Ubiquitous Project-Based Learning Instructional Design in Islamic College

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ABSTRACT: The right learning strategy provides benefits in mastery of learning, allowing students to collaborate and interact in implementing and creating learning projects. Through Ubiquitous Project Based Learning (UPjBL), Instructional Design fully contributes to achieving optimal learning objectives for students. This study aims to develop UPjBL Learning Design and determine the feasibility of the results. The development method for education uses the ADDIE development model stages. The data collection technique uses an instrument in the form of a validation assessment sheet and a closed question instrument in the form of a five-point Likert scale. The development procedure is done by analysis, design, development, implementation and evaluation. The study found that the Ubiquitous Project Based Learning (UPjBL) learning design is valid and feasible. It is known that the product developed has a feasibility value of 4.5 which means that the product is included in the extraordinary category or is very possible to use in the learning process. The combination of Ubiquitous learning and Project-based learning has a UPjBL learning model based on the Constructivist approach. This approach emphasizes that the learning process is centred on students by constructing knowledge obtained contextually. The lecture program units and teaching materials for Information and Communication Technology with primary computer material are adjusted to the curriculum and characteristics of students.
analisis, perancangan, pengembangan, implementasi dan evaluasi. Hasil penelitian menemukan bahwa desain pembelajaran Ubiquitous Project Based Learning (UPjBL) valid dan layak. Diketahui bahwa produk yang dikembangkan memiliki nilai kelayakan sebesar 4,5 yang berarti produk tersebut masuk dalam kategori luar biasa atau sangat layak digunakan dalam proses pembelajaran. Perpaduan Ubiquitous learning dan Project based learning mempunyai model pembelajaran UPjBL berbasis pendekatan Konstruktivisme. Pendekatan ini menekankan agar proses pembelajaran berpusat pada siswa dengan mengkonstruksi pengetahuan yang diperoleh secara kontekstual. Satuan program perkuliahan dan bahan ajar teknologi Informasi dan komunikasi dengan materi komputer dasar disesuaikan dengan kurikulum dan karakteristik mahasiswa.

**Keywords:** Instructional Design, Project-Based Learning, Ubiquitous Learning.

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I. INTRODUCTION

After the trials of the Covid-19 pandemic and its aftermath, Ubiquitous learning (U-learning) emerged as a valuable tool that simplifies the learning process, wherever and whenever students are. The implementation of the Independent Curriculum in Indonesia promotes active learning, a process that values and involves educators and students using various digital platforms (Herlandy & Purwanto, 2022). In college education, the use of project learning and Ubiquitous learning further underscores the integral role of educators, increasing the effectiveness and efficiency of the learning process in the classroom (Aljawarneh, 2020).

To get maximum learning results, an educator needs to plan the learning activities that will be implemented. Educators need to carefully plan learning content for U-learning. A multi-expert system integrates knowledge using improved representation and Delphi methods (Šobota, 2024). This system enhances content richness by combining educators’ expertise and structured information. Teachers find the approach effective in creating a cohesive learning experience. The system improves education quality by uniting experts' wisdom and promoting collaboration in U-learning (Hwang, 2014).

Learning innovations such as U-learning have brought fresh air to the world of education by utilizing mobile technology to create flexible learning experiences. With U-learning, students are no longer tied to physical classrooms or fixed schedules. They can access learning materials and attend lectures from anywhere and at any time, as long as they have a mobile device and an internet connection (Owidi, 2023). This provides extraordinary convenience for students who have busy schedules or who live in areas far from campus. Besides flexibility, U-learning also increases collaboration and interaction between students and lecturers. Online learning platforms often include discussion features, forums, and other collaboration tools that allow students to discuss and work together on group projects more effectively (Patrəwiwat, 2024). Lecturers can also provide real-time feedback and monitor student learning progress more efficiently. This more intensive interaction can create a more dynamic and interactive learning environment. Furthermore, U-learning helps accelerate the achievement of learning goals (Y.-M. Huang & Lin, 2017).
Project-based learning (PjBL) is a student-centred, cooperative social learning method. It's an active learning approach with a specific design prepared by educators. Project-based learning follows four systematic instructional stages: planning, developing, reflecting, and publishing. This method significantly enhances learning activities. In the context of academic achievement and various characteristic studies, Project-based learning is particularly effective in science education compared to traditional learning approaches (Elsamanoudy et al., 2021; Putri & Koranto, 2022).

However, the implementation of the U-learning strategy could be more optimal. It there has been much research regarding the meaning of Ubiquitous learning, characteristics of Ubiquitous learning, Ubiquitous learning tools, and mobile Ubiquitous learning (Champakul et al., 2022). However, until now, no one has conducted research on 'learning interactions' in Ubiquitous learning. Therefore, this research emphasizes the interaction aspect of project-based learning, namely instructional design Ubiquitous Project Based Learning (UPjBL). Apart from that, instructional design has had weaknesses in the learning process, namely that it needs a systematically structured learning syntax, causing imperfections in achieving optimal learning goals. Therefore, researchers developed a UPjBL instructional design with a systematic learning syntax (Cholifah et al., 2019; Elsamanoudy et al., 2021).

Previous research on Ubiquitous learning (U-learning) was based on several learning theories that provided a solid basis for analysis. Ubiquitous learning research and innovation are currently being developed rapidly by experts in the field. The learning theories and frameworks that support the uniqueness of Ubiquitous learning (U-learning) are constructivism, communication theory, and new concepts such as connectivity and rhizomatic learning, where the emphasis is on learning that provides authentic learning experiences to students. In this context, the role of the lecturer changes from being a designer and deliverer of content to designing students' learning experiences that utilize appropriate resources (Cochrane & Narayan, 2016).

II. METHOD

The ADDIE development method is used in this study to develop a learning design model. ADDIE is a method for producing a product and testing the validity of a learning product. The learning product developed in this study is the UPjBL learning system design. The stages of the ADDIE development model are used as the basis for developing UPjBL, which has five stages: Analysis, Design, Development, Implementation, and Evaluation. This model was chosen because it is flexible, accurate, complete, adequate, and has been tested. According to Spatioti et al. (2022), the ADDIE model can be applied to develop an instructional design system for online learning; exemplary implementation of learning with the ADDIE model includes multimedia presentations, feedback, variations in exercises or interactive activities, a combination of learning strategies (individual and collaborative). The asynchronous approach is preferred in distance education. The ADDIE model is a valuable learning design system because it provides good teaching practices. Data collection in this study used an instrument in the form of a validation assessment sheet. The validation assessment sheet was carried out to obtain product validity data according to an instructional design expert with a Professor title. The experts who validated the UPjBL learning design were three experts in learning design, learning technology, and learning evaluation. The types of instruments used to validate the learning design were closed and open-question.
instruments. The closed instrument was in the form of a five-point Likert scale. The resulting product validity data was analyzed and adjusted to the validity category based on decision-making criteria using a score conversion on a 5-point Likert scale (1 = very bad to 5 = very good) (Nurrijal et al., 2023). Meanwhile, the open instrument was used to obtain information, suggestions and input from learning design experts regarding the design products being developed. In the limited trial, a practicality questionnaire sheet was used to get user response data from students.

The UPjBL learning design model was assessed using descriptive statistical analysis techniques. The scores obtained were added up, and then the average was found and converted into a value using a 5-scale reference test criteria table. The minimum eligibility score of "good" in this study was determined by learning design experts so that if the learning outcomes at least received the predicate "adequate" by the experts, then the UPjBL design model was considered feasible to be applied in the learning process. The subjects used in this study were 30 students. The sampling technique used in this study was randomized sampling for limited product testing (Setyosari, 2016). The UPjBL development procedure is described as follows: 1) Analysis, needs analysis is carried out to identify learning problems that cause the learning process and results to be less than optimal, identify student characteristics, learning environments, learning objects and media and the technology used in the learning process; 2) Design, consisting of development time planning, design of learning model development framework design, design of learning media used, design of applied learning materials, and design of learning resources and learning activities in a learning framework; 3) Development, consisting of the development of UPjBL framework, development of UPBL learning system on LMS, validation of product by learning design expert, and revision result of floating product; 4) Implementation, UPjBL product is tested to students; and 5) Evaluation, Final Revision and product evaluation.

III. RESULT AND DISCUSSION

Ubiquitous Learning Principles that can be Applied in Learning

Ubiquitous Learning Environment

Ubiquitous learning has characteristics and principles that can be implemented in the learning process. According to Suartama et al. (2021) the characteristics and principles of U-learning include Accessibility, Adaptability, Context Awareness, Immediacy, Interactivity, and Permanency.

U-learning provides accessibility that makes learning easy anytime and anywhere. According to Herlandy & Purwanto (2022), U-learning helps students learn effectively even with limited internet access during the pandemic. This technology supports multiple learning formats and personalization, allowing students to learn according to their style. U-learning is essential when direct meetings between teachers and students are not possible.

Characteristics of Ubiquitous learning and the Ubiquitous learning environment are a series of elements that cannot be separated in the Ubiquitous learning learning process. Accessibility is the access used in U-learning. Ubiquitous computing technology provides easier access to learning resources so that learning becomes more independent, and context awareness brings the real world into the learning process; namely, by accessing the database, the system can find out the learner's location and usage situation.
Ubiquitous learning, interactivity where students can interact with anyone anytime and anywhere, with no restrictions to a particular learning environment, and permanence where students will not lose their work even though it has been deleted. All learning processes can be recorded continuously daily (Tahir et al., 2018).

Interactivity in Ubiquitous learning allows students to engage anytime and anywhere, promoting Constructivism Theory compared to Behaviorism Theory. In the Constructivist approach, students are recognized as active individuals in the learning process, not just passive recipients of information. With technology that enables learning in various contexts, students can access course materials, interact with classmates, and receive feedback in near real-time. Students benefit significantly from the ability to share their opinions and ideas in a Ubiquitous learning environment. These interactions enrich their learning experience and help construct new knowledge based on individual experiences and perspectives. Learning becomes more dynamic and relevant because students can use real context from their daily lives to understand the concepts being taught (Mykytiuk et al., 2022).

Ubiquitous learning (U-learning) significantly improves primary and higher education. According to Champakul et al. (2022) research results show that the Ubiquitous learning management system combined with Imagineering can improve learning achievement and multimedia skills. This method is superior to traditional methods, producing better student learning outcomes.

One indicator of the success of U-learning is learning achievement. According to Wong (2018), students who use this system tend to achieve higher grades and master the material better. In addition, learning motivation also increases due to a more interactive and personalized approach, which allows students to learn anytime and anywhere, according to their own pace and learning style.

Several factors must be considered when designing and developing instructional designs. According to Hwang (2014), Mobile technologies, wireless communications, and sensors enable the development of contextual, Ubiquitous learning environments (U-learning). Key factors in designing inclusive and intelligent learning systems include personalization to meet individual learning needs, environmental context integration, and educators’ support and training. Successful implementation requires thoroughly considering all factors in developing an effective U-learning system.

Context-aware Ubiquitous learning (U-learning) tailors subject content to learning tools for personalized experiences. According to Hwang et al. (2018) the system adapts to learners’ situations and environments, integrating virtual and real-world learning. It provides personalized support, guidance, and real-time information, enhancing learning experiences. Seamless transitions between learning environments ensure continuity and engagement. This approach advances personalized education, making learning dynamic and responsive to individual needs.

**Ubiquitous Learning Learning Strategy**

Weiser (1991) states that Ubiquitous computing is the third wave in computing that has just begun. The first are mainframes, each shared by many people. Waiser said that now that we are in the era of personal computing, humans and machines are staring nervously at each other across the desktop. Next is Ubiquitous computing, or the quiet age of technology, when technology fades into the background of our lives.
In modern education, using computers has brought significant changes that cannot be ignored. One of the most prominent aspects is the introduction of E-learning, M-learning, and Ubiquitous computing. These three methods offer the flexibility of access that allows students to learn anytime and anywhere, providing unprecedented convenience. E-learning, or electronic learning, uses the internet to provide learning materials and interaction between students and teachers. It allows students to take online courses, access digital learning materials, and participate in online discussions. M-learning, or mobile learning, goes further by utilizing mobile devices such as smartphones and tablets. This allows students to learn on the go, accessing course materials from the devices they always have with them. Ubiquitous computing and Ubiquitous learning, or U-learning, aim to revolutionize education by adapting to students' needs through personalized and adaptive learning methods. Ubiquitous computing involves integrating technology into the overall learning environment so that the technology becomes part of students' daily lives. With U-learning, students can receive course materials tailored to their learning style, get instant feedback, and learn in the most effective way. This creates a more dynamic and responsive learning experience, helping students reach their full potential.

Ubiquitous computing, which has the characteristics of context awareness, is the beginning of the creation of Ubiquitous learning. Electronic learning has evolved into Ubiquitous learning, namely electronic learning tools that can be used anytime, anywhere. Hwang (2014) stated that in recent years, the educational landscape has experienced significant transformation thanks to the advent of context-aware Ubiquitous learning environments. These innovative settings are designed to support students by dynamically adapting to their learning contexts their physical location, the time of day, or current emotional and cognitive states. Despite the extensive research in this field, a standardized framework for constructing these environments is still noticeably absent. This gap highlights the need for clear criteria and strategies to guide the development and implementation effective context-aware Ubiquitous learning systems.

Ubiquitous learning strategy is the latest evolution of electronic learning, which will later evolve into seamless learning or what is usually called learning that is not limited by space and time. This learning strategy provides excellent opportunities in the world of education. Apart from learning that can be done whenever and wherever students are, Ubiquitous learning also provides benefits for mastering learning according to the student's abilities; apart from that, Ubiquitous learning allows students to collaborate and interact in implementing and creating learning projects. All of these things fully contribute to students achieving optimal learning goals (Vallejo-correa et al., 2021). In the last ten years, the use of mobile technology devices has experienced a continuous increase. It shows great potential in various learning environments, including Ubiquitous learning (U-learning) and Mobile learning environments (M-Learning).

Ubiquitous learning has several meanings related to the environment and learning characteristics. So that there are no errors in defining U-learning because the definition of U-learning continues to develop along with current and future technological developments, the researcher concludes the existing report. U-learning aims to focus on learning that occurs anytime and anywhere in the right way with the right content using Ubiquitous computing technology.
U-learning offers unprecedented flexibility in the world of education. According to Suartama et al. (2020) the integration of mobile technology, students can access learning materials, communicate with teachers, and collaborate with peers without limitations of place and time. This increases student engagement and provides opportunities for more effective personalized learning. Students can learn at their own pace, repeat material they do not yet understand, and explore topics they are interested in more deeply. Apart from that, U-learning also supports contextual learning, where students can apply their newly acquired knowledge in real situations. For example, through augmented reality (AR) applications, students can learn physics concepts directly in the environment around them. Thus, U-learning not only makes learning more accessible but also more relevant and meaningful for students. Through this approach, it is hoped that the expected learning objectives can be achieved more effectively and efficiently.

Project Based Learning Learning Strategy

Learning methods include learning organizing strategies. The learning method has three implementation strategies (Degeng & Degeng, 2018). The strategy stages in the learning method are the first, the learning organizing strategy; the second, the learning delivery strategy; and the third, the learning management strategy.

Project-based learning (PjBL) is a dynamic and engaging educational approach that places students at the heart of their learning journey. Rooted in the principles of social constructivism, According to Huang et al. (2019b) PBL emphasizes cooperative social learning, where students work together on educator-designed projects. This method fosters a collaborative environment where learners can collectively share ideas, solve problems, and construct knowledge. In PBL, students are encouraged to actively participate in their education rather than be passive recipients of information. They engage in hands-on projects often tied to real-world problems, requiring them to think critically, innovate, and apply their knowledge practically. This active involvement helps students internalize and retain information more effectively, as they see the direct application and relevance of their learning.

Project-Based Learning (PjBL) is a pedagogical approach that has garnered significant attention for its potential to enhance student learning outcomes. Guo et al. (2020) empirical studies have demonstrated that PjBL can positively impact students in multiple dimensions, including affective, cognitive, and behavioral outcomes. Affective outcomes, such as increased student engagement and motivation, are often measured through questionnaires and interviews, which provide insights into students' attitudes and feelings towards their learning experiences. Cognitive outcomes, reflecting knowledge acquisition and critical thinking skills, are typically assessed through tests and performance tasks. Behavioral outcomes, such as collaboration and problem-solving skills, are usually observed in classroom settings and group activities. Research in PjBL has shown that students exhibit higher levels of engagement and motivation when actively involved in hands-on, meaningful projects. These projects often require students to work collaboratively, think critically, and apply their knowledge to real-world problems, fostering a deeper understanding of the subject matter. Observational studies and interviews with students and teachers have provided valuable data on how PjBL influences classroom dynamics and student-teacher interactions, suggesting that this approach can create a more interactive and supportive learning environment.

Gaps in learning emerged during the Covid-19 pandemic, triggering various learning problems, including learning loss. Learning Loss will directly or indirectly influence
high-level thinking abilities or what is usually called higher-order thinking Skills (HOTS). The results of the research Mahendra et al. (2022) state that the learning process of students who take online project-based learning integrated with Quizzizz as a formative assessment with HOTS obtain maximum learning results than students who take regular online learning.

Self-initiation to innovate in the learning process positively impacts the world of education. Project-based learning is a strategy that can answer the challenges of innovative learning initiatives in the era of education 4.0. Cholifah et al. (2019) argue that the self-initiative to innovate using online project-based learning is increasing. The results show that measurements during the online project-based learning process meet the criteria for learning towards innovation.

Project-based learning (PjBL) research delves into the development of various student abilities, notably creative thinking. According to Chen & Lin (2019), PBL is an instructional methodology that allows students to learn and apply knowledge and skills through engaging in projects often rooted in real-world challenges. This approach can significantly enhance students’ creative thinking abilities, particularly fluency and flexibility. Fluency refers to the ability to generate many ideas, while flexibility involves the capacity to approach problems from different angles and perspectives. One of the primary ways PBL fosters creative thinking is by encouraging students to apply their knowledge in innovative ways. Working on projects requiring problem-solving pushes students to think outside the box and explore multiple solutions. This hands-on experience is invaluable, as it helps students understand the material more deeply and teaches them how to think creatively and adaptively. Furthermore, the collaborative nature of PBL allows students to share ideas and gain new insights from their peers, further enhancing their creative thinking skills.

If integrated with other learning strategies, such as computational thinking, project-based learning positively contributes to the learning process. According to Saad & Zainudin (2022), project-based learning and computational thinking can increase the effectiveness of teaching and learning and improve students’ computational thinking skills. Thinking skills are essential 21st-century skills needed for student success. The definition of Project-based learning is a comprehensive approach to teaching and learning in the classroom designed to involve students in the investigation of authentic problems.

Designing a good and effective Project-based Ubiquitous requires planning an appropriate and systematic organizational strategy. According to Degeng & Degeng (2018), a learning organizing strategy is a way of arranging the sequence of content in a field of study. In the strategy for organizing learning, there are two strategies, namely, micro strategy and macro strategy. Micro strategy is a way of organizing the presentation of a concept, principle, or procedure. At the same time, a macro strategy produces many ideas, regulations, or processes. Usually, it covers the entire content of the field of study to be taught.

Apart from that, this strategy is also expected to fulfill the characteristics of Ubiquitous learning. According to Aljawarneh (2020), Ubiquitous learning has ushered in a new era in the college education sector. Context awareness is enhanced by Ubiquitous learning as a learning experience that offers unlimited availability regardless of location. They establish easy interaction between reality and learning resources. Project-based Ubiquitous strategies can also fulfill the principles of project-based learning stages.
According to Cupo (2023), the stages of the project-based learning model are planning, creating, reflecting, and publishing.

**Systematic Stages of Ubiquitous Project Based Learning**

By adopting the ADDIE development model, the UPjBL development procedure is described as follows: 1) Analysis, needs analysis is carried out to identify learning problems that cause the learning process and results to be less than optimal, identify characteristics of students, learning environment, learning objects and media as well as technology used in the learning process; 2) Design, consisting of planning development time, designing the learning model development framework design, designing the learning media used, designing the learning materials applied, and designing learning resources and learning activities in a learning framework; 3) Development, consisting of developing a UPjBL framework, developing a UPjBL learning system in an LMS, product validation by instructional design experts, and floating product revision results; 4) Implementation, UPjBL products are tested on students; and 5) Evaluation, Final revision and product evaluation.

The product results of this research are developing a Ubiquitous Project based Learning Design on ADDIE research and development procedure while determining the feasibility of the UPjBL results. The first research result is UPBL learning design in the form of learning syntax. Various analyses have been carried out to carry out the next stage, namely designing the UPjBL syntax for the Information and Communication Technology course.

Learning materials in digital format were developed to complement the learning process carried out online using a learning management system. Learning materials and resources are in documents, presentations, images, videos, and websites suitable for the Information and Communication Technology learning process. The mapping of the UPjBL learning process is described in a systematic learning syntax framework. The UPjBL design syntax framework can be illustrated in Figure 1.

![Figure 1. Syntax framework for UPjBL design](https://doi.org/10.35723/ajie.v8i2.664)
UPjBL has four systematic stages of project-based learning by implementing Ubiquitous learning characteristics. The description of the four stages is as follows;

**First Planning:** At the planning stage, group division activities are carried out, and descriptions of learning objectives and achievements, as well as observations, are carried out classically. The learning model used is Synchronous lecturing with the Google Meet platform as a learning tool. The principle of U-learning Interactivity in the learning process emphasizes the Interaction that students can carry out with other students and the Interaction between students and lecturers/educators (Mykytiuk et al., 2022). Meanwhile, the principle of U-learning Context awareness emphasizes observation activities that can bring the real world into the learning process wherever and whenever students are (Afzal et al., 2024). The cognitive level achievements of Bloom's Taxonomy at this stage are remembering and understanding (Husain, 2021). In operating the U-learning system, learning is carried out individually with an asynchronous individual learning model using the LMS platform, which implements the U-learning Accessibility principle (Herlandy & Purwanto, 2022). The cognitive level achievement of Bloom's Taxonomy at this stage is application.

**Second Developing:** In the developing stage, there are four activities, namely developing storyboards, producing learning videos, editing, and rendering, carried out in groups. The learning model used is Asynchronous Collaborative Learning, using the Canva application as the U-learning tool. The U-learning principle of Flexibility enables students to engage in group learning activities at their own pace, fostering a sense of connection and engagement (Tahir et al., 2018). The cognitive level achievements of Bloom’s Taxonomy at this stage are analyzing, evaluating, and creating (Husain, 2021).

**Third Reflecting:** At the reflecting stage, the activities are joint monitoring and providing criticism, suggestions, and problem-solving. Learning is carried out in groups. The learning model is synchronous collaborative for monitoring activities, and the asynchronous collaborative model is used to provide criticism and suggestions and solve problems. The Google Meet platform is used when conducting joint monitoring activities, while the LMS platform is used when giving criticism, offers, and problem-solving. The principle of U-learning Interactivity is found in joint monitoring activities between students, lecturers, and other students (Mykytiuk et al., 2022). Meanwhile, the focus of U-learning Accessibility is found in providing criticism, suggestions, and solving problems when using the LMS platform. Students find it easy to access anytime (Herlandy & Purwanto, 2022). The cognitive level achievement of Bloom's Taxonomy at this stage is creating.

**Fourth Publishing:** At the publishing stage, there is an activity of uploading learning products in the form of learning tutorial videos carried out in groups using the Asynchronous Collaborative Learning learning model using the YouTube Platform. The principles of U-learning Permanency and Accessibility make it easier for students to access learning product results that will not be lost whenever and wherever they are (Suartama et al., 2020). The cognitive level achievement of Bloom's Taxonomy at this stage is creating (Husain, 2021). The second activity at this stage is displaying the final product on the YouTube platform, carried out in Synchronous Collaborative learning groups using the Google Meet Platform. The principle of U-learning Interactivity in this learning is because there are interactive activities between students, students, and educators (Mykytiuk et al., 2022). The cognitive level achievement of Bloom's Taxonomy at this stage is creating.

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The second research result is the feasibility of the UPjBL results. The product validation evaluation stage of the UPBL design model involves validation tests by three Learning Design Experts. The evaluation stage tests the UPjBL design products that have been developed. The validation results from three Learning Design Experts on the quality of the UPjBL design model are presented in Figure 2.

![Figure 2. Diagram of validation results of project-based learning ubiquity design](image)

Based on the diagram above, it is known that the product being developed has a feasibility value of 4.5, which means the product is in the outstanding category or very suitable for use in the learning process.

The implementation stage tests the practicality of the product implemented through the UPjBL LMS. The questionnaire consisted of responses from 30 students. The practicality test results are assessed by 30 students and described in Figure 3 below.

![Figure 3. Diagram of student user response results](image)

Based on the diagram above, it is known that the product developed has an average value of (4.1), which is included in the excellent product feasibility category. This shows that the research product is suitable for implementation in the learning process.
This research develops an effective Ubiquitous learning syntax to be implemented at the project-based learning stage. The resulting learning syntax is practical and flexible and can be implemented through an LMS that collaborates with other platforms such as Google Meet, YouTube, and Canva. According to Wang et al. (2017) many museums are adopting Ubiquitous-based learning systems that use mobile devices to help strengthen social bonds as students work collaboratively in language learning activities. It also allows museums to evolve from mobile learning to Ubiquitous learning environments in various socio-cultural contexts. The results of this study have implications for teachers and museum educators in helping them implement Ubiquitous learning appropriate to learning systems in different socio-cultural contexts.

The stages of developing the UPjBL model for information and communication technology courses are carried out systematically through five locations: analysis, design, development, implementation, and evaluation. This development stage can be carried out well, smoothly, and systematically because its performance is based on a systematic planning design and the readiness of the required materials, facilities, and infrastructure based on the results of analyses that have been carried out previously.

The evaluation results of learning design experts show the 'outstanding' category. Therefore, the UPjBL learning model meets the criteria for being suitable for the learning process.

The Ubiquitous project learning model product is a product that is suitable for use in the learning process for the following reasons: 1) The "UPBL Instructional Design" which was designed and developed is perfect, comprehensive, holistic, and specifically fulfils four C elements (4C, namely Critical Thinking/Problem Solving, Creativity, Communication, and Collaboration) so that Instructional Design is exciting, providing challenges to students for a learning process, 2) The learning theory and framework that supports the uniqueness of Ubiquitous project learning is constructivism, communication theory, and new concepts such as connectivity, where the emphasis is on learning that provides authentic learning experiences to students. According to Huang et al. (2019), Connecticut is a learning theory that can create learning networks and connect learning activities worldwide. Connectivism holds the view that learning is an activity that develops networks. Nodes are external units that can be used to create a network. A Node can be a person, organization, library, website, book, database, or other information source; 3) Social and collaborative interactions in Ubiquitous learning environments can increase student activity and performance; interactive features increase collaborative learning interactions and improve the learning process. According to Araújo et al. (2017) social and cooperative interactions in Ubiquitous learning environments can increase student activity and performance. Interactive features increase collaborative learning interactions and improve the learning process; 4) The UPBL learning strategy provides excellent opportunities in education. Apart from learning that can be done whenever and wherever students are, UPBL also benefits from mastering learning according to the student's abilities. Apart from that, UPBL also allows students to collaborate and interact in implementing and creating learning projects. All of these things fully contribute to students achieving optimal learning goals. According to Suartama et al. (2019), Ubiquitous learning (U-learning) is a discovery in education that answers questions about information and communication technology development, especially mobile technology. The paradigm shift from a closed learning system to an open one is a form of Ubiquitous learning innovation.
IV. CONCLUSION

This research produces learning design products with more systematic and structured learning syntax. The combination of Ubiquitous learning and Project-based learning has the UPjBL learning model based on the Constructivism approach. This approach emphasizes that the learning process is centered on students by constructing knowledge obtained contextually. Project-based learning is based on a collaborative learning approach. This approach emphasizes collaboration in the learning process. UPjBL learning design has been developed through five systematic stages: analysis, design, development, implementation, and evaluation. Likewise, the principle of Ubiquitous Learning can be applied through various features and applications available in the moodle learning management system. Using the URL feature, discussion forum, activity and source, and Google Meet, the U-learning principles that can be applied are the principles of accessibility, interactivity, flexibility, and context awareness. Meanwhile, the Canva and YouTube applications can implement the principles of Permanency and Interactivity. The assessment results carried out by instructional design experts from several aspects, namely basic principles of learning design, characteristics of learning design, elements of Ubiquitous learning, stages of project-based learning, and steps of learning design, have shown validation results in the "very good" category. Therefore, this indicates that the UPBL instructional design in the information and communication technology course is feasible in the learning process.

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