

An Educational Program against Digital Drama using Artificial Intelligence

¹Eunsun Choi, ²Namje Park

¹Ph.D. student, Major in Computer Education, Faculty of Science Education,
Graduate School, Jeju National University, Korea

²Professor, Dept. of Computer Education, Teachers College, Jeju National Univ., Korea
namjepark@jejunu.ac.kr

Abstract

Cyberbullying and digital drama are on the rise among students. Therefore, this paper proposes an educational program that can enhance students' ability to use artificial intelligence(AI) technology and develop the power to respond to digital drama. In order to understand the effect of the proposed education program, this education was applied on a trial basis to 205 middle school students residing in South Korea. Moreover, the change of coping ability to the digital drama was observed before and after education. After applying for the educational program, the students' empathy($t=-5.506$, $p<0.001$), peer conflict resolution($t=-3.842$, $p<0.01$), and peer mediation($t=-4.213$, $p<0.001$) improved, and did not significantly affect their anger control ability($t=-0.272$, $p>0.05$). The educational program proposed in this paper uses AI to make it more attractive for students familiar with digital devices to participate in education and increase their educational concentration. This paper has its limitations as it is a study only for middle school students in South Korea. However, it is significant that the educational program proposed in this paper prevented the recently increased digital drama and led to a crucial change in coping ability.

Keywords: Digital drama, Educational program, Artificial Intelligence, Coping ability, Cyberbullying, Cyberviolence

1. INTRODUCTION

Due to COVID-19 that occurred in 2019, most workers in South Korea worked from home except for workers in essential industries such as medical and transportation. In addition, elementary, secondary schools, and universities suddenly converted their face-to-face classes to Home-Based Learning(HBL), and classes were conducted online at home. As the online education environment became standard, face-to-face classes were reduced, and blended classes, which mixed online and face-to-face classes, were commonly conducted [1]. For this reason, the time students stayed in cyberspace increased significantly compared to before the outbreak of COVID-19. As a result, physical violence such as verbal and physical violence has decreased, but cyberviolence that criticizes and bothers online has increased.

Digital drama is a type of cyberviolence and refers to psychological harassment that occurs among most adolescents. According to Tim Jordan(1999), a Ph.D. in developmental and behavioral pediatrics, teenagers should learn how to process and prevent dramas and gossip in offline spaces to show that they can cope with digital dramas online [2]. In particular, he explains that if they get caught up in a drama at school, their maturity,

Manuscript received: January 4, 2022 / revised: March 1, 2022 / accepted: March 8, 2022

Corresponding Author: namjepark@jejunu.ac.kr

Tel: +82-64-754-4914, HP: *** - **** - ****

Professor, Department of Computer Education, Teachers College, Jeju National University, Korea

Copyright©2022 by The International Promotion Agency of Culture Technology. This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>)

impulse control ability, and social and emotional ability to deal with social media can be reduced. The problem is that digital drama is a term that is not well known compared to its seriousness [3]. Therefore, in this paper, we proposed an educational program using AI technology to prevent digital drama from occurring among adolescents. In addition, we analyzed the effectiveness of this program to gauge its actual applicability.

2. RELATED RESEARCH

2.1 Cyberviolence

Social media has been used for our interaction and communication online, but it has also brought negative results and positive effects. Since social media was used in many people, it has been used as a medium for cyberviolence, and perpetrators of face-to-face attacks used to use social media to promote violent activities. Cyberviolence refers to all types of violence through information and communication devices or online cyberspace. The acts of cyberbullying classified in the Council of Europe(2021) include various types of bullying, invasion of privacy, sexual abuse, sexual exploitation, and prejudice crimes against social groups or communities [4].

2.2 Digital Drama

Digital drama is a new term for new forms of abuse and harassment occurring in cyberspace among teenagers. It is an incident in which adolescents fight or argue online. Also, due to the nature of online, many teenagers can spread rumors that cannot be said or confirmed in reality because they can have anonymity without actually facing each other [5]. Most people are not the main characters in TV drama, but they can always be the main characters in cyberspace. They can decide whether to play a good role in the drama or a bad role that bothers others. However, they should remember that they can be both perpetrators and victims. In addition, digital drama should always be wary. Because if students meet in offline space, it can be converted from offline to physical fights. Cyberviolence related to digital drama among teenagers can lead to more severe damage such as depression, inferiority, and drug addiction, so education to prevent this is essential.

3. DEVELOPMENT OF DIGITAL DRAMA EDUCATIONAL PROGRAM

3.1 Instructional Design Model

The model used to develop digital drama prevention education programs is the Successive Approximation Model(SAM). This model was developed to compensate for the shortcomings that the ADDIE model, which is frequently used in pedagogy, takes a long time to enter each stage required for educational design [6]. Therefore, we used this model to quickly develop and apply educational programs in line with the situation where Internet use increased due to the influence of COVID-19.

3.2 Application AI in Education

We designed to attract students' interest and interest and become independent learners by incorporating AI technology into educational programs. First, teachers educate students on concepts for digital drama. And then, students produce digital drama prevention videos or cartoons themselves. Students can create virtual anchors using AI technology for video production and make them in a news manner. The platforms that can be used in AI video production include DesignsAI that converts text into video, OnAir Studio and ClipChamp that can be used to produce images with AI voices. Using a cartoon production platform incorporating AI technology

such as Storyboard That, students can produce short cartoons with four cuts. In addition, students can use machine learning to create their AI voices or background music suitable for the video. Fig. 1 is an example of digital drama prevention education videos and cartoons produced using AI.



Figure 1. Digital drama prevention education videos and cartoons

3.3 Educational Program Contents

Table 1 shows the content system of the proposed educational program. The academic program consists of three modules. The education subjects are from the third grade of elementary school to the third grade of high school because it can be difficult for students under the third grade to produce videos using computers. In the first module, they learn about the dangers of digital drama and cyber violence. Then, in the second module, they produce videos or cartoons and present them under digital drama. Finally, in the third module, students discuss ways to respond to digital drama based on the videos or cartoons produced.

Table 1. Educational program contents

Module	Contents	Time	Technique
Module 1	Concepts of digital drama & cyber violence	1H	Lecture
Module 2	Producing videos related to digital drama	2H	Using AI
Module 3	Discussion on how to respond to digital drama	1H	Micro Debate

4. EFFECTIVE ANALYSIS

The subjects of this study were 205 middle school students living in randomly selected South Korea. We applied the education programs to all 205 students who participated in the study. In addition, we analyzed the effectiveness of education to evaluate the ability to cope with digital dramas before and after applying the education program suggested in the paper. Finally, we used the analysis tool in coping ability to prevent school violence used in the study of Park, Chung and Kim(2010) by modifying it into school violence that occurs online [7]. Each question consisted of a 5-point Likert scale. The sub-components of this school violence coping ability include empathy, anger control, peer conflict resolution, and peer mediation. The number of

questions for each sub-item consisted of five, with a total of 20 questions, and the Cronbach's alpha coefficient in this instrument was very high at 0.951. As a method of analyzing the results of this study, we basically performed the corresponding sample t-test, which is descriptive statistics. In addition, one-way ANOVA was also conducted for differences between grades to determine whether there was a difference in results between grades. Lastly, an independent t-test was conducted to grasp the difference between genders. For data processing, we used the IBM SPSS 24.0 Program.

As a result of the analysis, the sub-factors showing significant results after application of the program were empathy ($t=-5.506$, $p<0.001$), peer contrast ($t=-3.842$, $p<0.01$), and peer mediation ($t=-4.213$, $p<0.001$). In particular, empathy and peer mediation showed the most statistically significant results, followed by peer conflict. However, the anger control ($t=-0.272$, $p>0.05$) factor did not show significant results before and after education. Table 2 shows the detailed results.

Table 2. Results of paired t-test(N=205)

	Period	Mean	Standard Deviation	<i>t</i>	<i>p</i>
Empathy	Pre	14.83	1.663	-5.506	0.000***
	Post	16.37	1.956		
Anger control	Pre	13.60	2.207	-0.272	0.788
	Post	13.73	2.463		
Peer conflict resolution	Pre	13.13	2.224	-3.842	0.001**
	Post	14.83	2.230		
Peer mediation	Pre	14.03	2.059	-4.213	0.000***

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

On the other hand, as a result of checking whether there is a difference between gender in educational programs, there were no significant results between gender and educational programs. Accordingly, it was found that gender did not have any effect on the application of educational programs. Table 3 shows the results of differences according to the gender of educational programs.

Table 3. Results of independent t-test(N=205)

	Gender	Mean	Standard deviation	<i>t</i>	<i>p</i>
Empathy	Male	16.07	2.120	-0.836	0.410
	Female	16.67	1.799		
Anger control	Male	14.33	2.870	1.354	0.187
	Female	13.13	1.885		
Peer conflict resolution	Male	14.87	1.807	0.080	0.936
	Female	14.80	2.651		
Peer mediation	Male	15.87	1.727	0.091	0.928

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Lastly, we analyzed the relationship between educational programs and grades. As a result of the analysis, the peer conflict resolution factor showed remarkably high results in the third grade and significant results ($F=4.082$, $p<0.05$). However, in the case of other factors, no significant results were found. We found that the educational program worked evenly regardless of grades. Table 4 shows the results of differences according to the grade of educational programs.

Table 4. Results of one-way ANOVA(N=205)

	Grade	Mean	Standard deviation	<i>F</i>	<i>p</i>
Empathy	1	16.09	2.071	0.164	0.849
	2	16.50	2.224		
	3	16.56	1.667		
Anger control	1	13.55	2.841	1.054	0.362
	2	14.60	2.271		
	3	13.00	2.121		
Peer conflict resolution	1	14.18	2.442	4.072	0.028*
	2	14.10	1.663		
	3	16.44	1.810		
Peer mediation	1	15.64	1.690	0.138	0.872
	2	15.80	1.932		
	3	16.11	2.472		

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

5. CONCLUSION

With the development of information and communication technology, violence is changing from physical to cyberviolence compared to the past [8],[9]. This paper developed an educational program using AI to respond and prevent digital dramas that are relatively unknown among cyberviolence and analyzed their effects. As a result, we found that scores for all factors except for the anger control factor among the ability to cope with cyberviolence increased after applying for the education program. It was because this educational program did not deal with the negative effects of anger control disorders. In addition, we confirmed that whether educational programs were affected by gender and grade. There was no effect on gender, but it was found that the score of the peer conflict resolution factor was affected in grade. It seems to be the result of discussing various methods of conflict resolution in the higher grades. Accordingly, we going to add education content related to anger so that digital drama prevention education programs can improve anger control in the future. In addition, we going to reorganize educational programs to work effectively regardless of grade.

ACKNOWLEDGEMENT

This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2019S1A5C2A04083374), And, this work was supported by the Korea Foundation for the Advancement of Science and Creativity(KOFAC) grant funded by the Korea government(MOE). Corresponding author is Namje Park.

REFERENCES

- [1] T. Kim, "A Study on Violence and Countermeasures on Cyberspace Corruption," *The journal of Convergence on Culture Technology*, Vol. 5, Issue 1, pp. 51-58, February 2019.
- [2] T. Jordan, *Cyberpower: The Culture and Politics of Cyberspace and the Internet*, Routledge, pp. 31-62, 1999.
- [3] S. Bang and E.H. Lee, "Empathy and Involvement in Bullying in Adolescents," *The International Journal of Advanced Culture Technology*, Vol. 9, Issue 3, pp. 46-54, September 2021.
- [4] Council of Europe, Types of cyberviolence. <https://www.coe.int/en/web/cyberviolence/types-of-cyberviolence>.
- [5] K. Min and J. Kang, "Rights to Control Information and Related Security Technologies on the CyberSpace," *The Journal of The Institute of Internet, Broadcasting and Communication*, Vol. 10, Issue 2, pp. 135-141, April 2010.
- [6] R. Sites and A. Green, *Leaving ADDIE for SAM Field Guide*, ATD Press, pp. 10-37, 2012.
- [7] H. Park, M. Chung and H. Kim, "The Effect of the School Violence Prevention Program at the Elementary School Level," *The Journal of Korean Education*, vol. 37, No. 4, pp. 47-72, December 2010.
- [8] W. Jun, "A Study on Correlation between Age and Information Ethics Using Information Culture Index," *The International Journal of Internet, Broadcasting and Communication*, Vol. 8, Issue 2, pp. 81-85, May 2016.
- [9] J. Cho and C. Lim, "Rhyme of Truce, Training Program for moral psychology in Cyberspace," *The International Journal of Advanced Smart Convergence*, Vol. 8, Issue 1, pp. 176-183, March 2019.