

Digital Context Influences Batam Students' Educational Ethics

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Abstract

The rapid development of digital technology can cause serious problems, namely, the use of digital technology with an unethical attitude. The objective of this study is to analyze the use of digital technology can affect the unethical attitude of students in Batam city. By collecting 360 total data samples, all collected data will be analyzed using SPSS software by using extraction method: principal component analysis, factor analysis was conducted, and it was found that there are 3 factors: the development of the digital context has eliminated professional ethical attitudes, inappropriate use of digital technology, and the educational community's response to unethical attitudes. We conclude that the influence of the digital context with the development of digital technology can affect the unethical attitudes of Batam city students so that it requires provisions and policies from educational institutions to direct training to avoid the negative influence of the use of digital technology.

Keywords: Digital Context; Digital Technology; Ethic; Principal Component Analysis

Abstrak

Perkembangan teknologi digital yang semakin pesat dapat menimbulkan masalah yang serius, yaitu penggunaan teknologi digital dengan sikap yang tidak beretika. Tujuan dari penelitian ini adalah untuk menganalisis penggunaan teknologi digital dapat mempengaruhi sikap tidak etis mahasiswa di kota Batam. Dengan mengumpulkan 360 total sampel data, semua data yang terkumpul akan dianalisis menggunakan perangkat lunak SPSS dengan menggunakan *extraction method: principal component analysis*: analisis faktor dilakukan, dan ditemukan bahwa ada 3 faktor: perkembangan konteks digital telah menghilangkan sikap etika profesional, penggunaan teknologi digital yang tidak tepat, dan respon komunitas pendidikan terhadap sikap tidak etis. Kami menyimpulkan bahwa pengaruh konteks digital dengan perkembangan teknologi digital dapat mempengaruhi sikap tidak etis mahasiswa kota Batam sehingga diperlukan ketentuan dan kebijakan dari institusi pendidikan untuk mengarahkan pelatihan agar terhindar dari pengaruh negatif penggunaan teknologi digital.

Kata Kunci: Konteks Digital; Teknologi Digital; Etik; Principal Component Analysis

1. Introduction

The rapid development and changes in technology in the world of education has changed the learning system to be more effective. Technological changes have proven to have an impact on students' mindset, productivity, creativity, and innovation to create an ecosystem with an effective learning system. Because of COVID-19 pandemic[1], many educational institutions require online learning so that students are encouraged to use digital technology to learn. However, this has not received a satisfactory response. There are many factors that make online learning ineffective[2], such as students do not have supporting facilities to carry out online learning, students experience burnout and depression[3] because they have a lot of homework every day, cannot interact directly with friends or teachers so that student achievement decreases. This research report[4] shows that Cenderahwasih University's online learning has proven to be ineffective and efficient due to not having gadgets as learning media and uneven internet access. The passing of the COVID-19 pandemic requires educational institutions to conduct online learning. Many scientific articles[5] are being researched to analyze the positive or negative impacts of online learning during the COVID-19 pandemic. The purpose of making these scientific articles is to obtain useful data and information for educational institutions to prepare and develop the latest strategies in the future regarding

effective learning systems to adapt to the learning system in the latest ecosystem. The COVID-19 pandemic has also impacted local communities, forcing them to work from home[6]. The existence of digital technology to do work from home really helps a lot of people to complete their work from home. In the world of education, it is also very impactful on teachers or lecturers so that it affects the learning system. Teachers or lecturers find a lot of benefits from this digital technology such as being able to teach collaboratively, create online tutorials, and conduct online exams or assessments[7].

From a young age, moral values or attitudes should be taught by parents such as being responsible, being honest, helping others, and so on. But ironically there are still many children who do not have these moral values or attitudes. In the research[8] that there are some students who still do not have professional ethical attitudes due to the absence of mutual assistance, courtesy, honesty, and responsibility so that in the research the teachers teach and apply these attitudes to create professional ethical attitudes. In this study, students easily paste, copy, and paraphrase the sentence without quoting the original source of the sentence, which is a source of concern among the community. The research proves that students have forgotten the ethical attitude of professionalism when using digital technology. The research[9] explains that in addition to teachers or lecturers that parents also have an important role in fostering ethical professionalism. Parents must supervise and teach their children to apply moral values or attitudes so that the child appears ethical professionalism. The research[10] also shows that to create an ethical attitude of professionalism it is necessary to set a good example so that everyone can follow. The research[11] discusses preventing plagiarism, cybercrimes, etc. and how important it is to do honest deeds in the field of education or other fields. Therefore, we need to know what impacts digital technology has on students' ethical professionalism and students' knowledge about the importance of ethical professionalism.

Before the COVID-19 pandemic, people all over the world were able to access the internet to use digital technology during their daily lives, and educational institutions are no exception[12]. Educational institutions have used digital technology with the internet to help conduct an effective learning system to increase student potential and achievement. The COVID-19 pandemic the use of digital technology has increased rapidly, digital technology is an important tool for educational institutions because it is a medium for teaching and training. This makes digital technology have a very large and broad impact on the world of education. Digital technology can be useful for students, teachers or lecturers to continue learning and research to a higher level[13]. The existence of digital technology that is very useful triggers concerns that this technology can trigger fraudulent practices such as cheating, plagiarism, not having the intention to learn, and only relying on digital technology to do schoolwork. This can be caused by students' lack of ethical professionalism towards the use of digital technology. The emergence of these problems, it is evident that students have forgotten ethical professionalism when using digital technology. We must also understand how to use digital technology properly. Not only digital technology, but the internet[14] also needs to be considered because the internet is the key to accessing all kinds of digital technology that has been circulating. Therefore, the right and responsible person is needed to conduct training for students in ethical professionalism. Educational institutions[15] should also propose what rules and regulations are needed to use digital technology to support the learning system. In addition to training, to prevent students from committing fraud or unethical attitudes, the factors and preventive measures must be analyzed so that students can avoid committing fraud or unethical attitudes.

Professional ethics[16] is very important for students so that they can have an attitude of professionalism as preparation for entering the world of work. The rapid development of technology sometimes produces new habits that can threaten ethical professionalism. Ethical professionalism[17] is very important when using digital technology because the purpose of applying ethical professionalism: to avoid unwanted actions such as cheating practices, cyber-criminal acts, plagiarism, and so on. However, recently students have forgotten ethical professionalism. There are many cases of students using digital technology such as artificial intelligence to commit plagiarism[18]. The unprofessional ethical attitude is caused by the loss of responsibility and indifference so that students do not have an attitude of professionalism. For example, students use the internet as a source of information to do campus work, students do not have guidelines for conducting deeper searches, conducting deeper analysis and obtaining information for the needs of campus work so that cases of plagiarism of other people's work occur[19]. It is necessary to examine the problems that can be caused by using digital

technology on professional ethical attitudes and student self-development. A professional ethical attitude[20] is very important when using digital technology by accessing the internet to avoid inappropriate use of technology or the internet. This topic is very important to research because digital technology has been very developed with emerging technologies such as artificial intelligence, Chatgpt, and others. However, students are not using digital technology with professional ethics[21], causing concern among the public, teachers, and lecturers. Until now, there has been limited research on the impact of the use of digital technology on students in Batam City, so this research topic is very important to study. To remind and reapply ethical professionalism, teachers are needed as role models for students to conduct training on ethical professionalism. The purpose of this topic is to remind everyone, especially educational institutions, how important it is for students to have an awareness of professional ethical attitudes when using digital technology to conduct learning to create students who have professional and educated ethics.

2. Literature Review

This research was conducted based on research conducted by (V. Cebrián-Robles., 2023)[22]. The research conducted by them focuses on analysing the influence of the digital context ecosystem on academic cyber plagiarism committed by students before and after the COVID-19 pandemic. The research has an objective to find out how much influence digital technology has on students commit plagiarism and build awareness so that students can prevent and avoid committing plagiarism. This research was conducted with a quantitative approach and factor analysis with correlation and descriptive, the data collection method was carried out by distributing questionnaires to three universities in Spain. By conducting factor analysis, four factors were confirmed: the educational community response to the plagiarism during the pandemic, the digital context of the pandemic as an opportunity for plagiarism, intentional impersonation of authorship, and inappropriate use of sources. The results of the study can be concluded that the digital context can provide opportunities for students to commit plagiarism in the academic field. There is a need for skills that must be taught to students to avoid cheating, plagiarism, and others.

The next research used as a reference is research (N. Lestari., 2020)[23]. This research focuses on the impact of student ethics on spiritual intelligence, emotional intelligence, demographic factors, and intellectual intelligence. The purpose of this study is to determine the impact of spiritual intelligence, emotional intelligence, demographic factors, and intellectual intelligence on student ethics. In this study, the data used was primary data in the form of a questionnaire with a total of 989 respondents, using purposive sampling method. The data was analysed using one-way ANOVA and multiple regression analysis. The results showed that spiritual intelligence, emotional intelligence, demographic factors, and intellectual intelligence have a positive effect on student ethics. Female-gendered students are more ethical than male-gendered students. Age, occupation, and marital status have no effect on student ethics.

Research conducted by (C. K. Y. Chan., 2023)[24] examined the effect of artificial intelligence on higher education. The purpose of the study was to create and develop policies on the use of artificial intelligence for higher education by analysing the implications, impacts, and perceptions of various artificial intelligence technologies. In the study, data was collected from 457 students, 180 teachers and education staff in Hong Kong universities. The research used quantitative and qualitative methods as well as descriptive and thematic analyses. The results showed that there is a need for a national policy on the use of artificial intelligence to avoid cheating and plagiarism. The research also showed that there are three dimensions to use artificial intelligence correctly: operational (training and infrastructure), pedagogical (improving the learning system), and governance (maintaining accountability and privacy or security issues).

The research researched by the Author is research on how much influence digital context has on the ethics of students in the city of Batam. The idea of research on the impact and influence of digital context on the ethics of students in the city of Batam is a very important research topic because there is still limited research on this topic. This research uses factor analysis and descriptive methods in accordance with research (V. Cebrián-Robles., 2023)[22]. Research (N. Lestari., 2020)[23], this proves that it is also important to know the factors, influences, impacts caused by the rapid development of digital technology on the ethics of Batam city students. Research (C. K. Y. Chan., 2023)[24], the research shows that national

regulations and policies are needed for the use of digital technology to prevent and avoid negative actions. Therefore, a national policy is needed to maintain and prevent the unethical attitude of Batam city students when using digital technology in daily life.

3. Methodology

3.1 Research Plan

This study has an objective to analyze the unethical actions when using digital technology from the perspective of students who are completing college in Batam. To fulfil the objective, this research was conducted in a longitudinal, exploratory, and descriptive manner. This research analyses students in Batam with the academic years 2020/2021, 2021/2022, 2022, and 2023, and 2023/2024.

3.2 Respondent

This study successfully collected respondents with a total of 360 respondents. Of these 360 respondents, male gender students totaled 160 (50%) and female gender students totaled 160 (50%). The students came from 3 universities in Batam city: Batam International University with 175 (48.6%), Putra Batam University with 75 (20.8%), and Universal University with 110 (30.6%). The age of the respondent students in this study ranged from 18 to 26 years old. The respondent students are studying in Batam city: semester 1-3 with 67 (18.6%), semester 4-5 with 99 (27.5%), semester 6-7 with 186 (51.7%), and above semester 7 with 8 (2.2%).

3.3 Survey

This research was conducted with a survey in the form of an online questionnaire in the form of a google form, following the research[22] conducted by getting Cronbach's alpha with a value of 0.785. This research focuses on the influence of the use of digital technology with unethical behavior by Batam city students during the pandemic and after COVID-19 and the digital technology that has developed rapidly, such as the use of artificial intelligence. The data and information are collected to find out what unethical attitudes have been carried out by Batam city students when using digital technology in their daily lives. This research can also find out what attitudes or actions and knowledge are taken by Batam city students to avoid unethical attitudes when using digital technology. The questionnaire questions consist of several indicators, in this study focusing on three indicators:

- 1) The rapidly developing digital technology situation is being exploited by students to carry out unethical attitudes.
- 2) Students have an awareness of ethical attitudes, so they do not engage in unethical attitudes while using digital technology.
- 3) Have the skills and knowledge to avoid unethical behavior when using digital technology.

The questions were answered on a five-point scale: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. By conducting a survey in the form of a questionnaire, after conducting an internal consistency test with Cronbach's Alpha[25] with a value of 0.858, this value is higher than the research. This parameter relates to the accuracy of a measuring instrument and serves as a reference for the stability of the results obtained when making repeated measurements and the same situation[26]. This internal consistency states how broadly the questions evaluate topics or concepts that are related or the same between indicators in the test. Students from three different universities in Batam city were given a google form link in the form of an online questionnaire. Students were given sufficient time to fill in the questionnaire and had no hesitation in answering.

3.4 Information Processing

To perform factor, correlational, and descriptive analyses, by following this research method[22], we use the principal component analysis: extraction method, it is necessary to use statistical software called SPSS version 30.0.0. Furthermore, confirmatory, variance, and factor analyses were carried out, by obtaining three factors that have been named and arranged in a grouping of indicators each:

Factor 1. The development of the digital context has eliminated professional ethical attitudes.

- 1) Indicator 1. The Development of Digital Technology Triggers Unethical Professional Attitudes.
- 2) Indicator 2. The rapidly developing digital technology situation is being exploited by students to carry out unethical attitudes.
- 3) Indicator 3. There is communication between students who behave unethically during assignments.
- 4) Indicator 4. There is communication between students who behave unethically during the exam.

Factor 2. Inappropriate use of digital technology.

- 1) Indicator 1. Copying a sentence or text from a website without citing the original source.
- 2) Indicator 2. Copying a sentence or text from a printed source (encyclopedia, scientific article, book, etc.) without citing the original source.
- 3) Indicator 3. Using my previous assignments to complete new assignments.
- 4) Indicator 4. Using sounds, images and videos from the internet without indicating the original source.
- 5) Indicator 5. Cheating on other students' work and submitting it as one's own.
- 6) Indicator 6. Cheating on scientific work from the internet and using it to publish as one's own work.
- 7) Indicator 7. Because carrying out an unethical attitude is carrying out actions without harming other people, unethical behavior is not a big problem.
- 8) Indicator 8. Not feeling guilty when using digital technology in an unethical manner.

Factor 3. The educational community's response to unethical attitudes.

- 1) Indicator 1. Students have an awareness of ethical attitudes, so they do not engage in unethical attitudes while using digital technology.
- 2) Indicator 2. There are rules and regulations to avoid unethical behavior while using digital technology.
- 3) Indicator 3. Lecturers are afraid to take online exams because they cannot control unethical actions
- 4) Indicator 4. Have the skills and knowledge to avoid unethical behavior when using digital technology.
- 5) Indicator 5. After the pandemic do you have the skills and knowledge to avoid unethical behavior when using digital technology?

4. Discussion

Image 1 shows the total variance explained, the presence of three factors that have been observed and named.

Component	Initial Eigenvalues			Total Variance Explained			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.382	31.661	31.661	5.382	31.661	31.661	3.218	18.932	18.932
2	1.420	8.355	40.016	1.420	8.355	40.016	3.144	18.492	37.424
3	1.049	6.173	46.189	1.049	6.173	46.189	1.490	8.765	46.189
4	.898	5.280	51.469						
5	.855	5.027	56.496						
6	.847	4.980	61.476						
7	.765	4.498	65.973						
8	.736	4.332	70.305						
9	.696	4.097	74.402						
10	.675	3.972	78.374						
11	.627	3.691	82.065						
12	.596	3.507	85.572						
13	.547	3.215	88.787						
14	.535	3.147	91.934						
15	.524	3.083	95.017						
16	.456	2.682	97.699						
17	.391	2.301	100.000						

Extraction Method: Principal Component Analysis.

Image 1. Total variance explained

The content of the indicator that has been grouped into Factor 1, 'The development of the digital context has eliminated professional ethical attitudes', shows that the influence of the digital context, i.e. the rapid development of digital technology can trigger Batam city students to conduct unethical attitudes and provide opportunities for students to use digital technology with

unethical attitudes. This can happen because there is an online community or communication for how to use digital technology, it is utilized by irresponsible students by using digital technology unethically, such as cases of cheating or plagiarism in making scientific articles and so on. The indicators that have been grouped in Factor 2, "Inappropriate use of digital technology", have a relationship with the development of digital technology. Batam city students often unknowingly use digital technology unethically, such as cases of using social media to bully others, using artificial intelligence technology such as Chatgpt to cheat and do college assignments. Not only that, students also often commit plagiarism by using the internet as a source of information to carry out assignments for the publication of scientific articles without mentioning the reference of the information source. Consciously or unconsciously, the rapid development of digital technology has provided a gap or opportunity to use digital technology unethically which can lead to cyber-criminal acts. Finally, the indicators that have been grouped in Factor 3, "The educational community's response to unethical attitudes", show that there is a concern for Batam students who use digital technology with unethical attitudes when learning at the University. Lecturers have concerned that students will adopt unethical attitudes when using digital technology. This is related to the awareness, knowledge, and actions of Batam city students to avoid unethical behavior in using digital technology during learning. It needs provisions and regulations from educational institutions so that students of Batam city can prevent and avoid unethical behavior in using digital technology.

Student's t-test[27] were conducted to analyze the indicators by gender and no significant differences were found. However, it is important to note that most of the scores reported by men were slightly higher than those reported by women according to Table 1. By comparing by gender, it is important to remember that female student respondents still do not have sufficient knowledge and skills to avoid unethical attitudes when using digital technology (indicator 16 responses in Table 1). According to Table 1 data, after the COVID-19 pandemic, female students have improved their knowledge and skills to avoid unethical attitudes when using digital technology (response indicator 17 in Table 1). ANOVA test[28] has also been conducted on all semester levels of students in Batam city. ANOVA test shows that there is a very significant difference between students in semester 1-3, semester 4-5, semester 6-7, and above semester 7 in the sub-indicator of using digital technology unethically. In the sub-indicator of using digital technology with an unethical attitude, semester 4-5 got the highest score.

Table 1 Mean indicator and sub indicator scores by gender.

No	Indicator	Women	Men
1	The Development of Digital Technology Triggers Unethical Professional Attitudes.	3.8889	3.7500
2	The rapidly developing digital technology situation is being exploited by students to carry out unethical attitudes.	3.7722	3.7222
3	There is communication between students who behave unethically during assignments.	3.8222	3.8444
4	There is communication between students who behave unethically during the exam.	3.8000	3.8556
5	Students have an awareness of ethical attitudes, so they do not engage in unethical attitudes while using digital technology.	3.7556	3.7833
6	There are rules and regulations to avoid unethical behavior while using digital technology.	3.7278	3.7722
7	Lecturers are afraid to take online exams because they cannot control unethical actions.	3.8778	3.7778
8	Copying a sentence or text from a website without citing the original source.	3.7833	3.8278
9	Copying a sentence or text from a printed source (encyclopedia, scientific article, book, etc.) without citing the original source.	3.7667	3.8333
10	Using my previous assignments to complete new assignments.	3.8111	3.8056

No	Indicator	Women	Men
11	Using sounds, images and videos from the internet without indicating the original source.	3.8444	3.9667
12	Because carrying out an unethical attitude is carrying out actions without harming other people, unethical behavior is not a big problem.	3.7667	4.0111
13	Cheating on other students' work and submitting it as one's own.	3.8222	3.9556
14	Cheating on scientific work from the internet and using it to publish as one's own work.	3.7278	3.9389
15	Not feeling guilty when using digital technology in an unethical manner.	3.7944	3.9833
16	Have the skills and knowledge to avoid unethical behavior when using digital technology.	2.8222	2.9944
17	After the pandemic do you have the skills and knowledge to avoid unethical behavior when using digital technology?	2.8389	2.8944

When analyzing the data, we concluded and reviewed that the data was affected by the school year, as the student respondents had year levels between semesters (semester 1-3, semester 4-5, semester 6-7, and above semester 7). We can conclude several possibilities that make students in semester 1-3 and semester 4-5 underestimate the unethical attitude when using digital technology. Students in semester 1-3 who have just entered the world of lectures, still lack knowledge of ethical attitudes, so they are still reckless when using digital technology. For students in semester 4-5, they still think that an unethical attitude when using digital technology is not important in everyday life to the world of work. This makes 4-5 semester students have an attitude of indifference when using digital technology so that they often commit unethical acts. For example, making scientific articles or essays is not important when entering the world of work so that students in semesters 4-5 tend to commit acts of plagiarism or cheating by taking references or other people's work without mentioning the original source. Uniquely, students in semester 6-7 and above semester 7 have an awareness of how important it is to apply ethical attitudes when using digital technology in everyday life. This makes students in semester 6-7 and above semester 7 start to pay attention and apply ethical attitudes because they realize that ethical attitudes have an important role in determining a person's attitude, characteristics, and maturity which will affect how to interact, take responsibility and make decisions in everyday life. We also reviewed and concluded that gender differences are also a possible problem related to the knowledge and skills of ethical attitudes when using digital technology. This condition is reinforced by the evidence in Table 1 indicator 16 that women still have minimal knowledge and skills on how to minimize or prevent unethical attitudes when using digital technology. It should be noted that in this context it refers to a trend, as well as a hypothesis based on a trend that has already occurred.

Before and after the pandemic and the rapid development of digital technology such as the emergence of Chatgpt, is a new "trial"[29] that must be faced by the world of education, especially educational institutions. The digital context requires educational institutions and professionals to create new ways of learning with new ecosystems[30]. It also causes opportunities or loopholes for unethical use of digital technology. For this case, the training of ethical attitudes and academic digital competencies has an important role in preventing unethical attitudes in the use of digital technology. The results of the analyzed data reveal that one of the determining aspects of unethical attitudes is the digital context, the careless use of digital technology either intentionally or unconsciously, and the response of the educational community to the use of digital technology with unethical attitudes. This research provides new knowledge about the use of digital technology that has been carried out by respondents before and after the pandemic, it can be seen in Table 1 that the female gender has more capable and developed learning. In this study, differences in gender men and women were found, it was revealed that gender men have the highest values in terms of unethical attitudes when using digital technology, it can be seen in Table 1 that gender men report a lot of unethical attitudes.

Women students who were respondents in this study revealed that they had minimal knowledge and skills on unethical attitudes when using digital technology (indicator response 16 Table 1). According to Table 1 data, after the pandemic, they revealed that their knowledge and skills about unethical attitudes when using digital technology and how to prevent them have improved (indicator response 17 Table 1), although the score has increased, it is still lower than the men's score, but the men's score has decreased, which shows that men are starting to underestimate unethical attitudes. The data does not reveal any circumstances that determine the difference, we can conclude that the difference is based on experience and in terms of digital competency training. In the process of literature review, we can find out how big the impact of digital technology is in the field of education. Digital technology can create new ecosystems and competencies that can improve the competencies of Batam city students to prevent unethical behavior in the use of digital technology in everyday life. All educational institutions and academies are discussing strategies on how to use digital technology in the field of education to increase the level of education to a higher level[31]. With the data from the research results that to prevent unethical attitudes towards Batam city students, national regulations and policies are needed in the use of digital technology. In this study[32] the use of digital technology tends to make students lazy to think and always rely on digital technology so that students intentionally or unintentionally will commit acts of fraud in the form of stealing other people's work, plagiarism, and commit cyber criminal acts that can create unethical attitudes. To prevent this, in research[24] it is proven that policies and training can build awareness and morale to avoid these attitudes and uphold ethical attitudes in the use of digital technology in everyday life.

5. Conclusion

In conclusion, the development of digital contexts such as the emergence of digital technology can be an obstacle and an opportunity for educational institutions. This phenomenon, it is possible to obtain learning that focuses on two main things to train professional ethical attitudes in the use of digital technology in everyday life. First, there is a literature review study[33] that aims to evaluate various national policy strategies on artificial intelligence. Therefore, there is a need for policies, provisions, and regulations that implement appropriate and safe digital technology because until now there have been no policies and provisions for the use of safe and appropriate digital technology in Batam city. Secondly, there is research[34] that discusses how important teachers are in guiding students in the use of digital technology. Lecturers have a very important role because they can prevent students from having various unethical attitudes when using digital technology (plagiarism, cyber bullying, cybercrime, and so on)[35]. By conducting training that has focused on these two main issues, it can prevent students in Batam city from unethical attitudes when using digital technology in their daily lives. In this study, there is a limitation in the research methodology plan and the number of respondents, which can show us some variables that have a correlation but do not explain the cause further. Therefore, if given the opportunity, we will deepen this research with a larger number of respondents to gain a better insight into the issue.

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