



# Commercialization of the Study Sustainability Learning Chatbot Through Digital Education Teaching Factory Based on Profit Sharing

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**Abstract.** Teacher income in Indonesia is very low as the majority of private and honorary teachers. In fact, the current administration is less concerned about the fate of teachers, which can create a bad view of the level of teacher welfare in Indonesia. The purpose of this study is to upgrade the quality of teachers through curriculum and self-development through technology and integrated with chatbot application features in the form of special teacher training focusing on critical analytical thinking and can be utilized by students and benefits for its main campus partners, State University of Malang. This goal is expected to increase the output of moment index development. In the process of business development carried out, developers use a startup development phases system. The stages of business development that will be used are ideating, concepting, committing, validating, scaling, establishing. The result of this study is a learning chatbot continuing studies carried out commercialization and improving the development of learning quality using chatbot media.

**Keywords:** chatbot · learning sustainability studies · digital education teaching factory · profit sharing

## 1 Introduction

The implementation of commercialization of the study sustainability learning chatbot through a *profit sharing-based digital education teaching factory* is the focus of research development. Learning chatbots are the solution to efforts to improve the quality and welfare of teachers. In terms of quality, currently teachers face a problem, namely the lack of use of technology in teaching and learning activities. In addition, teacher welfare is viewed in terms of the benefits obtained when teachers successfully obtain certification. Salary is the main factor in the change in teacher performance.

Based on the Organization for Economic Co-Operation and Development (OECD) 2019, the worst salary comparison data from 10 countries, shows that the worst number of teacher incomes abroad is much greater in value than salaries in Indonesia. Income as a teacher award, while teacher salaries in Indonesia are very low, as the majority of private and honorary teachers [1]. In fact, the current administration is less concerned about the fate of teachers which can create a bad view of the level of teacher welfare in Indonesia

[2]. The low welfare of Indonesian teachers can affect the quality of student learning outcomes, because the welfare of teachers can affect concentration and motivation to become a teacher [3]. As evidenced by the 2018 Programme for International Students Assessment (PISA), Indonesian students averaged a score of 371 reading, mathematics 379, and science 396 showed that student learning outcomes decreased from 2015. If the welfare of teachers in Indonesia is to increase, then people's interest in becoming teachers will be high [4].

Currently, efforts to overcome these problems in Indonesia have many platforms that offer internet-based learning media innovations, such as zenius [5], cerebrum, and entering campus. This can be used as a teacher as an additional source of welfare and students who access the platform can improve their learning outcomes [6]. In fact, the platform supports the preparation of study sustainability exams without being supported by students' understanding of the management of learning methods, besides that the existence of the platform cannot guarantee the welfare of teachers to increase, because the role of teachers is not used as a medium for their studies [7].

Based on these problems, in previous research researchers have carried out research development. Through Product Development Innovation, Incubation, and Industrialization of the PNB scheme for fiscal year 2021 with a focus on developing chatbots to prepare for the sustainability of studies has succeeded in improving student learning outcomes in preparation for entering higher education, and has obtained Intellectual Property Rights in the form of Copyright and published in Journals Economic Education. From this research, several *need analysts* were produced about improving learning in Indonesia, one of which is the effect of the quality of teacher welfare on the quality of education obtained by students, not only from the learning factors carried out.

The purpose of this study is to improve the quality of teachers through curriculum and self-development through technology. This research will be integrated by utilizing the Chatbot application feature as an opportunity for teacher self-development. The integrated system with special training of teachers focuses on *critical analytical thinking*. Later, teachers will be given a project to make a chatbot-based study sustainability preparation media. This project directs teachers to think according to the 4.0 era (Digital Education). The results of the media that have been compiled by the teacher can be used by students. These results also bring benefits to its main campus partner, State University of Malang, which continues to be involved in the preparation of the platform system. So that the achievement of the objectives of this study brings benefits to teachers, students, and campus partners (Profit Sharing System). This goal is expected to increase the output of moment index development.

This research is very important to be carried out as a solution to the problem of the quality of education in Indonesia related to the low quality of teacher welfare and the quality of student achievement. If these problems are not addressed, it will backfire on Indonesian education. Later, the development of this innovation can improve the quality of student achievement and the quality of teachers. In addition, this research also supports the independent campus policy program that continues to be intensified. Therefore, the success of this research will bring benefits to teachers, students, and partner campuses.

## 2 Literature Review

### 2.1 Upgrading Teacher Quality

The teacher is a very important component in education system. The process of learning and teaching is much influenced by the quality of a teacher. The teacher is a determining factor for the success of the process learning in an effort to increase knowledge, skills, and attitude of students [8]. Meanwhile, according to [9] the issue of teacher quality is the first and foremost dimension in realizing education complete national.

One of the programs carried out to improve quality teachers in Indonesia is through certification. Some previous research who reviewed teacher certification policies from various perspectives conducted. One of them is research conducted by Nurhattati Fuad in 2017 [10] which discussed teacher certification policies viewed from the aspect of improving teacher performance. Research result shows that the performance of teachers who have been certified has close to conformity with the standard, but there are still weaknesses on the use of IT in learning and search for enrichment materials.

Another study was conducted by Regita Andriani, et al. in 2021 [11] which discusses improving the competence and quality of teachers in the field ICT. The results of the research show that there are several One of the problems faced by teachers is the lack of the use of ICT in the learning process. In addition, deep awareness increasing the knowledge, abilities, and skills of teachers in using technology that is still low also makes the quality of teachers to be less good.

### 2.2 Teacher Welfare Improvement

According to Nurcholis in [12] teacher welfare is governance material and spiritual social life and livelihood that is encompassed by a sense of safety, decency and inner and outer peace that makes it possible for every citizen to conduct business fulfillment of physical, spiritual, and social needs as best as possible good for the family and society by upholding the rights human rights and Pancasila. Indicators of teacher welfare according to Rida et al. in [12] namely earning income above the necessities of life minimum and social welfare guarantees, get promotions and awards according to tasks and work performance, as well as obtaining protection in producing duties and property rights intellectual.

Several studies regarding welfare improvement programs teachers, one of which is by Edy Putra Kelana in 2021 [13]. Study This shows that the level of teacher welfare is very high effect on the quality of education illustrated in the low level of teacher welfare causes low motivation teachers in teaching and teacher discipline. Other research about the improvement of teacher welfare has been carried out by Mohammad Zulkiffi et al. [12] regarding work motivation and certification as antecedents teacher welfare and teacher performance and welfare as antecedents performance. The results of this study indicate that work motivation and certification plays an important role in efforts to increase welfare and teacher performance. Related research was also conducted by Maretha Riana Ramdhani, et al. [14] about the impact of teacher certification on behavior social and economic. The results of the research show that giving allowances or incentives obtained from teacher certification cause changes in social and economic behavior among incentivized teachers with those who are not incentivized. The certification also matters on improving the welfare of these teachers.

## 2.3 Study Sustainability Learning Media

Teacher quality is the most fundamental thing that determines quality of education and students in the future [15]. Of course, it is affecting the Human Development Index (HDI). One of the solutions One way to fix this is by providing continuing study learning services, such as the Zenius and Quipper School platforms. The Zenius application, which has been around since 2008, provides services access to education in the presented Indonesian language video format online-based website (zenius.net), or offline with DVD media. Quipper School is a service-based learning applications based on open source or free and can be used as learning media between educators and students in doing interactions like teacher and student.

Several previous studies related to platform development the continuation of Zenius' studies, one of which was carried out by Nisya Sintawana on 2020. This research discusses the influence of learning media online e-learning based on the Zenius application on student learning outcomes SENIOR HIGH SCHOOL. The result of this research is that the Zenius application is not very good effect on the learning outcomes of respondents (students). This can be caused several things, namely the absence of a direct discussion system for all users and majors consulting system to continue their studies to higher education. Other research related to this development was carried out by Sandra Ayu Satyawati and Dhany Efitia Sari in 2018, regarding effectiveness use of Quipper School e-learning as a media-based learning digital. The results of the research show that there are differences significantly to students' understanding after using the service. The results of this study are in line with the results of research conducted by Dedy Aswan in 2018, regarding the effect of using e-learning media Quipper School on results in mathematics. Results research shows that the use of Quipper School e-learning media in mathematics, especially statistics material makes students happy so that they are more interested in learning and make it easier for students to understand the subject matter. So that it can be considered effective for learning continuation of studies to higher education.

## 3 Method

### 3.1 Development Model

Developers use a startup development phases system [8]. The *stages of startup development phases* consist of 6 main stages, which will be described as follows:

- A. Ideating, at this stage the process of identifying market needs and identifying existing solutions and product market fit in the early stages is carried out to find a *market need analyst* process that can be used in the formulation of business ideas and at this stage is expected to produce an operational design seminar that will be used in business planning, this stage is carried out in the first month of program implementation [9].
- B. Concepting, at this stage the product will be updated in accordance with market conditions and the existing product will be developed and can produce an initial stage MVP product that will be carried out by a market fit product [10] and from these results a marketing strategy planning process will be carried out. Marketing strategy

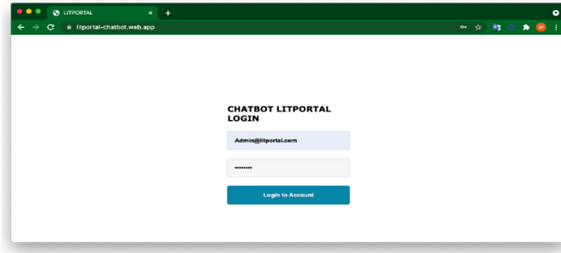
is carried out using the method of 9 core elements marketing strategy [11]. The marketing strategy used consists of 3 large stages starting from explore consisting of segmenting, targeting, and positioning, with the second stage being engage by utilizing sales actions, marketing mix, and product and market differentiation [12]. In the third stage of the marketing strategy used, namely the execute stage where at this stage the optimization of brand, service, and process [13], this stage is carried out in the first month of program implementation.

- C. Committing, is the third stage in the development of business implementation, the formation of a professional team commitment will be carried out, and at this stage the product will be prepared to be able to scale up the product, this stage is expected to produce a marketing team, publication team, sustainable business partnerships, social media, and exhibitions in preparation for promotion and further market validation of the product [14]. At this stage, the development of the digital marketing team will be carried out by forming a digital-based marketing team consisting of several divisions such as content marketing managers, inbound marketing managers, search engine marketers, SEO Specialists, and social media managers [15]. It is hoped that the formation of this marketing team can help prepare for product scale up at various stages next.
- D. In the fourth stage, namely validating, this stage is a stage of business development that has increased, with production carried out on the scale of market demand, validation of final-stage market fit products, and early stage commercialization carried out, with the hope of producing massive production outputs, validation of final stage product market fit, product sales, and feasibility study documents can be produced and digital product certified standardized from international product certification bodies [16] can be carried out in the 3–6 months of program implementation.
- E. Scaling, at this stage is the stage after large-scale and rapid business growth has been carried out, at this stage a small-scale market size marketing process is carried out, and product updates according to user input are carried out, at this stage further production is carried out according to the market [17], marketing expansion, and product promotional videos will be carried out at this stage which will be carried out in months 6–8.
- F. Establishing, at this stage the expansion of the market will be carried out and target the target of obtaining pre-seed funding investment to seed funding, at this stage an evaluation of business development with a business incubator is carried out [18] and also the publication of articles and the preparation of final reports.

### 3.2 Data Collector Instruments

The data collection instrument is taken from an assessment questionnaire by material experts and media experts. Referring to the Likert Scale, there is a score range of 1–5 for assessment at the time of the validation stage.

- a. Score 5, if the learning medium is very appropriate, very appropriate, and very easy.
- b. Score 4, if the learning media is appropriate, appropriate, and easy.
- c. Score 3, if the learning media is not right, not suitable, and not easy.
- d. Score 2, if the learning media is inappropriate, inappropriate, and not easy.



**Fig. 1.** Display login

- e. Score 1, if the learning media is very inappropriate, very inappropriate, and very not easy.

## 4 Results and Discussion

The following are findings and discussions that comprehensively cover the essence of the current study in response to two research problems, namely (1) improving facilities for upgrading teacher quality through curriculum and self-development through technology and integrated with chatbot application features in the form of special teacher training focusing on critical analytical thinking and (2) increasing the output of index development moments.

### 4.1 Chatbot App Features

Based on the development of chatbot applications carried out to solve problems in this study, the following is the appearance of the developed application (Fig. 1).

#### A. Login

On this page, teachers can log in to the account as an admin and as a speaker who will input in the form of material and quiz questions that are run by each user who has completed learning (Fig. 2).

#### B. Display of Material Input by Admin/Teacher

The display of input material consists of several options for the type of material, type of media, duration, time (day to day), material content and the option of whether or not there is a quiz. The type of material provided there is material for science and technology. The types of media provided are in the form of Powerpoint, text (PDF), and video. After uploading the material, the admin can review it again with the “View Material” option (Fig. 3).

#### C. Chatbot Display

The following is what it looks like when the admin Chatbot interacts with users i.e. students who will access learning.

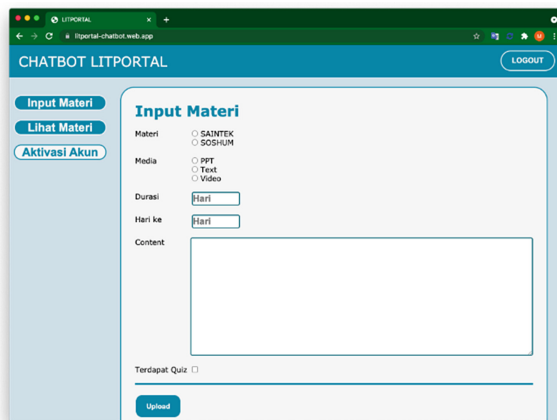


Fig. 2. Display of material input by admin/teacher

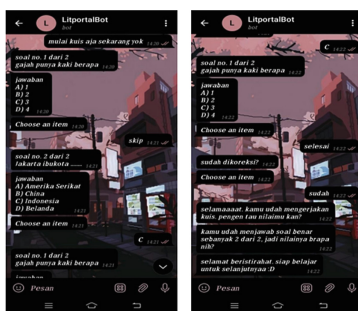


Fig. 3. Chatbot display

## 4.2 Expert Validation

Validation by material experts and media experts is carried out to find out the feasibility of the product that has been developed. Validation results are measured from quantitative and qualitative aspects. Material expert assessment is measured from 2 indicators, namely indicators of usefulness and presentation of the material. Meanwhile, the assessment of media experts is measured from 2 indicators, namely indicators of ease of access and the presentation of appearance or design (Tables 1 and 2).

## 4.3 Usability Testing Products

Product usability is one of the most important things when developing media. The use of media that is right on the target of the research objectives is a benchmark for research results. The following is a table of percentage recapitulation of validation results based on indicators of usability, presentation of material, ease of access, and presentation of charts (Table 3).

**Table 1.** Material Expert Validation Results

No.	Indicators	Statement	Score				
			5	4	3	2	1
1	Uses	a. Compliance with graduate learning outcomes standards	✓				
		b. Learning activities using media can improve the competence of students		✓			
		c. The use of learning media can provide opportunities for students to practice independently	✓				
		d. Learning media can support learning activities	✓				
		e. Learning media is easily accessible	✓				
2	Presentation of the material	a. Conformity of the material with learning objectives	✓				
		b. Conformity of contents with menus and needs		✓			
		c. Compatibility of learning media with material	✓				
		d. The language used in the learning media is appropriate	✓				
		e. The language used in learning media is easy to understand	✓				

Based on the percentage of validation results above, it can be seen that learning chatbots are declared feasible to use on a wider scale. The assessment refers to the Likert scale guidelines. Here are the assessment guidelines of the Likert scale.

- a. Score 5, if the learning medium is very appropriate, very appropriate, and very easy.
- b. Score 4, if the learning media is appropriate, appropriate, and easy.
- c. Score 3, if the learning media is not right, not suitable, and not easy.
- d. Score 2, if the learning media is inappropriate, inappropriate, and not easy.
- e. Score 1, if the learning media is very inappropriate, very inappropriate, and very not easy.

**Comparison with the Results of Previous Studies**

The results of previous research by Rosyida (2021) explained that *teaching factories* can increase the effectiveness of learning in the classroom, especially at the VOCATIONAL



**Table 2.** Media Expert Validation Results

No.	Indicators	Statement	Score				
			5	4	3	2	1
1	Ease	a. Ease of menu access	✓				
		b. Ease of entering data		✓			
		c. Ease of editing data	✓				
		d. Ease of operation	✓				
2	Serving	a. Suitability of writing	✓				
		b. Color and typeface suitability		✓			
		c. Suitability of the image	✓				
		d. Accuracy of menu arrangement	✓				
		e. Linkages between menus	✓				
		f. Suitability of <i>icon</i> function	✓				

**Table 3.** Percentage recapitulation of validation results

No.	Indicators	Material Expert Question Items Total Score	Media Expert Question Items Total Score
1.	Uses	24	-
2.	Presentation of the material	24	-
3.	Ease	-	19
4.	Presentation of charts	-	37
<b>Sum (<math>\Sigma x</math>)</b>		<b>48</b>	<b>56</b>
<b>Percentage (<math>(\Sigma x/\Sigma i \times 100\%)</math>)</b>		<b>96%</b>	<b>93%</b>
<b>Information</b>		<b>Very Valid/ Very Worthy</b>	<b>Very Valid/Very Worthy</b>

level. Meanwhile, the results of previous research [7] explained that sustainability learning using chatbots is considered to be able to facilitate the learning process quickly and precisely.

The results of this study are in accordance with the literature that explains that the application of the teaching factory learning model makes students independent, not relying on others in doing the tasks and problems faced. Creative attitude, which is indicated by the behavior of thinking and doing things to produce and develop ways to produce something different from existing products or services. The attitude of daring to take risks is shown by students' skills to do challenging tasks, as well as daring to take work risks both internally and externally. The development of the quality of teachers in

utilizing technology is also developing. This can then increase the *output of the moment index development*.

## 5 Conclusions and Advice

Commercialization of chatbots as a medium for learning sustainability with digital education teaching factories can improve the quality of teachers in utilizing technology, so that there is an increase in *the output of index development moments*. The suggestion for further research is the development towards the development of a study sustainability analysis with sustainable environmental learning.

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