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The Influence of Learning Contents, Virtual Class Interaction and Game-Based Learning Platform on Distance Learning Participants' Satisfaction

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ABSTRACT

PT PLN (Persero) as a State-Owned Enterprise (BUMN) has the responsibility to provide electricity to the people of Indonesia, including households, government agencies, and the industrial sector. To support employees' competence and quality, PLN has an Education and Training Center (Pusdiklat PLN) which functions as a center for employees' skill and career development. However, since the COVID-19 pandemic, Pusdiklat PLN has faced challenges in conducting face-to-face training and then switched to digital learning methods to ensure that training activities ran well. This study aims to analyze the effect of learning content, classroom interaction, and game-based learning platforms on the satisfaction of participants who take part in the digital learning program. This study uses a quantitative approach with PLN employees who took part in digital learning training in April 2024 as subjects. A total of 100 participants were selected using a purposive sampling technique. Data analysis was carried out using multiple linear regression with the assistance of SPSS 25 software. The results of the study showed that learning content, classroom interaction, and game-based learning platforms has a significant positive effect on participant satisfaction, both partially and simultaneously. Additionally, education policymakers may consider investing in game-based learning technologies and interactive teaching strategies to optimize student experiences and improve retention rates.

Keywords: *Distance Learning, Game-Based Learning, Learning Contents, Virtual Class*

INTRODUCTION

The Covid-19 pandemic that emerged in late 2019 has had a wide impact on various aspects of life, including education and society. Education, which aims to form adaptive and well-mannered individuals through a quality learning process, has experienced a major shift towards Distance Learning. Schools, universities, and even companies have switched to online methods to prevent physical meetings. This PJJ system allows the learning process to continue thanks to advances in information technology, which maintains connectivity between teachers and students and supports the achievement of learning goals even in limited situations (Lin et al., 2020; Zhang et al., 2020; Basar, 2021; Pakpahan & Fitriani, 2020). PT PLN (Persero) is a State-Owned Enterprise (BUMN) tasked with serving and supplying the electricity needs of the Indonesian, both for households, government agencies, and industry. The Covid-19 pandemic

phenomenon certainly has an impact on the learning process that occurs at the PLN Pusdiklat, considering the large number of PT PLN employees who still need education and career development during the pandemic. The quality of an employee's work is one of the important things that must be considered by the company. Quality of work is how well an employee does what is his/her responsibility according to his/her role and abilities.

In the implementation of distance training at PLN Pusdiklat, several challenges related to learning content, interaction in virtual classes, and gamification platforms have been identified as factors that influence participant satisfaction. In terms of learning content, there are complaints about the relevance of the material to the needs of participants and the less interesting delivery method, which results in low participant engagement. In addition, interactions in virtual classes often experience obstacles, such as low active participation and limited communication between participants and instructors, which can reduce the overall learning experience. On the other hand, the use of gamification platforms is considered to have the potential to increase participant motivation and engagement but has not been fully optimized in the PLN training environment.

This research is significant as it addresses the evolving landscape of distance learning (PJJ) in the wake of the Covid-19 pandemic, particularly within the corporate training environment of PLN Pusdiklat. The shift from traditional face-to-face learning to virtual platforms has introduced various challenges that impact participant satisfaction, including content relevance, interaction quality, and engagement through gamification. Given that PLN Pusdiklat plays a critical role in the professional development of PT PLN (Persero) employees, ensuring effective distance training is essential for maintaining and improving workforce competence.

Learning content is a form of information delivered during training. Quality information shows that the information provides user needs well. The quality of information from learning content is one of the key dimensions needed in evaluating the success of E-Learning because information has an important role in achieving learning objectives (Satyadarma & Syamsudin, 2023).

Interaction is one of the factors that is a strong determinant in creating an active learning environment. Interactions that occur online will certainly be different from interactions that occur face-to-face. Interaction is a broader picture between participants and instructors and refers to two-way communication and is not limited to instructor feedback to students. Interaction is also an important factor in measuring participant satisfaction during online training (Inayah, et al., 2023).

Gamification or game-based learning method is an educational strategy that emerged in the 2010s, and effectively gamifies situation-appropriate elements necessary for learning. Learning to use games is an effective method in increasing knowledge and solving problems (Chang, et al., 2024). Well-structured learning content and relevance of the material to the participants' work play an important role in increasing participant satisfaction, which is in line with the first hypothesis about the alleged relationship between learning content and participant satisfaction. In addition, interactions that occur during learning, such as case discussions and job simulations, have been shown to be effective in increasing participant engagement, which supports the second hypothesis regarding the alleged relationship between classroom interactions and participant satisfaction. The use of game-based learning platforms, such as Kahoot, Quizziz, and Mentimeter, is also considered successful in increasing participants' enthusiasm for learning and adaptation to online learning, providing evidence to support the third hypothesis regarding the alleged relationship between game-based learning platforms and participant satisfaction. Overall, the combination of relevant content, dynamic interactions, and gamification elements shows a significant relationship between these three factors and participant satisfaction, supporting the fourth hypothesis which states the alleged simultaneous influence of these three variables on participant satisfaction. There has been no

previous research that discusses this combination, so this can also be a novelty for the research to be conducted.

Most existing studies on distance learning focus on formal education settings, such as schools and universities. However, corporate training environments, especially in state-owned enterprises like PLN Pusdiklat, have unique challenges and requirements that have not been extensively explored. This research addresses that gap by providing insights specific to professional and skill development programs in a corporate setting.

Based on these problems, this study aims to examine the influence of three factors, namely learning content, virtual class interaction, and gamification platforms on participant satisfaction in distance learning programs at PLN Pusdiklat. Thus, this study entitled "The Influence of Learning Content, Virtual Class Interaction, and Game-Based Learning Platform on Distance Learning Participant Satisfaction at PLN Pusdiklat" is expected to provide insight for the development of more relevant and interactive learning strategies in the future.

The conceptual framework for the research can be figured out in Figure 1. There are three dependent variables: learning content, interactions, and game-based learning platforms. The three variables will be analyzed based on their influence on the satisfaction of the training participants as the research sample.

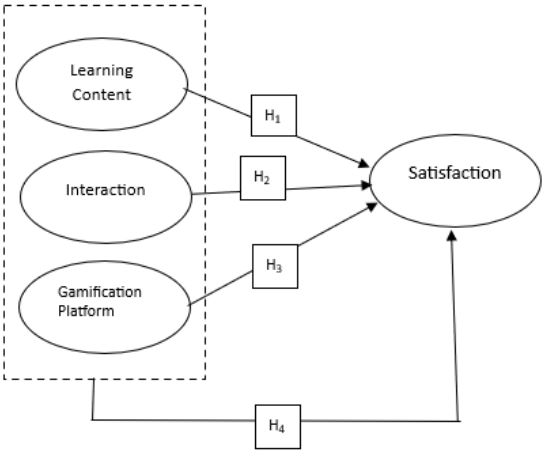

Figure 1. Research's Conceptual Framework

Based on the conceptual framework as shown in Figure 1, the following research framework or model and hypothesis can be formulated:

H_1: There is an influence of learning content on participants' satisfaction

H_2: There is an influence of classroom interaction on participants' satisfaction

H_3: There is an influence of game-based learning platforms on participants' satisfaction

H_4: There is an influence of learning content, classroom interaction, and game-based learning platforms on participants' satisfaction simultaneously

METHODS

The method used in this study explains research approach, population and sample, and data collection method. It can be explained in detail below:

Research Approach

This research is a quantitative research because it analyzes data related to the relationship between one variable and another, with the aim of testing the research hypothesis related to the influence of independent variables on the formulated dependent variables. There are three independent variables used, namely learning content, classroom

interaction, and game-based platforms. In addition, this study will also test the influence of independent variables on dependent variables simultaneously. The objects of the study were employees who had participated in online training conducted by PT PLN Pusdiklat from 2021 to 2023.

Population and Sample

The population of this study were PT PLN employees who had participated in online training in April 2024. This data collection time was chosen so that the data obtained was the latest data based on the opinions of participants who had just participated in the training. Based on the data collected, there were 22,800 participants who participated in Digital Learning in April 2024. Therefore, the criteria applied in sampling this study were: being an active employee at PT PLN, having participated in online training in April 2024. To further deepen participant satisfaction, priority was given to participants who had participated in training more than twice within a specified period of time. Non-probability sampling with a purposive sampling type was the sampling strategy employed in this investigation. Participants who meet the requirements to complete the provided questionnaire will make up the study's sample. The research to be conducted uses the multiple linear regression analysis method. The minimum number of samples in multiple linear regression is 10 times the number of independent variables (Bujang, et al., 2017). Another method that can be used to calculate the minimum population size is the Slovin method, the formula for which is as follows:

n= N/(1+N〖(e)〗^2)
Note:
n : number of sample
N : number of population
E : rate error (in this research using 0,1)

Using the Slovin method, with a population of 22,800 participants and an error rate of 10%, the minimum sample size was obtained as follows:

n= N/(1+N〖(e)〗^2)
n= 22.800/(1+22.800 〖(0,10)〗^2)
n= 22.800/229
n = 99,56

Data Collection Method

In collecting data through questionnaires, respondents were given a number of structured questions that have been prepared in advance. The preliminary testing upon the questionnaire showed that it was a valid instrument for measuring the impact of Learning Content, Virtual Class Interaction, and Game-Based Learning Platforms on Distance Learning Participants' Satisfaction at PLN Pusdiklat. The validity test was carried out using content validity and construct validity to determine whether the questionnaire items effectively measured the intended variables. Based on these findings, the questionnaire was finalized for use in the full-scale study. Data collection through interviews involves direct interaction. Interviews can be conducted face-to-face or through communication media such as telephone or video conference. During the interview, the researcher asked questions that have been prepared in advance.

RESULTS AND DISCUSSION

Results

The results of the study includes several elements; those are respondents' characteristics that includes gender, age, frequency of attending the training, training types and gamification platform. On the other hand, it also explains about the testing results that includes validity testing, reliability testing, hyphothesis testing, and determination efficiency testing.

A. Respondents' Characteristics

1. The Respondents' Gender

Tabel 1. The Respondents' Gender

Gender	Number of respondent	Percentage
Male	46	46%
Female	54	54%
Total	100	100%

Based on Table 1, there were 46 male respondents (46%) and 54 female respondents (54%) involved in the research. The highest number of respondents is female.

2. The Respondents' Age

Tabel 2. The Respondents' Age

The Age Range	Number of Respondent	Percentage
≤ 25 years old	20	20%
26-30 years old	48	48%
31-35 years old	14	14%
36-40 years old	10	10%
≥ 40 years old	8	8%
Total	100	100%

Based on Table 2, there were 20 respondents below 25 years old, 48 respondents in the range of 26-30 years old, 14 respondents in the range of 31-35 years old, and 8 respondents above 40 years old. The highest number of respondents is in the age 26-30 years old.

3. The Frequency of Attending Training

Tabel 3. The Respondents' Frequency in Attending the Training

Gender	Number of respondent	Percentage
Once	14	14%
Twice	42	42%
Three times and more	44	44%
Total	100	100%

Table 3 shows that the respondents' frequency on attending the training vary from once to more than three times. In detail, 14 respondents or 14% only attended once, 42 respondents or 42% attended twice and 44 respondents or 44% attended three times and more. The highest number of participants attending the training three times and more.

4. The Training Types

Tabel 4. The Training Tyoes

The Training Types	Number of respondent	Percentage
Corporate Strategic Initiative	39	14,4%
Retirement Provision	50	18,5%
Promotion	52	19,3%

Supporting	48	17,8%
Profession	38	14,2%
New Employee Selection	43	15,9%
Total	270	100%

There are six types of training used in this research. The number of participants for each types vary. In the corporate strategic initiative type, 39 respondents attended the training or 14,4%. In the retirement provision type, 50 participants attended the training or 18,5%. In the promotion type, 52 participants attended the training or 19,3%. In the supporting type, 48 participants attended the training or 17,8%. In the profession type, 38 participants attended the training or 14,1%. In the new employee selection type, 43 participants attended the training or 15,9%. The highest number of participants is in the promotion type.

5. The Gamification Platform

Tabel 3. The Gamification Platform

Gender	Number of respondent	Percentage
Kahoot	55	33,3%
Quizizz	59	35,8%
Mentimeter	51	30,9%
Total	165	100%

The gamification platform used in the researh are Kahoot, Quizizz, and Mentimeter. In each platform, the respondents' attendance vary. In the Kahoot platform there were 55 participants or 33.3%. In the Quizizz platform there were 59 participants or 35.8%. In the Mentimeter platform there were 51 participants or 30.9%. The highest number of participants is in the Quizizz.

B. Testing Result

1. Validity Testing

Table 4. Table of Validity Testing

	X1	**X2**	**X3**	**Y**	***p-value***
X1.1	0,714				0,000
X1.2	0,828				0,000
X1.3	0,866				0,000
X1.4	0,815				0,000
X2.1		0,827			0,000
X2.2		0,880			0,000
X2.3		0,853			0,000
X2.4		0,861			0,000
X2.5		0,857			0,000
X2.6		0,804			0,000
X2.7		0,806			0,000
X3.1			0,706		0,000
X3.2			0,835		0,000
X3.3			0,819		0,000
X3.4			0,739		0,000
X3.5			0,895		0,000
X3.6			0,838		0,000
Y.1				0,811	0,000
Y.2				0,844	0,000
Y.3				0,828	0,000
Y.4				0,779	0,000
Y.5				0,778	0,000
Y.6				0,790	0,000

All indicators in this research variable have a value of more than 0.60, which means that all indicators have good validity values. Thus, all indicators used to measure learning content (X1), classroom interaction (X2), game-based learning platforms (X3), and participant satisfaction (Y) are valid.

2. Reliability Testing

Table 5. Table of Reliability Testing

Cronbach's Alpha	Number of Items
0.943	23

From the table above, the Cronbach's Alpha value of the research variables is more than 0.70, which states that the research variables have high reliability.

3. Hyphothesis Testing

Table 6. Table of Hyphothesis Testing

Variable	B	Coefficient	t	Sig.
Constant	0,716	1,633	0.438	0.662
Learning Content	0,284	0,108	2,634	0.010
Class Interaction	0,362	0,069	5,275	0,000
Gamification Based Learning Platform	0,351	0,079	4,462	0,000

With a t value of 2.635 and a p-value of 0.010, the learning content variable displays a value of B = 0.284. The dependent variable is significantly impacted by learning content, as indicated by the significance value being less than 0.05. The dependent variable will rise by 0.284 units for every unit increase in the quality of the learning material, according to the positive coefficient (B = 0.284).

The interaction variable in the class has a significant influence with a value of B = 0.362, t = 5.275, and p-value = 0.000. Because the significance value is much smaller than 0.05, it can be concluded that the interaction in the class is very significant in influencing the dependent variable. The positive regression coefficient (B = 0.362) indicates that an increase in interaction in the class will increase the dependent variable by 0.362 units.

The gamification-based learning platform variable also shows a significant effect on the dependent variable with a value of B = 0.351, t = 4.462, and p-value = 0.000. The positive coefficient (B = 0.351) indicates that an increase in the use of gamification-based learning platforms will increase the dependent variable by 0.351 units. Based on the results above, each variable has a significance level <0.05 which can be concluded that there is an influence of the independent variable on the dependent variable.

Table 7. Table of Simultan Hyphothesis Testing

	Sum of square	df	Average of Square	F	Sig.
Regression	1399,170	3	466,390	49,009	0,000
Residue	913,580	96	9,516		
Total	2312,750	99			

According to the F test findings in the above table, the computed F value is 49.009, and the significant value (Sig.) is 0.000. The regression model in use is statistically significant since its significance value is less than the 0.05 cutoff. As a result, it can be said that the independent

factors in this study significantly affect the dependent variable at the same time. The Sum of Squares for the regression is 1399.170, with a Mean Square of 466.390, also supporting the strong relationship between the variables in the model. The Total Sum of Squares of 2312.750 indicates that this model explains most of the variation in the data, while the remaining variation is explained by errors or residuals reflected in the value of 913.580. Based on the test results above, it can be concluded:

H1 is accepted: There is an influence of learning content on participants' satisfaction
H2 is accepted: There is an influence of classroom interaction on participants' satisfaction
H3 is accepted: There is an influence of game-based learning platforms on participants' satisfaction
H4 is accepted: There is an influence of learning content, classroom interaction, and game-based learning platforms on participants' satisfaction simultaneously.

4. Determination Coefficient Testing

Table 8 The Determination Coefficient Testing

R	R Square	Adjusted R Square
0,778	0,605	0,593

According to the findings of the determination coefficient R Square (R^2) test, the independent and dependent variables in this model have a reasonably good association, as indicated by the R value of 0.778. The independent variables utilized in this regression study may account for 60.5% of the variation in the dependent variable, according to the R^2 value of 0.605. This indicates that the model's ability to describe how the independent variables affect the dependent variable is fairly excellent. Additionally, after adjusting for the number of independent variables employed, the Adjusted R Square value of 0.593 offers a more precise estimate pertaining to the determination coefficient. Regression models with a large number of independent variables typically automatically provide high R^2 values, thus this modification is crucial because it gives a more accurate picture of how well the model predicts the dependent variable.

With an Adjusted R^2 value of 0.593, it can be said that the current independent variables in this study account for about 59.3% of the variation in the dependent variable, with the remaining 40.7% possibly being influenced by unmeasured or other factors not included in the model. Although there is certainly opportunity for improvement by taking into account more pertinent factors or experimenting with different models, these results show that the regression model in use has decent predictive ability.

Discussion

A. The influence of learning content (X_1) on participants' satisfaction (Y)

Learning content (X1) shows a significant effect on participant satisfaction (Y). The regression coefficient value of B = 0.284 with a significant value of p-value = 0.010 (<0.05) indicates that increasing the quality of learning content will increase participant satisfaction by

0.284 units for each increase. This means that learning content that is of higher quality, relevant, and structured will improve participants' experience in the learning process, thereby encouraging increased satisfaction. Additionally, this is consistent with a number of earlier research which show that good quality learning materials are a key factor in creating participant satisfaction and engagement in education.

As mentioned in the research of Wahyuni, et al. (2021), which aims to explore and develop interactive content to increase student engagement and learning outcomes. Data were collected through expert validation sheets, trial questionnaires, and pretests and posttests to measure effectiveness. The results showed that the learning content achieved a very high level of validity (1.00), individual and small group trials obtained a percentage of 84%, field tests 82%, and N-Gain effectiveness testing of 0.75 which showed a high increase in understanding. The responses of students and teachers were very positive with average scores of 61.125 and 41 respectively, indicating that the content was valid, practical, and effective in enhancing learning.

Effective learning content not only provides accurate information but must also be tailored to the needs and level of understanding of participants. Well-designed learning, as shown in this study, will facilitate participants' understanding, increase active engagement, and motivate them to learn more deeply. This positive influence of learning content can also reflect the importance of content that is easily accessible, interactive, and relevant to the real world, which in turn improves participants' perceptions of the quality of the training program. Quality learning content can provide a better learning experience and support the achievement of learning objectives. Content that is presented interactively, easily understood, and challenging will be preferred by participants compared to content that is monotonous or too theoretical. This further encourages increased satisfaction with the overall learning program.

Overall, the results of this study confirm that "the first hypothesis (H1) that learning content has a significant influence on participant satisfaction". In this context, the development of dynamic and adaptive content to the needs of participants is a very important factor in supporting the success of an education or training program. Therefore, training organizers need to continuously improve and update learning materials to keep them relevant and interesting for participants.

B. The influence of interaction (X_2) on participants' satisfaction (Y)

It has been demonstrated that participant satisfaction (Y) is significantly impacted by the independent variable of classroom interaction (X2).With a regression coefficient value of B = 0.362 and a significance value of p-value = 0.000 (<0.05), this means that the higher the intensity and quality of classroom interaction, both between participants and teachers and among fellow participants, the greater the impact on participant satisfaction. Coupled with the regression coefficient value of the classroom interaction variable is the largest value of the other variables, meaning that the classroom interaction variable has the highest influence among the other variables, namely increasing participant satisfaction by 0.362 units for each increase. These results indicate that good interaction between teachers and participants, as well as between participants themselves, is an important element in creating a conducive and satisfying learning atmosphere. Interaction in class allows participants to ask questions, share ideas, and discuss material in more depth, which ultimately strengthens their understanding of the material. In addition, good social interaction in class can increase participant motivation and their sense of involvement in the learning process. Additionally, the findings of this study were confirmed by social learning theory which emphasizes the importance of interpersonal

relationships in the learning process, where participants not only learn from the material, but also from interactions with fellow participants and teachers.

One study that supports the significant influence between interaction and learning satisfaction is the study of Nurjanah, et al. (2021), which revealed a positive and significant relationship between interaction and learning satisfaction in online learning for students. In the context of online learning, this study significantly advances our understanding of the variables influencing student learning satisfaction, particularly in the area of economic education. These findings have implications that can be used as a basis for designing more effective online learning strategies in the future.

Furthermore, these results indicate that effective interaction also helps create a collaborative and supportive learning environment. When participants feel involved in the learning process through dialogue and exchange of ideas, they tend to be more satisfied because they feel they have an active role in learning. Therefore, interaction in class is one of the variables that cannot be ignored in efforts to increase participant satisfaction.

Thus, "the second hypothesis (H2) is accepted that interaction in class has a significant influence on participant satisfaction". Improving the quality of interactions can be done through more participatory learning methods, such as group discussions, role-playing, or other collaborative activities, which can directly increase participant involvement and create a more interactive and satisfying learning atmosphere.

C. The influence of gamification based learning Platform (X3) on participants' satisfaction (Y)

Regarding the results of statistical analyses, game-based learning platforms, or in this study known as gamification (X3) have a significant influence on participant satisfaction (Y). The regression coefficient value of B = 0.351 with a significance value of p-value = 0.000 (<0.05) indicates that the use of gamification platforms can increase participant satisfaction by 0.351 units. This shows that game elements integrated into the learning process can positively affect the learning experiences of participants, especially in terms of their motivation and involvement in learning activities.

Game-based platforms can make learning more fun and interactive, so that participants feel more motivated to participate actively. Gamification in learning also creates a healthy competitive atmosphere and provides direct feedback to participants, which makes them more focused and challenged to continue learning. The application of this technique is very relevant, especially in today's digital era where the use of technology in the teaching and learning process is crucial.

The research that supports these results is the research of Anggraeni, et al. (2021) which highlights the problem of low interest and motivation to learn in computer science students, which is caused by the complexity of the material and the difficulty in mastering the skills needed. This decrease in motivation has a negative impact on academic performance and student engagement in the learning process. One potential approach to addressing this problem is to implement gamification, a method that integrates game elements into learning. According to a survey by Butler S, as many as 85% of students stated that they were more motivated if the learning process resembled a game. The results show that the use of gamification has a positive impact on student learning activities and learning outcomes, with increased motivation, engagement, and understanding of the material compared to conventional methods. These findings support the implementation of gamification as an effective pedagogical strategy to address the problems of motivation and complexity in learning computer science in higher education.

Game-based platforms also provide a more interactive and personalized learning experience. Through the use of gamification elements, participants can learn in an atmosphere that is not only educational but also entertaining. This indirectly increases the intrinsic motivation of participants to continue learning, which has an impact on increasing their satisfaction with the overall learning process.

Thus, the third hypothesis (H3) that "game-based learning platforms have a significant effect on participant satisfaction is accepted". The results of this study also emphasize the importance of innovation in teaching methods, where the use of game elements in learning can be an effective strategy to increase participant satisfaction and success in training programs.

D. The influence of learning content, Interaction and learning Platform (X_1, X_2, X_3) on participants' satisfaction (Y) simultanously.

Based on statistical tests for independent variables simultaneously, it was found that the variables of learning content (X1), classroom interaction (X2), and game-based learning platforms (X3) together had a significant effect on participant satisfaction (Y). This is supported by the calculated F value of 49.009 with a significant value of p-value = 0.000 (<0.05), which indicates that the regression model used is statistically significant. The Sum of Squares for the regression of 1399.170 and the Mean of Square of 466.390 support the strong relationship between these variables in the model. This model also managed to explain most of the variation in the data, with a total Sum of Squares of 2312.750, while the remaining variation was explained by errors or residuals. With a significant level of <0.05, it can be concluded that interesting learning content, active interaction in class, and the use of gamification together have a significant impact on participant satisfaction. This finding proves that learning innovations that integrate these elements can improve the quality of the overall learning experience.

When compared to previous research by Widjaja et al. (2023), this study broadens the scope of factors influencing participant satisfaction by including gamification aspects. Widjaja et al. (2023) highlighted the importance of environmental interaction and learner characteristics on satisfaction in E-Learning, with the finding that interaction between participants was not significant in influencing satisfaction. In contrast, this study shows that classroom interaction, which includes interaction between participants and with instructors, has a significant effect on satisfaction. The addition of gamification elements in this study also brings new contributions, where game-based learning platforms have been shown to significantly increase participant motivation and engagement, which was not reviewed in Widjaja et al.'s study.

This study also has similarities with the study by Sari and Kurniawan (2021) which highlights the importance of engagement in virtual education. However, Sari and Kurniawan's study focuses more on the presence of instructors and social presence during the COVID-19 pandemic in online education, while this research looks more at the additional role of technology in gamification platforms. The results of Sari and Kurniawan's study show that the presence of instructors does not have a direct effect on participant satisfaction, but interaction and social presence have a significant effect. In this context, ongoing research shows that classroom interactions, especially those integrated with quality content and gamification, have

a broader impact on participant satisfaction, regardless of the physical presence or direct presence of the instructor.

This simultaneous influence shows that the three aspects complement each other in creating a satisfying learning experience for participants. Overall, the success of a learning program in increasing participant satisfaction does not only depend on one element, but on the synergy of various factors. The combination of relevant learning content, active interaction in class, and the use of game-based platforms create a comprehensive learning ecosystem. Each component plays an important role and supports each other in building a dynamic learning atmosphere and supporting the achievement of learning goals. When interesting content is supported by good interaction and innovative technology, participants are more motivated to follow the learning enthusiastically, which has an impact on their satisfaction.

Finally, this research contributes significantly to the development of literature by combining elements of content, interaction, and gamification to see the simultaneous influence on participant satisfaction. These results expand the findings of previous studies such as Widjaja, et al. (2023) and Sari and Kurniawan (2021), by adding the aspect of technology in the form of gamification as one of the independent variables. The significant simultaneous influence between the three independent variables on participant satisfaction indicates that innovation in learning methods, especially with the integration of gamification, can be a useful way to raise the standard of future educational opportunities.

CONCLUSION

The conclusion highlights that several factors significantly influence participant satisfaction in a learning environment. Firstly, the quality and relevance of the learning content have a significant impact on participant satisfaction. Secondly, the level of interaction within the class, fostering engagement and collaboration, has a notable influence on the overall learning experience. Thirdly, the use of game-based learning platforms enhances participant satisfaction by making the process of learning more interactive and enjoyable. Finally, it is evident that learning content, class interaction, and game-based learning platforms collectively contribute to participant satisfaction, emphasizing the importance of an integrated approach to create an effective and engaged educational experience.

Unlike previous studies that focus on isolated elements of online learning, this research provides a holistic examination of how learning content, virtual class interaction, and game-based learning platforms collectively influence participant satisfaction. This integrated approach offers a comprehensive framework for designing more effective distance learning programs.

By addressing these unique aspects, this research bridges the gap between theory and practice in distance learning, offering both theoretical contributions and practical applications for corporate training institutions. The findings serve as a valuable reference for organizations seeking to optimize their e-learning frameworks and enhance employee learning experience.

Future research should focus on the long-term effectiveness of training programs to ensure sustainable outcomes. Additionally, there is a need to explore various technology platforms that can enhance learning experiences and accessibility. The development of diverse evaluation methods is essential to assess learning outcomes comprehensively. Training content should be reviewed and adjusted to align with participant profiles, ensuring relevance and inclusivity. Incorporating group discussions can foster interaction and collaborative learning, promoting deeper understanding among participants. Finally, creating a fun, engaging, and conflict-free training atmosphere is crucial to maximizing participant satisfaction and facilitating effective knowledge transfer.

CONFLICT OF INTEREST

Regarding the publishing of this work, the authors state that they have no conflicts of interest. All the sources of funding for this research have been disclosed, and the work was conducted independently without influence from any external organization or party.

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