

The Role of Intellectual Property Law in Increasing Science Education Capacity in Indonesia

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Abstract: Currently, the world of education is the backbone of the development of Intellectual Property Rights (IPR). Research results in learning and research activities in the form of science and technology are objects of IPR that must be registered and protected. This is because the findings are an innovation that has high moral and economic value. This study aims to identify the role of IPR law in increasing the capacity of science education in Indonesia. This type of research is legal research using a conceptual approach. Data collection techniques were carried out using library research. Data analysis techniques were carried out using the critical hermeneutic method. The results of the study state that IPR law has two functions, namely: a protective function and an economic function. The function of protection means that the registration of IPR legally protects the findings of inventors as intellectual property. Inventors also have the right to sue other parties who use their findings without rights. The economic function means that registered innovations in science education can provide economic benefits for inventors as well as a source of income (royalty). However, the level of HKI registration in the world of science education is still low. The existence of HKI learning materials in science education is something that is needed at this time.

Keywords: Intellectual property rights; Invention; Inventor; Legal protection; Science education

Introduction

The downstream of research results produced by tertiary institutions and even at the school level is an issue that the Government continues to study (Schot & Steinmueller, 2018). How can the results of research produced in the world of education be used directly by the community continues to be a frequently discussed question. The results of research or research must not just stop being reports but must turn into products that can be used by the community and can be commercialized for the welfare of inventors. The downstream process is the process of bringing research and innovation results closer to its users (Allen, 2022). Users in this case are the public. Society in this case can be the public or general users, government agencies, or industry (Olan et al., 2022). This is not only limited to research (RI) products in the form of technology, prototypes, and the like, but also products related to

software, policies, systems, and other RI products. The aim is none other than to expand the benefits and impacts of RI's results to society. the results of the implementation of innovation by universities so that it can be applied in the business world (Astirin, 2018).

One of the stages of downstream research results is the registration of Intellectual Property Rights (IPR). IPR registration is the initial mechanism so that downstream research can achieve its goals (Kemdikbud, 2021). Research results can be marketed to users or the public, it is very possible if the research results already have an IPR certificate according to the type of object found. This is because the results of research produced in the world of education can be of various kinds, and can be in the form of works of art, science, appropriate technology, to brands (Darling-Hammond et al., 2020).

According to the World Intellectual Property Organization (WIPO), IPRs are various things that arise from the creativity of human intellectual abilities in the

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form of creations and inventions from thoughts, literary and artistic works, symbols, names, and pictures that have economic value and are used in trading (WIPO, 2018). IPR is an intangible right that arises from the results of human intellect in the fields of industry, science, technology, arts, and culture that have economic value (Kharisma, 2020; Kharisma & Hunaifa, 2022). For inventors, IP rights provide exclusive rights to enjoy economically. Other people are required to respect these rights with permits or licenses if they want to enjoy or use these findings (Kharisma & Kholil, 2022). IPR is specifically divided into two main areas: Copyright includes all rights related to Copyright and Industrial Property Rights including patents, brands, industrial designs, trade secrets, integrated circuit layout designs, and protection of plant varieties (Kharisma & Kholil, 2022).

In the context of science education, research results in learning and research activities can be in the form of books, scientific articles, technology, prototypes, visual art, industrial design, visual communication, interior design, craft, multimedia, film, and photography. The results of research produced in tertiary institutions are prone to violations of IPR. In fact, the level of IPR violations in tertiary institutions is quite high (Sattiraju et al., 2023). An example is the rise of research paper plagiarism is an example of intellectual work copyright infringement (Muryanto et al., 2021).

The results of this research are objects of intellectual property rights that must be registered, protected, and distributed to the public. This is because the findings are an innovation that has high moral and economic value. However, the level of HKI registration in the world of science education is still low (Faisal & Martin, 2019). In this regard, research is needed on what are the functions of HKI in increasing the capacity of science education in Indonesia. Then, how to construct policies so that inventors' understanding and registration of Intellectual Property Rights in science education can increase will also be discussed in this paper.

Method

The approach used in this research is the socio-legal research approach. The object of research in this study is not only IPR law in the sense of "norm" or statutory regulations but also social phenomena that exist in society related to the role and function of IPR in increasing the capacity of science education. In socio-legal research, there are two aspects of research, namely aspects of legal research and socio-research. The legal aspect of research means that the research object still exists in the form of law in the sense of "norm" or statutory regulations (Sarikakis & Winter, 2017). While

the socio-research aspect means that the research object is also a social phenomenon that exists in society (Hutchinson, 2002).

The socio-legal research approach used in this study is due to the following reasons: first, according to Satjipto Rahardjo, new laws can be effective if they reflect the conditions of society (legal realist) (Rahardjo, 2009). Therefore, to analyze the role and function of IPR law in improving science education it is more appropriate to use a socio-legal research approach. Second, according to Roscoe Pound, the law is a means of social change that is widely used in policymaking (Soemitro, 1999). Thus, to construct an IPR legal strategy so that it can increase the capacity of science education in the world of Indonesian education, it is more appropriate to use a socio-legal research approach so that legal facts and social phenomena can be known more deeply (Meutia et al., 2022). Third, the reason why researchers use a socio-legal research approach is that to analyze the role and function of IPR in science education, researchers must be able to capture the "outsider" nuances of IPR issues in science education. The authority of legal experts in forming or reading laws to apply them never stands alone, but there is always a context behind it, namely the community where the law applies or is enforced (Mulyani, 2010).

Data collection techniques in this study were carried out using library research or referred to as document studies. Document study is a data collection tool that is carried out through written data (secondary data) using content analysis. This library research was conducted to collect secondary data on theories that support the proposed problematic analysis, as well as positive law in the form of laws and regulations related to IPR in science education. In this study, the author collects data by reading, understanding, and collecting legal materials that will be examined, namely by making document sheets that function to record information or data from legal materials studied which are related to research problems that have been formulated against: Literature books on IPR and science education, Laws and regulations related to Intellectual Property Rights.

Result and Discussion

The main asset in downstream science education research results is intellectual property owned by inventors (academicians). Research results in science education focus on the value of originality, innovation, and uniqueness, thus requiring the protection of intellectual property. IPR law can be a means of legal protection for research results produced by academics. With the existence of IPR law, research results in learning and research activities in the form of books,

scientific articles, technology, prototypes, visual art, industrial design, visual communication, interior design, craft, multimedia, film, and photography can be protected for their intellectual property and optimize economic benefits. from the innovation research results (Sulistiyono & Sudarwanto, 2019).

IPR law in science education can provide various benefits to inventors, academics, and the state in education and the national economy (Biagioli, 2019). In addition to obtaining economic benefits from intellectual creativity, IP can be an instrument for producing research products that are more innovative and contain elements of novelty. This understanding is obtained, in KI is known to have a KI database system that is beneficial for efforts to develop a product including other science education research products. For the state, intellectual property resulting from downstream research can increase GDP, absorb labor, transfer technology, and encourage international trade which in turn can boost Indonesia's national economy (Kharisma & Kholil, 2022).

The downstream research in science education will continue to develop rapidly and contribute more significantly to education and the national economy if inventors who incidentally are academics register their intellectual property. IPR registration will have significant implications for downstream research and economic benefits for inventors (Gubby, 2020). Registered intellectual property rights increase the capacity of science education to expand the benefits and impact of innovative research results on society so that they can be applied in the business world.

IPR law in science education has two functions, namely: a protective function and an economic function. The function of protection means that the registration of IPR legally protects the findings of inventors as intellectual property. For example, when a lecturer manages to find a vaccine for the Covid-19 virus and wants to claim that he is the inventor of the vaccine, he must register his patent for the vaccine. When it has been registered, the lecturer has moral rights over his invention. That is, as an inventor, the lecturer is a patent holder. Referring to Law Number 13 of 2016 concerning Patents, a Patent is an exclusive right granted by the state to an inventor for his invention in the field of technology for a certain period to carry out the invention himself or give approval to another party to carry it out (Sudarwanto & Kharisma, 2021).

The protective function also means that inventors also have the right to sue other parties who use their findings without rights. Continuing the previous example, a lecturer as a patent holder for a vaccine he has invented has the exclusive right to use his patent and to prohibit other parties without his consent from

making, using, selling, importing, renting, handing over, or providing it for sale or rent or submitted a patented product. The economic function means that registered innovations in science education can provide economic benefits for inventors as well as a source of income (royalty). Still using the same example, lecturers as vaccine patent holders are entitled to receive royalties for licenses granted to other parties based on license agreements, both exclusive and non-exclusive, to manufacture, sell, and import the vaccine. A license is a permit granted by a patent holder, either exclusively or non-exclusively, to a licensee based on a written agreement to use a patent that is still protected within a certain period and under certain conditions. Royalties are compensation given for the use of patent rights.

However, the level of HKI registration in the field of science education is still low. Data for 2020, only 1.8 percent of Indonesian people have IPR. This means that around 98 percent do not have IPR. This ratio has dropped dramatically from 2016, namely reaching 11.05 percent having IPR and 88.95 percent not having IPR (Kompas, 2022). This condition is caused by several things, including There is still a lack of understanding by researchers and academics about HKI. Often new researchers understand the importance of IPR registration when the results of their research will be produced by a company. It often happens that when a researcher is about to register an IPR, another party has already preceded him, Lack of socialization regarding Intellectual Property Rights in the educational environment, including universities and schools. So far, the government has only focused on facilitating business actors, but not researchers and academics in educational institutions.

This is also a "homework" for the government so that in the future it will also facilitate academics who have IPR potential for their findings, Lack of absorption of research results by the business world, especially industry. The research output requires the need for the research results to be used by the industry. However, in addition to the lack of interest from industry players to work together, the lack of absorption is due to the research results of Indonesian researchers not being related to industry needs. Therefore, innovative and sustainable research results are still a problem for researchers in Indonesia. To overcome these problems, registration of IPR to the application of innovation results by educational institutions, especially higher education institutions, can apply the innovation cycle of research results as shown in Figure 1.

IPR registration is the first step in downstream research results in science education (Holgersson & Aaboen, 2019). Therefore, collaboration is needed from all parties, both researchers as inventors, the

government, universities, industry players, and the community. To increase the understanding of researchers, universities can work together with the Government, in this case, the Directorate of Intellectual Property Rights, Ministry of Law and Human Rights, to facilitate the registration of Intellectual Property Rights as well as socialize Intellectual Property Rights to researchers in educational institutions (Purcell et al., 2019).

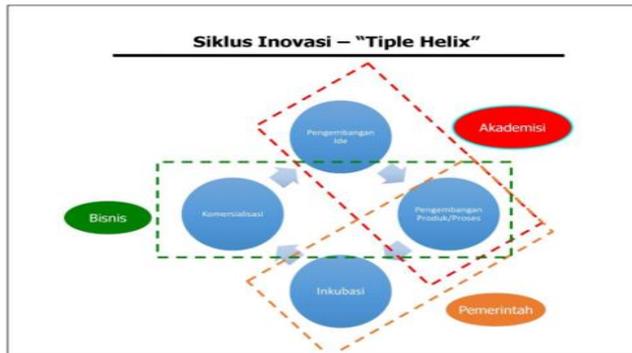


Figure 1. The triple helix of the innovation cycle, the roles of the components of academia, government, and the business world (Source: Directorate General of Strengthening Research and Development, in Astirin, 2018).

Then, universities together with industry players and business actors can collaborate to develop designs or long-term research road maps to the needs of the business world and the public (Brun et al., 2020). It is intended that the research results produced are by the needs of the community and can be absorbed by the business world. The government, in this case, the Ministry of Education and Culture, and educational institutions, both at the tertiary level and at the school level, need to include intellectual property learning materials in science education (Coman et al., 2020). Education and understanding of IPR are something that is needed at this time. This aims to encourage innovation and prevent future IPR infringement.

Conclusion

HKI Registration has an important function in increasing the capacity of Science Education. Aside from being a mechanism for downstream research results, IPR has two functions, namely a legal protection function for research results and an economic function to provide economic benefits for inventors as well as a source of income (royalty). However, HKI registration is still low due to the lack of understanding and socialization of IPR in educational institutions. In addition, the lack of absorption of research results by the business world is also a serious problem in downstream research results. To increase IPR registration, a triple helix collaboration

is needed between all parties, including academia, the government, the private sector (business actors, and the community).

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Author Contributions

Conceptualization, Diana Tantri Cahyaningsih, and Dona Budi Kharisma; methodology, Diana Tantri Cahyaningsih; validation, Dona Budi Kharisma, and Diana Tantri Cahyaningsih; formal analysis, Diana Tantri Cahyaningsih; investigation, Diana Tantri Cahyaningsih, and Dona Budi Kharisma; resources, Dona Budi Kharisma and Diana Tantri Cahyaningsih; data curation, Diana Tantri Cahyaningsih; writing-original draft preparation, Dona Budi Kharisma, and Dona Budi Kharisma; writing-review and editing, Dona Budi Kharisma; visualization, Diana Tantri Cahyaningsih, and Dona Budi Kharisma; supervision, Dona Budi Kharisma; project administration, Diana Tantri Cahyaningsih; funding acquisition, Diana Tantri Cahyaningsih and Dona Budi Kharisma. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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