

Legal Review for the Vitalization of R-Learning

Yeon-Seung Lee¹, Soo-Jin Lim^{2*} and Yong-Ho Seo³

¹*Department of Childhood Education, Kyungsoong University, Korea,
ysly@ks.ac.kr*

^{2*}*Corresponding Author : Department of Childhood Education, Dong-shin
University, Korea, lunar815@dsu.ac.kr*

³*Department of Intelligent Robot Engineering, Mokwon University, Korea,
Corresponding Author yhseo@mokwon.ac.kr*

Abstract

R-Learning is an educational system that makes use of robot functions, contents and IT convergence. R-Learning system was used in 1,843 kindergartens(2.147 EA) as of October, 2013. To accelerate the universalization of R-Learning, the related laws and system should be reviewed to seek workable reform measures. The purpose of this study was to examine an act on the development of the e-learning industry and the promotion of e-learning and an intelligent robot act in an effort to offer an overview of the legal system related to R-Learning. Besides, the regulations of the copyright law and the personal information protection law that were associated with R-Learning were reviewed to expedite the vitalization of R-Learning.

Keywords: *R-Learning, Childhood education, Intelligent Robots, Law*

1. Introduction

In early childhood education, robots are used during normal classroom hours to spark State-of-the-art scientific technology has brought a drastic change to Korean society, affecting it across the board directly or indirectly. The field of education is no exception. The major shifts in education including e-learning have made a contribution to the universality of education by eliminating the restrictions of time and space, and to the quality of education by providing a wide variety of teaching media and learning materials as well. In early childhood education, a further attempt has been made by introducing R-Learning, which takes advantage of up-to-date scientific technology of intelligent robots. R-Learning is a hands-on educational system that capitalizes on robot functions, contents and IT convergence. That was introduced as part of "the early childhood advancement initiative" in March, 2010. The R-Learning system was used on 1,843 kindergartens (2,147EA) as of October, 2013, and plenty of research efforts are channeled into this field by research clubs of teachers and colleges [1].

The certified robots used in R-Learning, which are respectively named iRobi and Genibo, support two-way hands-on education between preschoolers and their teachers and provide educational contents of their own through the LCD and voice function. These are designed to serve as preschooler-led learning media and teaching media for teacher as the same time.

It's pointed out that there are plenty of barriers to e-learning among particular learners such as preschoolers as a means to ensure the perfect achievement of the selected educational objects, since it requires digital literacy like computer literacy. R-Learning that is easier for learners to do is more suitable for the attainment of educational objectives in terms of accessibility or usability than e-learning that needs a stereotyped means of input like a keyboard or mouse. In addition, preschoolers are able to take the

initiative in R-Learning thanks to the pivotal characteristics of robots like mobility, movement, and TTS-based interactivity [2].

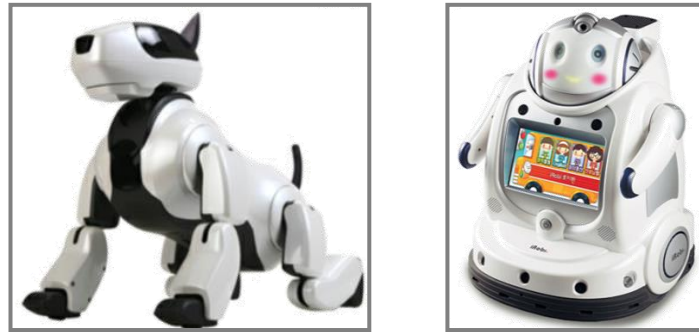


Figure 1. The Certified Robots Used in R-Learning, which are Respectively Named iRobi and Genibo

And R-Learning can be utilized in an efficient manner during normal classroom hours of kindergarten owing to the diverse functions of a robot that can be used for attendance record, calling or evaluation. According to a study of the influence of R-Learning on educational institutions and teachers, R-Learning exerted an influence on the educational environments and curriculum domain of kindergartens, and was considered to create preschooler-led learning environments [3]. That is, R-Learning is expected to serve as a teaching medium to have a positive impact on early childhood education, and to make a contribution to the efficiency of education. Due to the interactive, hands-on characteristics of R-Learning, that is expected to make a great contribution to nurturing competent human resources and creative leaders who will take the lead in future society [4].

But a separate certification system for intelligent robots that could be used for educational purposes was introduced to ensure the selective selection of educational robots that meet the standard, but there is little concern for the necessity of the additional improvement of the related laws [5]. Therefore the related laws should carefully be reviewed to take necessary reform measures to accelerate the universalization of R-Learning in early childhood education. In this study, "an act on the development of the e-learning industry and the promotion of e-learning" was discussed, which deals with e-learning that can be considered to be comprehensive of R-Learning, since there is no separate law that covers R-Learning only. Besides, another "act on the development and spread of intelligent robot" that deals with intelligent robot, one of the major components of R-Learning, was discussed, and what improvements should be made to facilitate the penetration of R-Learning was mentioned. Finally, legal matters, related to the copyright law and the personal information protection law that could possibly concern R-Learning, were discussed.

2. Review of the Legal System related to R-Learning

E-learning is defined as a learning system that links schools, families and local communities with one another to improve the quality of teaching and learning to boost self-directed learning capabilities through ICT, and that is to take advantage of digital contents in class[6]. Given this fact, R-Learning that combines ICT and intelligent robot technology can be regarded as an advanced applied form of e-learning or an educational form that belongs to e-learning in a broad sense. Accordingly, an act on the development of the e-learning industry and the promotion of e-learning (hereinafter called the e-learning industry act) should be discussed to have an accurate legal understanding of R-Learning.

The e-learning industry act deals with industry and education at the same time, and is characterized by an attempt to take an industrial approach to education [7]. In No. 1, Article 2 of this act, e-learning is defined as learning that makes use of electronic means, IT, electromagnetic wave or broadcasting technology. According to this definition, R-Learning can be said to belong to e-learning that the e-learning industry act mentions, and the only difference between the two is whether a robot is used or not. In the 7th Clause of Article 2 of the act, it's stipulated that educational institutions are comprehensive of educational institutions that have been established according to the early childhood education law. Therefore R-Learning that takes place in kindergarten could be said to be under the category of e-learning. Furthermore, Article 3 of the e-learning industry act states that no distinctions can be made on the ground that the educational form is e-learning. It prevents the possibility that the spread of e-learning is illegally curbed, and obligates the government to further e-learning [8]. Accordingly, R-Learning should not be discriminated on the ground that the educational form is R-Learning, and it implies that R-Learning shouldn't merely use as an auxiliary means of education on the ground that a robot is used.

Article 4 of the e-learning industry act specifies "the vitalization of e-learning" to make it prevailing. In particular, the first clause of Part 2 of Article 17 stipulates assistance for the e-learning of educational institutions, which allows every educational institution to receive support necessary for the vitalization of e-learning [9]. As a consequence, it's possible to receive support for R-Learning from the educational authorities when necessary materials are developed such as contents, since R-Learning is under the category of e-learning defined by the e-learning industry act.

On the other hand, it's also required to take a look at the act on the development and spread of intelligent robot (hereinafter called the intelligent robot act in that R-Learning is an educational method to utilize an intelligent robot. According to this act, an intelligent robot refers to a mechanism that perceives external environments, makes a judgment and moves in an autonomous way [10]. A robot that is used in R-Learning is equipped with a sensor and can perceive the action of a teacher or learner and properly respond to that. Therefore this kind of robot could be said to conform to the intelligent robot act. In addition, one of the regulations requires quality certification to ensure the quality of robots for R-Learning, and it's stipulated that the government must offer a subsidy required for that within the limit of the budget [11]. Chapter 4 of the intelligent robot act stipulates robot-investment companies and provides tax benefits to facilitate an investment in intelligent robots from the private capital [12].

So far, the two acts related to R-Learning were reviewed. The e-learning industry act and the intelligent robot act respectively include regulations about e-learning and intelligent robot, but there's something desired in that the regulations of the two acts mostly lean toward industrial aspects without paying due attention to education. The regulations of the e-learning industry act are just declamatory or deal with basic concepts only, and few of them could be categorized into the field of education. Furthermore, the intelligent robot act includes no mention about education, and it just specifies the necessity of intelligent robots in the sector of industry as what's used for educational purposes. In order to expedite the spread of R-Learning and quality R-Learning contents, the acts should be revised to clearly stipulate R-Learning in terms of education.

3. Review of the R-Learning-Related Regulations of the Copyright Law

Article 25 of the copyright law involves a special regulation about the limit of the education-related copyright of the copyright holder. Clause 1 states that a work which has been released can be printed in a book for an educational purpose that is necessary at school for an educational purpose [13]. Thus, it's possible to use a work without the permission of the copyright holder when a book for an educational purpose is produced,

because a school may be unable to attain the selected educational objects if it's not possible to use a particular work without the permission of the copyright holder. Whether a textbook that has digital contents available for R-Learning can be classified as a book for an educational purpose according to the law or not will be at issue in terms of e-learning of comprehensive concept. But "the regulation of book for an educational purpose" states that a book for an educational purpose refers to a textbook and a teacher's guide and is also comprehensive of an electronic work. So a textbook that is in the form of a computer file and is used for e-learning also should be regarded as a book for an educational purpose that is defined in Clause 1, Article 25 of the copyright law. If a book for an educational purpose that is going to be used for R-Learning is provided and used in the form of digital contents, it can be said that the first clause of Article 25 of the copyright law applies to it.

When it comes to R-Learning in early childhood education, however, there are no contents that could be regarded as a book for an educational purpose that is mentioned by the law, and R-Learning contents are mostly books for educational purposes produced by teachers or scholars in consideration of R-Learning environments or are educational contents, and the first clause of Article 25 of the copyright act cannot apply to these contents. This case of R-Learning contents might be classified into the category of fair use of a work that is specified in Part 3 of Article 35, but most R-Learning contents are sold to educational institutions as products for educational purposes along with intelligent robots, and it will consequently be impossible to use one of these contents for educational purposes without the permission of the copyright holder. Therefore it can be said that the regulations of the copyright law about the limitation of copyright don't apply to the production of contents for R-Learning.

In fact, however, a teacher who teaches in an educational institution is entitled to use some of a released work if it's necessary in class, and this also can apply to instruction of R-Learning type that is conducted in kindergarten [14]. Accordingly, it's possible to use not only contents for instruction that are mounted on the robot for an educational purpose but a work that a teacher considers necessary for instruction, and the contents or the work can be used with some modifications to attain the objects of instruction as well [15].

The editing or modification of educational contents that are provided along with a robot might be at issue as well. If an educational institution purchases the educational contents of the educational robot along with another contents provided for an educational purpose and uses them in class, it seems valid to use them with modifications without the permission of the copyright holders in view of the fair use of Part 3 of Article 35 [16]. But even if a work is used with some modifications without the permission of the copyright holder, such a fair use is only allowed within an extremely limited range as a means to achieve the purpose without illegally harming the interests of the copyright holder. As a consequence, it may be beyond the range of fair use to use it with modifications or share with another teacher specific educational contents into which another work is inserted.

4. Review of the R-Learning-Related Regulations of the Personal Information Protection Law

Another possible problem related to the personal information protection law is about inputting the personal information of preschoolers into the web-site of the company that runs the robot for an educational purpose to make use of the function of calling or attendance recording. The fundamentals of education act is "the constitution of education" that specifies national obligation for education according to Article 31 of the constitution [17]. Article 20 of the fundamentals of education act states that the nation is obliged to further early childhood education, and Part 3 of Article 23 allows schools to gather student information for educational purposes [18,19]. In addition, Article 14 of the early

childhood education act imposes an obligation on early childhood education institutions to make a record of kindergarteners and thereby allows them to gather the personal information of preschoolers for an educational purpose (guidance) [20]. A kindergarten record of a preschooler must be made according to the guidelines of the Ministry of Education about the preparation and management of kindergarten record. According to the guidelines, every personal information involving name, date of birth, address, physical development and attendance must be collected, kept and maintained in a certain fixed form.

As the collection of preschooler personal information that is based on the law is allowed by the law, there is no obligation to seek the consent of the principal of the information, but the information must be used and managed for an educational purpose only [21,22]. That must not be provided for a third person without the consent of the student (the guardian when the student is a minor) except for the cases specified by the law [23]. According to the personal information protection law, every information included in the kindergarten record is personal information that is protected by the personal information protection law [24]. Personal information must evidently be collected for a particular purpose, and only a minimum amount of information that is necessary must be gathered [25, 26].

In the case of R-Learning, preschooler personal information should be inputted into the website of the company that produced the educational robot, when an early childhood education center intends to make use of some particular functions. Even if the teacher uses the personal information for the purpose of instruction, this is apparently providing a third person with the personal information, and the collected personal information can be used in a limited way as far as the law permits. If this requirement isn't satisfied, one of the requirements in each number of the first clause of Article 17 of the personal information protection law must be satisfied to provide a third person with the personal information. Therefore this requirement should be reviewed in more detail.

The first case is obtaining the consent of the principal of the information [27]. It's allowed to provide a third person with the information if the principal of the information agrees. As for the second case, it's said to be allowed to provide a third person with the information if it corresponds to No. 1, 2, 3 and 5, Clause 1, Article 15 of the personal information protection law [28]. As a matter of fact, it's not likely to obtain the consent of the principal of the information about providing a third person with the information for the purpose of R-Learning, and it's common to input into the website of the company the data of preschooler record that are legally gathered. So whether the requirements of No. 2, Clause 1, Article 17 of the personal information protection law are satisfied or not should be reviewed as to the matter of providing a third person with personal information for the purpose of R-Learning.

Among the requirements of No. 2, Clause 1, Article 17 of the personal information protection law, the requirement related to preschooler record belongs to No. 2, Article 15 of the law. That is, it's allowed to provide a third person with personal information within the limit of No. 2, Article 15 of the personal information protection law. But the early childhood education act stipulates that the record of preschoolers must be made for the purpose of guidance and for elementary school education. It cannot be denied that the input of personal information for the purpose of R-Learning is done as part of instruction-related guidance, but that cannot be viewed as indispensable for the attainment of educational objects. That is to provide a third person with personal information to make use of additional service to improve the efficiency of instruction. Therefore a more strict judgment is necessary for this case, and it couldn't be said that it corresponds to the requirement of No. 2, Clause 1, Article 17 of the personal information protection law. This case that is to provide a third person with personal information seems to possibly violate the personal information protection law unless the principal of the information is asked to agree. If the personal information of preschoolers are legally kept in the server of

the company with their consent, the company must take every safety measure according to the law to prevent the leak of the information.

5. Conclusions

So far, the major acts and legal issues that are related to R-Learning have been reviewed. Although it cannot be said that none of the laws is linked to R-Learning, both of the e-learning industry act and the intelligent robot act give more weight to industrial aspects than to education, and it is a shame that education is overshadowed by industrial aspects. As for possible R-Learning issues related to the copyright law, presenting a new released work other than contents provided for R-Learning or using some of the contents with modifications can be justified as what's used for the purpose of instruction or as the fair use of a work. But sharing the work or the modified contents with another person is highly likely not to be protected, since it may be construed as an action that is beyond the range of what's specified in Part 3 of Article 35 of the copyright law. Finally, the input of preschooler personal information into the website of the company, which aims to make use of one of the functions of an educational robot like attendance recording, is an action to use an additional function, though it is for an educational purpose, and this is within the range of guidance specified by the law. Since this isn't acknowledged as an action that is legally to provide a third person with information without the consent of the principal of the information, it may cause a problem.

Finally, there are some suggestions on some of the right directions for the development of R-Learning in early childhood education. First, the relevant laws should be rearranged to create the kind of legal environments that guarantee strong assistance for R-Learning in terms of both industry and education. Second, precise guidelines about legal issues that may possibly take place in R-Learning should be prepared not to throw educators into confusion. Indeed, education has continued to innovate, and the further involvement of it shouldn't be interrupted by indifference to the laws.

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