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Mapping Student Engagement: Analyzing the Nexus of Course Engagement, Resource Utilization, and Online Tutorial Participation

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ABSTRACT

The purpose of this study was to analyze the intensity of students in accessing essential and enrichment materials; the relationship between Course Hits, Resource with access, Days with Access, and Tuton; and the Effect of Course Hits, Resource with Access, Days with Access, on Tuton. This research is descriptive research and tests the effect using a quantitative approach. The population in this study were all classes of Masters students at one of the open universities Based on research findings, the majority of students do not access essential materials and enrichment materials. Course hits and tutor scores have a weak correlation, even though there is a significant effect on Course Hits scores, the effect is only 5%. Likewise, resources with access and the value of Tuton have a very weak correlation, even though there is a significant effect of Resources with access on the value of Tuton by 9%. Then the correlation of Days with Access with the Tuton Score is 0.411, which is in the sufficient category dan there is a significant effect of Days with access on Tuton score, the effect is 16%. There is a jointly significant effect on the online tutorial score between course hits, days with access, and resources with access, with an effect of 24%. Students have not made maximum use of the material presented in the study, so online tutorial materials that can encourage students to use them must be made.

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1. INTRODUCTION

Universitas Terbuka (UT) is a university that implements a distance learning system Universitas Terbuka (UT) is a university that implements a distance learning system. This means that learning is not done face-to-face, but uses media, both print media (modules) and non-prints (audio/video, computer/internet, radio broadcasts, and television) (UT, 2021). The distance learning system is also applied in the UT Postgraduate Program, including the Master of Basic Education (MPDr). The learning process consists of self-study and tutorials. The tutorial activities are carried out in a combination mode (hybrid or blended) in postgraduate student learning. Combination tutorial mode integrates asynchronous tutorial mode (online tutorial or Tuton) with synchronous tutorial (Face-to-Face Tutorial/TTM or Webinar Tutorial/Tuweb) as a single, continuous and intact tutorial activity (Julaeha et al., 2021).

In the distance education system, the learning process can be carried out via the internet network (Wahyuningsih et al., 2019). Tuton is an important learning process for UT postgraduate students including MPDr because it contributes as much as 60% to the final grade of the course. Online tutorials are carried out through the Internet (online) and must be followed by students. Tuton lasts for 12 weeks in the form of giving 12 (twelve) times of material and discussion as well as 3 (three) assignments that must be done by students (Julaeha et al, 2021). Then the tutorial value comes from 10% access to materials, 20% participation in discussions, and 70% working on tutorial assignments (Julaeha at al., 2021). However, based on a preliminary study, the intensity of UT Basic Education Master's students in accessing the material is very low because they think that the contribution to the tutorial score is small.

The application of information and communication technology has emerged in the world of education, so institutional readiness for e-learning adoption ensures alignment of new tools with the educational context (Frehywot, 2013; Harsasi & Sutawijaya, 2018). The increasing need for information has become a worldwide concern for adopting new tools for exchanging knowledge by fostering knowledge management and developing e-learning (Yordanova, 2007). E-Learning itself means a system that utilizes information technology in the teaching and learning process (Wahyuni et al.2019). The existence of e-learning at this time is very useful because of the large benefits that are felt with this e-learning. Since the beginning of 2020, e-learning has become increasingly widespread and accepted in various parts of the world, especially in schools, universities, and training institutions. E-Learning is a learning system that helps and facilitates students to learn anywhere, anytime without having to be constrained by space and time. In addition, according to Safiyeh (2015) e-learning can increase student motivation in the learning process at the university level. Like the research conducted by Setuju et al. (2017), "Development E-Learning to Improve Student Activity with Technological Pedagogical and Content Knowledge", this research utilizes Edmodo as its e-learning medium to increase student learning activities.

Moodle is part of an LMS that was introduced by Martin Dougiamas, a computer scientist and educator (Fendi et al 2017). Several studies also state that on average researchers use Moodle as their online learning system. As in the research conducted Husni et al. (2017) and Alnsour et al. (2011), entitled "Implementing Moodle as a Tool to develop the Isra University e-learning system", explaining that the implementation of e-learning can support students' understanding of the learning process, increase student motivation and improve teaching behavior. Then Fendi et al. (2017) in his research entitled "Development of Moodle-Based E-Learning for Course Participants at Swift English School Yogyakarta". Based on the results of product trials, Fendi stated that the e-learning that had been designed was feasible to use, almost the same as Alnsour's (2011) study, Fendi used Moodle LMS as the medium. Komendangi et al. (2017) also researched the design of LMS Moodle-based e-learning in the Agricultural Engineering Study Program, Sam Ratulangi University. Of all the research presented, generally researchers use and apply Moodle as their learning system.

Students consider it important to participate in discussions and do assignments because they contribute as much as 90%. While access to the material is considered not too important. even though the intensity of accessing the material affects the increase in learning outcomes by 47% (Oftika et al., 2015). Other studies also state that access to material has an effect of 10.7% on learning outcomes (Gustina, Zulhendra, & Jufri, 2014). Tuton UT uses a Learning Management System (LMS), namely Moodle. LMS is application software used to assist the learning process in e-learning (Rusli, Hermawan, Supuwiningsih, & Bali, 2017). The main functions of LMS include student management, course management, skills assessment or evaluation, collaboration support, student-centred systems/personalization & and tracking, enrollment, and administration (Lestari, 2014). Meanwhile, Moodle LMS is an open-source LMS that can be customized for the learning chosen. The benefit of using an LMS using Moodle is that it can reduce the limitations of online learning (Simanullang & Rajagukguk, 2020). UT's Moodle LMS contains essential materials, enrichment, discussions, and assignments.

When compared with several previous studies that looked at the effect of intensity in accessing material from the internet on learning outcomes, this research wants to have an update in the form of the intensity of student access in an LMS where the essential material has been prepared in it. Then, Tuton for UT students is the main learning process, not a complement as in other educational institutions. So, it is important for students to access Tuton, both essential material, enrichment, discussion, and assignments.

2. METHODS

This study employs a descriptive research design and examines the impact using a quantitative methodology. This study seeks to examine the extent of students' utilisation of online lessons, employing a quantitative descriptive research approach. Subsequently, this study proceeded to examine the impact of student engagement in accessing the online tutorial on the efficacy of student online tutorials. To achieve this, quantitative research methods were employed, namely correlation tests, to determine the influence of each variable. Subsequently, this study proceeds by examining the impact of student engagement in accessing online tutorials on the efficacy of student online tutorials. To do this, a quantitative research approach is employed, utilising correlation tests to assess the influence of each variable.

The population in this study were all classes of Master of Basic Education at the Universitas Terbuka in the odd semester of the 2021/2022 academic year, while the sample in the influence test study was ten classes where the sample was 1 class from each class in the subjects taken randomly.

Table 1. List of Courses and Number of Classes

No	Course	Number of Classes
1	Desain dan Model Pembelajaran Inovatif dan Interaktif (Innovative and Interactive Learning Design and Model)	12
2	Difusi Inovasi Pendidikan (Diffusion of Educational Innovation)	12
3	Evaluasi Program Pendidikan (Evaluation of Educational Programs)	9
4	Filsafat Pendidikan Dasar (Basic Education Philosophy)	6
5	Integrasi Teori dan Praktek Pembelajaran (Integration of Learning Theory and Practice)	7
6	Kepemimpinan dan Manajemen Pendidikan Dasar (Basic Education Leadership and Management)	9
7	Metode Penelitian Pendidikan (Educational Research Methods)	6
8	Perencanaan dan Pembiayaan Pendidikan Dasar (Basic Education Planning and Financing)	10
9	Statistika Pendidikan (Education Statistics)	9
10	Studi Komparatif Pendidikan Dasar di Berbagai Negara (Comparative Study of Basic Education in Different Countries)	8
	Number of Classes	88

Descriptive research was conducted to see how large the percentage of students who access essential and enrichment materials is. Data collection was carried out from UT e-learning using Moodle LMS by pulling from the Report of Content Access from each class (88 classes). Furthermore, the data were analyzed using descriptive statistics. An example of the number of students accessing online tutorial materials is shown in Figure 1 below.

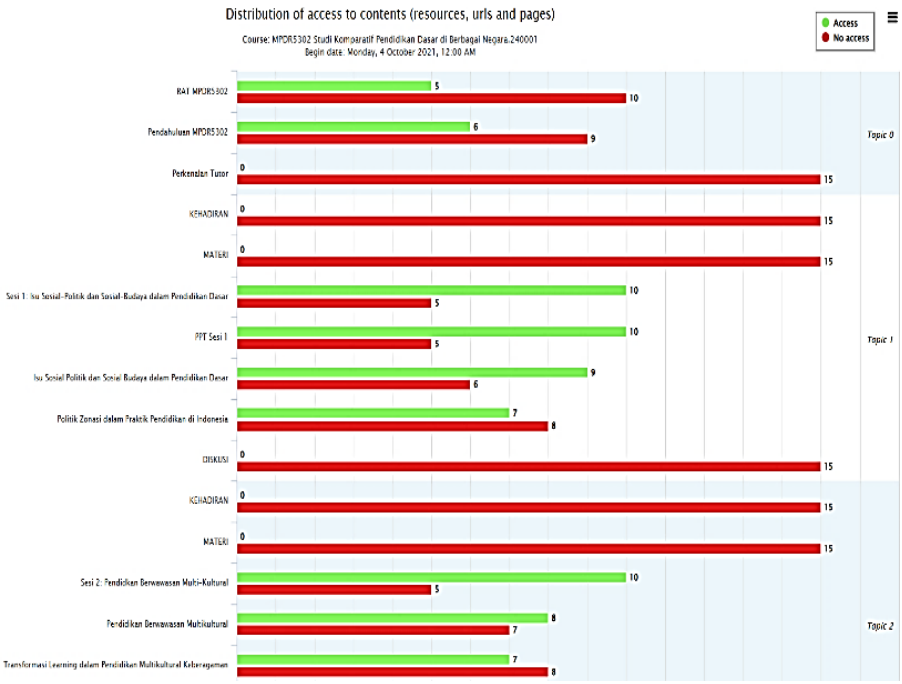
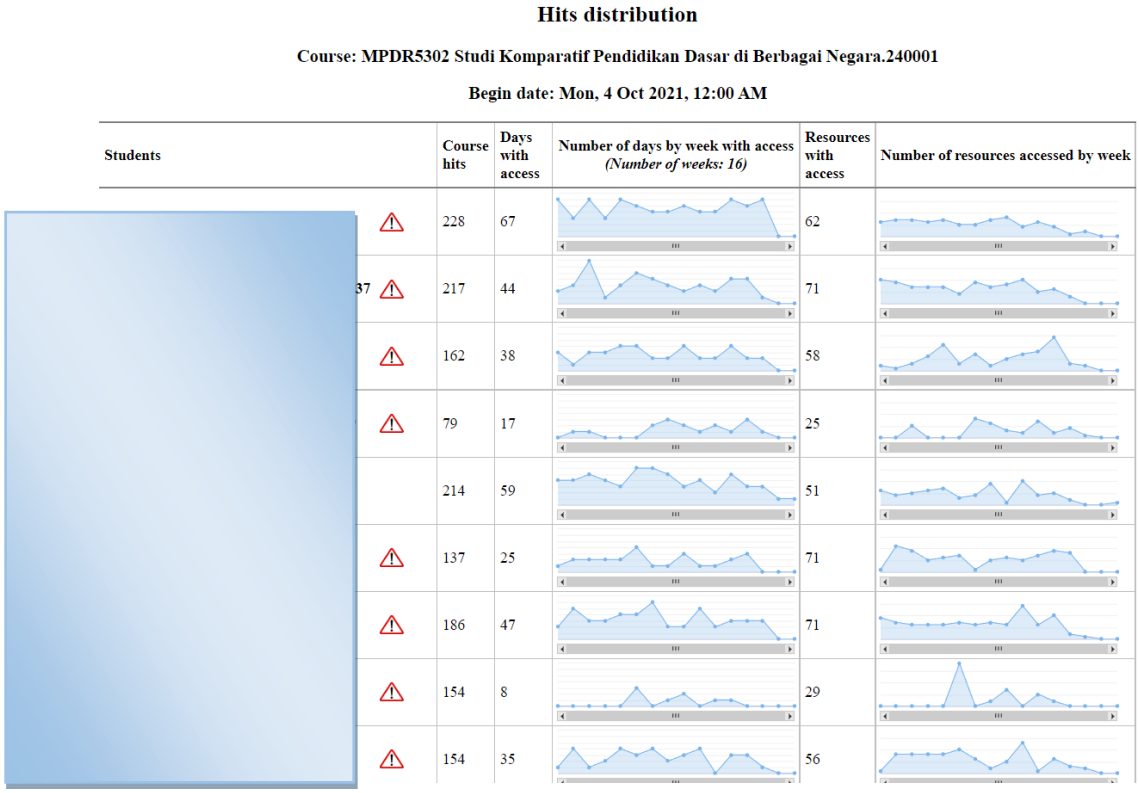


Figure 1. Example of Students' Number of Accessing Materials in Online Tutorials

The effect test is used to see the effect of course hits and resources with access to the online tutorial scores of 11 classes representing each course. Data collection was also carried out from UT e-learning using Moodle LMS by pulling from the Report of Hits Distribution. Then the data were analyzed descriptively, through correlation tests, and regression. An example of student hits distribution in online tutorials is shown in Figure 2 below.



Hits distribution

Course: MPDR5302 Studi Komparatif Pendidikan Dasar di Berbagai Negara.240001

Begin date: Mon, 4 Oct 2021, 12:00 AM

Students	Course hits	Days with access	Number of days by week with access *(Number of weeks: 16)*	Resources with access	Number of resources accessed by week
	228	67		62	
37	217	44		71	
	162	38		58	
	79	17		25	
	214	59		51	
	137	25		71	
	186	47		71	
	154	8		29	
	154	35		56	

Figure 2. Example of Student Hits Distribution in Online Tutorials

3. FINDINGS AND DISCUSSION

3.1 Accessing Essentials and Enrichments Material

The subjects of the UT MPDr Study Program consist of 11 courses, while those studied here are 10 courses with 88 classes. Based on the results of data processing from the 88 classes, the percentage of students who access the essential material in Figure 3 below is obtained.

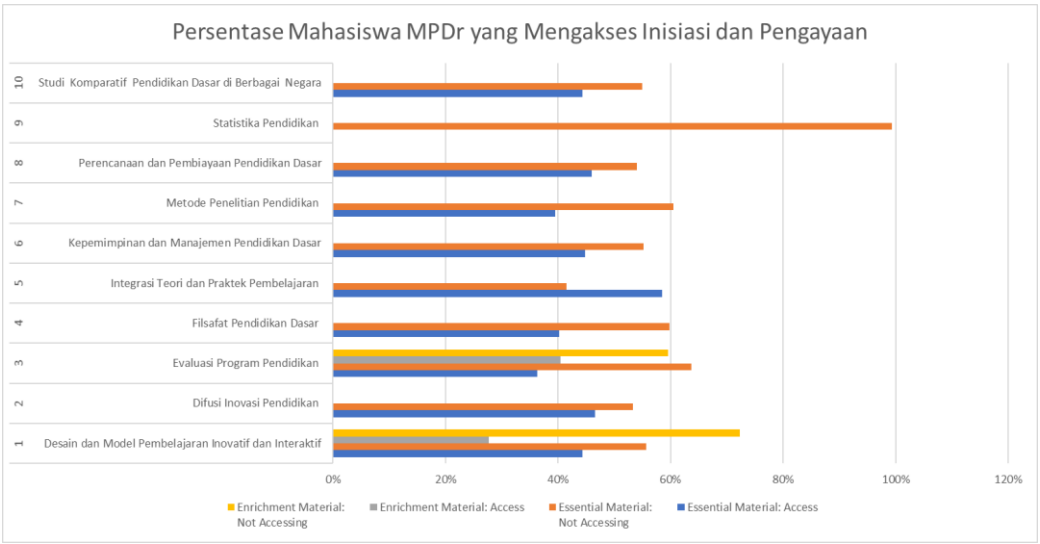


Figure 3. Percentage of Students Accessing Essential and Enriched Materials

Students who access essential materials are still below 50% with details: 44% Innovative and Interactive Design and Learning Model courses; Diffusion of Educational Innovations 47%; Education Program Evaluation 36%; Basic Education Philosophy 40%; Basic Education Leadership and Management 45%; Educational Research Methods 40%; Basic Education Planning and Financing 46%; Education Statistics 0%; and Comparative Study of Basic Education in Various Countries 44%. Only one course has more than 50%, namely Integration of Learning Theory and Practice 59%.

Meanwhile, students who have access to enrichment materials are also below 50% and even below 40%, for example, 28% of Innovative and Interactive Learning Design and Model courses and 39% of Educational Program Evaluation. Based on the results of in-depth interviews with several students, it was revealed that students thought that sources for understanding lecture material could be obtained from various sources, for example, discussions in webinar tutorials with tutors, discussions with students in WhatsApp Groups, Basic Materials Books, the Internet, and others. Students think that what is important is that they can be active in discussion forums and do assignments because their contribution to the value of tutoring is large.

Based on other research (Sahin, Balta, & Ercan, 2010) revealed that the priority order of students in finding sources is as follows: 1) First priority: Search engines (Google and Yahoo); 2) Second priority: Online database and e-magazines; 3) Third priority: Online libraries, e-encyclopedias, e-books; 4) Fourth priority: e-journal; and Fifth priority: email and forum. This shows that sourcing from the forum is the last priority.

3.2 Course Hits, Resource with Access, and Tuton Scores

Furthermore, from the 88 classes, 10 classes were randomly selected representing each course to be analyzed by Course Hits, Resource with access, and Tuton scores with descriptive statistics. The results are presented in Table 2 below.

Table 2. Descriptive Statistics of Course Hits, Resource with access, and Tuton scores

	Course hits	**Resources with access**	**Days with access**	**Tuton Score**
Mean	224.109375	34.83854167	42.63212	83.79875
Median	192	34	40	85.64
Mode	271	27	39	88.58
Standard Deviation	143.8493377	9.037442415	15.69184	12.08022804
Minimum	26	17	9	6.75
Maximum	1066	58	89	95.63
Count	192	192	192	192

Based on the table above, it can be seen that students accessed e-learning an average of 224 times, even though there were students who accessed it 1066 times. The average day students access one course is 43 days. Then the sources accessed by students are an average of 35 sources, even though there are students who access 58 sources. The average student Tuton score is 83.8. Then correlation analysis was performed to see the relationship between course hits, resources with access, and Tuton values. The results of the correlation analysis are presented in Table 3 below.

Table 3. Correlation of Course Hits, Resource with access, Days with Access, and Tuton scores

	Course hits	Days with access	Resources with access	Tuton Scre
Course hits	1			
Days with access	0.810111812	1		
Resources with access	0.093223758	0.217495484	1	
Nilai Tuton	0.222610027	0.411201092	0.309314841	1

3.3 The Effect of Course Hits, Days with Access, Resource with Access, on Tuton Scores

Although the correlation between course hits and Tuton scores is categorized as weak and very weak, it is analyzed again whether Course Hits have an influence on Tuton's score as shown in Tabel 4 below.

Table 4. Test of the Effect of Course Hits on Tuton Values

Regression Statistics	
Multiple R	0.222610027
R Square	0.049555224
Adjusted R Square	0.044579074
Standard Error	11.77726533
Observations	193

	df	SS	MS	F	Significance F
Regression	1	1381.289926	1381.289926	9.958546	0.00186047
Residual	191	26492.45992	138.7039786		
Total	192	27873.74984			

	Coefficients	Standard Error	t Stat	P-value
Intercept	79.60939899	1.576339293	50.50270545	0.0000
Course hits	0.01866476	0.005914587	3.155716372	0.00186

P-value 0.00186 <0.005 indicates that there is a significant effect of Course Hits on Tuton score, although the effect is only 5%. We will also see the effect of days with access on Tuton scores which is presented in Table 5 below.

Table 5. Test of the Effect of Days with Access on Tuton Values

Regression Statistics	
Multiple R	0.411201
R Square	0.169086
Adjusted R Square	0.164736
Standard Error	11.01182
Observations	193

	df	SS	MS	F	Significance F
Regression	1	4713.07	4713.07	38.86744	0.0000
Residual	191	23160.68	121.2601		
Total	192	27873.75			

	Coefficients	Standard Error	t Stat	P-value
Intercept	70.34266	2.299995	30.58383	0.0000
Days with access	0.315739	0.050645	6.234376	0.0000

Then P-value 0.000 < 0.005 indicates that there is a significant effect of Days with access on Tuton score, the effect is 16%. This is in line with research conducted by Oftika, Jalmo, Marpaung (2015), which reveals that the intensity of accessing material has an effect on improving learning outcomes. However, it can be seen that the effect of Course Hits on Tuton score is smaller, which is only 5% and the effect of days with access also is smaller on Tuton score, which is only 16%. Meanwhile, in the research of Oftika, Jalmo, & Marpaung (2015), it is 47%. This can be because students get other sources such as data obtained from interviews. Later in another study stated that students' interactions with online learning affected their performance in their studies (Shah & Barkas, 2018).

Furthermore, the influence of Resources with access to Tuton Values is also analyzed as presented in Table 6.

Table 6. Test of the Effect of Resources with access on Tuton score

Regression Statistics	
Multiple R	0.309315
R Square	0.095676
Adjusted R Square	0.090941
Standard Error	11.48797
Observations	193

	df	SS	MS	F	Significance F
Regression	1	2666.84	2666.84	20.20741	0.0000
Residual	191	25206.91	131.9734		
Total	192	27873.75			

	Coefficients	Standard Error	t Stat	P-value
Intercept	69.45346	3.297569	21.06202	0.0000
Resources with access	0.412437	0.091749	4.495265	0.0000

P-value 0.000 <0.05 indicates that there is a significant influence of Resources with access on the Tuton score. Even though the effect is only 9%. In another study, it was stated that access to the material had an effect of 10.7% on learning outcomes (Gustina, Zulhendra, & Jufri, 2014). Furthermore, the joint effect, of course, hits, days with access, and resources with access on tutor scores are also analyzed in the following Table 7.

Table 7. Test of the Effect of Course Hits, Days with Access, and Resources with Access, on Tuton Scores

Regression Statistics	
Multiple R	0.49461
R Square	0.244639
Adjusted R Square	0.232649
Standard Error	10.55466
Observations	193

ANOVA

	df	SS	MS	F	Significance F
Regression	3	6818.998	2272.999	20.40379573	0.0000
Residual	189	21054.75	111.4008		
Total	192	27873.75			

Significance F 0.000 <0.05 indicates that there is a significant influence, of course, hits, days with access, and resources with access, on tuton scores, the effect is 24%. The results of this study indicate that students have not made maximum use of the material presented, so online tutorial materials that can encourage students to use them must be made. This is based on findings showing that e-learning content has a positive impact and is substantially related to perceived benefits and student satisfaction, which has an impact on students' intention to utilize e-learning (Al-Rahmi et al., 2018).

Discussion

Based on the results of student calculations access to essential material is still below 50% with details: 44% of Design and Innovative and Interactive Learning Models courses; Educational Innovation Diffusion 47%; Educational Program Evaluation 36%; Basic Education Philosophy 40%; Elementary Education Leadership and Management 45%; Educational Research Methods 40%; Basic Education Planning and Funding 46%; Education Statistics 0%; and Comparative Study of Basic Education in Various Countries 44%. Only one subject has more than 50%, namely Integration of Theory and Practice Learning with 59%. This is reinforced by research conducted by (Sahin, Balta, & Ercan, 2010) that the priority order of students in finding resources is as follows: 1) First priority: Search engines (Google and Yahoo); 2) Second priority: Online database and e-magazine; 3) Third priority: Online libraries, e-encyclopedias, e-books; 4) Fourth priority: e-journal; and Fifth priority: email and forums. This indicates that sourcing from the forum is the last priority. it can be seen that students access e-learning on average 224 times, although there are students who access it 1066 times. The average day students access one course is 43 days. Then, the sources that students accessed on average were 35, although there were students who accessed 58 sources. Meanwhile, students who have access to enrichment materials are also below 50% and even below 40%, for example 28% for Innovative and Interactive Learning Design and Models courses and 39% for Educational Program Evaluation. Based on the results of in-depth interviews with several students, it was revealed that according to students, sources of understanding of lecture material can be obtained from various sources, for example discussions in webinar tutorials with tutors, discussions with students on WhatsApp Groups, Basic

Material Books, the Internet, and others. Students think that the important thing is being able to be active in discussion forums and doing assignments because it contributes a lot to tutoring scores.

While the correlation between course hits and the Tuton score is 0.223 and is included in the weak category. While the relationship between resources and access and the Tuton score is 0.093 and is included in the very weak category. Then the correlation of days with access with the Tuton score is 0.411 which is included in the sufficient category. This is also in line with other research which states the relationship between the use of the internet as a learning resource with weak learning outcomes (Halim, Yani, Mahzum, Farhan & Irwandi, 2021). The Pearson correlation results show that there is a significant positive relationship between access to material on the internet in learning and academic achievement (Loeneto & Kurniawan, 2021).

The P-value of 0.000 <0.005 indicates a statistically significant effect of Day on the Tuton score, with a 16% effect size. This aligns with the findings of a study conducted by Oftika, Jalmo, and Marpaung (2015), which demonstrated that the level of access to educational resources directly impacts the improvement of learning outcomes. Nevertheless, it is evident that the impact of Course Hits on the Tuton score is rather minor, amounting to a mere 5%. Similarly, the influence of days with access on the Tuton score is likewise relatively modest, standing at only 16%. In contrast to the findings of Oftika, Jalmo & Marpaung (2015) which reported a rate of 47%, this discrepancy may be attributed to students accessing additional sources, such as data gathered through interviews. Subsequent research has indicated that students' engagement with online learning has a direct impact on their academic achievement (Shah & Barkas, 2018). Students should have the capacity to fully utilise the resources provided in the learning management system. The advancement of content in system management education should focus on creating novel online tutorials that motivate and enable students to effectively utilise them.

4. CONCLUSION

Based on research findings, the majority of pupils do not access key information and enrichment items. Course hits and tutor scores have a limited link, even while there is a considerable effect on Course Hits scores, the effect is just 5%. Likewise, resources with access and the value of Tuton have a very poor link, even though there is a considerable effect of Resources with access on the value of Tuton by 9%. Then the correlation of Days with Access with the Tuton Score is 0.411, which is in the sufficient level dan there is a substantial influence of Days with access on the Tuton score, the effect is 16%. There is a jointly significant effect between course hits, days with access, and resources with access, on the tuton score, with an effect of 24%. Students have not made optimum use of the content offered in the study, so online tutorial resources that can motivate students to use them must be produced. Based on the foregoing results, it is hoped that students will be able to make maximum use of the content offered in learning so that online tutorial material must be developed that can motivate students to use it.

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