

Software Development of Speed Typing Counter Application as a Typing Lesson Supporting Tool

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Abstract:

This research aims to design and create media applications that will be used to train the speed and accuracy of typing in the classroom. Lack of instructional media typing speed appropriate to the circumstances in the classroom was the background of this research. The study began with the observation phase, then followed by system design and coding. An application as the research results has main features: the study materials, practice typing, and data management, which each function is executed by the user level use. Implementation of the user level is intended to secure the data from unauthorized third parties so that only students and teachers can see the results of learning. Furthermore, the application also gives teachers the opportunity to participate in learning, a way to create and change the questions used for the exercise. As a typing progress report, the application can also display the results in various format such as speed tables, accuracy tables, speed graph, and chart accuracy.

Keywords: typing learning media, typing learning, typing speed

DOI: <http://dx.doi.org/10.20961/ijie.v1i1.8404>

Introduction

Vocational High School (SMK) is one of education that provides education with the goal of forming graduates who are able to plunge into the world of work. Programs Administrative (AP) is one of the majors in vocational education. This department aims to create graduates who are competent in the field of administration. Thus, in the teaching and learning process not out of the realm of communication protocols, document processing, the introduction and use of office equipment, filing, financial administration, and other competencies needed for graduates of this department.

Processing of documents is extremely significant in the company. In a study conducted by Terry (1984) in one of the private companies in America gain the result that typing has a percentage of 24% of the total jobs in the office. The percentage of typing to explain the high demand for fast typing skills in the workplace. So students need to practice typing to balance the needs of work.

Fast typing skills will provide a very significant benefit for people who work with computers. With the ability to type fast, someone can focus on the text to be typed and reduce its attention on the keyboard, so it can minimize the estimated time required to finish the document. This capability not only focused on speed without seeing results, but also on the accuracy and neatness of the typing results. from this background that makes the curriculum in vocational giving attention to the typing lessons.

Calculation of the speed of typing, using the standard typing speed with the term "wpm" or word per minute. As for how to calculate the speed, McPherson (1995) explains that the number of letters, punctuation, and spaces generated is divided into 5 (five) so that every single word consists of a maximum of 5 characters. Total words produced divided by the number of minutes used for typing, the result is called by wpm. In addition, the amount of typing accuracy was also assessed with the formulation wpm number minus the number of wrong words. The typing speed limit to be exceeded can be adjusted from individual agency policies. However, the school expects the final results of the learning process, students are able to type at a speed of 150 EPM (characters per minute), or around 30 wpm.

The problems that have been found by the researchers are monitoring the progress of students' ability to learn typing is not optimal. This is because there are no media in accordance with the conditions of learning which make them difficult to document the student's ability. Whereas the purpose of this document is as a media to monitor the development of students' skills during typing speed learning. With the development of the document, the teacher can evaluate if there is a progress or decline of exercise each student, so the teacher will be able to take actions to be carried out by teachers so that all students can follow the lessons.

Researchers in the observation process at typing lessons, data showed that in every class there are 30 students. The average time is taken by the teacher about 5 minutes to give the assignment sheet, between 10 to 20 minutes for the students typed text, and 20 minutes to check the typing speed and accuracy. The amount of time will be equivalent to half of the total hours of lessons each week. Though learning to type the first few chapters of subjects that must be studied and understood by students. Due to limited time, teachers are not able to calculate the speed and analyze the results of student exercises.

On the other hand, students require constant training and evaluation, in order to obtain skills that are needed in the workplace (Sadiman et al., 2008). However, due to limited time and lack of development of the document, making the teacher have difficulty in measuring the speed and analyze the results of typing practice. As a result, the teacher is difficult to determine students are skilled or not to type. Therefore, we need a software that can calculate the speed of typing and be evaluating the results of the exercise students within a certain time.

Survey of Typing Learning Media

Making an application for typing lesson relates to the use of computers in the learning process. Because the main media used was a computer, so the supporting medium is a software application, or often called Computer Assisted Instruction (CAI). CAI is an application program that is designed specifically for learning and is based on programmed instruction of the designer in collaboration with the education program (Marisa et al., 2014).

Related to learning software typing speed, Asih (2013) conducted a study with Rapid Typing applications utilize to improve their typing skills. The result is a significant improvement on the typing skills of students,

both in terms of speed and accuracy. But the research does not mention that the application has content suitable for learning. This means that the application is only used for training and materials that students need not exist. The study also did not mention that the documentation of the application during the training process, there is only the assessment at the beginning and at the end. Yet according to Gronlund and Linn (1990) conducted a procedural vote and not only through the test.

Development of the media to practice typing ever done by Susanto, et al. (2006) who makes an application to train and test the typing speed and accuracy, with a scoring system based on the fuzzy system. The results of this study explain that the value gained from the experiment does not compare with the absolute value but also compared with other users who do training typing with the same application. So the user can know the level where he is compared to another user. But their research did not explain did application is made can be used as a tool to train an ongoing basis or just to make an assessment.

Furthermore, observations on the applications that have been used in the classroom is an application, Typing Master. Typing Master application that is used is the free version, so the function of exercise do not provide enough service. In the user guide, this application is focused on the practice of typing speed. However, because it uses a free app that features learning and evaluation are limited, while the language factor making it difficult understands the material by students. In additional, users on this application (paid or free) are not protected, so anyone that are using the application can change the user workout data. The observation was checked the online training applications typingtraining.com. But because most of the internet connections at the school in Indonesia is running slow, it is felt will become difficult to maintain in the learning process.

Of the overall observation, features applications that need to be updated include: (1) Easily accessible, (2) The security of data for each user (3) Has the subject matter that is easy to understand by students, (4) Features exercises planned yet simple, (5) Facility to evaluate the process of typing practice both by students and teachers, and (6) Make it easy for teachers to play a role in training students.

Design System

Design

At the design stage of the application, there are some things that are planned include the functionality and developing. The design outlines some functionality and display functions implemented in software applications. Some important points designing functionality include the following: (1) the software will be accessible to the local network (one class) by using a centralized database, (2) there are two levels of software users are administrators and students, (3) The function of the software is divided into three main menus: materi (material), menu, and data processing.

In the design of developing described some of the tools and materials used to develop software applications. The tools used are divided into two forms of software and hardware. Some of the hardware used is Accer Ashpire notebook with the specification of 4GB of RAM, 700 GB hard drive, Intel Core i5-3210M CPU@2.50 G.Hz. While the software to be used in progression is Windows 7 Professional as the Operating System, Delphi 7 as programming language, Alpha Skin as supporting software to see Delphi 7 Quick Report as report maker, Microsoft Access as a database maker, and Inno Setup as an installer maker

Modeling

In the modeling stage, were made several drafts of the software. The draft created include use-case, flowcharts, data flow diagram (DFD), entity relationship diagram (ERD), database creation and design of the application display.

Use-case diagrams are used to describe the sharing permissions on each user (Whitten et al., 2004). Shown in Figure 1, the admin user rights more dominating than the student user. This is due to, the user types student in the application may only register an account, try exercise, change the display settings, and see the results, while administrators have more privileges.

Flowcharts aim to make it easier for developers to determine the work process software. Along with use-case, flowchart used as a divisor workflow software for each user.

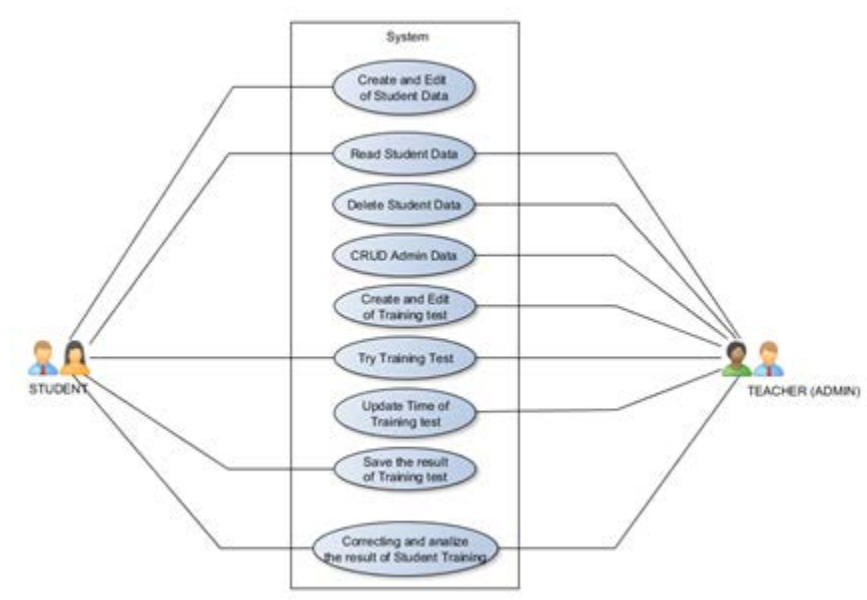


Figure 1. Usecase Diagram

The Data Flow Diagram (DFD) is used to describe the process of input, the data processing and the outcome (Dennis, et al., 2012). In the design stage, DFD is divided into three levels, namely the context diagram (DFD level 0), DFD level 1 and level 2 DFD context diagram depicted in Figure 2, illustrates a simple manner any data entered by the user admin and students, as well as data what they earn.

In the DFD level 1, the context diagram is described in several major processes that illustrate simple entry and exit data on multiple processes. Figure DFD Level 1 that have been being made viewable in Figure 3. The DFD level 2 is a more detailed elaboration of every process described in DFD Level 1. The purpose of the translation process at every level DFD is to make it easier to understand the processes that are running in software, So it will be easier for developers in determining what data to be input and output of a process, and how they were processed.

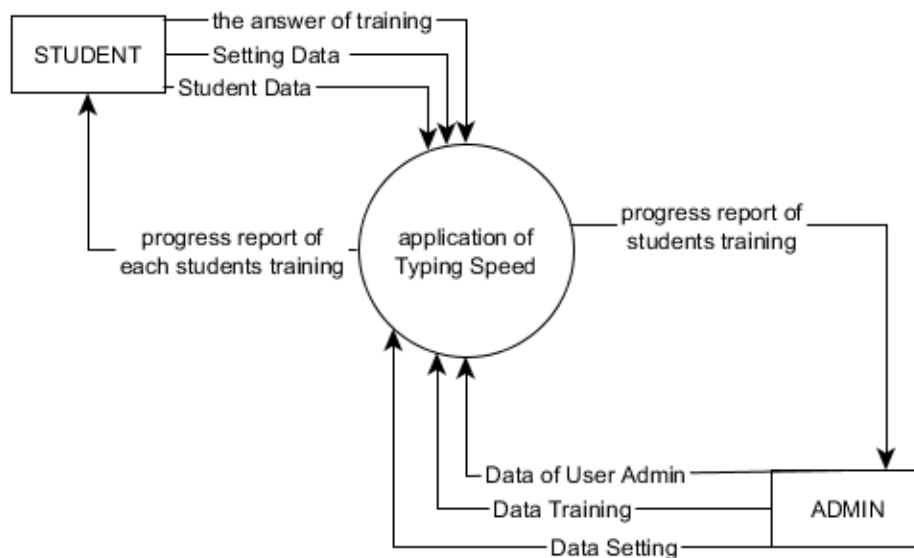


Figure 2. Context Diagram

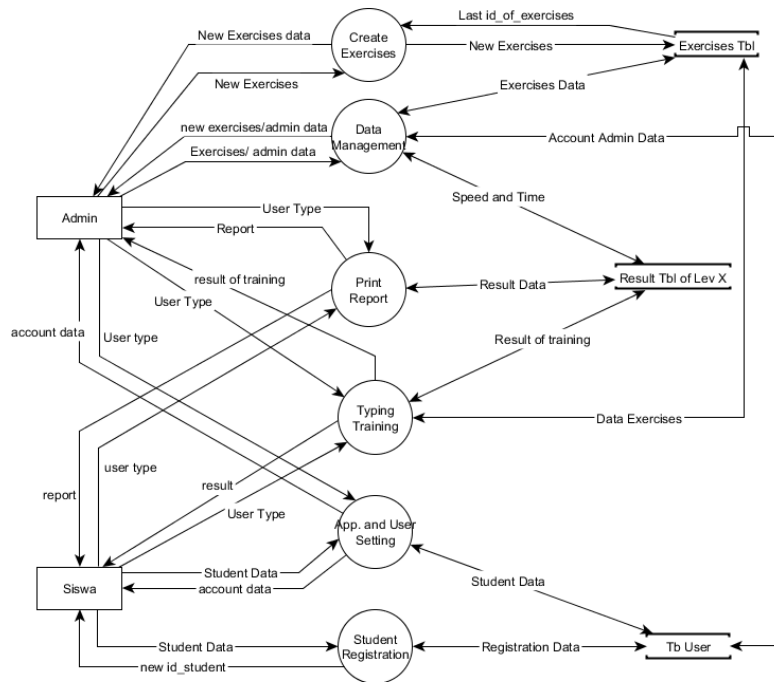


Figure 3. DFD Level 1

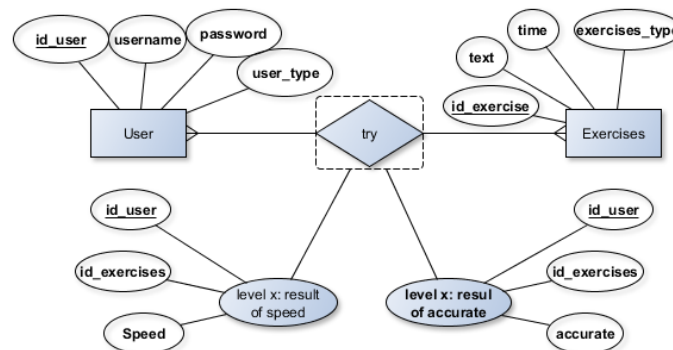


Figure 4. Entity Relationship Diagram

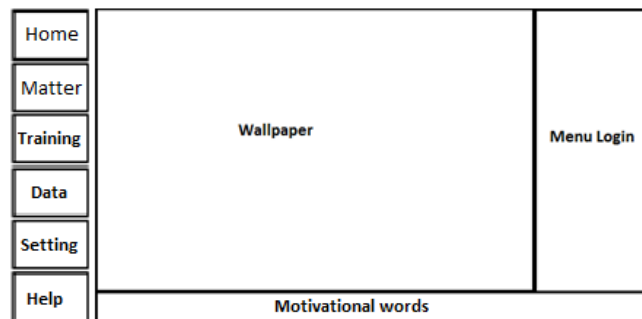


Figure 5. Home Display Design

After the creation of DFD is completed, the next stage is the manufacturing entity relationship diagram (ERD). ERD is used as a model diagram illustrating the logical relationship and interaction between system entities (Shelly & Rosenblatt, 2012). The end result of manufacture ERD is as shown in Figure 4.

After the ERD completed the next step is creating a database by using a software Ms. Access. The function of the database in the software is to store important information on software (Pressman, 2001). As a result of the making is the formation of a database file with the extension .mdb file.

The last stage is the design software display. At this stage, the draft generated a user interface that will be used. The draft produced include: Display the main menu, Home, Material, Practice, Problems, Data, Reports, Settings, Help. An example of a design that is as in Figure 5.

Implementation and Coding

The development phase (construction) is the stage of implementation of all the design that is at the stage of design modeling. At this stage, the implementation of design and coding uses Delphi 7 programming language software and additional software that is Alpha Skin. Sample results from this process are Figure 6 which is the Home view of the typing speed applications.

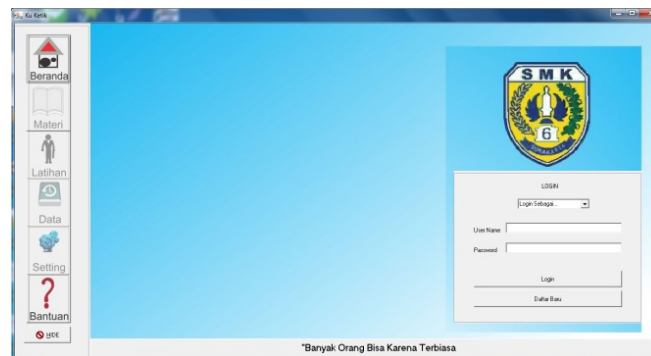


Figure 6. Home Display

Results and Discussion

The results of the implementation process, besides the Home view that has a login feature, there are several other menus contained on this application. Shown in Figure 6, on the left side of the picture there are six menu display applications, namely Home, Content, Exercise, Data, Settings, and Help. Of the six on the menu, there is three main menu of the flagship of this application is the Matter menu, Exercise, and Data. Matter menu is a menu that contains simple explanations related to the problem of typing, for example is about the functions of typing and typing basics. In a simple menu display material contained in Figure 7.

Training menu is a menu whose contents are focused on training type. Exercises menu, as exists in Figure 8, is divided into five parts, namely basic training, exercises, about knowledge, articles, and other options. On the other options, there are functions to create questions, try artificial matter, and making up, for more details Additional options section is shown in Figure 9. As for the display and try to exercise, there are two types of views, which can match the display use and display without matching, for more details see the difference between Figures 10 and 11.

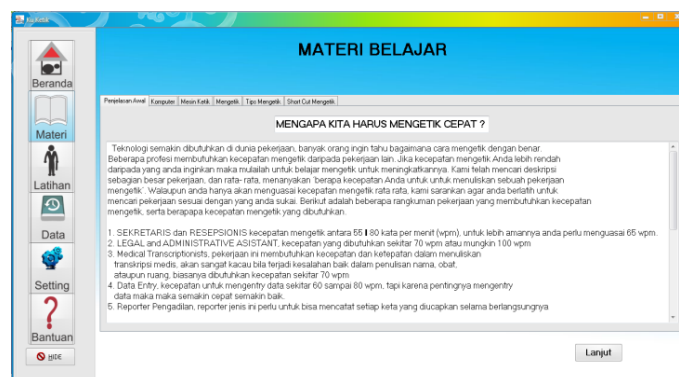


Figure 7. Material Menu

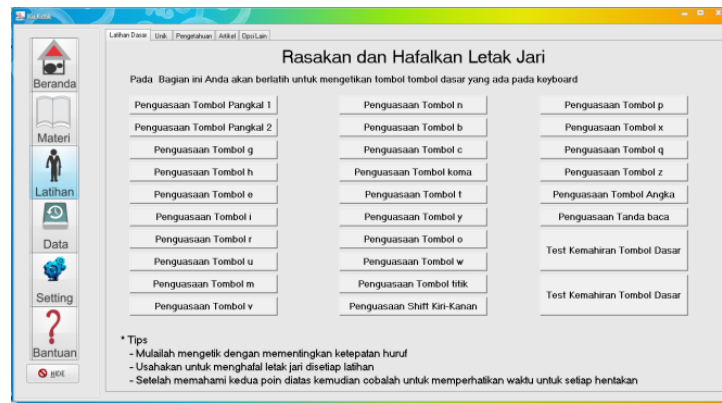


Figure 8. Training Menu

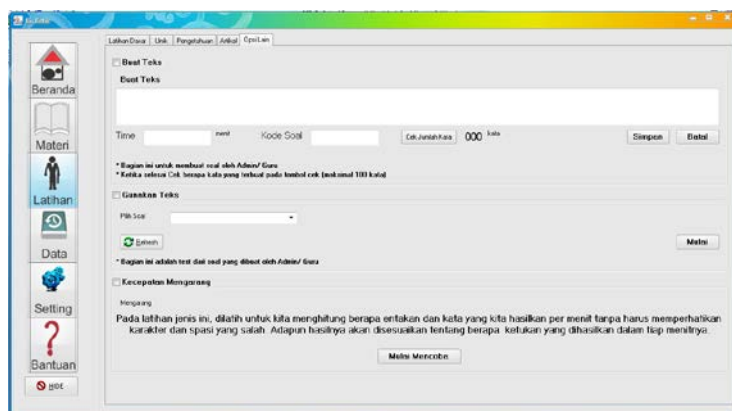


Figure 9. Other Options

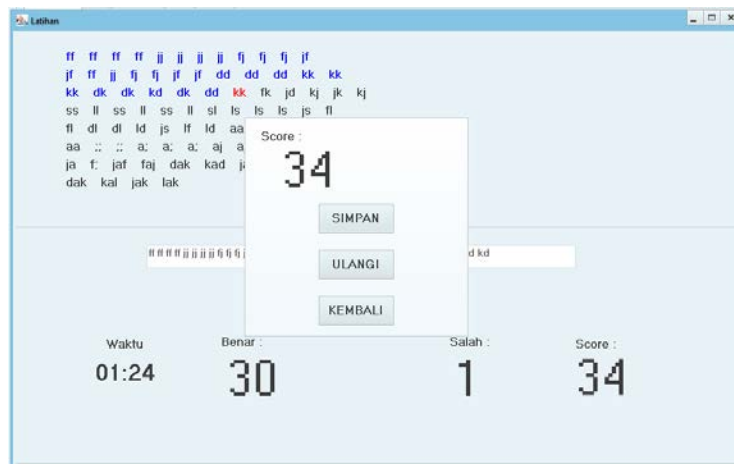


Figure 10. Training With Matching

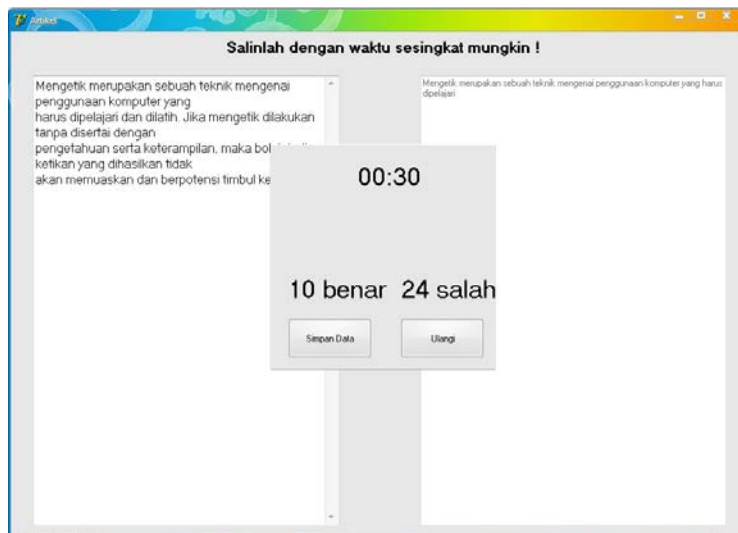


Figure 11. Training Without Matching

Each user has different permissions on each menu, for example in Exercise and Data menu. Exercises menu, which was given the right to store the value of only the students, but only administrators who have the authority to make the matter. On the Data menu, students can display the results of his training, but the admin can do three things: (1) look at student data (Fig 12 and 13), (2) admin data management (Fig 14), and (3) training data management (Fig 15).

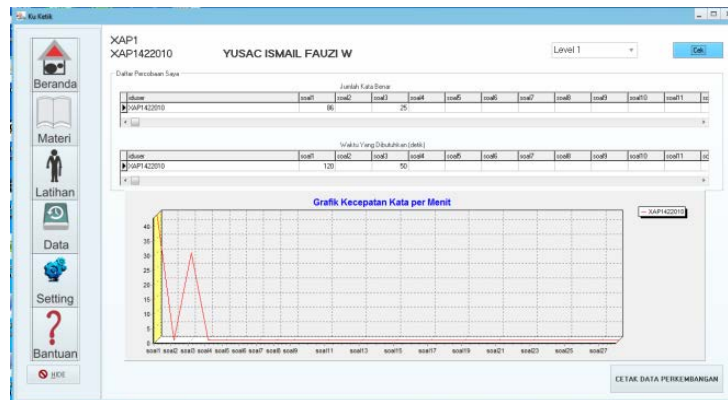


Figure 12. Student Data

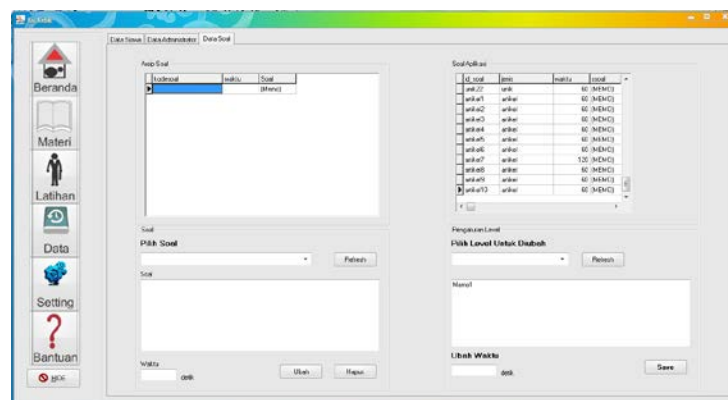


Figure 15. Training Data Management

Conclusions and Recommendations

After the test phase, the application speed type has advantages such as (1) easy to understand and simple in its use, (2) application can be used simultaneously within a local network, (3) The application is built using the concept of levels of users, so security guaranteed data (4) Exercise created per level that can be tested in accordance with requirements (5) training in addition to applying the principles of psychomotor, also tried to apply affective aspect through moral message in question (6) Storage data is centralized on a single computer, (7) Admin can see the cumulative results of the exercise students per class, (8) The form of the report can be printed and simple, so that the results are easy to read, (9) each user can set their own application views

The advice can be given to further development of this software include (1) database and software were made online so that access can be carried out all over the place, (2) to create another user level (teacher), so that the function of teachers and admin can be distinguished, (3) necessary development of this application in order to motivate and improve student's interest, and (4) application display can be modified using a theme so that is more attractive.

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