapers for return, but never knew why. The scenario is a backdrop to the whole workshop, whereby students are provided with an overview of what is protected with IP (using the room as per previous section).

A photograph of a jar of Nescafe Gold Blend coffee is used within the Gowers (2006) report as a tool to outline IP features in a common everyday object. The workshop extends this example by taking the coffee grains from

the jar and asking students to consider commercialising the coffee. by placing it within a container (glass jar - registered design), that keeps the product airtight (lid seal and foil - patent). Registered and unregistered design rights can protect the shape of the jar. The typographical layout can be protected and the artwork in labels subject to copyright. Trademarks can protect the shape of the labels, brand names and the colours used. Advertising and associated licensing agreements and the potential for trade secrets, complete the IP related picture.



Student feedback consistently demonstrates that these techniques have had significant impact on their thinking, as illustrated by the following quotes from participants

“Fantastic, essential information clearly and humorously explained”

“Lots of information supplied in an understanding and interesting way ... I am so glad we are offered this info”

“Entertaining for a complex subject”

“Thought provoking”

“Love to learn more”

“I had no idea I needed to know this stuff “

“We should have had this in the first year” (Third year photography student)

Once the facilitator has raised awareness and curiosity the students can be signposted to guidance such as [IP Tutor](#) and readily engage in the activity as they are motivated to learn.

An additional outcome of the workshop is the frequency with which students share that they have ideas for a business opportunity, which they hadn't shared with anyone within the University previously. The facilitator is thereby able to raise awareness of the support available and to signpost accordingly. Supplying and discussing non-disclosure agreements is a practical starting point.

A graphic recorder's documentary on the intellectual property class in which key points highlighted in the text can be seen, e.g. the opening activity of throwing away the 'art' and ensuing discussions on copyright, patenting and trademarking, is shown in appendix 2.

Conclusion

- Intellectual Property awareness raising sessions should be embedded within all programs of study to respond to the needs of society, be they economic, social or cultural.
- The entrepreneurship educator has a key role to play in ensuring that intellectual property is covered within the curriculum.
- Workshops should be contextualized and incorporate program specific cases.
- The IP educator does not have to be an expert in the topic, but to raise awareness and engender curiosity for the student to consider the issues.

A challenge for entrepreneurship education is to meet the 'rigours of academia while keeping a reality-based focus and entrepreneurial climate in the learning experience environment' (Solomon et al, 2002, 2).

The authors posit the view that entrepreneurial education, where value needs to be captured, managed and developed; is highly reliant on an ability to know how, and when, IP aspects will impact on success. If as a

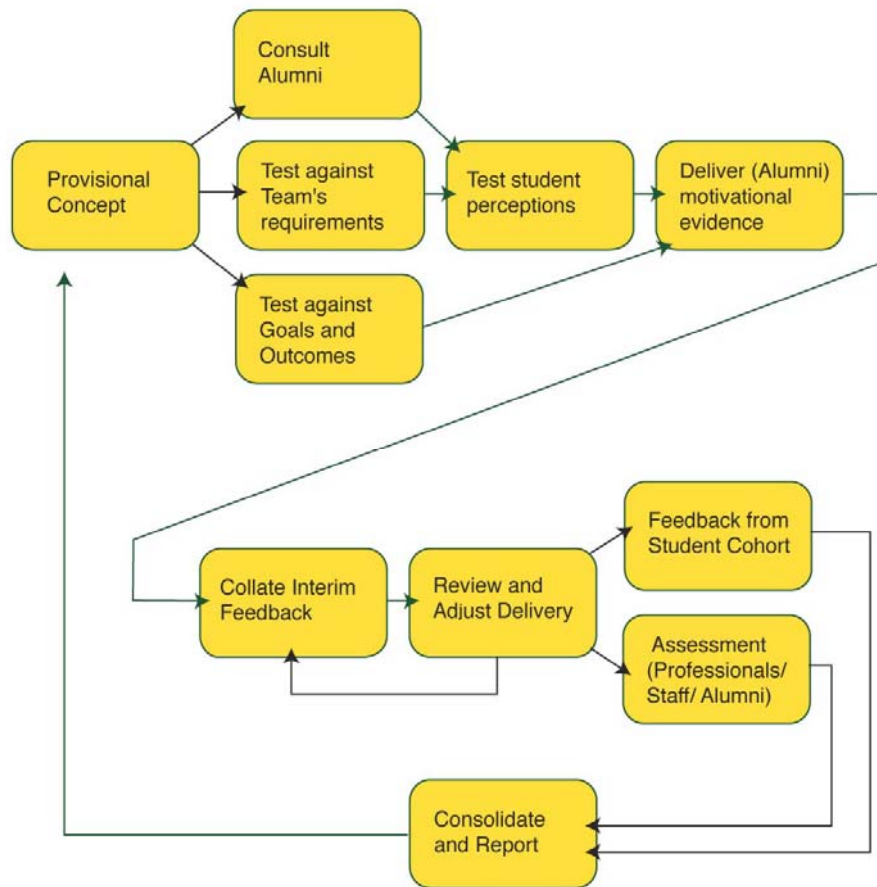
minimum students curiosity is not aroused through their education, their ability to take full advantage of their ideas will be compromised.

The paper has discussed intellectual property awareness-raising sessions, that stimulate curiosity (Penaluna and Penaluna, 2007, Nguyen, 2011) offering students the potential to exploit creativity and innovation. This in turn will help students avoid infringement and potential legal pitfalls.

Intellectual property management needs intellectually developed strategies that critically evaluate potential issues and ultimately lead to opportunity. In the words of Andrew Gowers (2006, 1),

‘Getting the balance right is vital to driving innovation, securing investment and stimulating competition. Lasting success will belong to those who get this right’.

Appendix 1 – Continuous Conceptual Review Model (Penaluna and Penaluna, 2009)



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