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A Design of Innovation In Educational Technology to Improve The Quality of Website Learning in Industrial Revolution Era 4.0 Using Waterfall Method

A Design of Innovation In Educational Technology to Improve The Quality of Website Learning in Industrial Revolution Era 4.0 Using Waterfall Method

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Abstract. The purpose of this study was to make detailed learning design in accordance with the needs of educational institutions. Learning Technology Design is one of the necessary ways to improve the qualified graduates' competence. This research aimed to make a learning model website to improve students' quality. This current study only provides general learning model. The participants of this study were lecturers, undergraduate and postgraduate students and educational practitioners throughout Indonesia using online form. Data collection techniques used in this study were in depth interview as well as online survey and a need analysis using waterfall method. The result showed that the existing learning model until now has not yet given any changes. This research generates an innovation in the learning model as needed by the Policy Makers

1. Introduction

Innovation of educational technology in the world of education is an absolute requirement required for the development in the digital age. The design of the project is based on the development of a collaborative work distributed among all the students of the subject, grouped in several teams or working group [1]. To Fulfill this, Educational Technology create changes in all aspects of human endeavour especially in training and research as it provide resources for trainers and researchers leading to comprehensive learning as well as extend the learning process [2]. An e-learning framework incorporating different stages of learning and usage of learning resources was first developed as a guide [3][4]. Furthermore, The competencies to manage an engineering project, work in and lead a team are demanded from a graduate of a higher engineering education. A design education model,

consisting of of two linked courses, is presented that allows students to learn key engineering and social competencies by experiencing real situations [5] and Many teachers use online professional development websites, but little is known about what teachers actually learn from them [6]. However, Unsatisfactory prior experiences in collaborative learning influence students' predisposition towards team-based learning activities. Incorporating strategies for helping teams to effectively regulate group work and enhance planning processes may result in an increase in students' engagement with learning activities and collaborative processes [7]. It is necessary that self-regulated learning phases are related to collaborative engagement in two different collaborative task conditions. It integrates SRL theory and the concept of engagement, including interaction in collaboration, as key characteristics of engagement [8], Finding indicate that the design, general content, and appearance dimensions of a website are most important for users [9]. Finally, it will determine all the required components. The paper shows how is ideas on individual, group and network-wide learning can benefit research on services and service innovation [10] in the process of website learning design.

2. Research Methods

At this stage, every member of the team (programmer and innovation design education team) will do the tasks that have been his responsibility [11]. Not only does the team design educational innovation and program writing, all team members also have the responsibility to experiment on their respective duties.

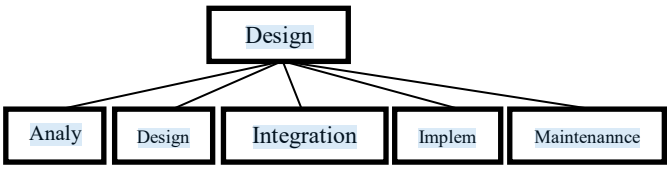

Fig. 1 Waterfall Design Model

Waterfall method generally has the following stages: 1) Requirements analysis and definition: a Service system for viewing constraints, and objectives defined by the results of consultations with users which are then defined in detail and serve as system specifications within the website. 2) System and software design [11]. Stages of system design that allocates the needs of the system both hardware and software by forming the overall system architecture. Software design involves the identification and representation of the basic system software abstraction and its relationship. 3) Implementation and unit testing. At this stage, the design of the software is realized as a series of programs or program units. Testing involves verifying that each unit meets its specifications, all device components used in both hardware and 4) Integration and system testing [12]. Individual units of the program or program are combined and tested as a complete system to ascertain whether it meets the needs of the software. After the test, the software can be sent to the customer, in this process is a continuation of previous work, the entire working of the device is activated. 5) Operation and maintenance. This stage is the longest stage. System installed and used. Maintenance involves rectifying errors not found in the previous stages, improving the performance implementation of the system unit, and improving system services as new needs [12][13]. Methods of data collection using direct interview and survey form Online.Data obtained. All respondents are academic community and practitioners from Industry. After knowing the duties and responsibilities of each work team, then the next step is to formulate the learning design that can be tailored to the needs of educational institutions are: Designing for the system or process being executed will automatically stop if experiencing a constraint, long enough to complete a process and use a sequential approach.

3. Result

Design Innovation and learning strategies [15] using the waterfall method still use the 5 basic principles, resulting in a work that focus on the formation process as expected:

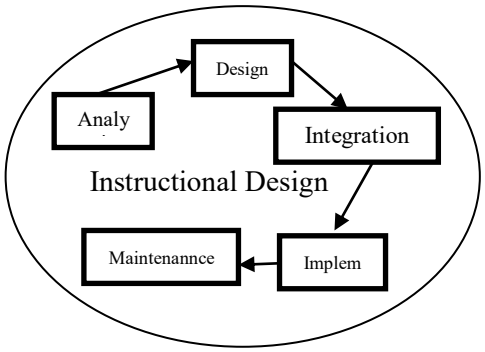

Fig. 2 Design of Learning Innovation Using Waterfall Method

In this section will be given the necessary design information needed in the learning innovation:

3.1. Description of Constraints faced

Study program	Campus Preparation in Facing the Industrial Revolution 4.0	Obstacles encountered
Educational technology	Not ready	Lack of IT Infrastructure
Primary teacher education	Not ready	Facilities Limitations, Raw Regulations that do not exist from the campus to get together as soon as possible prepare campus face the era of Revolution 4.0
Islamic economics	Ready	Human Resources. Human Resources are not yet aware of the real tight competition, HR prosecuted loyal
Public health	Not ready	Internet network systems are often disrupted
Informatics Engineering	Not ready	The Laboratory does not update its Tools anymore

3.2 Solution Description

Study Program	Is the current learning model necessary to support the needs of the Industrial revolution era 4.0	What to expect in the Industrial World to support learning on your Campus	What to expect from City / Provincial / Central Government to support learning on your Campus
Educational Technology	Yes	enhancing IT usage	IT Facilities and Infrastructure

Primary teacher education	Yes	developing learning-based industry programs	Creating an industry-based educational creativity development tool
Islamic economics	Yes	Synergize, place internship, graduate placement	The municipal and provincial governments currently have no concern for universities
Public health	Yes	Provide learning places for students so that when finished can immediately interact well	Provide Funds in support of better campus performance
Teknik Informatika	Yes	The existence of cooperation in attracting students' graduation	Facilities and infrastructure to support learning activities
Communication and Islamic Broadcasting	No	Its role is the same as the Government	proactively responding and adjusting learning with the development of science and technology

4. Discussions

Results obtained from various fields of study program and from various academic community in this Republic, which record all campus preparation and constraints faced. Respondents are academic civitas consisting of students, lecturers and industrial practitioners. From the constraints faced by respondents also provide input components that are expected from industry and related education offices in connection with this learning innovation.

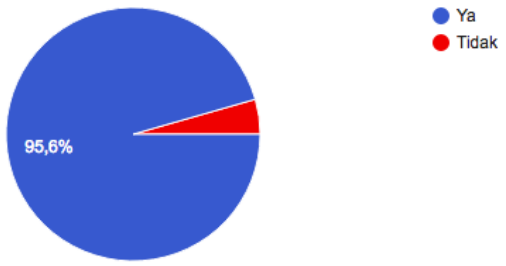

Fig. 3Tthe Importance of an Innovation Design of Learning
Ya = Yes
Tidak = No

The picture above shows most resonpers want a change in the learning model as it exists.

5. Conclusion

In short, the need for the design of learning innovation in education is indispensable to face any changes that exist in the industry revolution era 4.0. Proposed changes and design models required of course require the role of the Industry and the relevant Education Department that exist in each region.

However, further research is also required by involving more related components so that it is expected to gain more input and point of view.

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