Prototype Development Model Application Visualization Jarimatika Simple and Interest Based Website for Early Childhood Education

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***Abstrak*-**Suatu proses yang menghasilkan prototype disebut prototyping. Langkah pengembangan prototype: mengidentifikasikan, mengembangkan, menentukan Prototipe yang diterima, menggunakan, mengkodekan, menguji, menentukan system yang telah diterima user, menggunakan. Penelitian dilakukan pada anak-anak TK dan PAUD di Wilayah Dinas Dikspora Surakarta, tahun 2014 dan 2015, yang dibiayai Dikti, dan telah dihasilkan sebuah model aplikasi visualisasi jarimatika yang sederhana sebagai penyempurnaan penelitian yang dilakukan tahun 2012 di SD Kanisius Semanggi, Surakarta. Tujuan riset adalah mengembangkan model visualisasi jarimatika dengan rancangan model berbasis WEB. Proses pembelajaran matematika disekolah dikenalkan melalui metode jarimatika berbasis WEB. Dan melalui website diharapkan Pengembangan Prototipe Model Aplikasi Visualisasi Jarimatika Sederhana Dan Menarik Berbasis WebSite Bagi Pembelajaran Anak Usia Dini, diwujudkan menjadi hal yang bermanfaat bagi pembangunan bangsa, sebagai generasi penerus bangsa. Dari hasil penelitian dapat dipandang bahwa teknik jarimatika memang sangat penting untuk pembelajaran matematika khususnya anak usia dini, oleh sebab itu, pengembangan prototype model aplikasi visalisasi jarimatika adalah solusi yang dapat membantu anak-anak untuk belajar matematika, dan membawa dalam website adalah bagian dari pengembangan teknologi tepat guna, sehingga orang tua siswa khususnya dapat mempelajarinya melalui media online di internet, dan bukan hanya orang tua siwa dari 20 sampel di wilayah dinas Surakarta saja yang dapat belajar melainkan semua orang yang mau browsing dan mau belajar jarimatika melalui media internet secara online. Pengembangan menggunakan dasar aplikasi *Macromedia Flash* Professional 8 Portable Version, bahasa pemrograman Action Script dan database XML, rancangan tampilan memakai makromedia flash Prof 8 dan adophe firework, rancangan databasenya PhpMyAdmin dan Sequel Pro dan *output* Prototype Model Visualisasi Jarimatika.

***Kata kunci*:** Prototipe, Model,Visualisasi, Jarimatika, Website

***Abstract*-** A process that produces prototype called prototyping. Prototype development steps: identify, develop, define Prototype accepted, use, coding, testing, determine the system that has received the user, use. The study was conducted on children in kindergarten and early childhood Dikspora Surakarta Regional Office, 2014 and 2015, financed Higher Education, and has produced a model of visualization applications Jarimatika simple as a refinement of research conducted in 2012 in SD Canisius Semanggi, Surakarta. The purpose of research is to develop a model visualization Jarimatika with WEB-based model design. The process of learning mathematics in schools was introduced through a WEB-based Jarimatika method. And through the website are expected to Prototype Development Model Application Visualization Jarimatika Simple and Interest Based WebSite For Early Childhood Education, translate into something useful for the development of the nation, as the future generation. From the research results can be seen that the technique Jarimatika is very important for the study of mathematics, especially early childhood, therefore, the development of prototype model of application visalisasiJarimatika is a solution that can help children to learn mathematics, and bring in the website is part of the technology development appropriate, so that parents can specifically learn through your online media on the internet, and not just parents student of 20 samples in the region of Surakarta official who can learn but all those who want browsing and willing

to learn Jarimatika through internet media online. Basic application development using Macromedia Flash Professional 8 Portable Version, a programming language Action Script and XML database, the design view wear Makromedia flash Prof 8 and adophe firework, phpMyAdmin database design and Sequel Pro and output Prototype Model Visualization Jarimatika.

Keywords: Prototype, Model, Visualization, Jarimatika, Website

1. Introduction

The system development process is often used approach prototype (prototype), including development of prototype Model Application Visualization Jarimatika Simple And Interest Based WebSite For Learning in Early Childhood, for play and learning are part of children's learning in kindergartens and early childhood, and Jarimatika provided with techniques learned while play.

It is the basis why the development of this prototype is important is: the student activity kindergarten/early childhood learning arithmetic and mathematics is still low even most students still rowdy and not ready for learning, teacher activity kindergarten/early childhood in the management of learning arithmetic and mathematics is still lacking because teachers lecturing in class rather than use the props in learning, student learning outcomes kindergarten/early childhood learning arithmetic and mathematics is still relatively low, many students scored below the KKM 70 and the average grade only reached a score of 60.

Early childhood is the next generation, they are the spearhead of the nation, if they are in children right from an early age, they will be smart, creative and innovative, so that the country's development becomes smooth due to hold by children smarter Indonesia and the country becomes a developed country, so that authors take the title of the study: Prototype Development Model Application Visualization Jarimatika Simple and Interesting to Improve Early Childhood Education. By developing new models based on web is expected to be the basis for appropriate technologies for early childhood and kindergarten school children, as well as for the general public.

2. Research Method

The method used is the needs analysis and system design adopts the method of R & D that is written by Sugiyono and Research carried out by using an iterative and incremental development, where do troubleshooting or system weaknesses that are currently running. As for the plans for the system are as seen on Figure 1:
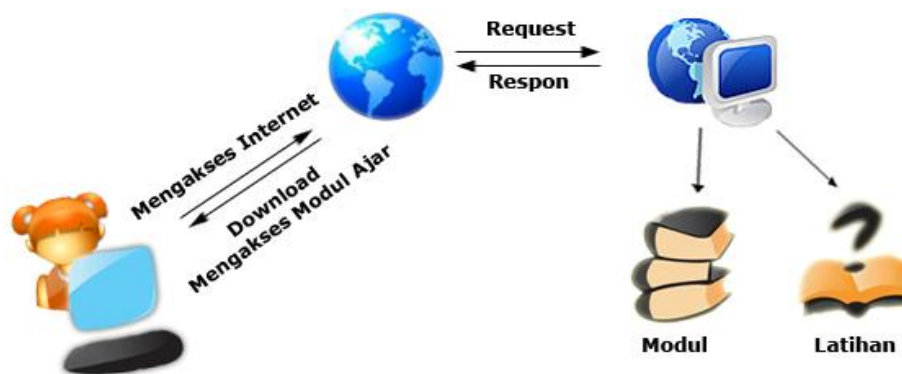

Fig. 1. Draft Development Systems Globally

The model of R & D steps in website development is drawn as. As for the plans for the system are as seen on Figure 2:
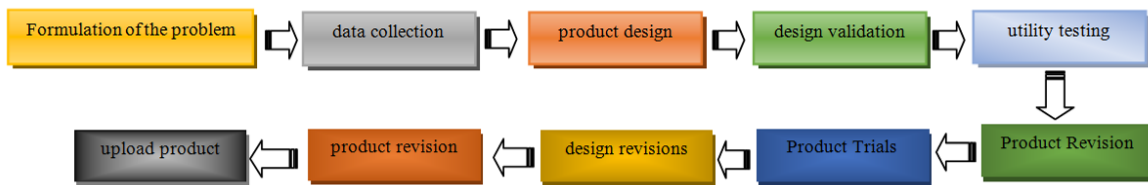

Fig. 2. Stages of Development Research Prototype Model Application Visualization Jarimatika Simple and Attractive to scaling up of the Early Childhood Learning Web Based

3. Result and Discussion

Jarimatika is counting process quick math with your fingers, where the ability to optimize the finger used to calculate with a very easy way. Excess Jarimatika is quick, tangible, practical, simple, safe and not prohibited to be used in the test, and is universal (everyone, anywhere, anytime can practice Jarimatika). Prototype Model application so developed is simple and attractive Jarimatika Visualization to Improve Early Childhood Education.

Prototype model visualization applications Jarimatika indispensable for early childhood as presented by parents and teachers in early childhood and kindergarten Surakarta when conducted field observations, and even many previous researchers who propose the importance of learning Jarimatika, as described in the table 1.

Matrix similarities and differences with the design study conducted by researchers with previous research, as for the plans for the system are as seen on Figure 3.
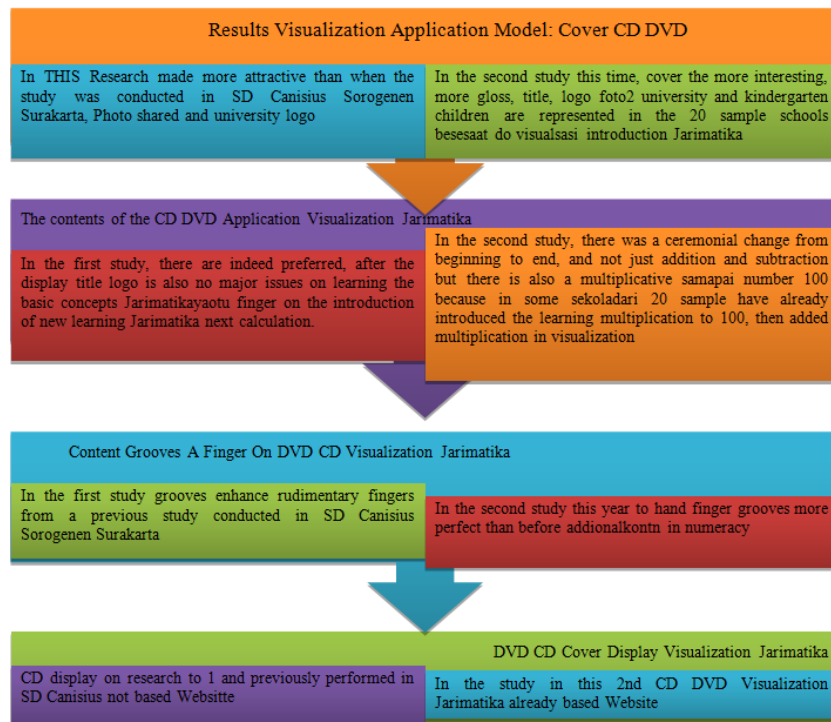

Figure. 3.Matrix similarities and differences with the design study conducted by researchers with previous research

Table 1. Table Matrix Difference Research

Researchers	Variable	Sampling	Measurement	Model analysis
Researchers	Kids playgroup and kindergarten in Surakarta	Emblem Jarimatika The introduction of the finger pattern of numbers 1-9 calculation multiplication division reduction the fingers	Testing and analysis systems implementation	Work processes and process improvement, Analysis System: Information Engineering, structure analysis, discovery prototyping, object oriented analysis,
Rohita, 2013	20 children Group B TK Bahr Ulum at Surabaya, consisting of 11 boys and 9 girls	Concepts addition, and subtraction	Problem test the ability to know the concept of addition and subtraction	Technical analysis of qualitative and quantitative descriptive data.
Elita, 2012	V grade student of SDN 24 Aie Angek Sijungjung	Formation of fingers multiplication numbers 1-9	Results of student test scores after learning Jarimatika	Quantitative visual and graphic
Karismasari, 2010	Class II Tegaldowo SD Negeri 2 Sragen Gemolong	Numbers counting arithmetic operations the finger	Test and documentation	Interactive descriptive analysis
Rahmi, 2010	IV graders MI Mambaululuum	Multiplication division reduction fingers emblem fingers	Hem test students who performed at three meetings Jarimatika	Learning mastery learning outcomes analysis
Suparno et al., 2012	Fourth grade students of SD Negeri Sragen Kaloran 2 Gemolong	Techniques Jarimatika multiplication operation	The results of the tests conducted after pembelajaraan Jarimatika	Comparative descriptive analysis techniques
Khothimah, 2008	Cinderejo Ngawen klaten MIM students	Count numbers arithmetic operation finger	Test student learning	Outcomes comparative descriptive analysis techniques

Based on the above matters, the analysis results for Development of Prototype Model Application Visualization Jarimatika Simple And Interest Based WebSite For Learning in Early Childhood in the form of a model design/drafting web-based learning to count and play for pupils early childhood and kindergarten, the form of the final model that contains the structure of the learning model visualization Jarimatika through watching a DVD visualization Jarimatika, which include: (1) Description of the fields of mathematics/math/science (theme, sub themes and names of activities to pay attention and play students (2) formulation of competencies (standards of competence, basic competence and indicator of learning outcomes, (3) the purpose of student learning (goal umun, objectives focus science process skills, and attitudes of science), (4) Net conceptual play activities, (5) Description of materials science

essential, (6) material learning (materials and equipment), (7) Scenario play activities (activities of teachers, children activities), and (8) the evaluation (individual and classical). Here is a sample workbook to teach math, reading and writing. As for the plans for the system are as seen on Figure 4.
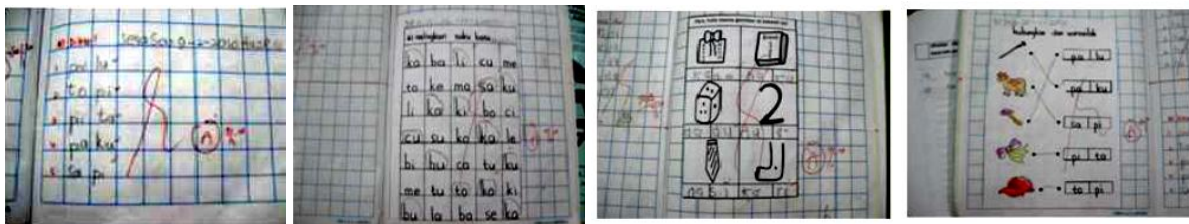

Fig. 4. Workbook to Develop numeracy ability to read and write Children

From the recognition of one classroom teachers early childhood, kindergarten A and TK B, ang as sample, teachers have difficulties in teaching math, reading and writing if parents do not help support by providing a way of teaching that is similar to what the teacher gave that with visualization and play. Teachers think this way is more effective than other ways. Efforts are being made to disseminate this way teachers already do. However, some parents do not want to listen to his son still does not experience an improvement in numeracy and literacy are. It can be concluded that the teacher only understands how to teach math, reading and writing with one method is to visualize and play.

Researchers and the school had a discussion about it and give a little explanation about numeracy and literacy of children in accordance with their development stage. Explanation of researchers was welcomed by the school authorities. Principals and teachers are willing to make changes in learning, especially for developing numeracy and literacy by involving a creative motor. The school is willing to try to create the feel of early childhood learning is playing while learning in the classroom. The invitation is directly delivered principals and teachers. Description of the data associated with numeracy and literacy starters PAUD, TK TK A and B more details are as follows: Data pre-study obtained by researchers in the first year of research conducted, which is seeking and collecting data about the learning process is ongoing and data numeracy and literacy beginning to be studied student-siawi 20 samples of early childhood education and kindergarten in the Department Dikspora City Suakarta. Data student's ability to numeracy and literacy are observed through the learning process done as much as each school 7 meetings. Through observations of researchers in the process of teaching the teachers in each lesson activities from 07.30 until 11.00. And the sequence of activities performed each day are as follows: 07.30 morning devotions, classroom activities 08.00, 10.15 breaks or eat together, play together at 10.30, then at 11.00 return. The activities of this class by teacher in classical. Teachers designing learning activities tailored to the theme, then choose activities based on the indicators listed in units of weekly activities (SKM). Selected activities of teachers, child labor is taken from the sheet already in the books worksheets from certain publishers and teachers sometimes find yourself on the other books. Motor activity in learning is still very minimal use in teaching numeracy and literacy, Medium teachers more dominant using paper and pencil to develop learning activities.

The percentage increase in numeracy and literacy school students 20 samples an average of 6.5% from the initial assessment and 11.38% when added the increase amounted to 17.89%. This means that the percentage of the increase beyond the set targets researchers and teachers at the pre-study amounting to 15%. Such improvements can be seen in the following graph, As for the plans for the system are as seen on Figure 5.
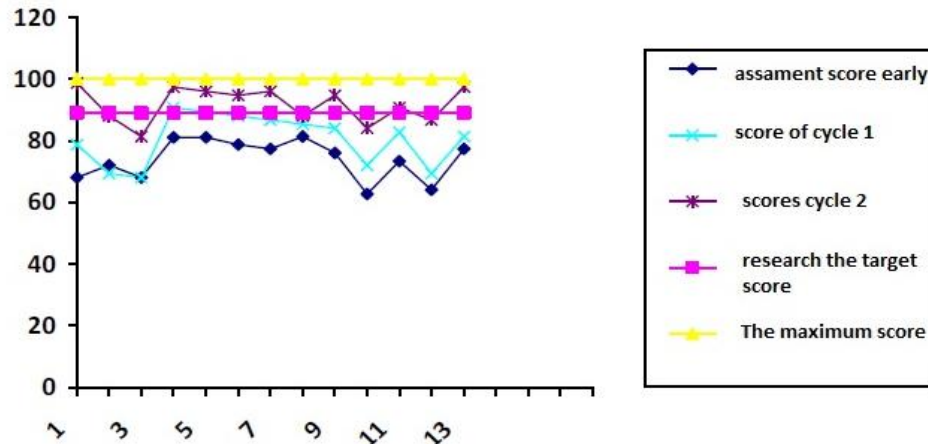
Figure 5. Upgrades count after learning visualization Jarimatika

Based on the results of data analysis of the percentage increase in numeracy in early childhood and kindergarten students in 20 Sample School early childhood and kindergarten in Dikspora Surakarta, 6.5% and 11.4%, when added then obtain the results of some 17.9%. These increases exceeded the target set of researchers and teachers who account for 15%. The increase was due to the following factors, among others; teachers managed to choose a variety of motor activities to creatively develop the ability berhitun, teachers give children the opportunity to express, teachers use a variety manage the classroom, the teacher set up the room, the teacher uses media visualization Jarimatika in the process pembelajaraan, teachers involve other aspects related to counting the form props, teachers reproduce play and bernyanyian in counting, the teacher becomes a model for children in counting, and many teachers provide reinforcement to the child.

While Website Prototype Development Model Application Visualization Jarimatika Simple And Interesting WebSite Share-Based Early Childhood Learning consists of two main pages are pages for users and pages for the administrator. Weather administrator pengupdatean useful to process the information. The page is intended for users aiming to display information about any and all information presented on the website. This website aims to ease the visualization Jarimatika mengacces prototype model is simple and attractive, which is viewed via the internet. The ERD model of application development can be drawn as follows, As for the plans for the system are as seen on Figure 6 and Cortex DFD Diagram Model-Based Application Development Website, As for the plans for the system are as seen on Figure 7.
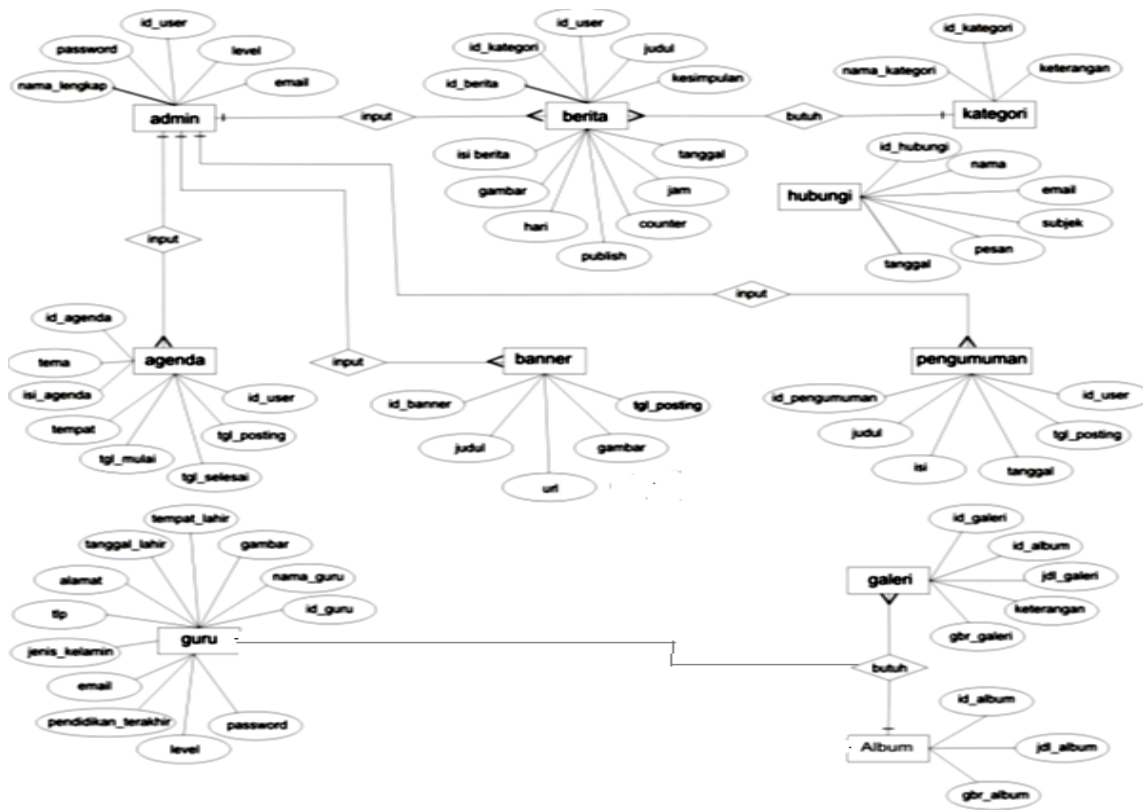
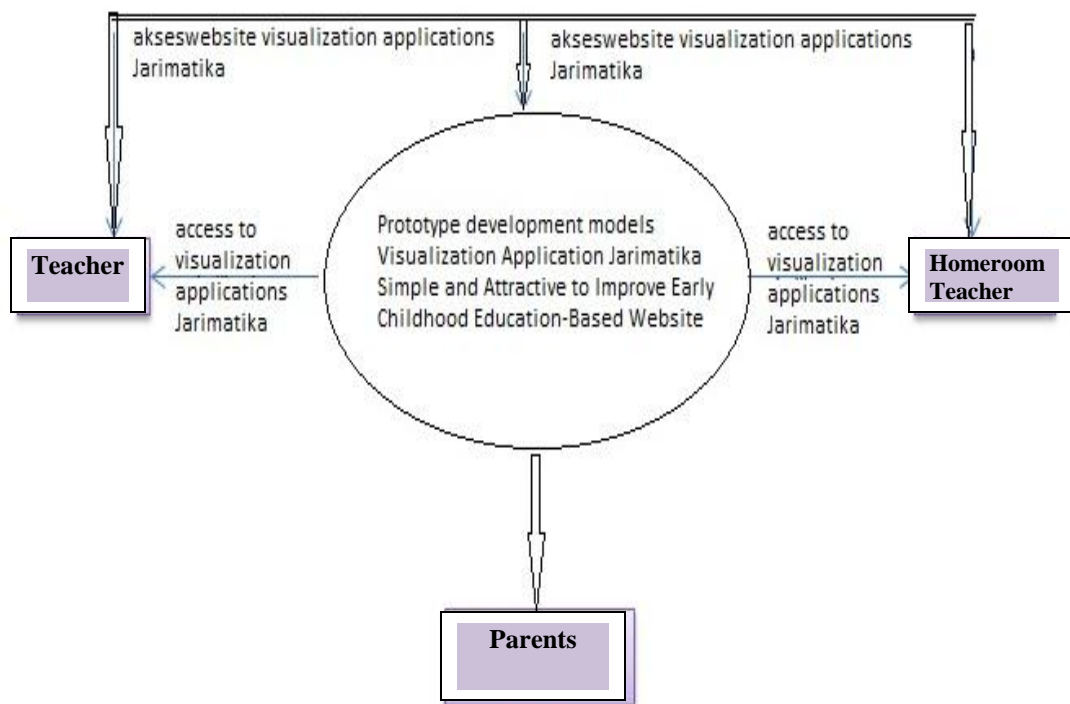Fig. 6. Entity Relationship Diagram Entity Relationship Diagram

Fig. 7. Cortex DFD Diagram Model-Based Application Development Website

The design of Model-Based Application Development Database Website

While the design of Model-Based Application Development Database Website, As for the plans for the system are as seen on Figure 8.
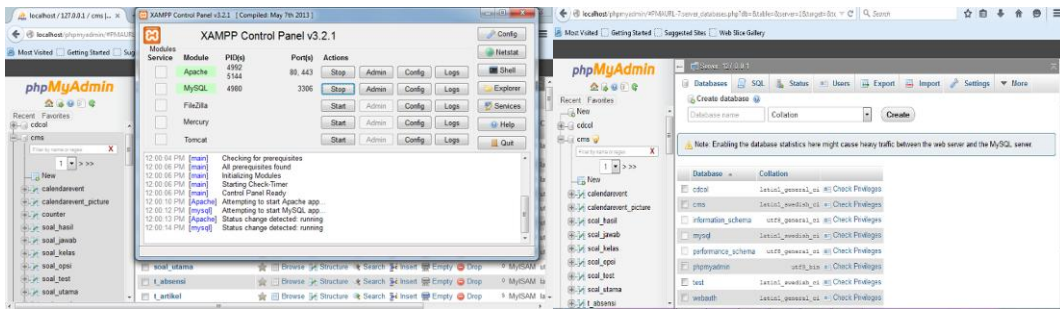

Fig. 8. Database Application Development Model-Based Website

Home Use Model-Based Application Development Website

While Home Use Model-Based Application Development Website, as for the plans for the system are as seen on Figure 9.
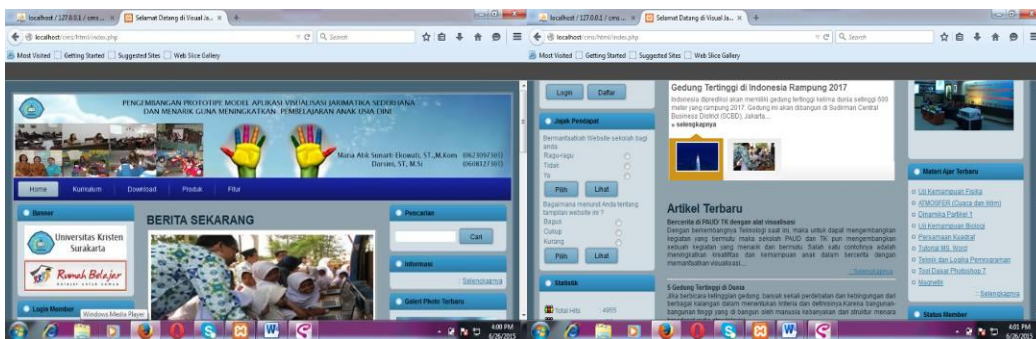

Fig. 9. Main Menu Next Page of Website

Revision Process, Render and Convert CD Application

Fig. 10. Tools and materials used in the Prototype Model Development Process Visualization Jarimatika Simple and attractive to Improve Early Childhood Education, and covert processes to CD DVD
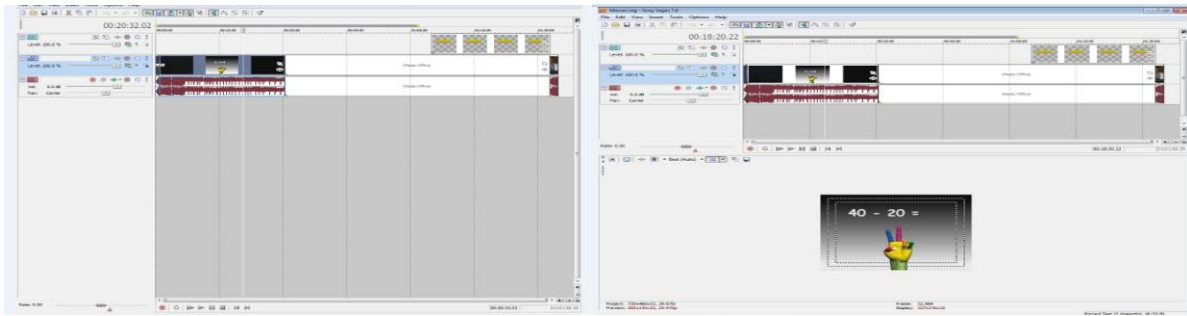
Fig. 11. Render Process in Development of Prototype Model Visualization Jarimatika Simple and attractive to Improve Early Childhood Education, and covert processes to CD DVD

While Revision Process, Render and Convert CD Application, as for the plans for the system are as seen on Figure 10 and as for the plans for the system are as seen on Figure 11.

4. Conclusion

From the existing research can be concluded as follows:

1. Through Application and use of the media websites on Prototype Development Model Application Visualization Jarimatika Simple And Interesting to Improve Early Childhood Learning it can deliver information how learning math through visualization Jarimatika media.

2. Submission of Information for Development Prototype Model Application Visualization Jarimatika Simple And Interesting to Improve Early Childhood Education-based Website will be more easily and quickly accessed anywhere and anytime without any time limit and place once a new system that utilizes the Internet to the media website.

3. With a media website that can be accessed via the internet, it is now the general public can provide suggestions for Prototype Development Model Application Visualization Jarimatika Simple And Interesting to Improve Early Childhood Education, to becoming better.

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