PUBLIC POLICIES FOR EDUCATION IN LATIN AMERICA AND THE DIFFICULTIES IMPOSED BY INTERNATIONAL OBLIGATIONS FOR TECHNOLOGICAL PROTECTION MEASURES

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I. INTRODUCTION

Technology has become essential in education. In order to give learners the skill sets needed to thrive in a twenty-first century world, many countries around the world have started to incorporate technology in the educational environment. For developing Latin American countries specifically, the use of technology in education represents an opportunity to solve salient problems that often plague their educational systems. Nonetheless, some Latin American countries have failed to consider the fact that copyright law governs, at least in part, how technology can be effectively used in education. Consequently, some of these countries have established regimes, such as Technological Protection Measures ("TPMs" or "TPM"), which do not favor the development of public policies that facilitate the incorporation of technology in education.

Although the relationship between copyright and education has been a hotly debated topic since the beginning of copyright law, the literature has not addressed the issues that arise between the incorporation of Information and Communication Technologies ("ICTs" or "ICT") in education and copyright law. Nor has the literature addressed the impact the United States' bilateral commercial treaties in Latin America have on education in the region. Therefore, for the first time in the literature, this paper brings together three controversial subjects in the copyright field: education, technology, and Free Trade Agreements ("FTAs") focusing on the cases of Colombia, the Dominican Republic, and Guatemala.

First, this paper provides a brief examination of the transformation of the learning process through the use of the technology. Second, this paper describes the importance of technology for Latin American countries, using as examples technological initiatives established in Colombia, the Dominican Republic, and Guatemala. Third, this paper describes the TPM protection international obligations that the United States' Latin American trade parties are required to fulfill. Fourth, this paper explains the potential difficulties created by standards such as TPMs in the incorporation of technology in education. Fifth, this paper describes the maximalist approach to TPM obligations that Latin American countries such as Colombia, the Dominican Republic, and Guatemala have adopted in their implementation legislation of FTAs with the United States.

Finally, this paper concludes that the approach taken by Latin American countries goes beyond the obligations of the commercial agreements with the United States and does not provide a TPM model that can boost or allow for full engagement with the new type of education that such countries seek. Therefore, the efforts of domestic governments in incorporating ICTs in education may become worthless.

II. TRANSFORMING THE EDUCATIONAL PROCESS: EDUCATION FOR THE XXI CENTURY

Technology has influenced every aspect of human life, and education is not an exception. ICTs are being incorporated in the educational process for at least two important reasons: (1) today's learners differ from their earlier counterparts;[1] and (2) today's economies are different. Today's learners were born in a digital world and will never experience a world without Internet, laptops, PCs, or tablets, among other forms of technology.[2] Therefore, today's learners have and need to develop skills that simply were not relevant to past learners.[3] These new skills embrace ICT literacy, which is a concept that goes beyond reading and writing[4] and refers to the ability to use all the electronic extensions of reading and

1. *See* BERNIE TRILLING & CHARLES FADEL, 21ST CENTURY SKILLS: LEARNING FOR LIFE IN OUR TIMES 27 (2009) ("Whether you call them 'digital natives,' 'net geners,' 'netizens,' 'homo zappiens,' or something else, it is clear that the members of the first generation to grow up surrounded by digital media . . . are different from the 'digital immigrants' who learned to 'do technology' later in life.").

2. *See* Ivan Kalaš et al., *This is the Digital Generation*, *in* ICT IN PRIMARY EDUCATION: ANALYTICAL SURVEY 16 UNESCO (2012), http://iite.unesco.org/pics/publications/en/files/3214707.pdftitle ("One of the most significant changes over the past decade is this: at primary school we nowadays deal with children of the digital or net generation, that is, with children that were born into a world where breath-taking technologies have become commonplace.").

3. *See* JONATHAN ANDERSON, ICT TRANSFORMING EDUCATION: A REGIONAL GUIDE 20-21 (2010), http://unesdoc.unesco.org/images/0018/001892/189216e.pdf (clarifying that digital natives perceive a disconnect between traditional teaching methods, modern multimodal technology driven communication, and recreation that younger students are accustomed to).

4. *See id.* at 26 ("Digital literacy (or in the plural digital literacies), e-literacy, new literacies, screen literacy, multimedia literacy, information literacy, ICT literacies—these are all terms to describe clusters of skills that students (and their teachers) need in the digital age of the 21st century.").

writing, including surfing the Internet, sending emails, and interpreting new types of codes such as icons, graphics, and videos.[5] Twenty-first century skills also make reference to other skills such as, information management, communication skills, teamwork skills, entrepreneurialism, global awareness, civic engagement, and problem solving.[6] Second, as today's economies have become increasingly knowledge-based,[7] citizens need to be trained to analyze and produce knowledge.[8] ICTs are essential tools for this process.[9]

The incorporation of ICTs in education is designed to provide new learners with the skills they need to succeed in this new society and be useful for the current knowledge-based economy. One of the initial benefits of using ICTs in education is the broadening of access to educational resources and information beyond the limits of a classroom's walls, thereby providing students and teachers worldwide with a vast amount of information.[10] The Internet opens

5. *See* Sasikala Nallaya, The Impact of Multimodal Texts on the Development of English Language Proficiency (Feb. 2010) (unpublished Ph.D dissertation, University of Adelaide), https://digital.library.adelaide.edu.au/dspace/bitstream/2440/62385/8/02main.pdf (explaining that literacy actually reflects the ability of a person, using all the modalities available to the student to create new knowledge in the target language).

6. *See* Robert B. Kozma & Daniel A. Wagner, *Core Indicators for Monitoring and Evaluation Studies for ICT for Education*, *in* MONITORING AND EVALUATION OF ICT IN EDUCATION PROJECTS 27 (Michael Trucano ed., 2005), http://www.infodev.org/infodev-files/resource/InfodevDocuments_9.pdf (describing that given the interconnectedness of global economies ICTs, digital literacy skills in education are becoming a necessity rather than a luxury).

7. *See* ECD, The Knowledge-Based Economy, OCDE/GD (96)102 (1996) (estimating that the gross domestic product of some Organisation for Economic Co-operation and Development countries is knowledge based).

8. *See* Robert. B Kozma & Shafika Isaacs, *A Framework for ICT Policies to Transform Education*, *in* TRANSFORMING EDUCATION: THE POWER OF ICT POLICIES 22 (2011), http://unesdoc.unesco.org/images/0021/002118/211842e.pdf (noting that once improvement of the human condition reaches a particular threshold, continued development requires an educated citizenry to enable participation in more advanced social institutions).

9. *See Towards Knowledge Societies*, UNESCO 19 (2005), http://unesdoc.unesco.org/images/0014/001418/141843e.pdf ("The new technology revolution marks the entrance of information and knowledge in a cumulative logic, which Manuel Castells describes as 'the application of such knowledge to knowledge generation and information processing/communication devices, in a cumulative feedback loop between innovation and the uses of innovation.'").

10. *See ICT and Education - Key Issues*, WORLD BANK, http://web.worldbank.org/wbsite/external/topics/exteducation/0,,contentmdk:20533883~%20menupk:61

access to educational resources and materials from other countries.[11] It disseminates content from one geographical region to another by facilitating the democratization of local information.[12] For instance, as a result of digital libraries, such as the National Library of Spain,[13] local content is available to any person around the world. Some of the most famous museums, including the Louvre in Paris, now provide virtual tours of their exhibition rooms, which would otherwise be impossible for many people to access.[14]

Additionally, the Internet allows anyone to disseminate any type of commercially available information worldwide, including reports, articles, books, and songs, which can benefit education systems in areas with limited resources. In this way, once a book published in the United Kingdom is made available on the Internet, it will be accessible, for instance, by Colombian teachers, researchers, and students where educational materials may be scarce.[15]

Additionally, the ICT capabilities of communication and information have allowed broader access to education by breaking time and geographical barriers. Internet access, through digital distance learning, brings formal and non-formal education to places where it is unavailable and to people unable to access a traditional educational setting.[16] Although distance learning is promoted by

7610~pagepk:148956~pipk:216618~thesitepk:282386~iscurl:y%20,00.html (last visited June 18, 2016) [hereinafter *ICT and Education*] ("Accessing information is the main use of ICT in education.").

11. *See id.* ("ICT's . . . provide access to a world of educational resources.").

12. *See, e.g.*, *Democratization of Information and Imperatives of Sustainable Development*, CENTER FOR MEDIA AND PEACE INITIATIVES (June 29, 2013), http://cmpimedia.org/democratization-of-information-and-imperatives-of-sustainable-development/ ("The remote communication possibilities made possible by developments in ICT and increased broad band [sic] Internet access in Africa can at the same time create opportunities to support democratic governance and conflict resolution in the continent.").

13. *See* Biblioteca Digital Hispánica, http://www.bne.es/es/Catalogos/BibliotecaDigitalHispanica/Inicio/ (last visited Nov. 8, 2014 4:04 PM).

14. *See Online Tours*, *LOURVE*, http://www.louvre.fr/en/visites-en-ligne (last visited Nov. 8, 2014 3:54 PM).

15. *See* Wadi D. Haddad & Alexandra Draxler, *The Dynamics of Technologies for Education*, *in* TECHNOLOGIES FOR EDUCATION: POTENTIAL, PARAMETERS AND PROSPECTS 8-9 (2002).

16. *See* Brendan T. Kehoe, *The TEACH Act's Eligibility Requirements*, 72 BROOK. L. REV. 1029, 1035 (2005) (noting that in instances where traditional access is not available, distance learning may be the only means to reach students).

other technologies, including television and radio, the Internet has been the first to allow education through asynchronous activities in a self-paced environment that is not limited by geography or time.[17]

Although broadening access to educational materials and education is critically important, it is just one piece of ICT's role in modern education. The incorporation of ICTs in education represents making technology a central and integral part of education,[18] and consequently, allows different activities, methodologies, and content to enter the educational paradigm. In other words, the incorporation of ICTs in education goes beyond the use of laptops, desktops, or tablets as productivity tools or the Internet as a replacement for printed materials inside a classroom;[19] the Internet allows people to take advantage of its information and communication capabilities to promote and generate a new range of teaching and learning methodologies and activities directed to teaching twenty-first century learners.[20] When ICTs are properly used, the educational setting is transformed: the teacher becomes a co-learner or facilitator,[21] and the student leaves the passive role and becomes an active learner and a

17. *See* Ryan Craig, *The Development of Internet Education and the Role of Copyright Law*, 47 J. COPYRIGHT SOC'Y U.S.A 75, 76 (2000)
(stating that the arrival of the internet created the opportunity to engage in both asynchronous and synchronous interactions in education).

18. *See* Haddad & Draxler, *supra* note 15, at 24 ("In this new paradigm, ICTs are not a substitute for schooling. They constitute one integral element of this education model-supplementing and enriching traditional institutions, delivery systems, and instructional materials. In this sense, ICTs contribute to the whole system of knowledge dissemination and learning."); *see also* Kalaš et al., *supra* note 2 at 33 ("[W]hen the transforming stage is reached, the whole ethos of the institutions is changed: teachers and other support staff regard ICT as a natural part of everyday life of their institutions, which have become centres of learning for their communities.").

19. *See Open and Distance Learning: Trends, Policy, and Strategy Considerations* UNESCO 66 (2002), http://unesdoc.unesco.org/images/0012/001284/128463e.pdf (explaining that in higher education, desktops have been used as a replacement of a typewriter; however the use of the technology in education is about creating a new educational platform and change the way students learn).

20. *See* Kalaš et al., *supra* note 2, at 22 ("More and more we are aware of the importance of new skills for the 21st century and new perceptions about literacy-digital and media literacy being its natural component.").

21. *See* Anderson, *supra* note 3, at 6 tbl. 1.1. (noting that with the increased use of ICTs in the classroom, the teacher is no longer the only source of knowledge and has taken on the role of "facilitator").

producer of knowledge.[22] The new paradigm of education therefore becomes about both learning and creating.[23]

Collaborative and interactive methodologies and activities are important for achieving this new educational paradigm. The purpose of these methodologies is to take advantage of Web 2.0 tools,[24] such as wikis, blogs, and video-sharing, which allow for communication and transformation,[25] and work together to generate new content while also facilitating an exchange of ideas, content, and experiences. In this way, the use of the Internet in education does more than provide access to vast amounts of information; it is also vital for the creation and exchange of information. For example, New Zealand primary school teachers use a class website to share their work with parents, children from others schools, and the general public.[26] Not only does this website allow for the creation of new content, it also allows virtually anyone to use it or transform it.[27]

Two modes of collaboration occurs inside a transformed learning process: (1) in-classroom collaboration, which seeks to promote cooperation between teachers and students, and between students and

22. *See* Haddad & Draxler, *supra* note 15, at 14 ("Perhaps the most profound shift is from systems of teaching and supervision of learning to systems of learning and facilitation of learning."); *see also* Anderson, *supra* note 3, at 6 tbl. 1.2. (conveying that before students used to have a passive role in the learning process. As students, they were limited to receive the information and reproducing knowledge).

23. *See* Kozma & Wagner, *supra* note 6, at 22 (asserting that education with ICT is about both learning and creating).

24. *See, e.g.*, Daniel Light & Deborah Keisch Polin, *Integrating Web 2.0 Tools into the Classroom: Changing the Culture of Learning*, EDC CENTER FOR CHILDREN AND TECHNOLOGY 11 (June 17, 2016, 11:45 AM), http://cct.edc.org/publications/integrating-web-20-tools-classroom-changing-culture-learning (discussing document and resource-sharing tools allows for greater collaboration between students).

25. *See* Kalaš et al., *supra* note 2, at 72 (describing Web 2.0 as the increase in web based applications that followed the "dot com bubble").

26. *See id.* at 41-42 (explaining how one New Zealand teacher uses only publishing tools to give students an audience and create an authentic purpose for learning).

27. *See* Syed Noor-Ul-Amin, *An Effective use of ICT for Education and Learning by Drawing on Worldwide Knowledge, Research, and Experience: ICT as a Change Agent for Education (A Literature Review)* 2(4) SCHOLARLY J. EDU. 38, 42 (2013), http://scholarly-journals.com/sje/archive/2013/April/pdf/Noor-Ul-Amin.pdf (noting that current mode of curricula has shifted from teacher generated to student generated content).

their peers in the development of projects intended for the creation of new knowledge products;[28] and (2) collaboration between teachers and students and experts and materials[29] outside the classroom through learning communities.[30] Learning communities enable teachers, researchers, and students, to reach peers worldwide that share the same interests or expertise in a given subject, and allow for the exchange of resources, experiences, and other useful information.[31] These forms of collaborations are important for modern society, particularly as employers increasingly seek employees who are able to create and work together.[32]

There are different examples of Web 2.0 tools used as collaborative learning tools and learning communities. Wikipedia is an example of a learning community that, as a result of the participation of numerous experts and individuals willing to share their knowledge,[33] has become the world's largest encyclopedia.[34]

28. *See* Kozma & Wagner, *supra* note 6, at 22 (stating that technologies allow collaboration between students and teacher and, this collaboration allows the creation of their own knowledge products).

29. *See* UNESCO, INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION: A CURRICULUM FOR SCHOOLS AND PROGRAMME OF TEACHER DEVELOPMENT 20 (Jonathan Anderson & Tom van Weert eds., 2002), http://unesdoc.unesco.org/images/0012/001295/129538e.pdf [hereinafter INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION] (noting that use of ICT in education "becomes quite natural to collaborate with other teachers in solving common problems and to share their teaching experiences with others").

30. *See* Ana García-Valárcel et al., *ICT in Collaborative Learning in the Classroom of Elementary and Secondary Education*, 21 COMUNICAR MEDIA EDU. RES. J. 65, 66 (2014), http://eprints.rclis.org/20858/1/c4206en.pdf ("[I]t is the role of information and communication technologies (ICT) to offer new possibilities for social intervention, to create collaborative learning environments (communities) that allow students to carry out group activities, activities that are integrated into the real world and planned with real objectives.").

31. *See* Kozma & Wagner, *supra* note 6, at 22; *see also* Haddad & Draxler, *supra* note 15, at 65 ("With ICTs, sharing knowledge resources is enhanced many times over. Putting information on the Web makes it available immediately to anyone in the world with suitable connection. Teachers can share lesson plans with their colleagues in their own jurisdictions and with those far removed from their jurisdictions. Students from all over the world can undertake joint projects, exchange findings, analyze data collectively, and draw reasoned conclusions.").

32. *See* Haddad & Draxler, *supra* note 15, at 36 ("Globalization, creativity, and collaboration are key words in the modern workplace, where employers and employees are expected to share knowledge and work together toward common goals.").

33. *See* Anderson, *supra* note 3, at 64 (attributing Wikipedia's growth, as the

Blogs are another type of learning community. Edublogs,[35] for example, allow educators and researchers to share their resources, experiences, and tips with others.[36] Researchers can share articles that are not generally accessible, provide translations of specialized articles written in a local language so that they are accessible to others, and exchange methodologies or elaborate classroom presentations that include videos, pictures, and music for other teachers to use inside their classroom.[37]

Other notable learning communities serve as specialized platforms for sharing research.[38] Social Science Research Network ("SSRN"), for example, is an electronic library that makes available research articles and abstracts of forthcoming research from various academic journals.[39] Another learning community, Academia.edu, allows researchers to share their research with others and follow the research of people in a given field of interest.[40] There are other specialized learning communities targeted specifically at teachers seeking to exchange teaching materials, lesson plans, and other resources developed by fellow educators. The United Nations Educational, Scientific and Cultural Organization's ("UNESCO") Asia-Pacific Education Community Portal (EC)[41] and eTwinning[42] are examples of these teacher focused learning communities. As a

largest encyclopedia in the world, to the collaborative work of volunteer authors).

34. *See generally Wikipedia*, http://en.wikipedia.org/wiki/Main_Page (last visited Oct. 20, 2014 2:52 PM).

35. *See generally Edublogs*, http://edublogs.org/why-edublogs (last visited Oct. 20, 2014 2:11 pm).

36. *See* Yun-Jo An et al., *Teaching with Web 2.0 Technologies: Benefits, Barriers, and Best Practices*, *in* 1 32ND ANNUAL PROCEEDINGS: SELECTED RESEARCH AND DEVELOPMENT PAPERS PRESENTED AT THE ANNUAL CONVENTION OF THE ASSOCIATION FOR EDUCATIONAL COMMUNICATIONS AND TECHNOLOGY 1, 1 (Michael Simonson, ed., 2009), http://files.eric.ed.gov/fulltext/ED511355.pdf.

37. *See id.*

38. Anup Kumar Das, *The 7 Habits of Highly Effective Research Communicators*, 1 GOLDEN JUBILEE COMMEMORATIVE 1, 6-7 (2014), http://arxiv.org/pdf/1409.3920.pdf.

39. *See* SOCIAL SCIENCE RESEARCH NETWORK, http://www.ssrn.com/en/ (last visited Nov. 8, 2014 11:22 AM).

40. *See Academia.edu*, http://www.academia.edu/about (last visited Nov. 8, 2014 11:35 AM).

41. *See Education Community*, http://ict.unescobkk.org (last visited Nov. 8, 2014 3:33 PM).

42. *See What is eTwinning?*, https://www.etwinning.net/en/pub/discover/what_is_etwinning.htm (July 30, 2012).

result of these specialized learning communities, teachers, researchers, and even students are able to exchange information and experiences, among other things.[43]

Additionally, the implementation of an "always on" learning model becomes important for new learners.[44] This model responds to the reality of new learners—one where information can be accessed at any time from anywhere.[45] Education needs to adapt to and harness this reality.[46] One way of providing an always on learning model is by implementing tools, such as blogs, that can be accessed at any time. Another way is by implementing cloud learning.[47] The importance of cloud computing in education is in its ability to bring "up-to-date learning experiences" to students regardless of the hardware they use to access the content.[48] In this way, when content is in the cloud, students can utilize the different capabilities of their respective devices when completing their tasks. For instance, students can use a desktop computer to write essays or conduct research and use tablets or mobile phones to collect notes and ideas during fieldwork.[49] Because of the cloud, any resource or work students have done becomes available at any time and on any device they have on hand. Thus, the cloud "ensur[es] continuity of the learning experience."[50]

43. *See* Eugenia M.W. Ng, *Extending Learning to Interacting with Multiple Participants in Multiple Web 2.0 Learning Communities*, ISSUES IN INFORMING SCI. AND INFO. TECH. 11, 12 (2010) (noting that online learning communities encourage students to help each other with collaborative problem solving).

44. *See* Daniel Light, *Do Web 2.0 Right*, LEARNING AND LEADING WITH TECHNOLOGY, 11 Feb. 2011), http://files.eric.ed.gov/fulltext/EJ914323.pdf.

45. *See* Noor-Ul-Amin, *supra* note 27, at 11 (noting that educators have experienced greatest successes with "always on" learning communities).

46. *See* Haddad & Draxler, *supra* note 15, at 10.

47. *See* Katya Koubek & John C. Bedward, *Effective Cloud-based Technologies to Maximize Language Learning*, *in* LEARN LANGUAGES, EXPLORE CULTURES, AND TRANSFORM LIVES 135-36 (Adeline J. Moeller ed., 2015) ("[C]loud-based or Web 2.0 technologies refer to the vast array of socially oriented, free or nearly free, web-based tools.") (internal citations omitted).

48. UNESCO, POLICY GUIDELINES FOR MOBILE LEARNING 20 (2013), http://unesdoc.unesco.org/images/0021/002196/219641E.pdf.

49. *See id.* (noting that students can access an array of information on a variety of devices).

50. *See id.* (explaining that cloud computing provides the opportunity for "seamless learning").

ICTs also promote the use of new content in education.[51] This is the case with multimedia materials.[52] The use of multimedia content in education enables the use of text, pictures, and animation, which in turn promotes the use of different instincts in learning and helps educators achieve a more natural, active, and dynamic learning process.[53] Multimedia content therefore aids students to better understand educational materials.[54]

Finally, the use of ICTs in education is essential for promoting lifelong learning and for making the educational setting more inclusive.[55] The incorporation of ICTs in education aims to promote lifelong learning, a necessity for the creation of a citizenry that can be valuable to the global market.[56] The reality of current society is one of constant evolution and change. As such, education cannot be confined just to the years of study spent inside a classroom.[57]

51. *See* Noor-Ul-Amin, *supra* note 27, at 3-5 (explaining how integrating ICTs into the education system increases the "reception and reception of information").

52. *See* Cesar A. A. Nuñes & Edmond Gaible, *Development of Multimedia Materials, in* TECHNOLOGIES FOR EDUCATION: POTENTIAL, PARAMETERS AND PROSPECTS 101, http://www.ictinedtoolkit.org/usere/library/tech_for_ed_chapters/07.pdf. ("Some multimedia authoring tools . . . facilitate creation of integrated online and offline media.").

53. *See Altablero*, MINISTERIO DE EDUCACIÓN NACIONAL (April- May 2004), http://www.mineducacion.gov.co/1621/article-87398.html (relaying the importance and characteristics of the interactive activities in the learning process); *see, e.g.*, COLOMBIA APRENDE, www.colombiaaprende.edu.co (last visited Aug. 16, 2016).

54. *See* Kozma & Wagner, *supra* note 6, at 21 (detailing how the interactive capability of technologies makes content more understandable); *see also Altablero*, *supra* note 53 (stating that interaction benefits the learning process).

55. *See* International Conference on ICT and Post-2015 Education, *Qingdao Declaration*, U.N. Doc. ED/PLS/ICT/2015/01 (May 23-25, 2015), http://unesdoc.unesco.org/images/0023/002333/233352E.pdf (establishing the goal of inclusive and lifelong learning, including mobile learning, to strengthen education systems by 2030).

56. Diego Ernesto Leal Fonseca, *Iniciativa Colombiana de Objectos de Aprendizaje: Situación Actual y Potencial para el Futuro* 8 APERTURA 76, 78 (2008).

57. *See Towards Knowledge Societies*, *supra* note 9, at 77 ("Lifelong education can provide a response to the growing job volatility that most forecasters predict. Increasingly, people will be changing jobs several times in a lifetime, and education can no longer be limited to offering a single specialization, but must develop each person's ability to change course during his or her lifetime, and to cope with economic and social change.").

Educators recognize this reality.[58] In this sense, ICT facilitates engagement in informal education and the acquisition of knowledge and skills.[59] In other words, technology allows different individuals and institutions to engage in informal teaching.[60] The Massachusetts Institute of Technology, for example, made the courses taught at its institution available to the general public,[61] thereby making vast educational resources available worldwide.[62]

One example of a Web 2.0 tool that promotes lifelong learning, learning communities, collaboration, and the use of multimedia content is YouTube, specifically YouTube EDU.[63] This Web 2.0 tool allows teachers or informational users to access full courses or videos from fellow educators worldwide in subjects such as math, physics, and the natural sciences.[64] In addition, YouTube and YouTube EDU allow teachers, researchers, or users willing to share knowledge to create their own learning channel.[65] Moreover, YouTube videos provide educational resources for teachers to use in their formal curriculum-based classes,[66] as is happening in American classrooms.[67] For example, a teacher explaining literary devices for

58. *See* Anderson, *supra* note 3, at 10 (stating that educators recognize that education does not stop with the end of formal education).

59. *See* Haddad & Draxler, *supra* note 15, at 11 ("This may be the first time in history of the human race when lifelong learning is not only desirable and urgent, but feasible as well.").

60. *See* William W. Fisher III et al., *The Digital Learning Challenge: Obstacles to Educational Uses of Copyrighted Material in the Digital Age*, BERKMAN CENTER FOR INTERNET AND SOCIETY (Aug. 10 2006), http://cyber.law.harvard.edu/media/files/copyrightandeducation.html#TOC (explaining that technology allows traditional institutions to open their courses to the general public by engaging the individual in teaching and learning activities).

61. MITOPENCOURSEWARE, http://ocw.mit.edu/index.htm (last visited Aug. 16, 2016).

62. *See Towards Knowledge Societies*, *supra* note 9, at 85 (finding that the MIT's initiative grants access to high quality knowledge to people around the world).

63. *See YouTube Edu*, https://www.youtube.com/t/education (last visited Oct. 20, 2014 12:08 PM).

64. *See id.*

65. *See id.*

66. *See* Light & Polin, *supra* note 24 (providing examples of how teachers use in their class contents available in web 2.0 public platforms).

67. *See* Jennifer Hillner, *How to Use Online Video in Your Classroom*, EDUTOPIA (Aug. 31, 2009), http://www.edutopia.org/youtube-educational-videos-classroom.

the state language arts assessment used a YouTube video of the Disney cartoon *Ugly Duckling* to illustrate flashback and foreshadowing.[68] As UNESCO has stated, "other networks with a basic educational function (e.g., YouTube) are also evolving outside of educational practice and authority."[69]

Finally, another benefit of incorporating technology in education is the creation of a more inclusive educational process that takes into account the necessities of learners with disabilities and gives them the same opportunities as their abled peers.[70] For example, learners with sight disabilities can make use of read-aloud technologies or text enlargers to access content.[71] Learners with dyslexia can improve their speed and comprehension by reformatting text on a small-screen digital device.[72] Computer software is used to help improve memory in people with brain injuries.[73] In this way, setting ICT as the core of the educational process gives disabled learners the ability to participate more actively in education. Thus, ICTs appropriately used in education can provide new learners with the different skills they need in the age of technology.

III. BENEFITS OF INCORPORATING ICT IN EDUCATION IN LATIN AMERICAN AND CARIBBEAN COUNTRIES

For developing countries such as those in Latin America and the Caribbean, incorporating technology in education goes beyond

68. *Id.* at 15.

69. *ICT in Education in Latin America and the Caribbean: A Regional Analysis of ICT Integration and E-readiness*, UNESCO INSTITUTE FOR STATISTICS2 (2012), http://www.uis.unesco.org/Communication/Documents/ict-regional-survey-lac-2012-en.pdf [hereinafter ICT IN EDUCATION IN LATIN AMERICA AND THE CARIBBEAN].

70. *See* Haddad & Draxler, *supra* note 15, at 30 (explaining that "technologies provide essential supports enabling [persons with disabilities] to participate in the educational system and the job market"); *see also* POLICY GUIDELINES FOR MOBILE LEARNING, *supra* note 48, at 23 (conveying that the use of these technologies improve the learning of students with disabilities).

71. *See* Haddad & Draxler, *supra* note 15, at 1035.

72. *See* POLICY GUIDELINES FOR MOBILE LEARNING, *supra* note 48, at 23 (explaining the process developed to help improve the reading comprehension of people with dyslexia).

73. *See* Haddad & Draxler, *supra* note 15, at 24 (stating the benefits to use computer software to enhance the memory of people with brain injury).

preparing new learners for a new economy. It also means that these countries have the opportunity to overcome serious gaps in their educational systems,[74] including lack of coverage, excessive high school dropout rates, and a lack of quality teachers.[75] Moreover, it provides an answer for overcoming social disparities,[76] which make the educational crisis more pronounced.[77] Consequently, some Latin American and Caribbean countries have started taking measures to promote the incorporation of ICT in education. For instance, since 2000 Latin American and Caribbean countries developed an action plan for the Information Society (eLAC 2018),[78] which seeks to use ICT, particularly in the realm of education, to bring about social inclusion.[79] Another example is the creation of the *Red Latinoamericana de Portales Educativos* (Latin American Network for Educational Platforms),[80] which seeks to promote collaboration

74. *See* Carolina Rossini, *Green-Paper: The State and Challenges of OER in Brazil: from readers to writers?* BERKERMAN RESEARCH PUBLICATION 2 (2010), https://www.opensocietyfoundations.org/sites/default/files/OER-Brazil-100101.pdf (elaborating on how "developing nations in particular look to use the Internet to replace outdated and insufficient educational systems . . . ."); *see also* Kozma & Wagner, *supra* note 6, at 4 (stating that policy of ICT in education are seemed in developing countries as the answer to overcome many challenges they face).

75. *See* MARÍA TERESA LUGO & SEBASTIÁN SCHURMANN, UNESCO, TURNING ON MOBILE LEARNING IN LATIN AMERICA: ILLUSTRATIVE INITIATIVES AND POLICY IMPLICATIONS 11, 14-15 (2012), http://unesdoc.unesco.org/images/0021/002160/216080E.pdf (describing the problems in the educational system of Latin Countries such as access to education, education quality, and teacher quality).

76. *See Uso de TIC en Educación en América Latina y el Caribe*, UNESCO 6 (2012), http://www.uis.unesco.org/Communication/Documents/ict-regional-survey-lac-2012-sp.pdf (stating that Latin American countries have developed public policies to use ICT as a tool for overcoming social disparities).

77. *See* LUGO & SCHURMANN, *supra* note 75, at 11 (claiming that "educational issues are substantially more pronounced for socio-economically disadvantaged and marginalized groups, including women, lower-income groups, rural populations and indigenous peoples.").

78. Quinta Conferencia Ministerial sobre la Sociedad de la Información de América Latina y el Caribe, *Agenda digital para América Latina y el Caribe (eLAC2018)*, ¶ 1 (Aug. 7, 2015), http://conferenciaelac.cepal.org/es/documentos/agenda-digital-para-america-latina-y-el-caribe-elac2018.

79. Naciones Unidas CEPAL, *Plan de Acción eLAC2015*, http://www.cepal.org/cgi-bin/getprod.asp?xml=/elac2015/noticias/paginas/9/44209/P44209.xml&xsl=/elac2015/tpl/p18f.xsl&base=/elac2015/tpl/top-bottom.xsl (last visited Aug. 12, 2016).

80. *See Fundamentos*, RED LATINOAMERICANA DE PORTALES EDUCATIVOS, http://www.relpe.org/que-es-relpe/fundamentos (last visited Aug. 12, 2016).

between countries to help not only design educational platforms and policies but also for the exchange of educational resources.[81] The Network recognized that creating educational resources in the region is a difficult challenge and that this process can benefit from an exchange between countries.[82]

Additionally, individual Latin American and Caribbean governments have dedicated efforts toward the development of public policies and plans for the establishment of institutions specifically designed for the incorporation of ICTs in education. According to data from UNESCO, among thirty-eight countries in the region, eighty-two percent affirmed that they have developed either a national policy or plan, or established an institution dedicated to the incorporation of ICT into the educational system.[83] Such commitments have helped to diminish the digital gap by making technology accessible to students from the most marginal sectors of society.[84] Nonetheless, only twenty-four percent of the same thirty-eight countries have accompanied such initiatives with a policy of Open Educational Resources ("OERs"),[85] resulting in hardware and connectivity that is used with materials that are likely to be under copyright protection.[86]

Some examples of these national initiatives are Colombia's *Colombia Aprende*,[87] which seeks to promote the exchange of educational resources between teachers and their peers as well as

81. *See id.*

82. *See id.*

83. *See* ICT IN EDUCATION IN LATIN AMERICA AND THE CARIBBEAN, *supra* note 67, at 7.

84. *But see id.* at 20 (noting that in the case of gender disparities the incorporation of ICTs in education may not necessarily serve as an equalizer due to varying levels of interaction with ICTs between males and females).

85. *See id.* at 7 (defining OERs as "digitized materials that are offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research.").

86. *See generally Open Educational Resources (OER): Resource Roundup*, EDUTOPIA, http://www.edutopia.org/open-educational-resources-guide (last updated Dec. 4, 2015) (conveying that OER is part of a movement to promote open licensed educational content in order to encourage collaboration, creation, and dissemination of knowledge).

87. Colombia Aprende, *Estudiantes 2016*, http://www.colombiaaprende.edu.co/html/home/1592/w3-channel.html (last visited Feb. 15, 2016).

students and their peers.[88] This initiative is complemented by other plans that endeavor to bring hardware and connectivity[89] to these regions and train teachers in the use of ICTs.[90] Similarly, *Educando*, an education portal in the Dominican Republic, provides teachers and students with resources, services, and other educational content.[91] Additionally, the Dominican Republic's Ministry of Education has invested in training teachers to allow the incorporation of ICT in education.[92] Finally, Guatemala has established the education platform, *Portal Educativo*,[93] and has initiated a plan called *Escuelas del Futuro* (Schools of the Future), which seeks to implement a new educational model based on the incorporation of ICT in the learning process.[94]

International organizations have also supported and promoted the incorporation of ICTs in education to help developing countries with their educational crises. Organizations such as UNESCO, the World Bank, and the UN ICT Task Force are working actively to develop

88. *See Programa Nacional de Nuevas Tecnologías*, COLOMBIA APRENDE, http://www.colombiaaprende.edu.co/html/home/1592/article-102549.html (last visited Aug. 12, 2016) (stating that the use of the Educational Portal Colombia Aprende allows for the sharing of resources and tools among the Colombian the educational community).

89. *See id.* (highlighting the CLARA Network which promotes greater access to Latin American academic networks for its member countries).

90. *See* MINISTERIO DE COMUNICACIONES, PLAN NACIONAL DE TECNOLOGÍAS DE LA INFORMACIÓN Y LA COMUNICACIONES 35-36 (2008), http://www.eduteka.org/pdfdir/ColombiaPlanNacionalTIC.pdf [hereinafter PLAN NACIONAL DE TECNOLOGÍAS].

91. *See* EDUCANDO, http://www.educando.edu.do/portal/ (last visited Aug. 14, 2016).

92. *See Agenda Digital de la República Dominicana 2016-2020*, DOMINICANA. GOB.DO, http://www.gob.do/index.php/politicas/2014-12-16-20-55-59 (last visited Aug. 14, 2016) (conveying that one of the strategic goals of the Dominican Republic's Agenda Digital involves capacity building by training educators in the use of ICTs); *see also Programa Compumaestro 2.0*, EDUCANDO, http://www.educando.edu.do/portal/programa-compumaestro-2-0/ (last visited Aug. 14, 2016).

93. *Relanzamiento del Portal Educativo de Guatemala*, RED LATINOAMERICANA DE PORTALES EDUCATIVOS, http://www.relpe.org/tag/portal-educativo-de-guatemala/ (Apr. 1, 2011) (describing the portal as a means by which educators and students can access a wide variety of multimedia educational resources).

94. *See Escuelas del Futuro*, MINISTERIO DE EDUCACION, https://www.mineduc.gob.gt/portal/contenido/menu_lateral/programas/escuelas_del_futuro/index2.html. (last visited Aug. 14, 2016).

and analyze policies regarding the benefits of ICT in education for developing countries. UNESCO has an initiative known as the Mobile Learning Program, which seeks to take advantage of the wide availability of mobile technology to bring literacy to the most vulnerable parts of society.[95] The World Bank has an initiative known as the World Links for Development Program ("WorLD"), which seeks to link secondary school students and teachers in developing countries with their peers in developed countries in order to encourage collaborative learning.[96] Likewise, the UN ICT Task Force helped to establish the Global e-Schools and Communities Initiative ("GESCI"), an international non-profit organization that uses ICT to help improve access to quality education and increase economic growth in developing countries.[97]

Nonetheless, the transformation of the learning process by the incorporation of technology is an ongoing, worldwide process, as the effect of ICT in education has yet to be fully explored and measured. Unfortunately, limited data are available regarding the utility of ICT for the empowerment of teachers and students.[98] Despite this reality, Latin American and Caribbean countries continue to bet on the ability of ICT to overcome serious educational crises and help the most vulnerable sectors of their societies.

95. *See Mobile Learning*, UNESCO, http://www.unesco.org/new/en/unesco/themes/icts/m4ed/ (last visited Aug. 14, 2016) (elaborating on UNESCO's efforts to promote mobile learning by advising governments, conducting research on topics related to mobile learning, and operating mobile learning field projects in several developing countries).

96. *See* DEEPTI BHATNAGAR ET AL., EMPOWERMENT CASE STUDIES: WORLD LINKS FOR DEVELOPMENT PROGRAM (WORLD) 1 (2003), http://documents.worldbank.org/curated/en/356311468150888217/pdf/514480WP0GLB0W10Box342028B01PUBLIC1.pdf (explaining that WorLD aims to improve education in developing countries by encouraging the use of ICT in education).

97. *See The History of Our Organisation*, GESCI, http://gesci.org/about-us/our-history/ (last visited Aug. 14, 2016).

98. *See* Michael Trucano, *Knowledge Map: Impact of ICTs on Learning and Achievement*, INFODEV, http://www.infodev.org/articles/impact-icts-learning-achievement (last visited Aug. 14, 2016) ("It is generally believed that ICTs can empower teachers and learners, promote change and foster the development of 21st century skills, but data to support these beliefs are still limited."); *see also ICT and Education*, *supra* note 10 (remarking that to fully exploit the benefits of ICT in education more research is needed on the impact of ICTs on student learning).

IV. INTERNATIONAL OBLIGATIONS FOR TECHNOLOGICAL PROTECTION MEASURES IN THE REGION.

At the international level, most Latin American countries[99] and some Caribbean countries[100] have ratified the World International Copyright Organization ("WIPO") Copyright Treaty[101] and must therefore comply with the minimum standards of protection for technological protection measures established in article 11 of the treaty.[102] Some countries have to go beyond these minimum standards of protection at the domestic level due to bilateral agreements signed with the United States.[103]

In the late 2000s, the United States devised an offensive international copyright policy within its Free Trade Agreements that included Intellectual Property Rights ("IPRs") exceeding the standards established in the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS").[104] By 2016, the United States

99. *See WIPO-Administered Treaties*, WIPO, http://www.wipo.int/treaties/en/ShowResults.jsp?lang=en&treaty_id=16 (last visited Aug. 14, 2016) (demonstrating that with the exception of Bolivia, Venezuela, Brazil and Belize all Latin American countries have ratified the WCT).

100. *See id.* (noting that only Dominican Republic, Jamaica, Saint Lucia, and Trinidad and Tobago have ratified the WCT).

101. *See* World Intellectual Property Organization [WIPO] Copyright Treaty, Alb.-Venez., Dec. 20, 1996, 36 I.L.M. 65 [hereinafter WCT].

102. *See id.* at art. 11 ("Contracting Parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law.").

103. *See* Kimberly A. Czub, *Argentina's Emerging Standard of Intellectual Property Protection: A Case Study of the Underlying Conflicts Between Developing Countries, TRIPS Standards, and the United States*, 33 CASE W. RES. J. INT'L L. 191 (2001) (arguing that the United States has utilized bilateral negotiations in order to secure intellectual property protection standards that go above those established in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which was signed by Member States of the World Trade Organization in 1994).

104. *See generally* Carsten Fink & Patrick Reichenmiller, *Tightening TRIPS: Intellectual Property Provisions of U.S. Free Trade Agreements*, *in* TRADE, DOHA, AND DEVELOPMENT: A WINDOW INTO THE ISSUES 289, 293, 295-97 (Richard Newfarmer ed., 2006) (finding that the IPR rules found in some U.S. bilateral agreements and FTAs exceed TRIPS standards in various aspects, including by

celebrated FTA victories, particularly the inclusion of a strong IPR chapter, with several trading parties including Chile,[105] Colombia,[106] Costa Rica,[107] El Salvador,[108] Guatemala,[109] Honduras,[110] Nicaragua,[111] the Dominican Republic,[112] Panama,[113] and Peru.[114]

Two features form the basis of the United States' international copyright policy: the negotiation process and the content of the treaty obligations. The negotiation process is onerous and unbalanced; the United States presents the text of the IPR chapter to the negotiating party in the form of a template.[115] The results of one negotiation set a precedent for future negotiations.[116] Taking into account the bilateral nature of the negotiations and the fact that most trade parties are developing countries, the United States' trade parties find themselves in a weaker position vis-à-vis the United States, and therefore lack the bargaining power to promote their intellectual property goals.[117]

extending the term of copyright protection, the inclusion of rules against the circumvention of technological protection measures, and institutional enforcement of IPRs, among others).

105. United States-Chile Free Trade Agreement, Chile-U.S., art. 17, June 6, 2003, 42 U.S.T. 1026.

106. United States-Colombia Trade Promotion Agreement, Colom.-U.S., art. 16, Nov. 22, 2006, https://ustr.gov/trade-agreements/free-trade-agreements/colombia-fta/final-text [hereinafter CTPA].

107. Dominican Republic-Central America-United States Free Trade Agreement art. 15, Aug. 5, 2004, 43 I.L.M. 514 [hereinafter CAFTA-DR].

108. *Id.*

109. *Id.*

110. *Id.*

111. *Id.*

112. *Id.*

113. United States-Panama Trade Promotion Agreement, Pan.-U.S., art. 15, June 28, 2007, Hein's No. KAV 9546 [hereinafter U.S.-Panama TPA].

114. United States-Peru Free Trade Agreement, Peru-U.S., art. 16, Apr. 12, 2006, Hein's No. KAV 9736 [hereinafter PFTA].

115. *See* Peter Drahos, *BITs and BIPs: Bilateralism in Intellectual Property*, 4 J. WORLD INTELL. PROP. 791, 794 (2001) (indicating that in order to reduce costs of bilateral transactions and increase chances of treaty approval in U.S. Senate, the United States has developed "model" bilateral agreements and FTAs for use in bilateral negotiations).

116. *See id.* (relating that a FTA negotiated with Jordan likely served as a model for pending FTAs with Chile and Singapore).

117. *See* Peter K. Yu, *Currents and Crosscurrents in the International Intellectual Property Regime*, 38 LOY. L.A.L. REV. 323, 396 (2004) (claiming that developing countries tend to either lack the bargaining power to negotiate for more favorable agreement terms or they consider such negotiations irrelevant to their

By isolating developing countries in bilateral negotiations, the United States is able to avoid opposition to its IPRs standards and establish industry-driven protection standards that otherwise could not be introduced in a multilateral setting.[118] In addition, where there are a reduced number of trading parties, the United States can offer side-payments directed to the specific interest of the trade party,[119] making the commercial agreement more appealing despite the IPRs provision. Although accepting stringent IPRs in exchange for trade benefits is not beneficial for developing countries as a whole,[120] individual developing countries often accept tradeoffs in bilateral negotiations for different reasons.[121] For example, the Dominican Republic viewed it as a less costly option for obtaining benefits in other trade areas.[122]

The incorporation of "TRIPS-Plus" standards[123] and the alignment of a trade party's national intellectual property legislation with U.S. style laws are cornerstones of the United States' approach to IPRs.[124]

national objectives).

118. *See* Carlos M. Correa, *Bilateralism in Intellectual Property: Defeating the WTO System for Access to Medicines*, 36 CASE W. RES. J. INT'L L. 79, 81 (2004) ("Bilateral dealing permits the United States to obtain what it cannot easily get multilaterally . . . .").

119. *See* Yu, *supra* note 117, at 395.

120. *See* Graham Dutfield, *TRIPS and its Impact on Developing Countries*, SCIDEV. NET (Jan. 10, 2001), http://www.scidev.net/global/policy-brief/trips-and-its-impact-on-developing-countries.html (alleging that stringent IPRs regimes hinder rather than spur economic development in developing countries and that regimes should be tailored to fit the protection needs of each country).

121. *See* Fink & Reichenmiller, *supra* note 104, at 289 ("U.S. trading partners generally have more defensive negotiating interests in intellectual property, but they are willing to commit to stronger intellectual property rules as a quid pro quo for concessions in other areas—notably preferential access to U.S. markets for agricultural and manufactured goods.").

122. *See* Michael Geist, *Why We Must Stand on Guard Over Copyright*, TORONTO STAR (Oct. 20, 2003), http://www.michaelgeist.ca/resc/html_bkup/oct202003.html.

123. *See* David Vivas-Eugui, *Regional and Bilateral Agreements and a TRIPS-Plus World: The Free Trade Area of the Americas*, *in* TRIPS ISSUES PAPERS 9 (2003), http://www.quno.org/sites/default/files/resources/FTAs-TRIPS-plus-English.pdf (indicating that IPRs bilateral agreements that the United States has entered into contain various features of TRIPS-Plus).

124. *See* Fink & Reichenmiller, *supra* note 104, at 289 (divulging that the U.S. trade promotion authority strives to advance U.S. style intellectual property rules through bilateral FTAs); *see, e.g.*, Jakkrit Kuanpoth, *TRIPS-Plus Rules under Free Trade Agreements: An Asian Perspective*, *in* INTELLECTUAL PROPERTY & FREE

First, TRIPS-Plus standards are those standards of protection that either exceed or are different from the minimum IPR standards established in TRIPS.[125] The adoption of the heightened TRIPS-Plus standard permits the United States to incorporate the obligation to protect TPMs in its FTAs.[126]

Second, the TPM obligations incorporated in the text of U.S. FTAs closely follow the U.S. model of protection incorporated in the Digital Millennium Copyright Act ("DMCA").[127] The reason for this approach is that the United States wants not only to enhance copyright protection but also to bring its trade party's legislation closer to the U.S. model of copyright protection in the digital age.[128] This in turn would make the new obligations of international copyright protection resemble U.S. law. Importantly, under this approach, the United States does not bind itself to new international obligations.[129]

TRADE AGREEMENTS 27, 42 (Christopher Heath & Anselm Kamperman Sanders eds., 2007) (noting that in the context of copyright protection, U.S FTAs encourage conformity with U.S. law by extending the term of copyright protection).

125. *See* Drahos, *supra* note 115, at 792-93; *see also* Vivas-Eugui, *supra* note 123.

126. Charles T. Collins-Chase, Comment, *The Case Against TRIPS-Plus Protection in Developing Countries Facing AIDS Epidemics*, 29 U. PA. J. INT'L L. 763, 765 (2008).

127. *See generally* Andrew Christie et al., *Exporting the DMCA Through Free Trade Agreements*, *in* INTELLECTUAL PROPERTY & FREE TRADE AGREEMENTS 211, 212, 216 (Christopher Heath & Anselm Kamperman Sanders eds., 2007) (analyzing intellectual property provisions found in U.S. FTAs to determine the extent to which these provisions emulate the DMCA and concluding that the U.S. uses such provisions to impose DMCA legal obligations on its trading partners).

128. *See* Miriam Bitton, *Rethinking the Anti-Counterfeiting Trade Agreement's Criminal Copyright Enforcement Measures*, 102 J. CRIM. L. & CRIMINOLOGY 67, 113 (2013) (relating that the U.S. was motivated to negotiate the Anti-Counterfeiting Trade Agreement in order to "set a new, higher benchmark for enforcement" of copyright protections) (quoting *Ambassador Schwab Announces U.S. Will Seek New Trade Agreement to Fight Fakes*, OFF. OF THE U.S. TRADE REPRESENTATIVE, https://ustr.gov/ambassador-schwab-announces-us-will-seek-new-trade-agreement-fight-fakes (last visited Aug. 16, 2016)).

129. *See* Anupam Chander, *Exporting DMCA Lockouts*, 54 CLEV. ST. L. REV. 205, 211 (2006) ("Free trade agreements are an oft-unnoticed forum for the export of American law. They rarely demand significant changes in United States law, but often require significant changes in the law of our trading partner."); *see also* Margot E. Kaminski, *The Capture of International Intellectual Property Law Through the U.S. Trade Regime*, 87 S. CAL. L. REV. 977, 1015 (2013).

In this way, most of the bilateral commercial agreements[130] signed between the United States and Latin American countries, which follow the DMCA model, mandate protection of TPMs and require sanctions for the three acts prohibited by the DMCA:[131] (1) circumventing access-control measures; (2) anti-trafficking provisions of circumventing devices and services of an access-control measure; and (3) anti-trafficking provisions of circumventing devices and services of a copy-control measure.[132] Additionally, such agreements incorporate other specific characteristics of the U.S. model, including seven confined exceptions[133] with instruction about application to the different prohibited acts,[134] a stand-alone provision,[135] a no-mandate rule[136] and, a TPM definition.[137] Finally, the agreements also require trade parties to institute a process for the creation of additional exceptions to the act of circumvention,[138] as the DMCA mandates.[139] Nonetheless, the agreements allow the parties to choose either an administrative or a legislative enforcement

130. *U.S.-Chile Free Trade Agreement: Analysis of Implementation of Exceptions and Limitations and Technological Protection Measure Provisions*, ELECTRONIC FRONTIER FOUNDATION (n.d.) (2004), https://www.eff.org/document/us-chile-free-trade-agreement.

131. *See* 17 U.S.C. § 1201 (1998).

132. *See* CTPA, *supra* note 106, art. 16.7.4(a); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7 (a); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(a); PFTA, *supra* note 114, art. 16.7.4 (a).

133. *See* CTPA *supra* note 116, art. 16.7.4(e); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7 (e)-(f); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(e)-(f); PFTA, *supra* note 114, art. 16.7.4(e).

134. *See* CTPA, *supra* note 106, art. 16.7.4(g); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(a); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(e)-(f); PFTA, *supra* note 114, art. 16.7.4(g).

135. *See* CTPA, *supra* note 106, art. 16.7.4(d); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(c); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(c); PFTA, *supra* note 114, art. 16.7.4(d).

136. *See* CTPA, *supra* note 106, art. 16.7.4(c); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(b); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(b); PFTA, *supra* note 114, art. 16.7.4(c).

137. *See* CTPA, *supra* note 106, art. 16.7.4(b); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(g); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(b); PFTA, *supra* note 114, art. 16.7.4(b).

138. *See* CTPA, *supra* note 106, art. 16.7.4(f); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(e)(iii); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(e)(iii); PFTA, *supra* note 114, art. 16.7.4(f).

139. *See* 17 U.S.C. § 1201(a)(1)(c).

procedure.[140]

Thus, many Latin American countries are required to comply with the international obligations of TPM protection set by the commercial agreements they enter into with the United States.[141] Like other commercial agreements, FTAs with the United States need to go through a domestic implementation process.

V. THE EFFECTS OF THE TPM INTERNATIONAL OBLIGATIONS ON THE DEVELOPMENT OF A TRANSFORMED LEARNING PROCESS

As mentioned above, the U.S. model of TPM protection has become the minimum standard of protection that many countries need to follow. Nonetheless, because of the way in which the DMCA is designed, copyright holders have been able to inhibit permitted uses, lock up public domain content, control not only access to content but also how it is used, and censor the dissemination of research.[142] These effects have been widely described and criticized.[143]

140. *See* Inti Linkletter Knapp, *The Software Piracy Battle in Latin America: Should the United States Pursue Its Aggressive Bilateral Trade Policy Despite the Multilateral Trips Enforcement Framework*, 21 J. INTL. L. 173, 194 (2014).

141. *See id.* at 174 (noting that Section 301 of the Omnibus Trade and Competitive Act of 1988 empowers the U.S. Trade Representative to sanction trade partners whose intellectual property protection practices are not in line with U.S. interests).

142. *See* Haochen Sun, *Fair Use as a Collective User Right*, 90 N.C. L. REV. 125, 161-62 (2011) ("The DMCA accords paracopyright to right holders, allowing them to legally lock up any information with technological measures. In this way, it entitles copyright holders to control access to their works, making it harder or even impossible for the public to make fair use of works under many circumstances."); *see also* Joseph P. Liu, *The DMCA and the Regulation of Scientific Research*, 18 BERKELEY TECH L.J. 501, 510, 525, 527 (2003) (analyzing the impact DMCA has on academic encryption research and arguing that the DMCA's focus on the protection of intellectual property rights has a negative effect on the way such research is conducted); Pamela Samuelson, *Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to be Revised*, 14 BERKELEY TECH. L.J. 519, 561-62 (1999) (commenting that copyright holders could come to use the DMCA's anti-circumvention provisions to challenge any act of circumvention even those Congress did not contemplate).

143. *See, e.g.*, *Unintended Consequences: Fifteen Years Under the DMCA*, ELECTRONIC FRONTIER FOUNDATION (n.d.) (2013), https://www.eff.org/pages/un intended-consequences-fifteen-years-under-dmca (demonstrating that the anti-circumvention provisions of the DMCA have been used to persecute the activities

This aggressive model of legislation is particularly problematic where countries have a goal of transforming the educational system through the use of technology. The unintentional consequences of such legislation inhibit teachers, students, and researchers from engaging in new types of methodologies needed to transform the educational system and avail themselves of the benefits of incorporating technology in education. For instance, the prohibition of permitted uses, which TPM regulation requires, can diminish the ability to engage in collaborative methodologies.[144] Collaborative methodologies require the active participation of each participant in the learning process—each student and teacher—in order to generate their own knowledge.[145] This is also true of learning communities which require all community members to actively participate in order for a constructive exchange to materialize.[146] The exchange and collaborative experience could stand to be more fruitful if entire works were shared; however, where the work is under copyright protection such sharing is not possible.[147] Nevertheless, collaborations can occur with permitted uses of copyrighted works.[148]

However, it is known that under the DMCA, copyright holders have limited the ability to make even permitted uses of copyrighted material.[149] TPMs block the fair use of digital copies of works.[150] For

of parties not intended by Congress to be the targets of the DMCA).

144. Sun, *supra* note 142, at 161-62 (arguing that fair or permitted uses of copyrighted works have been significantly curtailed by the DMCA because of the lack of free access to works and how U.S. courts have interpreted the statute).

145. Amy Soller, *Supporting Social Interaction in an Intelligent Collaborative Learning System*, 12 INT'L J. ARTIFICIAL INTELLIGENCE IN EDU. 40, 43 (2001).

146. *See* Ng., *supra* note 46, at 12.

147. *See* 17 U.S.C. § 106 et seq. (defining copyright as controlling the reproduction, distribution, transformation and communication of work).

148. *See* 17 U.S.C. § 107 ("[T]he fair use of a copyrighted work . . . for such purposes such as criticism, comment, news reporting, teaching . . . scholarship, or research, is not an infringement of copyright.").

149. *See* Gwen Hinze, *Brave New World, Ten Years Later: Reviewing the Impact of Policy Choices in the Implementation of the WIPO Internet Treaties' Technological Protection Measure Provisions*, 57 CASE W. RES. L. REV. 779, 797 (2006) (contending that the DMCA allows copyright holders to control uses of their work even when such uses are allowed under national copyright law); *see also* Neil A. Benchell, *The Digital Millennium Copyright Act: A Review of the Law and the Court's Interpretation*, 21 J. MARSHALL J. COMPUTER & INFO L. 1, 15 (2002).

150. *See* Pedro Roffe & Maximiliano Santa Cruz, Intellectual property rights and sustainable development: A survey of major issues, United Nations-Economic

instance, if a professor seeking to initiate a discussion among student were to copy and paste a short extract of a TPM protected e-book in a blog of a Virtual Learning Environment ("VLE") or in a tool such as Edublogs, TPMs would block such a use.[151] The same would occur if the students were to share other copyrighted works. Moreover, the development of collaborative activities inside learning communities[152] would present similar issues; teachers, researchers, and their peers would have a hard time utilizing copyrighted material under the permitted uses exceptions when such materials are protected by TPMs. This situation certainly affects the development of a collaborative learning process, where every actor in the learning process, through the use of ICTs, should be able to use, share, transmit, and transform material either under a license or a permitted use.[153]

The situation described above originates because of the anti-circumvention provisions of the DMCA,[154] which are duplicated in U.S. trade agreements.[155] TPMs that control uses of a copyrighted work seek to protect the exclusive rights of the copyright holder. That is, TPMs enable copyright holders to control the reproduction, distribution, and transformation of their work.[156] However, as these rights are limited,[157] the DMCA allows the circumvention of a copy-

Commission for Latin American and the Caribbean, ¶ 21, U.N. Doc. LC/W.161 (Oct. 2007), http://www.cepal.org/en/publications/3591-intellectual-property-rights-and-sustainable-development-survey-major-issues.

151. *See* Wendy Seltzer, *The Imperfect is the Enemy of Good: Anticircumvention versus Open User Innovation*, 25 BERKELEY TECH L. J. 909, 918 (2010) (discussing the effects of DRMs in fair use in a DRM world where a literary critic is blocked from extracting e-book pages or has the e-book deleted out from under her).

152. *See* García-Valcárcel et al., *supra* note 30, at 66-67.

153. See Ching Sing Chai & Seng Chee Tan, *Collaborative Learning and ICT*, *in* ICT FOR SELF-DIRECTED AND COLLABORATIVE LEARNING 52, 67 (Ching Sing Chai & Qiyun Wang eds., 2009).

154. *See* Hinze, *supra* note 149, at 799 (suggesting that in practice the alternatives directed to protect fair uses, such as the circumvention of a copy control measure, are meaningless due to the ban of circumvention tools).

155. *See* U.S.-Panama TPA, *supra* note 113, art. 15.5.7(a); *see also* PFTA, *supra* note 114, art. 16.7.4(a); USCO, *supra* note 116, art. 16.7.4(a); CAFTA-DR, *supra* note 107, art. 15.5.7(a).

156. *See* 17 U.S.C. § 106 (1998) (discussing the exclusive rights of copyright holders).

157. *Id.* at § 107 (noting that fair use is one limitation to the exclusive rights of the author); *see also* Marlin H. Smith, Note, *The Limits of Copyright: Property*,

control measure because of the permitted use exception.[158] This means that in the example mentioned above, the professor or students could have circumvented this copy-control measure in order to use the extract of the book without facing sanctions.[159] The drawback of this approach is that it can be difficult to execute for non-technologically savvy users,[160] and because of the anti-trafficking exception that prohibits marketing on devices and services primarily designed for circumvention.[161] In this sense, only technologically savvy teachers and students are able to make fair uses[162] of protected content. Moreover, the anti-trafficking provisions of copy-control measures are subject only to the reverse engineering[163]—again, a situation that was duplicated in the trade

Parody, and the Public Domain, 42 DUKE L. J. 1233, 1245 (1993) (explaining fair use as a limitation to copyright protection).

158. *See* Jacqueline D. Lipton, *Solving the Digital Piracy Puzzle: Disaggregating Fair Use from the DMCA's Anti-Device Provisions*, 19 HARV. J. L. & TECH. 111, 120 (2005) ("There is, however, no specific restriction on circumventing a copy-control measure because of the Congressional intention to preserve this fair use of copyrighted works.").

159. *See* 17 U.S.C. § 107 (explaining that fair use that allows a protected work "for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright").

160. YiJun Tian, *Problems of Anti-Circumvention Rules in the DMCA & More Heterogeneous Solutions*, 15 FORDHAM INTELL. PROP. MEDIA & ENT. L. J. 749, 771-72 (2005) (stating that users need to have decryption knowledge in order to be able to make fair uses of a content protect by a copy-control TPM); *see also* Jeff Sharp, *Coming Soon to Pay-Per-View: How the Digital Millenium Copyright Act Enables Digital Content Owners to Circumvent Educational Fair Use*, 40 AM. BUS. L. J. 1, 41 (2002) ("Unless the proverbial faculty member is a skilled hacker, statements about the sanctity and preservation of fair use under the DMCA provide little help in making fair use of technologically locked content.").

161. *See* Tian, *supra* note 160, at 771-72 (maintaining that it is difficult to circumvent a copy-control measure due to the ban in trafficking on circumventing devices); *see also* Hinze, *supra* note 149, at 799 (stating that in practice there are no tools available for engaging in permitted uses); *see also* Lipton, *supra* note 158, at 125 (explaining that although copy-control measures are allowed to be circumvented in order to make fair uses, in reality this provision does little for fair use because most users do not have the technological know-how to access protected works).

162. *See* Samuelson, *supra* note 155, at 551 ("It is unclear whether Congress intended for the technologically savvy who could 'do it themselves' to be the only ones who could engage in privileged acts of circumvention.").

163. *See* 17 U.S.C. § 1201(f)(2) (1998).

agreements[164]— which have very narrow scopes that do not cover the scenario[165] where circumvention is needed for making authorized uses.

Moreover, under the DMCA model, technologically savvy users will be allowed to use only their minds and hands to circumvent the TPMs. Every circumventing device has been banned, and the manufacture of such a device is prohibited.[166] This broad prohibition was also mandated in the FTAs.[167] Thus, even technically sophisticated users would not be able to partake in fair uses in order to engage in collaborative learning, if they require a device for circumvention. As a result, average teachers and students cannot undertake the fair uses of copyrighted material allowed under traditional copyright law when said material is protected under a TPM.[168]

Although an administrative rule-making procedure was created to resolve situations in which non-infringing uses are being affected,[169] it has not solved the problem of the impossibility of engaging in fair uses and obtaining access to protected educational material.[170] One of

164. *See* U.S.-Panama TPA, *supra* note 113, art. 15.5.7(d)(i), (f); *see also* PFTA, *supra* note 114, art. 16.7.4(g)(iii), (h); CTPA, *supra* note 106, art. 16.7.4(g)(iii), (h); CAFTA-DR, *supra* note 107, art. 15.5.7(d)(i), (f) (demonstrating that the FTAs confine exceptions available to the anti-trafficking provision for a copy control measure to the reverse engineering exception and the exception for governmental purposes).

165. *See* Lewis A. Kaplan, *Copyright and the Internet*, 22 TEMP. ENVTL. L & TECH. J. 1, 7 (2003) (finding that the seven exceptions to the DMCA bans are narrow and difficult to satisfy).

166. *See* 17 U.S.C. § 1201 (b)(1); *see also* Samuelson, *supra* note 174, at 551 (claiming that even the technically sophisticated will need to develop another tool to accomplish a privileged circumvention which would put them at risk under a strict reading of section 1201(b)(1)).

167. *See* U.S.-Panama TPA, *supra* note 113, art. 15.5.7(a)(ii); PFTA, *supra* note 114, art. 16.7.4(a)(ii); CTPA, *supra* note 106, art. 16.7.4(a)(ii); CAFTA-DR, *supra* note 107, art. 15.5.7(a)(iii).

168. *See* Tian, *supra* note 160, at 779-80 (stating that the anti-circumvention provisions do not allow fair uses allowed under traditional copyright law); *see also* Kaplan, *supra* note 177, at 7 (suggesting that technological means of controlling access to copyright holder's work cannot distinguish between fair and infringing uses).

169. *See* 17 U.S.C. § 1201 (a)(1)(B) (1998).

170. *See* Kaplan, *supra* note 177, at 7 (finding that legislative safety valves

the issues with this procedure is that the exception resulting from it applies only to the ban on circumvention of an access-control TPM but not to the anti-trafficking provisions.[171] This problem was also transferred to the trade agreements.[172] Therefore, as in the case of a copy-control TPM where the problem is lack of tools or services to make the allowed circumvention, the legislative procedures do not realistically allow users to make use of the new exceptions or existing fair-use rules.[173]

Moreover, legal protection to TPMs under the DMCA model can undermine the ability to create learning communities, especially in the field of encryption research.[174] Learning communities seek to bring to students and teachers not only access to resources found outside the classroom but also to teachers, experts, and mentors from different locations.[175] The idea of the learning community is to exchange experiences and solve problems together. But researchers in the field of encryption research have valid reasons for being reluctant to participate in learning communities.

In the United States, TPMs have become a tool to censor the dissemination of encryption research, even as part of an academic discussion. For instance, a Russian programmer Dmitry Sklyarov and his employer ELCOM Limited were indicted for violating the DMCA for the creation and distribution of a software program intended for circumventing the TPMs of e-books.[176] Since the

have not satisfied critics of the DMCA); *see also* Lipton, *supra* note 158, at 121 (arguing that the limited scope of determinations is disappointing to protect legitimate interests in copyrighted works).

171. *See* 17 U.S.C. § 1201 (a)(1)(B); *see also* Lance C. McCardle, *Despite Congress's Good Intentions, The DMCA's Anti-Circumvention Provisions Produce a Bad Result – A Means to Create Monopolies*, 50 LOY. L. REV. 997, 1023-25 (2004) (stating that these exceptions apply only to the act of circumventing an access-control measure)*;* Hinze, *supra* note 149, at 799 (stating that one of the biggest problems of the administrative rule making procedure is that its exceptions do not apply to the ban on circumvention devices).

172. *See* U.S.-Panama TPA, *supra* note 113, art. 15.5.7(e)(iii); *see also* PFTA, *supra* note 114, art. 16.7.4(f); CTPA, *supra* note 106, art. 16.7.4(f); CAFTA-DR, *supra* note 107, art. 15.5.7(e)(iii).

173. *See* Lipton, *supra* note 158, at 135 (discussing the impossibility of the rulemaking procedure to enact exceptions to the anti-trafficking provisions because the DMCA destroys fair use when the user cannot circumvent the technology).

174. *See* Liu, *supra* note 142, at 510.

175. *See* Ng, *supra* note 43, at 12-13.

176. *See U.S. v. ELCOM Ltd.*, 203 F. Supp. 2d 1111, 1118-19 (N.D. Cal. 2002);

ELCOM case, encryption researchers have avoided the discussion and publication of their research due to fear of violating the DMCA provisions, even for academic purposes. The Dutch cryptographer Niels Ferguson, for example, identified some flaws in Intel's high-bandwidth digital content protection video encryption system.[177] Instead of sharing this information, Ferguson chose to self-censor and did not upload his findings on his website for fear of prosecution under the DMCA anti-circumvention provisions in the United States.[178] Ferguson has not been the only researcher who, out of fear, has removed his research findings from the Internet. Fred Cohen, a professor of digital forensics, and the researcher Doug Song also decided to censor information on the field of security research due to fear of prosecution under the DMCA.[179] Finally, the Princeton professor Edward Felten, who identified some flaws in watermarked encryption technologies for digital audio files, was censored by the copyright industry.[180] In the end, he decided that he did not want to present his findings at a conference due to threats from the Recording Industry Association of America about taken legal measures under the DMCA.[181]

Although the DMCA establishes an exception in favor of encryption research that applies to the act of circumventing access-control measures and the anti-trafficking provision of circumvention access-control,[182] its scope is very narrow.[183] By providing this

see also Benchell, *supra* note 160, at 1 (discussing Dimitry's case).

177. *See* Joris Evers, *Cryptographer Claims Break in Intel Video Encryption*, IT WORLD CANADA (Aug. 16, 2001), http://www.itworldcanada.com/article/cryptographer-claims-break-in-intel-video-encryption/32295.

178. *Id.*

179. *See The DMCA Still Restricts Forensics*, ANALYST REPORT & NEWSLETTER (Fred Cohen & Assocs., Pebble Beach, C.A.), Aug. 2010, at 1.

180. *See* Edward Felten, *The Chilling Effects of the DMCA*, SLATE (March 29, 2013), http://www.slate.com/articles/technology/future_tense/2013/03/dmca_chilling_effects_how_copyright_law_hurts_security_research.html.

181. *See* Cassandra Imfeld, *Playing Fair with Fair Use? The Digital Millennium Copyright Act's Impact on Encryption Researchers and Academicians*, 8 COMM. L. & POL'Y 111, 136-38 (2003) (describing Edward Felten's case); *see also* Liu, *supra* note 142, at 513.

182. *See* 17 U.S.C. §1201 (g) (1998).

183. Liu, *supra* 142, at 509-10 (noting that legal and scientific commentators have criticized the exemption for being too narrow and vague).

exception, Congress attempted to protect development and freedom in the field.[184] In doing so, they were careful to avoid creating a loophole in the TPMs legal protection.[185] In this way, the exception only allows for encryption research conducted in "good faith," meaning that the researcher has attempted to obtain the copyright holder's permission in advance[186] and has used a lawfully obtained encrypted copy of the work.[187]

Additionally, the exception is only allowed if the circumvention is necessary to conduct the encryption research.[188] The law establishes the factors considered to determine if the exception applies: whether the researcher is engaged in a legitimate course of study and is employed, or is appropriately trained or experienced in the field of encryption research.[189] In addition, application of the exception requires an analysis of the nature of the dissemination of the information: was it disseminated to advance the state of knowledge, or was it disseminated in a manner that facilitates infringement?[190] Finally, the exception takes into account whether the person shared the results with the copyright holder.[191] This encryption research exception is also found in FTAs.[192] In sum, although the purpose of the exception is to promote encryption research, the narrow scope of its wording has generated significant fear within the encryption research field.

Another way a DMCA based model can affect the development of a transformed learning process is by making it difficult to establish a model of always-on learning. UNESCO has highlighted the benefits

184. *See id.* at 505-06, 508.

185. *See id.* at 508 (finding that Congress created the exemption to ensure freedom within encryption research while also ensuring that no loophole existed within the exemption).

186. *See* 17 U.S.C. § 1201 (g)(2)(C) (1998).

187. *Id.* § 1201 (g)(2)(A).

188. *Id.* § 1201 (g)(2)(B).

189. *Id.* § 1201 (g)(3)(B).

190. *Id.* § 1201 (g)(3)(A) (analyzing whether information was disseminated with the purpose to advance the state of knowledge in the field or whether it was disseminated in a manner that promotes infringement).

191. *Id.* § 1201 (g)(3)(C).

192. *See* U.S.-Panama TPA, *supra* note 113, art. 15.5.7(d)(ii); *see also* PFTA, *supra* note 114, art. 16.7.4(e)(ii); CTPA, *supra* note 106, art. 16.7.4(e)(ii); CAFTA-DR, *supra* note 107, art. 15.5.7(d)(ii), (f).

of the cloud's always-on learning model in education.[193] Specifically, UNESCO has stated that the use of cloud computing is beneficial in education because it allows students to have up-to-date learning experiences regardless of the hardware they use to access content.[194] Although students and teachers may take advantage of the cloud in connection with self-generated work (such as photos taken by the student during fieldwork), DMCA protection of TPMs may make it impossible to use the cloud in connection with a third party's copyrighted resources.[195] This limitation is due to the restriction on the adaptability and availability of the contents that TPMs may impose.[196] The synchronization of information such as research articles, pictures, or songs with different devices can be restrained by TPMs, even if legal access to the work has been acquired or the work is in the public domain.[197] Copyright holders have used TPMs not only to prevent access or exercise of an exclusive right but also to attach the content to a specific device or software.[198] For example, e-books acquired from Amazon can be downloaded only to devices that have the free software Kindle.[199] If a student's device, for instance, does not support the Kindle software, she would not be able to access the content on her device. Amazon recognizes that the Kindle app is not available for every device.[200] The situation is similar with other software such as Adobe Digital Editions, where

193. *See* POLICY GUIDELINES FOR MOBILE LEARNING, *supra* note 48, at 20.

194. *Id.*

195. *See* George Jiang, *Fair and Other Non-infringing Uses in the Context of Cloud Computing* 36 J. LEGIS. 395, 414 (2010) (maintaining that cloud computing enables copyright holders to exert greater control over their works by imposing restrictions to access).

196. *See id.*

197. *See, e.g.*, John R. Therien, Comment, *Exorcising the Specter of a "Pay-Per-Use" Society: Toward Preserving Fair Use and the Public Domain in the Digital Age*, 16 BERKLEY TECH. L.J. 979, 994 (2001); *see also* Tian, *supra* note 160, at 772; Hinze, *supra* note 149, at 801 (discussing the over-inclusion of public domain works protected under TPMs).

198. *See* Hinze, *supra* note 149, at 800 (stating that in practice TPMs restrict uses of e-books, including by limiting the number of copies available, controlling the ability to print, and determining the device upon which the e-book can be read).

199. *See Read Everywhere with the Kindle App*, AMAZON, https://www.amazon.com/gp/digital/fiona/kcp-landing-page?ie=UTF8&ref_=klp_mn (last visited June 23, 2016).

200. *See id.* (stating that "the Kindle app is available for most major smartphones, tablets and computer. . . .").

the content can be shared between up to six devices only if certain conditions are met, such as activating all with the same ID.[201] If the content is borrowed, then there is no possibility of using the content on another device due to the restrictions on copying.[202] In this sense, copyright holders not only control access to the work but also how the work should be used.[203]

If a student's device does not support the software needed to download a book or if a student simply prefers to use another software, then there is likely no way the student would be able to circumvent the TPMs in order to access the material. Although the access-control measures are subject to seven exceptions, these exceptions are very narrow[204] and leave outside their scope the possibility of circumventing TPMs for this kind of interoperability. For example, the reverse engineering exception plays a central role in cases of circumvention for interoperability.[205] Reverse engineering is also the only exception that applies to the three acts prohibited under the DMCA, which means that it also applies to the anti-trafficking provision.[206] This exception is limited to achieving program-to-program interoperability and to communicating the information only with the purpose and to the extent of achieving such interoperability.[207] In this way, the reverse engineering

201. *See Adobe Digital Editions/FAQ*, ADOBE, http://www.adobe.com/solutions/ebook/digital-editions/faq.html (last visited June 23, 2016) ("If the permission limits the books to be viewed on only one device, the copied books will not be able to be opened.").

202. *See id.* ("Books can be copied from one device to another device. If two devices are activated with the same ID, purchased books can be opened on the other device. If the other device is not activated or if it is activated with another ID, a pop up window will appear to ask for ID when opening the purchased books. Borrowed books cannot be opened on another computer regardless its activation status. It is because that the loan token is not copied.").

203. *See* Terri Branstetter Cohen, Note, *Anti-Circumvention: Has Technology's Child Turned Against its Mother?* 36 VAND. J. TRANSNAT'L L. 961, 980-81 (2003) (stating that copyright holders not only control access but how to access the work); *see also* Niva Elkin-Koren, *Making Room for Consumers Under the DMCA*, 22 BERKLEY TECH. L.J. 1119, 1124 (2007) ("The use of DRMs enables physical control over the use of cultural artifacts long after purchase by consumers.").

204. *See* Kaplan, *supra* note 177, at 7 (discussing the seven exceptions to the DMCA bans and concluding that they "are narrow and difficult to satisfy.").

205. *See* 17 U.S.C. § 1201 (f).

206. *See* 17 U.S.C. § 1201 (f)(2).

207. *See* 17 U.S.C. § 1201 (f).

exception leaves outside of its coverage reverse engineering for program-to-data interoperability. Consequently, the adaptability of content to different devices as is required by an always-on learning education model may be constrained by TPMs that cannot be circumvented without the threat of civil or criminal liability.[208] Therefore, even if students have acquired e-books from Amazon and different devices in the hope of taking advantage of the cloud facilities in education, nothing ensures that they will enjoy the benefits of cloud computing and interoperability without infringing the law. The FTAs also create this problem. The act of circumventing an access control in the FTAs is subject only to seven exceptions,[209] and the reverse engineering exception only applies to program-to-program interoperability.[210]

TPMs may also negatively impact the ability to access to a wide catalog of teaching and learning resources, another important advantage and goal of ICT incorporation in education. New technologies allow teachers and students to access materials that may otherwise not be available to them.[211] In this way, public domain works, which are free to use without legal constraints, serve as a useful resource in the educational setting despite time or geographical location.[212] TPMs under the DMCA model, however, have been used to restrict this kind of information and prevent their access and use.[213]

208. *See* 17 U.S.C. §§ 1203, 1204.

209. *See* CTPA, *supra* note 106, art. 16.7.4(a); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(d), (e), (f); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(d), (e), (f); PTPA, *supra* note 124, art. 16.7.4(g).

210. *See* CTPA, *supra* note 106, art. 16.7.4(e)(i); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(d)(i), (f); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(d)(i); PTPA, *supra* note 124, art. 16.7.4(e)(i).

211. *See cf.*, Laura N. Gassaway, *Impasse: Distance Learning and Copyright*, 62 OHIO ST. L. J. 783, 784 (2001).

212. *See* Jessica Litman, *The Public Domain*, 39 EMORY L.J. 965, 973 (1990) ("The lay understanding of the public domain in the copyright context is that it contains works free from copyright. Works created before the enactment of copyright statutes, such as Shakespeare's Macbeth or Pachelbel's Canon, are available for fourth grade classes across the nation to use for school assemblies without permission from any publisher or payment of any royalties.").

213. *See, e.g.*, Therien, *supra* note 216, at 994; Tian, *supra* note 160, at 772; Hinze, *supra* note 149, at 801 (discussing the over-inclusion of public domain works protected under TPMs).

TPMs under the DMCA establish a new right in favor of copyright holders. This right, which is referred to as the access right, is created when the law prohibits the circumvention of an access-control TPM as a stand-alone provision,[214] as has been carried out in FTAs.[215] The access right allows copyright holders to restrict access to works by limiting access only to users with a designated password.[216] The existence of an access right is a novel phenomenon because copyright law is not intended to prohibit access to copyrighted material—it prohibits the reproduction, distribution, transformation, or performance of the work without the owner's permission.[217] Aside from the fact that the access right is not an exclusive right of the copyright holder, one of the issues with the access right is that copyright holders have utilized it to impede access to works in the public domain[218] and to extend copyright protection.[219] As such, TPMs improperly inhibit access to and use of legally free resources

214. *See* Dan L. Burk, *Anticircumvention Misuse*, 50 UCLA L. REV. 1095, 1098 (2003); *see also* Tricia J. Sadd, Casenote, *Fair Use as a Defense Under the Digital Millennium Copyright Act's Anti-Circumvention Provisions*, 10 GEO. MASON L. REV. 321, 327 (2001) (contending that the TPMs introduced the access right).

215. *See* CTPA, *supra* note 106, art. 16.7.4(a); CAFTA-DR, *supra* note 107, art. 15.5.7(a); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(a); PTPA, *supra* note 124, art. 16.7.4(a).

216. H.R. Standing Comm. on Legal and Const. Aff., REVIEW OF TECHNOLOGICAL PROTECTION MEASURES EXCEPTIONS (AUSTL.), PARLIAMENT OF THE COMMONWEALTH OF AUSTL., 8 (2006) ("Access control TPMs allow the copyright owner to control access to the copyrighted material—for example, password protections, file permissions, and encryption.").

217. *See* 17 U.S.C. § 106.

218. *See* Therien, *supra* note 216, at 994 ("TPMs . . . can potentially protect any use on the Internet of copyrighted works, uncopyrightable works, or works that have fallen into the public domain."); *see also* Tian, *supra* note 160, at 772 (stating that the DMCA's anti-circumvention measures allow works that do not fall within the copyright scope to be protected); Hinze, *supra* note 149, at 801 ("[O]verbroad TPM regimes and obsolescent DRM technologies pose a serious threat to the public's right of access to works that are no longer protected under copyright.").

219. *See* Cohen, *supra* note 222, at 978 (explaining that anti-circumvention provisions allow unlimited copyright protection enforceable by law); *see also* Stephen E. Blythe, *The U.S. Digital Millennium Copyright Act and the E.U. Copyright Directive: Comparative Impact on Fair Use Rights*, 8 TUL. J. TECH. & INTELL. PROP. 111, 122 (2006) (discussing the ability of TPMs to extend copyright protection "[w]hat was once a copyright of limited duration under the Copyright Act of 1976 now has taken on the form of a patent with unlimited duration under the DMCA"); *see also* Benchell, *supra* note 176, at 14 ("[I]f a work is encrypted with a copyright protection measure, that work is effectively protected forever.").

that could be valuable to the learning process.

Technically speaking, TPMs that inhibit access to un-copyrighted materials or to public domains works are not protected under Section 1201.[220] Only TPMs that effectively control access to a copyrightable work are protected from circumvention,[221] as is demonstrated in the corresponding FTA provisions.[222] In reality, however, such protection of public domain works does occur and unless users are technologically savvy they will not be able to circumvent these measures due to the ban on circumventing devices and services.[223] This situation mirrors that of copy-control measures described above. Although the act of circumvention is not outlawed, there is no lawful means to obtain circumventing tools or services to obtain access.[224]

Another issue concerning the affect of access-control measures on public domain works for education arises when those measures are imposed on mixed works.[225] Some content providers use TPMs to restrict access to mixed work, even if most of the work is in the public domain.[226] Because the technology does not differentiate among components of a work, the entire piece becomes locked.[227] This situation differs from the access right issue described above; in

220. *See* Robert C. Denicola, *Fair's Fair: An Argument for Mandatory Disclosure of Technological Protection Measures*, 11 MICH. TELECOMM. TECH. L. REV. 1, 5-6 (2004) ("The anti-circumvention and anti-trafficking provisions are applicable only to protective measures used on copyrighted works, but the ease with which copyrighted and public domain works can be bundled effectively ties up the latter works as well.").

221. *See* 17 U.S.C. § 1201 (noting that the section only protects TPMs that protect works that fall under copyright law protection as stated in § 1201(a)(1)(A)).

222. *See* CTPA, *supra* note 106, art. 16.7.4(a); CAFTA-DR, *supra* note 107, art. 15.5.7(a); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(a); PTPA, *supra* note 124, art. 16.7.4(a).

223. *See* Brief for Electronic Frontier Foundation, et al. as Amici Curiae Supporting Defendants, United States. v. Elcom Ltd., 203 Supp. 2D 1111 (N.D. Cal. 2002) (No. CR 01-20138 RMW) (advocating that if the government's views of the DMCA in the *Elcom* case are followed, public domain works will not be able to be accessed due to the ban on circumventing devices).

224. *See, e.g.*, 17 U.S.C. § 1201(a)(3) (prohibiting the trafficking in services designed to circumvent access control controls).

225. *See cf.* Benchell, *supra* note 176, at 14 (stating that, under the DMCA, it is possible to lock up public domain works when those works are mixed with protected works).

226. *See id.*

227. *See* JASON MAZZONE, COPYFRAUD AND OTHER ABUSES OF INTELLECTUAL PROPERTY LAW 86-87 (2011).

this case, because the locked content contains protected work, the act of circumvention is therefore legally banned. For instance, it would not be unlikely to find a digital copy of Jane Austen's classic novel *Pride and Prejudice*—a public domain work—that is locked because it contains a copyrighted prologue.[228] In this case, even a technologically savvy user able to obtain access to the public domain work will violate the DMCA. The law does not provide an exception to circumvent access-control TPMs in order to access public domain works.[229]

Even when a user acquires access to a public domain work protected by an access-control TPM, publishers typically impose copy-control measures on the work as well[230] even though the work should be free to be used in any form. As in the case of an access-control measure, users can also face difficulty in trying to circumvent a copy-control measure, although not because of the ban on circumventing devices and services.[231]

Additionally, TPMs under the DMCA model have diminished the ability of ICTs to facilitate access to materials despite time and geographical location, as is desired in a transformed learning process.[232] A benefit of incorporating ICTs in education is the breaking of barriers of time and distance in order to allow for an expansion of teaching and learning resources.[233] Libraries play a central role in education, and these institutions provide students and teachers with copyrighted materials needed to develop classwork and homework, among other services important for the academic environment.[234] As such, libraries have benefited from copyright exceptions in order to facilitate such access from the beginning of

228. *See id.* at 87 (adapting the example from the cited work).

229. *See id.* at 86-87.

230. *See id.* at 83-84 (citing an example in which an Adobe e-book of *Alice's Adventures in Wonderland* prohibits the printing, copying, and pasting of the book that is in the public domain).

231. *Id.* at 85.

232. *See cf.* Gassaway, *supra* note 231, at 784.

233. *See cf. id.* at 784 (discussing the growing market in higher education for distance learning made possible by ICTs).

234. *See id.* at 792 ("Academic and school libraries maintain collections of materials and other resources for their students and faculty. They also provide access to electronic resources. Since the development of the photocopier, libraries have also provided reproductions of copyrighted works to users.").

copyright law.[235] Despite this history, TPMs impede even libraries from the fair use of protected materials. For instance, a library cannot lend or make an archival copy of a lawfully acquired digital work if the TPM does not allow such uses.[236] More importantly, sometimes the TPMs do not allow a library to lend a book outside the library's premises.[237] This kind of restriction negatively impacts the ability of ICTs to provide teachers and students with access to a wide range of resources and materials in the event an institutional or public library is not located nearby.

Although the DMCA establishes an exception to the circumvention of an access-control measure for libraries, this exception is also very narrow. Nevertheless, exception was also incorporated into U.S. FTAs.[238] The DMCA grants libraries, archives, and non-profit educational institutions a specific exception.[239] The exception allows for the circumvention of an access-control TPM for the limited purpose of determining whether a work that is not reasonably available in other formats should be purchased.[240] In this way, a library is able to circumvent an access-control TPM in order to decide whether to acquire new material. The exception, however, expressly leaves outside its scope any other type of circumvention.[241]

In sum, although a transformed learning process is able to take root due to the wide range of resources made available through ICTs, TPMs impede access to these resources by locking unprotected resources and restricting the ability of digital libraries to overcome time and geographical barriers.[242]

235. *See* Berne Convention for the Protection of Literary and Artistic Works, art. 10(2), Nov. 16, 1988, 331 U.N.T.S. 4757 [hereinafter Berne Convention] (noting exceptions in favor of libraries).

236. GRETCHEN MCCORD HOFFMAN, COPYRIGHT IN CYBERSPACE 2: QUESTIONS AND ANSWERS FOR LIBRARIANS 96 (2005) (citing examples within the work).

237. *See* Sangeeta Shashikant, *Copyright, Information Communications Technologies and Access to Information and Technology* 14 (2005).

238. *See* CTPA, *supra* note 106, art. 16.7.4(e)(v); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(e)(i); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(e)(i); PTPA, *supra* note 124, art. 16.7.4(e)(v).

239. *See* 17 U.S.C. § 1201(d).

240. *See id.*

241. *See* 17 U.S.C. § 1201(d)(1)(B).

242. *See* Hinze, *supra* note 149, at 801.

Finally, TPMs under the DMCA model can inhibit a twenty-first century technology-centric learning process seeking to provide a more inclusive educational setting. According to UNESCO, technology can be used to enhance education for learners with disabilities.[243] Digital resources cannot be used as efficiently either without such technology. Nonetheless, learners with disabilities, especially those with sight disabilities, have found it difficult to benefit from the advances in technology because of access barriers attributable to TPMs.[244] When copyright holders impose digital content access-control TPMs that inhibit format changing, limit copies of their work, and mandate which software must be used to access the work,[245] learners with sight disabilities are prevented from changing the work's format in order to utilize tools such as text-enlargement, voice-transcription, and text-to-speech technologies, which can help to enhance accessibility.[246] One of the reasons why such restrictions are possible is because an exception does not exist for persons with sight disabilities.[247] Another reason is that, as mentioned above, the reverse engineering exception does not cover program-to-data interoperability.[248] The U.S. FTA intellectual property provisions recreate this regulatory scenario.[249] Consequently, learners with disabilities are restricted in their ability to use technology in ways most suited to their specific needs.

In sum, the U.S. FTAs foist onto trade parties a restrictive model of TPMs that, based on U.S. experience, can pose difficulties for countries seeking to strengthen their education systems through the use of technology. Nevertheless, these trade parties should strive to diminish the effects of these provisions during the domestic

243. *See* POLICY GUIDELINES FOR MOBILE LEARNING, *supra* note 48, at 23 (stating that the use of these technologies improve the learning of people with disabilities).

244. *See* Hinze, *supra* note 149, at 800 (stating that in practice TPMs restrict uses of e-books affecting people with disabilities).

245. *Id.* at 800.

246. *Id.* (stating that TPMs may restrict the use of read aloud functions).

247. *See id.* (stating that one of the problems of the TPMs provisions is that it does not provide an exception in favor of people with disabilities)

248. *See* 17 U.S.C. § 1201 (f) (demonstrating the inapplicability of the reverse engineering exception to program-to data interoperability).

249. *See* CTPA, *supra* note 106, art. 16.7.4(e)(i); CAFTA-DR, *supra* note 107, art. 15.5.7(d)(i), (f); U.S.-Panama TPA, *supra* note 113, art. 15.5.7(d)(i); PTPA, *supra* note 124, art. 16.7.4(e)(i).

implementation process. In this sense, the U.S.'s Latin American trade partners should avoid a pure replication of the American intellectual property regulatory system and instead devise a domestic implementation process that allows for the promotion and protection of public policies and plans geared toward facilitating the inclusion of technology in education.

VI. IMPLEMENTATION OF THE U.S. FTA IN THE DOMINICAN REPUBLIC, GUATEMALA AND COLOMBIA

Despite the importance in the region of national public policies and plans focused on incorporating ICTs in education,[250] and consequently, the need to diminish the negative effects of the TPM model mandated by the FTAs, U.S. trade parties from Latin America and the Caribbean have failed to develop a user-friendly implementation process. Most Latin American and Caribbean trading parties have implemented their obligations on the subject.[251] Most of the time, the implementing legislation closely follows the text of the

250. *See* ICT IN EDUCATION IN LATIN AMERICA AND THE CARIBBEAN, *supra* note 67, at 7.

251. *See*, *e.g.*, Ley No. 8039, 5 Oct. 2000, Ley de Procedimientos de Observancia de los Derechos de Propiedad Intelectual [Law on Procedures for Enforcement of Intellectual Property Rights] LA GACETA, DIARIO OFICIAL [L.G.], 12 Oct. 2000 (Costa Rica); *see also* Decreto No. 604, 17 July 1993, Ley de Propiedad Intelectual [Intellectual Property Law] DIARIO OFICIAL [D.O.], 16 Aug. 1993 (El Sal.) (amended by Decreto No. 985 on 17 March 2006); *see also* Decreto No. 1030, 26 Apr.1997, Código Penal [Criminal Code] tit. VIII, ch. VII, DIARIO OFICIAL [D.O.], 12 Jan. 2006 (El Sal.); *see also* Decreto No. 11-2006, Reformas Legales para la Implementación del Tratado de Libre Comercio Rep. Dominicana-Centroaméricana-Estados Unidos de América [Reforms for the Implementation of the Dominican Republic-Central America-U.S.A. Free Trade Agreement] ch. VI, DIARIO DE CENTRO AMÉRICA [D.C.A.], 29 May 2006 (Guat.); Ley No. 424-06, 20 Nov. 2006, Implementación del Tratado de Libre Comercio, entre la República Dominicana, Centroamérica y los Estados Unidos de América (DR-CAFTA) [Law Implementing the Free Trade Agreement between the Dominican Republic, Central America, and the U.S.A.] GACETA OFICIAL [G.O.], 22 Nov. 2006 (Dom. Rep.); *see also* Decreto No. 16-1999, 16 March 2006, Ley de Implementación del Tratado de Libre Comercio, República Dominicana, Centroamérica y Estados Unidos [Law Implementing the Dominican Republic, Central America, and the U.S. Free Trade Agreement] tit. IV, DIARIO OFICIAL [D.O.], 24 March 2006 (Hond.); *see also* Ley. No. 312, 6 July 1999, Ley de Derecho de Autor y Derechos Conexos [Law on Copyright and Related Rights] LA GACETA, DIARIO OFICIAL [L.G.], 1 Sept. 1999 (Nicar.)

FTA rather than adopting a more flexible approach than the U.S. model or making use of some of the flexibilities found in the text of the treaty.[252] In this way, most of the U.S trade parties from the region follow the U.S. TPM system and, in some cases, provide a more restrictive model.[253] For the reasons described above, this approach hinders the process of integrating technology into education.

The implementation process in Guatemala,[254] the Dominican Republic[255] and the attempted implementation in Colombia,[256] are examples of processes that instituted a maximalist approach to FTA obligations. These countries either established a more restrictive system than the United States or did not make use of the flexibility in the treaty. Guatemala, for example, went beyond establishing protections against circumventing access-control measures. Guatemala's implementing legislation also imposes civil remedies[257] and criminal penalties[258] for the circumvention or attempted circumvention of a TPM.[259] In other words, under Guatemalan law, a person does not need to undertake a successful circumvention in order to engage in a prohibited action; the mere fact that he tried to circumvent a TPM makes his act outlawed.[260] For instance, if a professor was to upload an excerpt from a book onto his blog and tried, without success, to circumvent the access-control TPM protecting the book, the professor could face sanctions under

252. *See id.*; *see also* DAVID SWITZER & DANNY G. PÉREZ Y SOTO, THE STATE OF INTELLECTUAL PROPERTY IN LATIN AMERICA: LEGAL TRENDS, ECONOMIC DEVELOPMENT, AND TRADE 9-10 (Álvaro Ramirez Bonilla ed., 2012) (relating that FTAs have spearheaded a change of the domestic intellectual property laws of Latin American countries and strengthened protections).

253. *See id.* at 32 (noting that as a result of Colombia's FTA with the U.S. it extended the term for copyright protection by twenty years, as is the law in the United States and that it established "more stringent" civil and criminal penalties for copyright infringement).

254. *See* Decreto No. 11-2006, *supra* note 251.

255. *See* Ley No. 424-06, *supra* note 251.

256. *See* L. 1520, abril 13, 2012 DIARIO OFICIAL [D.O] (Colom.). *But see* Corte Constitucional de Colombia [C.C.] [Constitutional Court], enero 23, 2013, Sentencia C-011/13 (Colom.), http://www.corteconstitucional.gov.co/relatoria/2013/c-011-13.htm (striking down Ley No. 1520 due to legislative procedural errors).

257. *See id.* art. 106.

258. *See id.* art. 114(l).

259. *See id.* art. 106, 114(l).

260. *See id.*

Guatemalan law. The Guatemalan legislative approach goes beyond the obligations of CAFTA-DR, which only requires sanctions for those who circumvent TPMs without authorization.[261] The legislation is even more restrictive than the United States'—the DMCA sanctions only the act of circumventing a TPM,[262] not the attempt to circumvent.

Other examples of implementing legislation with a more restrictive approach than the U.S. model are those of Guatemala and Colombia.[263] Both countries decided to outlaw not only the circumvention of access-control TPMs, but also copy-control TPMs.[264] This approach goes beyond both the FTA obligations and the U.S. model since, again, the DMCA outlaws only the circumvention of access-control measures.[265] Under U.S law, the circumvention of a copy-control measure is allowed because Congress believed that it would enable users to engage in fair uses.[266] The FTAs similarly mandate only that circumvention of an access control measure be outlawed.[267]

Moreover, the legislation of both countries became even more restrictive when they decided against providing exceptions to the prohibition of the circumvention of copy-control measures,[268] although this provision was created as a stand-alone measure.[269] This type of legislative framework goes beyond the FTA obligations,

261. *See* CAFTA-DR, *supra* note 107, art. 15.5.7 (a).

262. *See* 17 U.S.C. §1201(a)(1)(A) ("No person shall circumvent a technological measure that effectively controls access to a work protected under this title.").

263. *See* Decreto 11-2006, *supra* note 251; L. 1520, *supra* note 256.

264. *See* Decreto 11-2006, *supra* note 251, art. 106, 114(l); *see also* L. 1520, *supra* note 256, art. 14(a).

265. *See* 17 U.S.C. §1201(a)(1)(A).

266. *See* Tian, *supra* note 160, at 770 (stating that the Congress differentiated between protection given to access-control and copy-control measures based on the argument that in order to engage in a fair use it is necessary to have lawful access to the work first).

267. *See* CTPA, *supra* note 106, art. 16.7.4(a); CAFTA-DR, *supra* note 107, art. 15.5.7(a).

268. *See* L. 1520, *supra* note 256, art. 15; *see also* Decreto No. 11-2006, *supra* note 251, art. 107 (establishing that the exceptions to the circumvention prohibition only apply to the act of circumventing an access control measure and, some of them, to the anti-trafficking provisions of both types of TPMs).

269. *See* Decreto No. 11-2006, *supra* note 251, art. 106; *see also* L. 1520, *supra* note 256, art. 14.

which require exceptions for the circumvention of access-control measures and the anti-trafficking provisions for both copy-control and access-control measures.[270] This kind of legislation impedes the use of technology in education because it essentially forms a complete barrier to the exercise of permitted uses.

The Dominican Republic's implementation legislation is another example of a country not taking advantage of the flexibilities found in the FTAs text. CAFTA-DR makes the prohibition against the circumvention of an access-control measure a stand-alone provision.[271] Nonetheless, the treaty allows trade parties to choose either the civil or criminal venue to create such stand-alone action.[272] The Dominican government, unfortunately, did not take advantage of this option and made of the act of circumventing an access-control measure both a civil and criminal stand-alone action.[273] This type of legislation does not establish a more restrictive model than the United States'. Indeed, the DMCA makes of the act of circumventing both a civil[274] and criminal[275] stand-alone action. Nonetheless, the Dominican Republic lost its opportunity to establish a more user-friendly legislation. Imposing criminal liability does not foster increased engagement in educational uses; educators, students and researchers may refrain from adopting new educational methodologies for fear of being prosecuted.

Another area in which Latin American U.S. trading partners did not avail themselves of the flexibility of U.S. FTAs is in the establishment of administrative or legislative procedures aimed at creating additional exceptions to the act of circumventing an access-control measure. The FTAs established an obligation to create a process directed at the implementation of additional exceptions to the act of circumventing an access-control measure.[276] This process is an

270. *See* CTPA, *supra* note 106, art. 16.7.4(e), (g); CAFTA-DR, *supra* note 107, art. 15.5.7(d)-(f).

271. *See* CAFTA-DR, *supra* note 107, at 15.5.7 (c).

272. *See id.*

273. *See* Ley No. 424-06, *supra* note 251, art. 62 (adding article 192 to Ley No. 65-00 sobre Derecho de Autor [Copyright Law]).

274. *See* 17 U.S.C. § 1203.

275. *See* 17 U.S.C. § 1204.

276. *See* CTPA, *supra* note 106, art. 16.7.4(f); CAFTA-DR, *supra* note 107, art. 15.5.7(e)(iii).

essential tool for balancing the model under the DMCA.[277] The U.S. Congress recognized that TPMs could negatively affect permitted uses.[278] As a result, it created an administrative procedure to enact new exceptions to the prohibition against circumvention.[279]

The FTAs likewise contain this obligation but they also allow trade parties to choose either an administrative or legislative procedure.[280] In the implementation legislation, however, the Dominican Republic chose not to instate a procedure for the creation of additional exceptions.[281] The Dominican implementation legislation limits itself to the FTA provision, despite the importance of such a procedure.[282] This approach could have important effects on the educational system because such an administrative or legislative procedure is essentially to balancing the TPMs model[283] and could be used to help educators and educational institutions. Colombia, on the other hand, chose to implement a legislative procedure in its implementation legislation.[284] This decision may affect the agility of the process, and, consequently, the effectiveness of the procedure.[285]

These examples illustrate the ways in which Latin American and Caribbean countries have gone beyond the mandates of their U.S. FTA obligations to establish an overprotective regime for TPMs. These countries did not seek to mitigate the impact that a U.S.-style intellectual property system would have on efforts to integrate

277. *See* 17 U.S.C. § 1201.

278. *See* H.R. Rep. No. 105-551, pt. 1, at 36 (1998) ("Given the threat of a diminution of otherwise lawful access to works and information, the Committee on Commerce Believes that a "fail-safe" mechanism is required.").

279. *See* 17 U.S.C. § 1201 (a)(1)(C).

280. *See* CTPA, *supra* note 106, art. 16.7.4(f); *see also* CAFTA-DR, *supra* note 107, art. 15.5.7(e)(iii).

281. *See* Ley No. 424-06, *supra* note 251, art. 62 (adding article 187(g) to Ley No, 65-00 sobre Derecho de Autor [Copyright Law]).

282. *See* Ley No. 424, *supra* note 251.

283. *See* H.R Rep. No. 105-551, pt. 1, at 36 (1998) ("Given the threat of a diminution of otherwise lawful access to works and information, the Committee on Commerce Believes that a "fail-safe" mechanism is required").

284. *See* L. 1520, *supra* note 256, art. 15(g).

285. *See* Maira Sutton, *Colombia to Fast Track Sweeping New Copyright Reform Bill*, EFF (April 9, 2012) https://www.eff.org/es/deeplinks/2012/04/colombia-fast-track-sweeping-new-copyright-reform-bill ("Bill 201 takes the most rigid possible approach, requiring any exemptions to be granted through legislation passed through Congress after an executive review every 4 years.").

technology in education. Guatemala and Colombia's approach to the protection of copy-control measures can significantly curtail fair uses and prohibit the development of collaboration and learning communities in education. This outcome could have strong social implications in the region because it could undermine the possibility of enhancing quality and access to education through the use of ICTs. Although governments are heavily investing in developing public policies and plans directed at the incorporation of technology in education, their approaches to protection of TPMs do not appear to be in line with these goals.

VII. POSSIBLE SOLUTIONS

In order to continue striving toward the goal of transforming education through the use of technology and, in turn, obtaining social benefits, Latin American countries should re-think their TPM models and attempt to make them more user-friendly. They should avoid going beyond the minimum standards of protection found in FTAs and other agreements, such as sanctioning attempted circumventions rather than only actual circumventions of TPMs or sanctioning the circumvention of copy-control measures. They should also seek to avail themselves of the flexibilities of the FTA and select the civil venue as the only jurisdiction to provide stand-alone protection to TPMs. In this vein, they should ensure that they implement an administrative procedure for the creation of new exceptions to the prohibition against circumvention.

In addition, these countries should establish a user-friendlier TPM model. For instance, they could follow the Australian approach of narrowing the scope of TPM to limit the use of such measures only to the protection of copyright.[286] Other important lessons from the Australian model are the narrowing of the terms "importation" and "manufacturing" in order to allow private importation and manufacturing to limit the scope of the anti-trafficking provision.[287] They could also establish an action against groundless threat of TPM

286. *See* Exploratory Memorandum, *Copyright Amendment Bill 2006* (Aust.), Sch 12 Item 1 Subsec. 10(1) 12.6 explaining subparagraph (a)(ii), http://www.austlii.edu.au/au/legis/cth/bill_em/cab2006223/memo_0.html.

287. *See id.*; Sch 12 Item 9 Subsec. A 12.64, http://www.austlii.edu.au/au/legis/cth/bill_em/cab2006223/memo_0.html.

procedure[288] to avoid censoring researchers, as happens often in the case of encryption research. These measures may not eliminate all the barriers that the international standards create, but they may provide for a less restrictive system.

Countries should sanction only the willful unauthorized circumvention of an access-control measure. Additionally, they should establish a system where users who possess a legal copy of a TPM-protected work can contact the copyright holder in instances where the TPM is preventing them from engaging in a permitted use. In case a user does not obtain a prompt resolution, the system would allow for legal action to be brought against the copyright holder and could result in the imposition of a fine. This kind of solution could potentially help users, especially those in the academic community, continue enjoying permitted uses and engaging in new types of methodologies.

Moreover, there should be other tangential measures implemented in order to continue promoting the incorporation of ICTs in education and diminishing the negative effects of TPMs provision on this process. To this end, countries should continue to promote public policies for OERs in order to make all government funded or government produced publications part of Open Access resources, and make the resources exchanged through educational portals subject to an open-access license.[289] Such measures will encourage the incorporation of ICTs in education because it would allow users to use materials without legal concerns. Finally, these countries should develop a public repository for digitized public domain works to allow citizens to obtain TPM-free content.

VIII. CONCLUSION

Technology opens a wide set of possibilities when it is incorporated in education. This incorporation means not only the possibility of broadening access to educational resources but also the possibility of engaging in new teaching methodologies aimed at

288. *See* 17 U.S.C. § 202A(1).

289. *See Guidelines for Open Educational Resources (OER) in Higher Education* UNESCO 5-6 (2012), http://unesdoc.unesco.org/images/0021/002136/213605e.pdf.

educating new learners. Moreover, technology can provide tools for developing Latin American countries to overcome social disparities and educational crises. Consequently, Latin American countries have developed public policies and plans on the subject and have invested heavily for this purpose.

Still, many Latin American countries have engaged in bilateral negotiations with the United States that have required them to establish a model of copyright protection that can make it difficult to engage and develop new teaching methodologies. Colombia, Guatemala, and the Dominican Republic have even gone beyond the obligations of these bilateral agreements and established a more restrictive model that will create barriers for incorporating the use of the technology in education. This approach has strong social implications in the region due to the important social purposes of these types of policies.