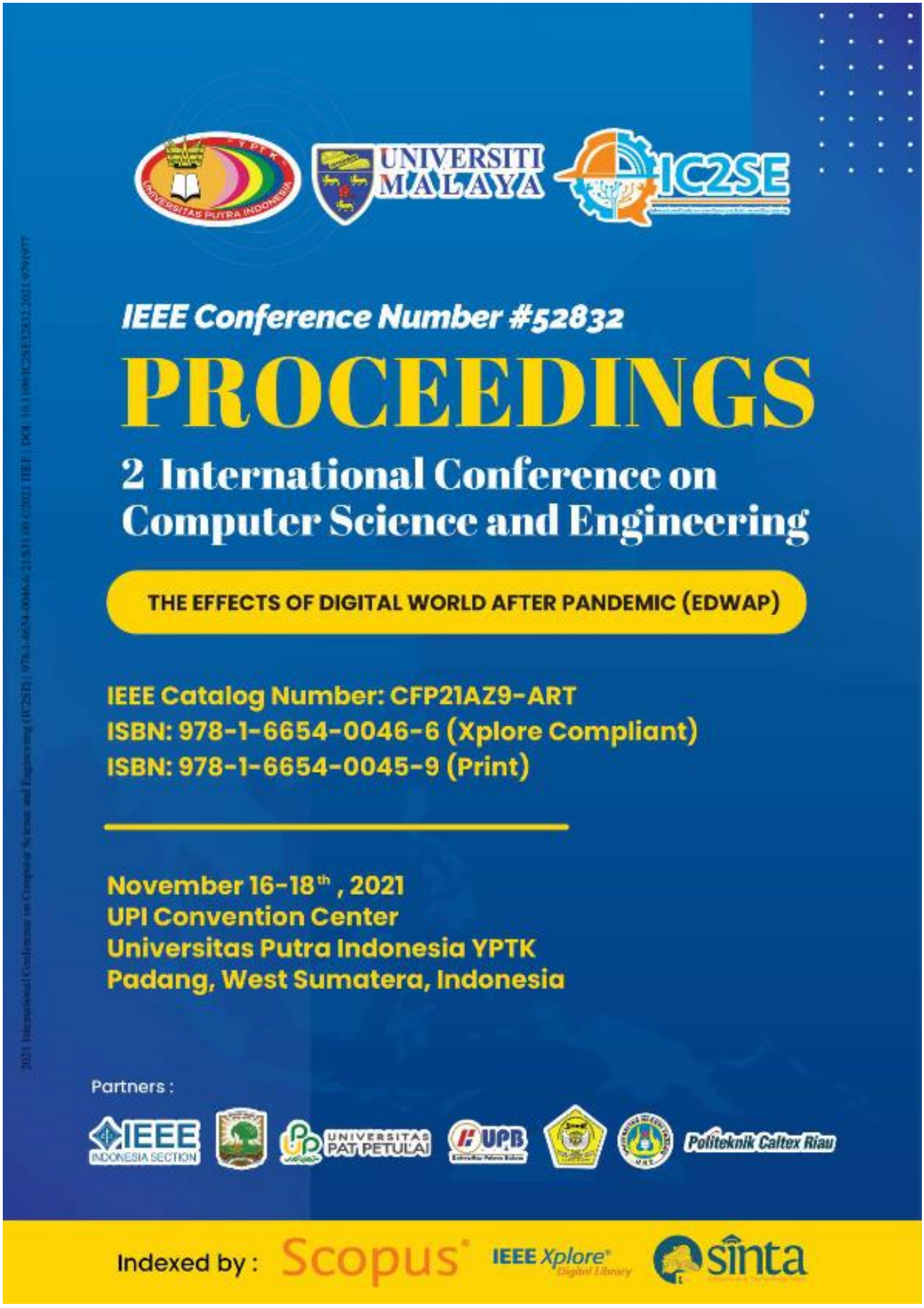
1. Cover Prosidding



2. Informasi dewan redaksi/editor/steering committee dan panitia pelaksana

2021 International Conference on Computer Science and Engineering (IC2SE) | 978-1-6654-0046-6/21/$31.00 ©2021 IEEE | DOI: 10.1109/IC2SE52832.2021.9792076

List of Committee

Organizing Committee of 2nd IC2SE

Advisors
Abulwafa Muhammad, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Dr. Billy Hendrik, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Dr. Norjihan Abdul Ghani (Universiti Malaya, Malaysia)

General Chair
Aggy Pramana Gusman, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)

General Co-Chair
Associate Prof. Dr. Suraya Hamid (Universiti Malaya, Malaysia)

Secretary
Halifia Hendri, S.Pd., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Suparmi, S.Pd., M.Pd. (Universitas Putra Indonesia YPTK Padang)

Finance
Rima Liana Gema, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Silky Safira, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)

Proceedings And Journal Publications
Mutiana Pratiwi, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Mardhiah Masril, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Associate Prof. Ts. Dr. Sri Devi Ravana (Universiti Malaya, Malaysia)
Associate Prof. Dr. Maizatul Akmar Ismail (Universiti Malaya, Malaysia)

Sponshorship
Hasri Awal, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Robby Dharma, S.E., M.M. (Universitas Putra Indonesia YPTK Padang)
Deri Marse Putra, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)

Event
Robby Usman, S.Ds., M.Sn. (Universitas Putra Indonesia YPTK Padang)
Okta Andrica Putra., S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Devia Kartika, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Sepsa Nur Rahman, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Stefvany, S.Ds., M.Sn. (Universitas Putra Indonesia YPTK Padang)
Dr. Mohd Khalit Othman (Universiti Malaya, Malaysia)

Publicity
Aulia Fitrul Hadi, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Harkamsyah Andrianof, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Dr. Hoo Wai Lam (Universiti Malaya, Malaysia)

Logistics
Silfia Andini, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)

2021 International Conference on Computer Science and Engineering (IC2SE) | 978-1-6654-0046-6/21/$31.00 ©2021 IEEE | DOI: 10.1109/IC2SE52832.2021.9792097

List of Reviewer

Computer Science

Prof. Dr. Sarjon Defit, S.Kom., M.Sc. (Universitas Putra Indonesia YPTK Padang)
Prof. Dr. Jufriadif Na'am, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Prof. Dr. Teh Ying Wah (Universiti Malaya, Malaysia)
Associate Prof. Dr. Fariza Hanum Md Nasaruddin (Universiti Malaya, Malaysia)
Associate Prof. Ts. Dr. Sri Devi Ravana (Universiti Malaya, Malaysia)
Associate Prof. Dr. Salimah Mokhtar (Universiti Malaya, Malaysia)
Associate. Prof. Dr. Suraya Hamid (Universiti Malaya, Malaysia)
Associate. Prof. Dr. Yuhandri, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Associate. Prof. Dr. Erdisna, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Associate Prof. Dr. Nor Liyana Mohd Shuib (Universiti Malaya, Malaysia)
Associate Prof. Ts. Dr. Vimala Balakrishnan (Universiti Malaya, Malaysia)
Dr. Billy Hendrik, S.Kom., M.Kom. (Universitas Putra Indonesia YPTK Padang)
Dr. Norjihan Abdul Ghan (Universiti Malaya, Malaysia)
Dr. Azah Anir Norman (Universiti Malaya, Malaysia)
Dr. Hoo Wai Lam (Universiti Malaya, Malaysia)
Dr. Kasturi Dewi Varathan (Universiti Malaya, Malaysia)
Dr. Norizan Mohd Yasin (Universiti Malaya, Malaysia)
Dr. Ir. Sumijan, M.Sc. (Universitas Putra Indonesia YPTK Padang)
Dr. Muharika Dewi, M.Pd. (Universitas Putra Indonesia YPTK Padang)
Dr. Mohd Khalit Othman (Universiti Malaya, Malaysia)
Dr. Sarah Bukhari (National Fertilizer Corporation institute of Engineering and Technology, Multan, Pakistan)
Assoc. Prof. Dr. Dina Fitria Murad, S.Kom., M.Kom. (Bina Nusantara University, Indonesia)
Dr. Mohamad Taha Ijab (University Kebangsaan Malaysia)
Dr. Norizan Mohd Yasin (Universiti Malaya, Malaysia)
Dr. Dadang Syarif Sihabudin Sahid, S.Si., M.Sc (Politeknik Caltex Riau, Indonesia)
Dr. Juni Nurma Sari, S.Kom., M.MT. (Universitas Gajah Mada, Indonesia)
Dr. Maizatul Akmar Ismail (Universiti Malaya, Malaysia)
Dr. Surjandy, S.Kom., M.Kom (Bina Nusantara University, Indonesia)
Dr. Widodo, S.Kom, M.Kom (Universitas Negeri Jakarta, Indonesia)
Fajril Akbar, M.Sc (Universitas Andalas, Indonesia)

Engineering

Prof. Dr. Erry Yulian Triblas Adesta (IIUM, Malaysia)
Dr. Bertha Maya Sopha, S.T., M.Sc. (Universitas Gajahmada, Indonesia)
Dr. Agusril (Universiti Teknologi Nasional Malaysia)
Dr. Agung Sutrisno, S.T., M.T. (Universitas Sam Ratulangi, Indonesia)
Samsul Huda, S.ST., M.T., Ph.D. (Universitas 17 Agustus 1945 Surabaya, Indonesia)
Aulia, ST, M.Eng, Ph.D. (Universitas Andalas, Indonesia)
Dr. Hendriko, S.T., M.Eng. (Politeknik Caltex Riau, Indonesia)
Dr. Emansa Hasri Putra, S.T., M.Eng. (Politeknik Caltex Riau, Indonesia)
Dr. Yohana Dewi Lulu Widyasari, S.Si., M.T. (Politeknik Caltex Riau, Indonesia)
Dr. Agus Urip Ari Wibowo, S.T., M.T. (Politeknik Caltex Riau, Indonesia)

3. Daftar Isi, Artikel Penulis

Systematic Literature Review Knowledge Reuse in Software Development
William Adjandra; Yosua Bisma Putrapratama; Adhitia Wiraguna; Dana Indra Sensuse; Nadya Safitri
Publication Year: 2021 , Page(s): 1 - 7
Abstract HTML

Thyroid Cancer Classification using Transfer Learning
Hanung Adi Nugroho; Eka Legya Frannita
Publication Year: 2021 , Page(s): 1 - 5
Abstract HTML

Literature Study on Online Learning as an Impact of Covid 19 Pandemic in Education
Gunadi Widi Nurcahyo; Aggy Pramana Gusman; Halifia Hendri
Publication Year: 2021 , Page(s): 1 - 5
Cited by: Papers (1)
Abstract HTML

Comparison of the Effectiveness of C.45 Algorithm with Naive Bayes Algorithm in Determining Scholarship Recipients
Sepsa Nur Rahman; Suparmi; Annisak Izzaty Jamhur; Yesri Elva; Surmayanti; Eva Rianti
Publication Year: 2021 , Page(s): 1 - 5
Abstract HTML

4. Full Artikel

Literature Study on Online Learning as an Impact of Covid 19 Pandemic in Education

1st Gunadi Widi Nurcahyo
Faculty of Computer Science
Universitas Putra Indonesia YPTK
Padang, Indonesia
gwidinurcahyo@gmail.com

2nd Aggy Pramana Gusman
Faculty of Computer Science
Universitas Putra Indonesia YPTK
Padang, Indonesia
apgusman@gmail.com

3rd Halifia Hendri
Faculty of Computer Science
Universitas Putra Indonesia YPTK
Padang, Indonesia
halifia_hendri@upiyptk.ac.id

2021 International Conference on Computer Science and Engineering (IC2SE) | 978-1-6654-0046-6/21/$31.00 ©2021 IEEE | DOI: 10.1109/IC2SE52832.2021.9792065

***Abstract*—The Covid-19 pandemic has resulted in restrictions and even closures of business, administrative, entertainment and educational activities. In order for these activities to continue, their activities are diverted by utilizing technology. In the field of education, the learning process is transferred to an online learning system or also known as the Online system (In the Network). The purpose of this study is to examine the problems faced in the online learning process and find the causes of these problems. This study also examines the extent to which information technology plays a role in assisting the learning process. The method used in this research is descriptive analytic. The author conducts a study of research results that have been published in various national and international journals. The results in this study are recommendations on how to apply technology appropriately in online learning to further optimize results and avoid the negative impact of disproportionate use of technology.**

Keywords—information technology, negative impact, recommendation, ofline learning, Covid-19 pandemic

I. INTRODUCTION

The outbreak of the Coronavirus (Coronavirus Disease) which is popularly known as Covid-19 was reported by the WHO for the first time appearing in Wuhan, China in December 2019. Since then, it has rapidly spread to various countries in the world, including Indonesia. The first case of Covid-19 in Indonesia was reported in March 2020. At that time, it was found that there were 2 residents of Depok, West Java who had contracted the Coronavirus. Although the government has taken preventive measures by implementing health protocols throughout the country, the spread of Covid 19 cannot be prevented. The Indonesian government subsequently issued a ban on people who may increase the likelihood of the spread of the Covid-19 virus. The impact of this prohibition is the restriction and even closure of business activities, administration, entertainment and including education. In order for these activities to continue, their activities are diverted by utilizing technology. In the field of education, the learning process is transferred to an online learning system or also known as the Online system (In the Network).

Although the e-Learning system was known before the Covid-19 outbreak, it seems that it is not enough to support the implementation of the online system in schools and even universities. Many teachers and lecturers take advantage of other online applications that are more practical to use. Applications such as Zoom, Google Meet, Google Classroom, and applications that are built independently are the choice for teachers and lecturers to teach online. Even the WhatsApp social media application is one of the most widely used applications to support this online learning. However, various problems arise in the implementation of online learning.

In accordance with the results of observations and analyzes in several schools, due to the limitations of mobile devices or media connected to the internet that occur simultaneously, they must use the internet network which is indeed very large. In Jakarta alone, around 95% of schools have used the online learning model (Rasmitadila et al, 2020). Many universities lack infrastructure and strategies [1] in [2] In addition to the impact of technology, the online system also has a psychological impact on both students and parents. Many students and parents experience stress [3]. Some of the obstacles from the search results are the limited ability to adapt and master information technology by teachers and students [4], inadequate facilities and infrastructure [5-6], limited internet access [7-8], problems with quotas and costs to study online [9-10]. [11] in his research also received various responses about the problems experienced by both students and teachers. These problems include technical and psychological problems. Technical problems are caused by technical issues such as the absence of a quota, the unavailability of an adequate internet network, the absence of supporting computer or mobile equipment, a lack of understanding of the required technology, blackouts and so on. Meanwhile, psychological problems include various problems such as stressed students and parents due to the large workload, boredom of students and educators, lack of seriousness in participating in online learning, unsupportive learning atmosphere, lack of discipline, etc.

Another problem that also needs to be watched out for is bad habits and student awareness. At the college level,

where the students' thinking is more mature, it is usually more manageable. But for high school students let alone elementary school level it is more difficult to manage. During online learning it is not certain whether students follow it well. Even though the teacher has asked the students to turn on the camera when zooming, there are still those who do not turn on the camera so that the teacher cannot know whether the student is in the place or not. This bad habit can occur due to the students' misunderstanding of the meaning of learning and education [12-13]. The results showed that only 50% of students were actively involved in online learning [14-15].

The purpose of this study is to examine the problems faced in the online learning process and find the causes of these problems. This study also examines the extent to which information technology plays a role in assisting the learning process. Many people assume that technology can have a negative impact on students. The results of this study are recommendations on how technology is used in the online learning process so that it does not have a negative impact on students in particular and on the education system in general.

II. RESEARCH METHOD

This research is a literature review that is expected to be a reference material in developing an online learning system. The author conducts a study of research results that have been published in various national and international journals. This literature review was conducted with the following objectives:

Knowing the problems faced by students, educators and parents in online learning during the pandemic. Studying the effectiveness of online learning carried out during the pandemic through the results of previous surveys on community responses to the implementation of online learning. Evaluate the extent to which technology plays a role in assisting the online learning process, how effective the use of the technology is and are there any negative impacts caused by the use of the technology [16-17].

To analyze the suitability of educational goals with the technological devices used in online learning. In addition, it also analyzes the suitability of online learning with the material being studied to find out whether all subjects or courses can be taught completely online. Provide recommendations on how to properly apply technology in online learning to further optimize results and avoid the negative impact of disproportionate use of technology. Fig 1 shows all the stages of the research as described above:

Fig. 1. Research Framework

III. RESULTS AND DISCUSSIONS

In a study conducted by Mittal (2020) with 358 respondents on how students responded to the implementation of online learning during the Covid-19 pandemic, the following facts were generated. The majority of students (65.9%) feel and strongly agree that the learning process is better done in a face-to-face room than online. Only a small proportion (31.6%) stated that the online learning process was better. On the other hand, responding to the use of technology in the online learning process, students really appreciate the resources provided to support the online learning process. Students (73.7%) realized that online learning materials and facilities were well-available. Students also felt that slideshows (58.7%) and note-taking applications (69.0%) were effective in gathering information.

From the facts described above, it can be seen that there are 2 contradictory responses between the implementation of online learning and the use of technology. On the one hand, there are still many students who say that face-to-face learning is more effective. Meanwhile, the use of technology that supports online learning has received a positive response. This fact shows that online learning with the application of technology is not always compatible. Therefore, it is necessary to conduct a study to find out under what conditions technology can have a positive impact on the online learning process and under what conditions the use of technology is not effective.

Yohannes Marryono Jamun (2018) mentions some of the negative impacts of using technology in his research, namely: teacher shifting, process deviations by students, information overload, dependence on cyberspace, criminal acts (cyber crime), apathy from students and educators. In another study, [18-19] stated that the influence of information technology is more emphasized on social aspects, namely juvenile delinquency and deviation, laziness due to the convenience obtained, reduced social interaction, as well as resulting in the occurrence of cyber crime. Meanwhile, [20-21] mention several negative impacts of the development of science and technology, namely the occurrence of plagiarism, the threat of program secrecy, criminal acts, the use of technology by minors, student and teacher addiction to technology, and laziness in learning.

It was also found that technology can have both positive and negative impacts at the same time. In another study, it was concluded that Artificial Intelligence has a positive impact on students and educators in terms of ease of communication. But on the other hand Artificial Intelligence results in a decrease in the independence of students in learning [22], in research conducted before the Covid-19 pandemic stated that the use of technology in education can change the social order in society, such as being able to change a person to be more individualistic and apathetic to the surrounding circumstances. It is undeniable that the impact of technology on social behavior does not only occur during this pandemic, but has been happening for a long time. Based on the problems mentioned above, we can see that there are problems caused by the direct

Covid-19 pandemic and problems caused by the application of technology in education.

The transfer of teachers is a problem caused by the Covid-19 pandemic, with the shift from face-to-face learning to online learning. Actually, the main problem is not the transfer of the teacher's function, but the impact caused by the replacement of the teacher's role with information technology. The learning process is not only conveying subject matter to students, but there must also be an inculcation of character values. Technology can indeed help provide material well, even better than a teacher. But technology cannot provide values of compassion to students. Therefore, the real problem of teacher shifting is the loss of emotional bonds and interactions that result in changes in the character of students. A teacher alone is not necessarily able to instill good character values to students, let alone a machine.

Meanwhile, other problems, namely the occurrence of cyber crime, student irregularities and delinquency, information overload, dependence, apathy, plagiarism, technology addiction, laziness and loss of learning independence are more caused by the use of technology in education which has occurred long before the Covid pandemic. -19. However, if analyzed more deeply, these problems are not really caused by the use of technology but because of human error using the technology. Cyber crime occurs because of crimes committed by humans by utilizing technology. Technology is just a tool that if in the right hands it will bring benefits. But if it is in the wrong hands it can bring losses. Therefore, the author conducts a deeper study based on the basic concept of education regulated in the law.

The elaboration of the 1945 Constitution on education is stated in Law no. 20 of 2003 article 3 states, "National education functions to develop capabilities and shape the character and civilization of a dignified nation in the context of educating the nation's life, aiming to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are knowledgeable. , healthy, capable, creative, independent, and become a democratic and responsible citizen." There are nine achievements mentioned in the law which we can only group into two groups. Group 1 includes the first three goals of national education, namely faith, piety to God Almighty and noble character. While group 2 includes knowledgeable, healthy, capable, creative, independent, and being a democratic and responsible citizen. Group 1 is included in the IMAN group because faith, piety to God Almighty and having noble character are still related to the heart. The heart is generally believed to be the place of faith. While group 2 is included in the ILMU group because they are knowledgeable, healthy, capable, creative, independent, and become democratic citizens and are responsible for reason. Intellect is the place of knowledge. The achievements in this second group all boil down to science. To be healthy requires knowledge. Likewise, to be capable, creative, independent, democratic and responsible, knowledge is also needed. Therefore, the national education goals stated in Law no. 20 of 2003 chapter 2 article 3 contains two main elements that form a single unit, namely the elements of FAITH and SCIENCE.

These two elements should have a balanced portion in the national education system with different methods and approaches. In practice, the element of IMAN is studied in subjects or subjects of Religion and for elementary and secondary levels, it is added with lessons on Morals and Character. In its development then formulated in the material of Character Education. Meanwhile, the SCIENCE element is studied in scientific subjects or courses in various fields of science, namely Natural Sciences, Social Sciences, Economics, Computer Science and other sciences. Based on the division of the national education goal groups, the use of technology must be carried out by considering the characteristics of each of these groups.

The application of technology, especially information technology, can be used to assist in learning related to both the IMAN element and the SCIENCE element. However, information technology should be used only for ease of communication and provision of materials. Information technology is more suitable to fulfill the scientific aspect, but cannot fulfill the faith aspect. The aspect of faith in question is not only about the implementation of worship, but includes broader aspects, namely the principles of compassion, discipline, responsibility, concern for others, etc.

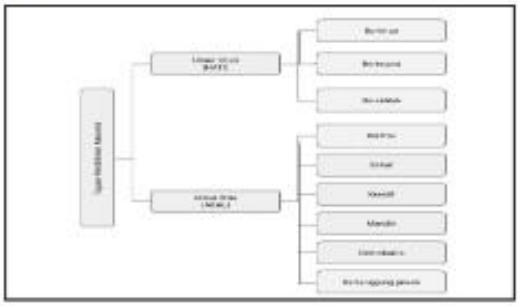


Fig. 2. Elements of National Education

Although it has not studied in more detail how to arrange material to get best results from the implementation of online learning, this paper recommends a learning model as shown in Figure 3. The model divides 2 learning areas, namely offline learning and online learning. The online learning area is depicted in the form of a circle in the middle which is in the wider offline learning area. This shows that the appropriate methods used online can also be used in offline learning. However, the learning methods used in offline learning cannot always be used in online learning. The area of learning outside the network which has a wider scope symbolizes that learning outside the network is a learning system that was used first and will continue to be used no matter how sophisticated the technology used.

While the online learning area is depicted as a circle as a symbol that this system has just been created to help the online learning process. So, this online learning system is

only as a tool to support the system outside the network to increase student interest in learning. The circles surrounding Online learning represent the subjects or subjects studied. These subject circles are described as partly in the online learning area and partly in the offline learning area. This means that every subject studied can be delivered online or offline.

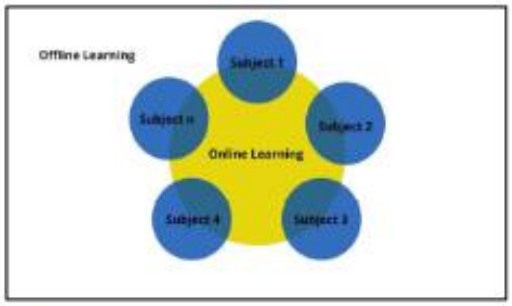


Fig. 3. Recommended Models

Fig 4 shows examples of methods in the area of Online learning and Offline learning. As shown in the figure, the ways that online learning can be used include presentations, seminars, lectures, distribution of learning materials or lectures and discussions. Since these methods are also in the Offline learning area, they can also be used in Offline learning. On the other hand, practicum activities, workshops, character education, group games, and academic guidance in the Offline learning area are not effective if carried out online.

Fig. 4. Example of Using Model

This division is based on the case discussed in the previous sub-chapter, that is, for some learning activities, online learning is not effectively used. For example, online learning can be implemented to teach students Mathematics. But as a result, some students will lose the attention of the teacher if they have difficulty understanding the lessons given. Teaching Mathematics Online is not difficult to do, but paying attention (academic guidance) is an activity that cannot be done online. If it is forced to do, it can be done but the results will not be effective.

IV. CONCLUSION

In this study, it can be concluded that technology is needed to facilitate the implementation of learning and teaching but must be managed properly. Technology is just a tool that if used properly by the right people will have a positive impact. But if it is not managed properly and in the wrong hands, technology will have a negative impact. Hence, the problem is not the technology, but how to build human character. However, technology will always deal with some people with bad character. So the focus of using technology is how to maintain security and prevent the learning process from actions that are not commendable. Thus the online learning process needs to be maintained, combined with online learning for appropriate materials and activities. The impact of the Covid-19 pandemic on the learning process is the loss of social interaction between educators and students which can also result in the loss of character values from students.

V. ACKNOWLEDGMENT

I would like to thank the Padang Computer College Foundation (YPTK) which was founded by the late Mr. H. Herman Nawas and chaired by Mrs. Dr. Hj. Zerni Melmusi, S.E., M.M., Ak. C.A. who have provided facilities for this research activity. B. G. thanks...". Put sponsor acknowledgments in the unnumbered footnote on the first page.

REFERENCES

[1] Andri Anugrahana, "Hambatan, solusi dan harapan: pembelajaran daring selama masa pandemi Covid-19 oleh guru sekolah dasar" Jurnal Pendidikan dan Kebudayaan, vol. 10, no. 3, hal. 282-289, 2020.

[2] Agung Marwanto, "Pembelajaran pada anak sekolah dasar di masa pandemi Covid-19" Jurnal BASICEDU, vol. 5, no. 4, 2021.

[3] Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J. dan Zheng, J.,, "The psychological impact of the COVID-19 epidemic on college students in China" Psychiatry Research, 287, 112934, 2020.

[4] Chakraborty, P., Mittal, P., Gupta, M. S., Yadav, S. dan Arora, A., "Opinion of students on online education during the COVID-19 pandemic", Journal of Human Behavior & Emerging Technology, 2020.

[5] Koko Adya Winata, Qiqi Yuliati Zaqiah, Supiana dan Helmawati, "Kebijakan pendidikan di masa pandemi", Jurnal Pendidikan., vol. 4, no.1, hal. 1–6, 2021.

[6] Mulyani, F. dan Haliza, N., "Analisa perkembangan ilmu pengetahuan dan teknologi (iptek) dalam pendidikan", Jurnal Pendidikan dan Konseling., vol. 3, no.1, 2021.

[7] Murtadlo, M., "Pembelajaran daring pada masa pandemi COVID-19 di lingkungan pesantren", Jurnal Psikologi., vol. 13, no.2, hal. 214–225, 2020.

[8] Munti, N. S., Syaifaddin, D. A., "Analisa dampak perkembangan teknologi informasi dan komunikasi dalam bidang pendidikan", Jurnal Pendidikan Tambusai, vol. 4, no. 2, hal. 1799–1805, 2020.

[9] Purwanto, A., Pramono, R., Asbari, M., Santoso, P. B., Wijayanti, L. M., Hyun, C. C. dan Putri, R., "Studi eksploratif dampak pandemi COVID-19 terhadap proses pembelajaran online di sekolah dasar", Journal of Education, Psychology and Counselling", 2(1), hal. 1–12, 2020.

[10] Rasmitadilla, R., Aliyyah, R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M. & Tambunan, A. R. S., "The perceptions of primary school teachers of online learning during the COVID-19 pandemic period: A case study in Indonesia", Journal of Ethnic and Cultural Studies, 7(2), 90-190, 2020.

[11] Sudasri Lestari, "Peran teknologi dalam pendidikan di era globalisasi" e-Journal Unuja, vol. 2, no. 2, 2018.

[12] Yohannes Marryono Jaman, "Dampak teknologi terhadap pendidikan" Jurnal Pendidikan dan Kebudayaan Missio., vol. 10, no. 1, hal. 1–136, 2018.

[13] Zhang, W., Wang, Y., Yang, L., dan Wang, C., "Suspending classes without stopping learning: China's education emergency management policy in the COVID-19 outbreak" Journal of Risk and Financial Management, 13(3), 55, 2020.

[13] A. Narin, C. Kaya, and Z. Pamuk, "Automatic detection of coronavirus disease (COVID-19) using X-ray images and deep convolutional neural networks," *Pattern Anal Appl*, pp. 1-14, May 9 2021, doi: 10.1007/s10044-021-00984-y.

[14] L. O. Hall, R. Paul, D. B. Goldgof, and G. M. Goldgof, "Finding covid-19 from chest x-rays using deep learning on a small dataset," *arXiv preprint arXiv:2004.02060*, 2020.

[15] Y. LeCun, Y. Bengio, and G. Hinton, "Deep learning," *Nature*, vol. 521, no. 7553, pp. 436-44, May 28 2015, doi: 10.1038/nature14539.

[16] V. An and G. Sh, "Deep neural networks for image classification," *Deep Learning for Image Processing Applications*, vol. 31, p. 27, 2017.

[17] T. Lillesand, R. W. Kiefer, and J. Chipman, *Remote sensing and image interpretation*. John Wiley & Sons, 2015.

[18] Y. LeCun *et al.*, "Handwritten digit recognition with a back-propagation network," in *Advances in neural information processing systems*, 1990, pp. 396-404.

[19] T.-Y. Lin *et al.*, "Microsoft coco: Common objects in context," in *European conference on computer vision*, 2014: Springer, pp. 740-755.

[20] Y. Gao, J. Mas, I. Niemeyer, P. Marpu, and J. Palacio, "Object-based image analysis for mapping land-cover in a forest area," in *Proc. of 5th International Symposium on Spatial Data Quality*, 2007.

[21] D. S. Kermany *et al.*, "Identifying Medical Diagnoses and Treatable Diseases by Image-Based Deep Learning," *Cell*, vol. 172, no. 5, pp. 1122-1131 e9, Feb 22 2018, doi: 10.1016/j.cell.2018.02.010.

[22] J. Bernal *et al.*, "Deep convolutional neural networks for brain image analysis on magnetic resonance imaging: a review," *Artif Intell Med*, vol. 95, pp. 64-81, Apr 2019, doi: 10.1016/j.artmed.2018.08.008.

5. Sertifikat