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Analysis of The Influence of Instructional Design and Usability on Student Motivation in Online Tutoring

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Abstract
Learning in the online era is not a barrier for tutoring institutions in providing online services. However, from the user's perspective, there is an inhibiting factor, namely decreased learning motivation when using online learning platforms. One of the aspects is usability and instructional design. In particular, students' approaches to learning through online tutoring systems were examined. Students from various types of education participate in this course namely junior high students, high school students, vocational high school students, universities and the general public. Using a qualitative research approach that examines data from the perspective of student experience. The study found that the completeness and clarity of instructional design had a dominant factor in influencing students' learning motivation. While the usability aspect is not significant enough in influencing the learning motivation of tutoring
Keywords: *usability, learning motivation, instructional design, tutoring*

INTRODUCTION

E-learning as a learning media enables teaching and learning processes or activities to carry out whenever and wherever without learning ward and time (Sumarsono & Firanti, 2021). Indonesia's growth of online tutoring facilities has been very rapid in the last five years (Rahmawati & Sujono, 2021). However, there is a decrease in learning motivation due to ineffective learning quality (Ammy, 2020); (Littlejohn et al., 2016). In addition, E-learning used in tutoring has not paid attention to learning motivation at the end of the system (Pambudi & Arini, 2018). The influence factors on online tutoring systems are product quality, price, accessibility, promotion, and service (Rahmawati et al., 2021). One system assessment aspect closest to learning motivation is the usability or application used causes usability value on how to give interaction value between the user and the system (Hamzah et al., 2011);(Pambudi & Arini, 2018); (Salar et al., 2020). Usability is an essential aspect of the concept of Human-Computer Interaction which focuses on systems that are easy to learn and use (Preece et al., 1994). Among several usability assessment methods, (Zaharias & Poylymenakou, 2009) added learning motivation and learning design aspects. However, this method has not been implemented into the online tutoring system.

One of the online tutoring institutions in Indonesia is Ruangguru which provides courses for students from various levels of education ranging from elementary school, junior high school, high school, university to professional (www.Ruangguru.com). Ruangguru is recognized as the "best educational platform" in Indonesia (Bhakti et al., 2019). However, several studies reveal user navigation problems, named learning videos that must be repeated when the user returns to the application after previously exiting, learning, and supporting, named summary displayed is too short (Shofi et al., 2019). Content has a problem, named online tutoring initiatives do not work if online tutoring and learning at school do not provide the same material, moreover online tutoring cannot support the students if they do not receive any support from teaching-learning at school (Joubert & Snyman, 2018). Visual design factors affect learning motivation, named adaptive emotion levels that can make learning a positive emotional experience and increase cognitive engagement if they have a good quality (Chai et al., 2021);(Adhiazni et al., 2020). The online learning problem is the low level of complete learning and retention (Sumarsono, 2020). Using questions as irrelevant case studies can reduce interactivity levels (Warner et al., 2020). Accessibility is the most accessible access for everyone, including people with disabilities. However, it is revealed that there are still

different opinions regarding the easiest of using an online tutoring system and difficulty level in accessing learning content (Batanero-Ochaíta et al., 2021). In addition, the weakness of learning design in online learning systems is in terms of integrating new knowledge and collaborative learning between students (Margaryan et al., 2015).

This research was conducted to determine the usability value of the Ruangguru online guidance system and determine the correlation between usability and learning design on students' learning motivation used (Zaharias & Poylymenakou, 2009). Previous studies have used the usability testing concept with learning design and motivation, but research is still limited in using the instruments to see how far the instrument has been achieved. In contrast, the research conducted by the researcher resulted in the correlation value between learning design quality factors and usability with learning motivation on the instrument. The usability assessment result used and the object researched can be a reference for online tutoring system developers to maximize system service qualities and serve as guidelines for schools in recommending good online tutoring for students. Structured, this article is grouped into several parts. The second part describes the research methodology, results, and discussion in the third part, and the conclusions in the last part.

METHOD

This research was conducted with five principal research stages using a Likert-scale questionnaire method, 1. application used as a sample is Ruangguru, Ruangguru is Indonesia's most significant online tutoring application. The researcher targeted responses of more than 100 people considering the characteristics of respondents: junior high school students, high school students, students, and professionals who currently subscribe to the Ruangguru application in October 2021 and who have customers to the Ruangguru application before October. 2021. The Research Procedure use of references from (Zaharias & Poylymenakou, 2009) presented in Figure 1.

Respondent Characteristics

Respondents are currently customers to Ruangguru in October 2021 (39 people) and ever been a customer in 2021 (91 people). Table 1 show the respondents' ages ranged from 13-15 years (12 people), 16-19 years (70 people), more than 20 years (48 people). Table 2 shows an educational background of Junior High School (3 people), Senior High School (52 people), University (54 people), vocational high school (6 people), and professional (15 people). Figure 2 shows the respondents' regions of origin classification level, showing that respondents from developed regions dominate, followed by respondents from developing and underdeveloped regions. Also presented the experience user level in using Ruangguru online tutoring application, and it can see that respondents spend more time on the Ruangguru application 1-5 times a week.

RESULT AND DISCUSSION

The user experience based on region

In Figure 2 a graph based on the user experiences number classified in IDM area categories. The symbol "A" on the graph means user experience that is 1-5 times per week, "B" means 5-10 times per week, "C" 10-15 times per week, "D" 15-20 times per week, "E " more than 20 times per week.

Usability test result

Figure 3 shows the current UI/UX in the six versions. Figure 4 is a reference graph of the correlation between usability, learning design, and learning motivation (Zaharias & Poylymenakou, 2009) which has simplified according to the research instrument used.

The calculating of result usability scores based on the current customer respondents and ever been customer questions showed in 3 and 4.

Table 5 presented the usability scores based on each usability aspect and shows very satisfactory results from sample applications. Scores aspect of Learning & Support, Navigation, and Accessibility are in a suitable category. Meanwhile, content aspect, visual design, interactivity, self-assessment & learnability, and learning motivation are excellent. Meanwhile, the average draw determines the overall score; then, the percentage results are 87.66% for current customer respondents and 86.62% for those who have ever been customer respondents. This value makes the sample application have an outstanding category.

Result of Correlation Testing

Finding out the correlation between instructional design and usability takes several steps using a multivariate structural equation (SEM) model. Some of these levels included 1) Creating a path diagram model, 2) Structural testing or compatibility testing, 3) Re-specifying model, such as removing path coefficients that have no significant effect, if a fit or appropriate model has not been generated, 4) Resulted

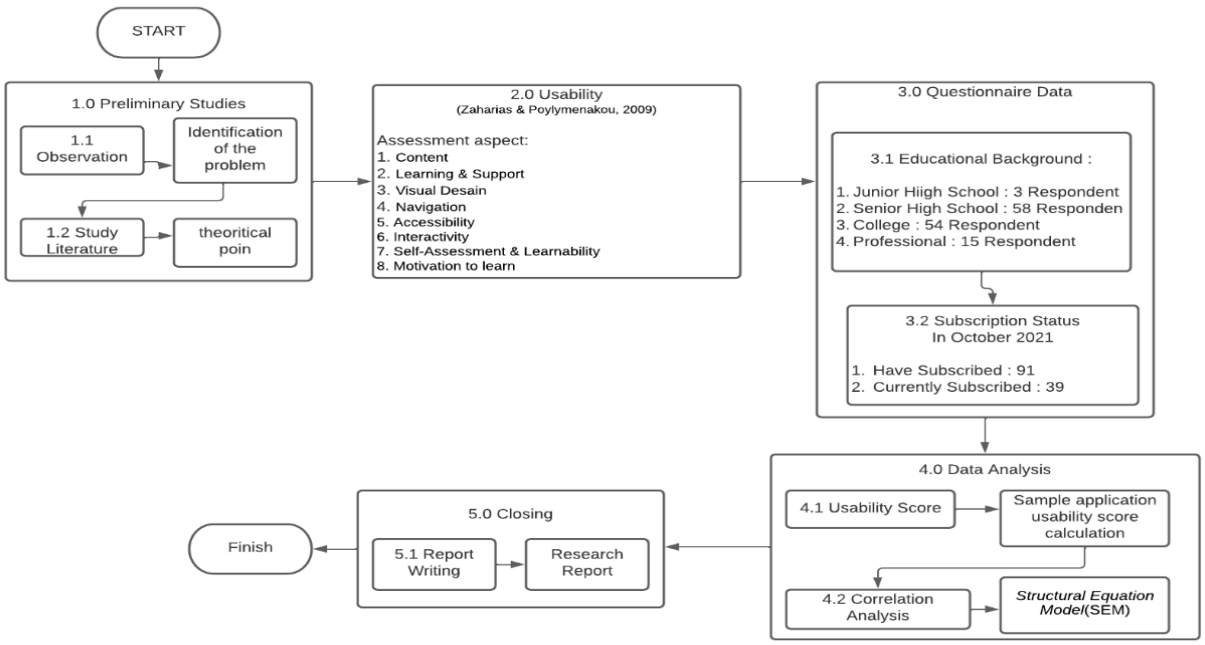

Figure 1: Research Procedure

Table 1: Age of Respondent

		Frequency	Percent	Valid Percent	Comulative Percent
Valid	13	1	0.8	0.8	0.8
	14	1	0.8	0.8	1.5
	15	10	7.7	7.7	9.2
	16	20	15.4	15.4	24.6
	17	16	12.3	12.3	36.9
	18	18	13.8	13.8	50.8
	19	16	12.3	12.3	63.1
	>=20	48	36.9	36.9	100.0
	Total	130	100.0	100.0	

Table 2: Educational Background

		Frequency	Percent	Valid Percent	Comulative Percent
Valid	Senior High School	52	40.0	40.0	40.0
	Vocational High School	6	4.6	4.6	44.6
	Junior High School	3	2.3	2.3	46.9
	Professional	15	11.5	11.5	58.5
	University	54	41.5	41.5	100.0
	Total	130	100.0	100.0	

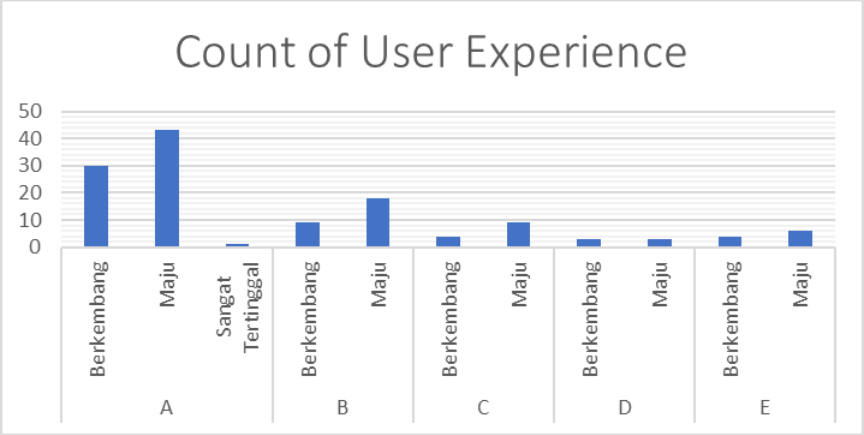

Figure 2: Graph of the number of user experiences on the classification of provincial progress levels

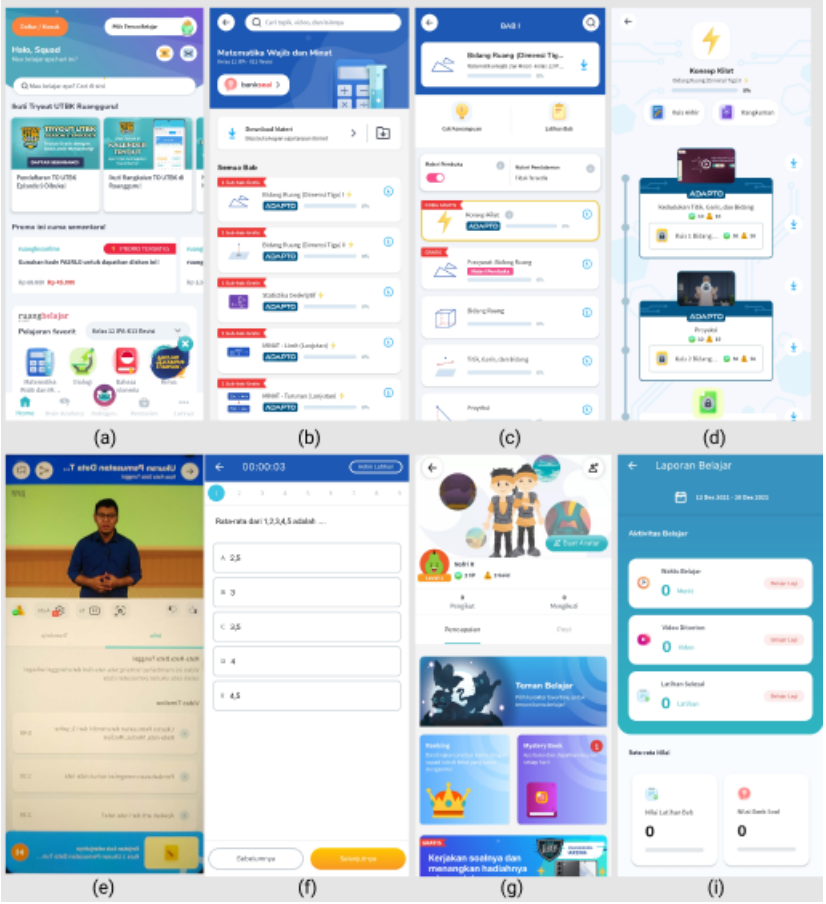

Figure 3: a) Homepage, (b) List of chapters, (c) Details in chapter (d) List of material, (e) Display of material, (f) Quiz, (g) Profile page, (h) Study report.

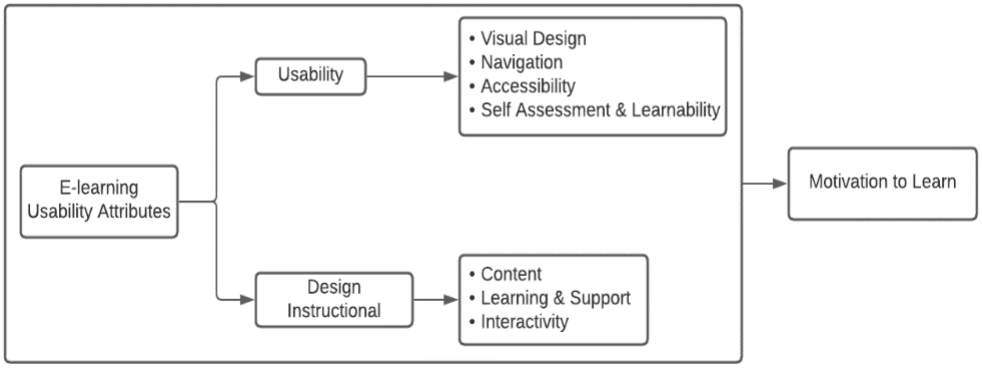

Figure 4: A simplified chart of the relationship between usability, instructional design and learning motivation (Zaharias & Poylymenakou, 2009).

Table 3: The results of the usability calculation of respondents who are currently subscribing

Questions Number	Total Weight STS	TS	N	S	SS	Total Weight	Mean STS	Persentage TS	Score N	S
Content										
Q1	0	0	6	56	115	177	4.54	90.77%	4.51	90.26%
Q2	0	0	15	40	120	175	4.49	89.74%		
Learning & Support										
Q3	0	0	24	44	100	168	4.31	86.15%	4.14	82.28%
Q4	1	6	21	52	75	155	3.97	79.49%		
Visual Desain										
Q5	0	0	9	32	140	181	4.64	92.82%	4,64	92,82%
Navigation										
Q6	0	2	9	56	105	172	4.41	88.21%	4.18	83.59%
Q7	1	4	36	28	85	154	3.95	78.97%		
Accessibility										
Q8	0	4	30	40	85	159	4.08	81.54%	4.08	81.54%
Interactivity										
Q9	0	0	18	32	125	175	4.49	89.74%	4.49	89,74%
Self-Assessment & Learnability										
Q10	0	2	12	36	125	175	4.49	89.74%	4.49	89.74%
Motivation to learn										
Q11	0	0	12	28	140	180	4.62	92.31%	4.54	90.77%
Q12	0	4	9	44	115	172	4.41	88.21%		
Q13	0	2	6	28	145	181	4.64	92.82%		
Q14	0	2	6	52	115	175	4.49	89.74%		

Table 4: The results of the usability calculation of respondents who are currently subscribing

Questions Number	Total Weight STS	TS	N	S	SS	Total Weight	Mean STS	Persentage TS	Score Mean	Percent
Content										
Q1	0	0	6	152	255	413	4.54	90.77%		
Q2	0	0	15	140	255	410	4.51	90.11%	4.52	90.44%
Learning & Support										
Q3	0	8	24	132	230	394	4.33	86.59%		
Q4	1	10	36	132	200	379	4.16	83.30%	4.25	84.95%
Visual Desain										
Q5	0	4	18	116	270	408	4.48	89.67%	4.48	89.67%
Navigation										
Q6	1	2	51	120	210	384	4.22	84.40%		
Q7	2	10	51	92	220	375	4.12	82.42%	4.17	83.41%
Accessibility										
Q8	1	10	60	136	155	362	3.98	79.56%	3.98	79.56%
Interactivity										
Q9	0	4	39	128	220	391	4.30	85.93%	4.30	85.93%
Self-Assessment & Learnability										
Q10	1	4	12	128	260	405	4.45	89.01%	4.45	89.01%
Motivation to learn										
Q11	0	2	21	136	245	404	4.44	88.79%		
Q12	0	4	30	128	235	397	4.36	87.25%		
Q13	0	2	24	148	225	399	4.38	87.69%		
Q14	0	0	30	152	215	397	4.36	87.25%	4.39	87.75%

Table 5: Usability score based on variables and aspects

Aspect	Respondent currently subscribe		Respondent has been subscribe	
	Mean	Presentase	Mean	Presentase
Content	4.51	90.26%	4.52	90.44%
Learning & Support	4.14	82.82%	4.25	84.95%
Visual Desain	4.64	92.82%	4.48	89,67%
Navigation	4.18	83.59%	4.17	83.41%
Accessibility	4.08	81.54%	3.98	79.56%
Interactivity	4.49	89.74%	4.30	85.93%
Self-Assessment & Learnability	4.49	89.74%	4.45	89.01%
Motivation to learn	4.54	90.77%	4.39	87.75%

Table 6: The level of quality of the relationship between indicators

No	Code	Indicator	Loding Values
Usability			
1	X5	I find the font (style, color, saturation) easy to read both on screen and in print	0.64
2	X6	I feel like I always know where I am in the Ruangguru App	0.58
3	X8	Ruangguru application is free from technical problems (hyperlink errors, errors, etc.)	0.57
4	X10	can start the course (find apps, install, register, access start page) only by using online help	0.53
5	X7	I find it easy to exit the Ruangguru app whenever I want, but it's easy to go back to where I was closest to before in the course	0.41
Instructional Design			
6	X9	Ruangguru uses games, simulations, role-playing activities and case studies to get my attention, and maintain my motivation to learn.	0.78
7	X2	I feel that while studying in the Ruangguru application, detailed and precise examples are given when understanding principles, formulas, rules, etc.	0.69
8	X3	The Ruangguru application offers tools (note-taking, work assistance, references, glossaries, etc.) that support learning	0.57
9	X1	I feel that the vocabulary and terms used in the Ruangguru application are easy to understand	0.55
10	X4	Learning at Ruangguru includes individual-based and group-based activities.	0.55
Learning Motivation			
11	X14	The Ruangguru application facilitates me (student) with frequent and varied learning activities that increase my learning success	0.84
12	X12	I feel that the Ruangguru application can increase my curiosity to carry out further investigations	0.81
13	X13	I find learning to use the Ruangguru application fun and interesting	0.81
14	X11	I feel that the Ruangguru application combines, new characteristics which are its own characteristics	0.61

assessment of research variables. Table 6 is an indicator assessment, that the loading values are sorted from highest to lowest from each variable. Code X1 to X11 explain the lowest score likert.

Results are the main part of scientific articles, containing: final results without data analysis process, hypothesis testing results. Results can be presented with tables or graphs, to clarify the results verbally.

Based on the usability test result of Ruangguru tutoring application, it got a high test score of 87.66% for respondents who are current customer and 86.62% for respondents who have been ever costumer. This means that the Ruangguru application usability is at an outstanding level. This perfect application usability factor causes the Ruangguru application to be in great demand by course participants at Ruangguru. This is also following previous research that Ruangguru has fulfilled aspects of the application relationship with HCI (Bhakti et al., 2019). Thus, it can be concluded that the high level of tutoring applications usability is affects the high interest of students (Salar et al., 2020).

The correlation analysis between usability and instructional design with student learning motivation indicates that in developing an online tutoring system, it is necessary to pay attention to usability aspect and instructional design to create learning motivation (Zaharias & Poylymenakou, 2009). Learning motivation factors can affect student learning success in e-learning (Sumarsono, 2020). The small loading value in the usability variable is because the usability factor in e-learning is also influenced by other things outside the e-learning system design and visual appearance, and several aspects included in the instructional design itself, such as learning styles and instructional instructions (Hamzah et al., 2011) ; (Khalfallah & Ben Hadj Slama, 2019).

Conclusion

Refer to online learning in the tutoring system in Ruangguru needs to pay attention to two important sides, namely from students in the form of learning motivation and the second is from the application system. Through the use of the relationship model of learning motivation, reusability and instructional design from previous research, the results of the study showed that there were several findings, namely the development of e-learning Ruangguru must consider students' learning motivation in order to be able to achieve learning goals in accordance with students' ideals. Maturity factor in the instructional design of an e-learning application system has a dominant factor in influencing student learning motivation. while the usability factor is below the level of instructional design. although the usability value is in a good level, it is still below the instructional design aspect.

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