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INCLUSIVE ONLINE LEARNING SUPPORT FOR UT'S STUDENT IN REMOTE AREAS (A CASE STUDY OF PROVIDING A LOCAL HOTSPOT SERVICE IN THE INTERNET BLANK SPOT AREA OF INDONESIA)

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ABSTRACT

This project focuses on providing online learning supports for UT's students living in remote areas. As Internet access is still a privilege for UT's students living in many remote areas of Indonesia, many of them encounter difficulties accessing UT's online services due to lack of a reliable Internet access. This has widened the discrepancies of online learning equality among UT's students. To address this inequality, this project aims at firstly, to develop a local hotspot area to enable UT's students in remote area to access UT's Online support services. This local hotspot service is very beneficial for UT students to give them online learning experiences that are expected to increase their study success. As most of the remote areas have limitations of the infrastructures including power supply and bandwidth, there needs a minimum requirement of the local hotspot services to provide access to UT's Online support services. Secondly, it aims to develop a learning design that needs to be adapted to support a low bandwidth capacity. By using offline Moodle platform service, the online support services are designed with the adaptive features. The adaptive features of the learning management system include discussion forums, feedback of formative tests, student learning progress, and collaborative apps.

Keywords*: Internet Offline, Local Hotspot, Inclusive Online Learning*

1. INTRODUCTION

Online learning has been a very popular mode of instruction in the last decade. It has become a prominent issue during the pandemic Covid 19 since all instructions have to be converted into online. It is a blessing since then the online instructions enormously developed in particular the supporting technologies to enable synchronous and asynchronous communication in various platforms (Teräs, M., et all, 2020). However, the conceptual and theoretical development of online learning was left behind. One of the prominent conceptual frameworks of online learning that has lasted for a decade is the community of inquiry (COI) theory (Garrison, D. R., Anderson, T., & Archer, W., 2000). The COI seems to be the dominant conceptual framework to consolidate the three major domains of online instructions that are teaching, cognitive and social presences. These three domains of online instruction need to be aligned and integrated into an impressive online learning design to effectively achieve the designated learning goals (Fiock, H, 2020).

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In online instruction practices, however the COI framework is quite challenging since the social presence is difficult to achieve. Furthermore when the learning content is not well designed, teaching presence and cognitive presence become troublesome. A major problem of online learning is mainly caused by an improper instructional design that is resulted in low retention and performance (Daryono, 2021; Saniya Khan, 2021). The problems include boredom, low self-motivation, low engagement, technical issues, and insufficient digital literacy (Saniya Khan, 2021). This particularly is evident during the conversion of face-to-face instruction to online instruction during the Covid 19 pandemic. The misconception about online learning that is only perceived as a medium of instruction and the availability of technology deny the importance of instructional design and learning strategies as an imperative requirement of online learning. Responding to the current prevailing issues, the three important factors of effective online learning include student engagement, support, and retention (Daryono, 2021).

This paper discusses the problems in online education and proposes the immersive online learning design. The immersive online learning design adopts the combination of ABC learning design (Online ABC LD, 2021) and ARCS instructional design (Keller, 2010). The ABC learning design provides a practical way to facilitate the integration of the available online learning tools and online learning strategies. A major prevailing problem in online learning is low retention due to lack of motivation (Daryono, 2020) the ARCS learning design will help an instructor to design an online learning strategy to be more motivated and attractive. This combination makes online learning personalized, engaged and motivated.

2. IMMERSIVE ONLINE LEARNING DESIGN

A widespread misconception about online learning is found particularly during the pandemic Covid 19 when the residential universities have to convert their instruction into online learning. Online learning is only perceived as converting face-to-face instruction into synchronous online mode by using technology (Teräs, M. et all, 2020). This misconception is commonly due to a lack of understanding about online learning. These have produced diverted results of student's and instructor's satisfaction in online learning. The majority of students and instructors are less preferred to online learning but many of them perceive more benefits from its flexibility, practicality, and interactivity (Belawati and Nizam ed, 2020). These diverted results may be caused by various factors but the unpreparedness, the improper learning design, and cultural disposition may contribute substantially to those conflicting results.

Online learning needs to be prepared in advance to ensure that supporting factors are well organized and arranged. The online learning system design may include the following:

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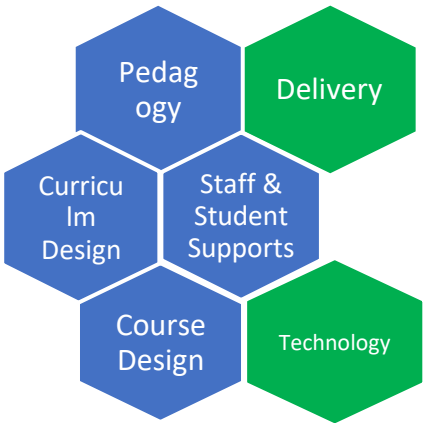
Graph 1.

Online Learning Ecosystem



The preparation of online learning may take more time and effort than face-to-face instruction. The instructional design in online learning is a critical part of how online learning should be organized and delivered within a range of technology availability (Belawati, 2020). In addition, the support system including, staff, students, and technological supports have to be properly in place. The absence of those support systems will most likely affect low retention and satisfaction.

In terms of how the online course should be delivered, the ABC learning design provides a practical way to integrate the learning strategies and the availability of online learning tools. The ABC learning design associates the Moodle learning apps and their plug-in with the learning types as described in the following table.

Table 1.

Matrix Integration of ABC Learning Design and the Moodle Learning tools

Learning Type	Acquisition	Collaboration	Discussion	Investigation	Practice	Production
Learning Activities	Reading, Listening, Watching,	Discussion, Team work, Project,	Discussion Debate,	Explore, Compare, Contrast, Critique	Implement, Doing, Working, Practice	Develop; Create;
Learning Tools	Podcast, Page, File, Video, Ebook. Scorm, URL, Lesson.	Forum, Chat, Wiki, Glossary, Database, Collaborate	Forum, Chat, Hot Question,	Survey. Questionnaire. Library. Search. Forum.	Assignment Quiz, Forum, Workshop, Glossary, Portfolio, Newsfeed;	Glossary, Wiki, Database, Portfolio, Blog;

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This matric provides useful tools for an instructor to design the appropriate learning activities with a range of available learning tools on the learning management system in particular Moodle. However, those learning activities and tools could not be able to guarantee that online learning will produce effective results. Saniya Khan, (2021) argued that according to a survey, the majority of the student (77%) found that online learning is much worse than that of class instruction. A similar result is found during the survey conducted by the Directorate of Higher Education in Indonesia to show that majority of students were dissatisfied with online learning (Belawati and Nizam, 2020).

The mixed result regarding the effectiveness of online learning is arguable that the improper instructional design has caused low student retention and performance due to student lack of motivation to learn. The lack of motivation needs to be taken into account by accomodating the motivational-based instructional design. The ARCS instructional design will be best fitted to supplement the ABC learning design by emphasizing the motivational factors of attention, relevance, confidence, and satisfaction (Keller, 2010). The matrix combination of ABC and ARCS learning design is presented in the following table.

Table 2.

Matrix Combination of ABC and ARCS Instructional Design.

Learning Type	Acquisition	Collaboration	Discussion	Investigation	Practice	Production
Attention	**Variety**	**Active participation**	**Active, participation, Conflict, Case,**	**Variety**	**Real-world examples**	**Real-world examples**
Relevance	**Link to previous experience**	**Choice**		**Modeling**	**Perceived present worth**	**Perceived future usefulness**
Confidence	**Communicate objectives and prerequisites.**	**Give learners control.**	**Provide feedback.**	**Give learners control.**	**Facilitate self-growth**	**Facilitate self-growth**
Satisfaction	**Praise or rewards**	**Praise or rewards**	**Praise or rewards**	**Praise or rewards**	**Praise or rewards, Immediate application**	**Praise or rewards; Immediate application**

The immersive online learning design will create online learning to become more personalized, and attractive due to its flexibility and diversities. Furthermore, the creation of an online social learning space contributes to the expansion of learning into real-world activities. These are elaborated in the following parts.

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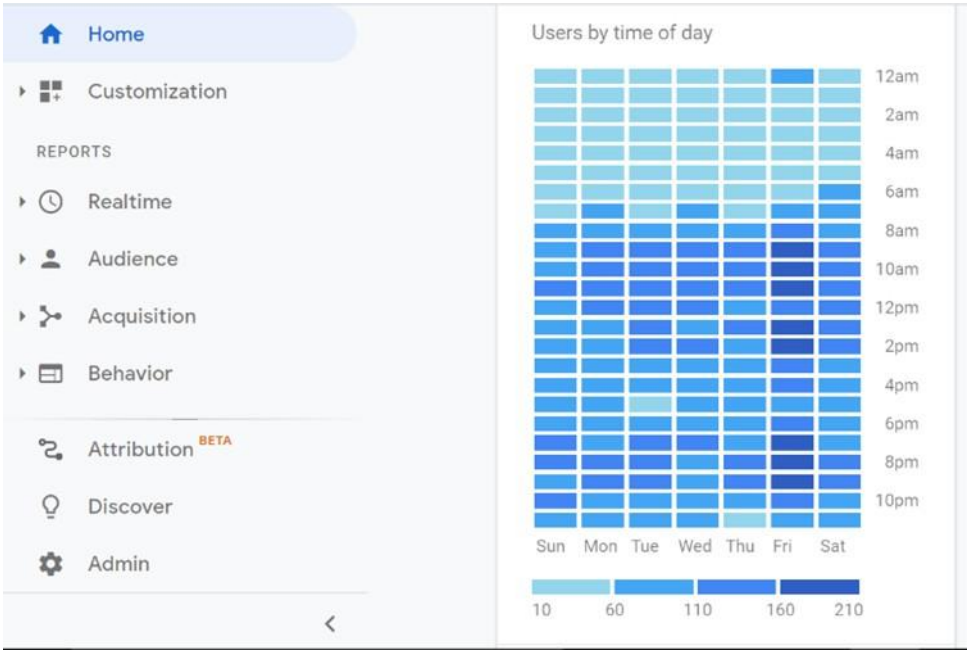
3. PERSONALIZED LEARNING

One of the important characteristics of online learning is the types of communication and interaction between educators, students, and learning materials that can occur both personally and individually (COI, 2021). Personal in the sense that students can freely interact and communicate with educators and learning materials carried out in accordance with the needs, readiness, and preferences of students. While the individual is the interaction and communication of educators and students and learning materials in 2 (two) directions *in a* person-to-person manner. Personalized learning accommodates both forms of communication and interaction of educators and students personally and individually. This contrasts with offline lectures (face-to-face) that are more public and non-personal (Michael Feldstein and Phil Hill,2016). In addition to the various advantages of online learning that can make learning personalized, some challenges require a new learning approach. One of the challenges is related to "time-space". In personalized learning, time-space becomes unlimited and can be done within 24 (twenty-four) hours for 7 (seven) days a week. This time-space requires special attention considering the difference in time, both based on geographical location and student preferences. From the time used by students to learn and their access to learning materials, it can be argued that almost 24 (twenty-four) hours students access learning activities as shown through Graph 2 below.

Graph 2.
Student Access-Time Profile in Online Learning



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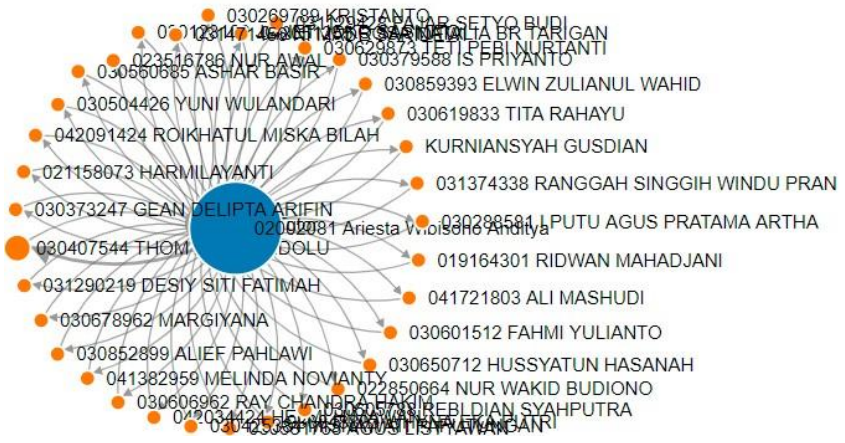
The analytics graph above shows that student activities are distributed evenly from Sunday to Saturday (7-days a week). However, Fridays are most preferred by students to study even though other days have also a fairly high level of access. While in terms of time, most students perform their learning process from 8 am to 10 pm.

The condition related to time-space in online learning is certainly a challenge on how educators and tutors must assertively interact with students so as not to reduce their motivation who post messages or discussions when they study. In online learning, Immediate response is an important reward that may increase their retention and satisfaction. By looking at the time access of students, educators and tutors must be prepared to provide manage their presence in online learning so that students are aware of their presence.

Nevertheless, the student interactions are still merely uni-directional from student to tutor/instructor in the early session. The discussion forum that is expected to impose the interaction among students only consists of student's responses to tutor questions. Tutor is still the main role of interaction as presented in the following graph.

Graph 3.

Forum Graph Interaction on the Early Session



In the early discussion forum seems that the tutor plays a very dominant role in assisting the discussion. The pattern of interactions improving during the late session of 7-8 when the students are more eager to respond to the other students' comments. This interaction is seen in the following graph.

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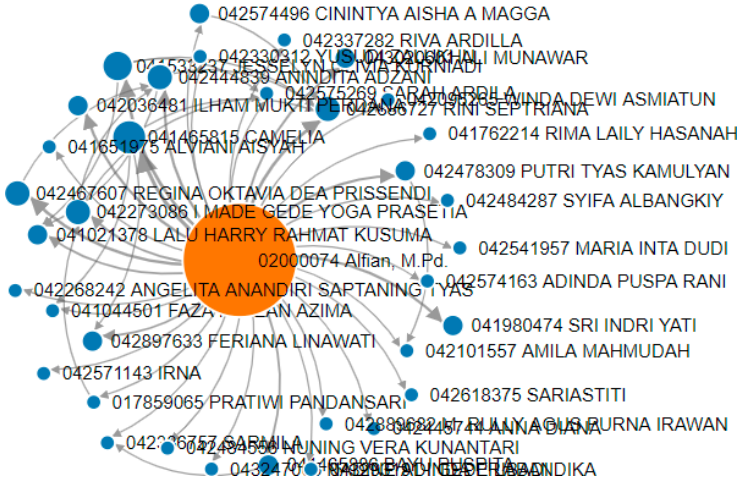
Graph 4.

Forum Graph Interaction on the Late Session



In the late session, student interactions become more active and multi-directional. This changing pattern of interaction may be a result of the reward that is given during the last week of each discussion forum. This reward is important to maintain engagement. To retain the student in online learning, the reward of all activities has to be designed including the gamification to give a ranking of accomplishment.

4. ONLINE SOCIAL LEARNING SPACE

Student activity in online learning is one of the indicators of their success to complete tasks and exams. Empirically the level of online learning activity is not very satisfactory. The engagement and retention of students in online learning is generally less than 50%. This is due to many factors, such as the absence of a "social learning space" that allows interaction and communication between students and students with educators and learning materials, which is one of the factors of low engagement and retention of students in online learning.

Social learning space is a medium that allows students to interact and communicate on a digital platform. During the study from home in the COVID-19 pandemic, student activity was very high. This is driven by the availability of time and activities carried out from home so that student interaction and communication have been able to create a social learning space *(Williamson, A*. and Nodder, C, 2002*).* The existence of a social learning space will improve the learning process. According to the post message activity of students during the COVID-19 period, it shows a high intensity. During the weekend the concurrent users of online learning could reach to seven thousand users.

The high level of learning activities and discussion is a good asset to deepen students' understanding of materials tailored to their preferences. On each day student activity is distributed from 6 a.m. to 12 p.m. as seen in the following graph:

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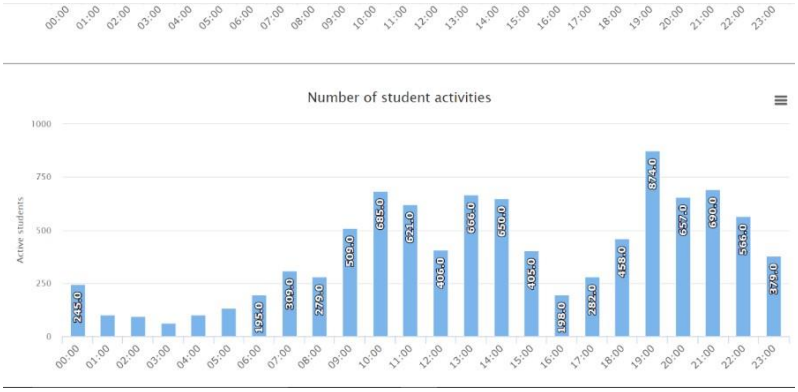
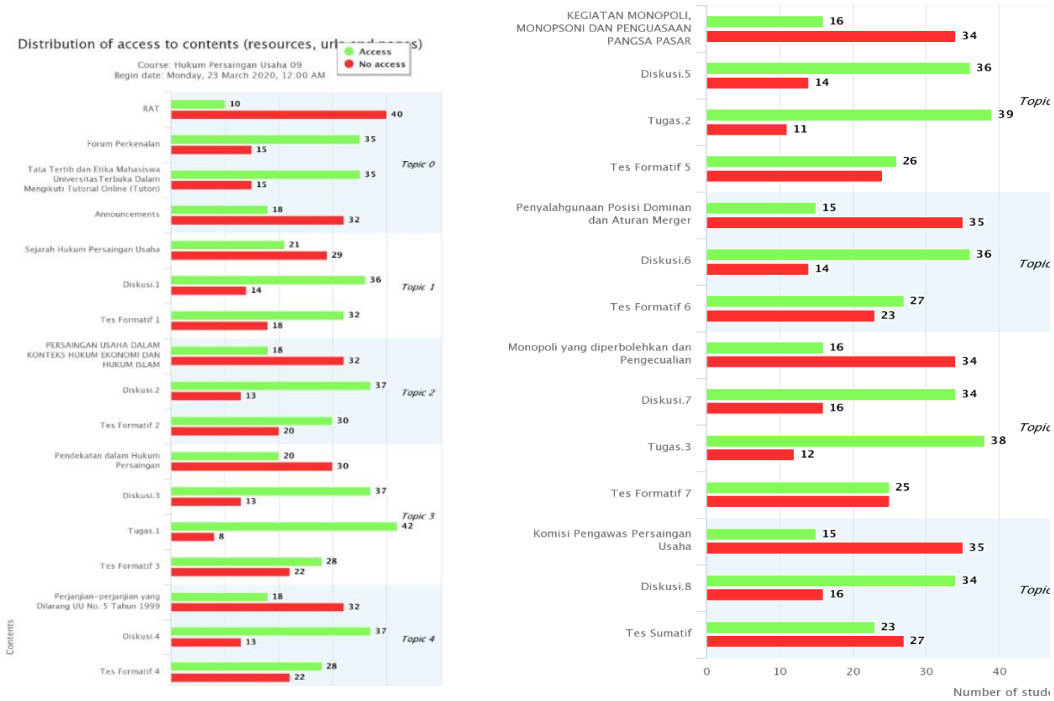
Graph 5.
Student Activities in Online Learning



The student activities, engagement, and retention seem not mutually exclusive but it is a result of the reward that is given to the student activities. It is seen in the following graph that the student retains to engage in learning activities when there is a reward that affects the final grade. The student engagements to the assignment (Tugas), formative test (test formatif), and discussion forum (diskusi) are considerably higher than those of learning materials because the assignment, test formative, and discussion are graded by a tutor. The distribution of access to the content is presented in the following graph.

Graph 6.
Distribution of Student Access to the Online Learning Content



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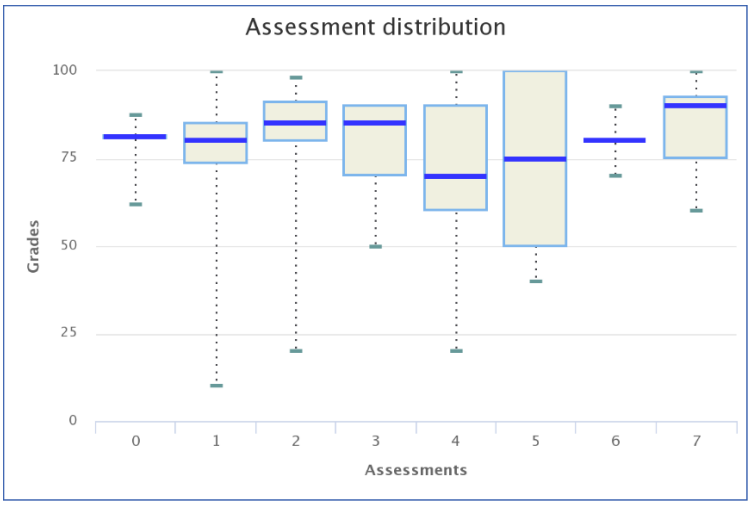
Motivational tools inevitably affect retention and engagement. It is therefore that the online learning design requires to provide a reward to all students' activities to maintain their engagement and satisfaction. Student satisfaction may also contribute to higher achievement and performance. The grade distribution of seven graded learning activities is presented in the following graph.

Graph 7.
The Assessment Distribution



Students' engagement and retention may substantially affect higher achievement and satisfaction. To maintain the engagement, the reward needs to be attributed to all learning activities that meet the student's expectations.

5. CONCLUSION

Immersive online learning may not be a single solution for effective online learning, but it provides a constructive tool on how engagement and retention in online learning should be designed. The combination of ABC and ARCS learning design addresses the prevailing problems in online learning that lack motivation due to improper instructional design. In addition, effective online learning requires a certain level of digital competence that allows students and educators to interact and communicate optimally using digital platforms. The use of various relevant learning tools is expected to increase student retention to form a social learning space. Along with this journey, pedagogical principles must also be adjusted to allow multi-faceted learning and active participation in the real world.

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