A Novel Approach to Make Presentation Using PowerPoint Without Projector in Local Area Network

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***Abstract*—**This research using a prototype method and results of this research tries to propose a new approach is to do a presentation material of powerpoint without the use of a projector. The proposed software is Powerplan (Powerpoint in LAN), that is expected to be an alternative to a projector so as to decrease the amount of electrical energy consumption due to the use of a projector as well as the cost of purchase and repair a damaged projector. The results of this research can be applied on a Local Area Network but without using an Internet connection.

Keywords— powerpoint; powerplan; offline; presentation; projector; LAN;

I. INTRODUCTION

Since being acquired by Microsoft from Forethought in 1987[1], the PowerPoint has undergone many developments. PowerPoint has now become the most widely presentation applications used worldwide. This is because the PowerPoint is a powerful tool in creating a presentation with a clear structure and has a strong visual impact[2].

PowerPoint excellence namely the use of the function of video, audio, and document hyperlinks, quite efficient in presenting the learning materials so that helped influence on student achievement, apart from the positive response of students to use PowerPoint[3,4]. Another advantage of the PowerPoint as compared with the conventional teaching is PowerPoint able to provide the beneficial effects on the retention of learning in a longer period of time or within a longer time period[5].

In addition to the teaching field, the field offices and the field of research in which the presentation using PowerPoint combined with the projector. The results show that by using PowerPoint allows to customize their expertise through the exchange of information and negotiation in conveying information through PowerPoint presentations are displayed[6]. While in the field of research, most researchers, or about 86% of researchers use PowerPoint to present their research results due to excess PowerPoint in terms of reporting to the form of tables and graphs[2].

The use of PowerPoint and a projector device is a combination that is used in the process of teaching and learning and presentation which was sufficient to bring significant benefits in terms of learning and motivation to learn[7, 8].

In terms of the efficiency it can be concluded that the dependency PowerPoint used with projector is high enough. This is understandable since the practical use of the device connection after the presentations can be directly implemented or just plug and play. However, this often creates problems when the projector equipment is not available so the presentation process certainly will not run optimally.

Another problem is the constraint damage to the projector or the condition of the dead pixel and the rainbow effect on the projector which often interfere with the display permanently. Besides the problems for example opaque projector display, shaded, or blur because the wear time or projector lamp life is up. Problems on the projector as this is usually quite a lot happening in areas with unstable electrical conditions or often experience sudden blackouts that occur repeatedly.

Hardware projector also has limitations in terms of visibility to the projector display. Required projector with a resolution greater if you want to reach an audience with considerable visibility. The viewing angle is also quite affecting because of the audience that was on the side with a narrow viewing angle of the display projector can't enjoy projector display properly.

Another thing that also needs to be seen is on the side of the space limitations of the presentation using a projector, since the projector range that is limited to a specific location or room, the necessary additional projectors in each room if you have an audience who are in a different location or room.

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This research wants to provide another alternative in the use of PowerPoint to make presentations but without the use of a projector. Given alternative is a software by the name Powerplan (**PowerP**oint in **Lan**) used within the scope of Local Area Network (LAN) without an Internet connection. Unlike similar presentation application that uses cloud-based, web-based, or internet connection [9–11]. Powerplan guarantee its use in a LAN with or without subnetting [12,13] this application will be able to work without using any internet connection.

II. Literature Review

Some of the reviews of scientific articles below are a sample picture of the use of multiple devices that are offline presentations, online or cloud-based applications and types of popular / most widely used. Scientific article below are represented by Collage as a media presentation offline, online KUMA or cloud-based and type of popular applications that are PowerPoint and Prezi[14,15].

A. Offline App

Collage is a software application designed for the needs of the class presentation that is destined for school teachers in developing countries. This is a result of an investigation which is quite deep in a teaching method that is practical in several schools in India, where it is believed that with a simple apparatus can display images and text books that can help in the learning process in addition to the chalkboard used in the interaction in the classroom[16].

This application has been through trials conducted on four suburban schools india for use in classroom presentations. Most educators using collage application showed good interest because by using this presentation means the students' learning ability through visual media showed an increased ability to learn increases. So the principle of collage work is to show the scanned image or text book but more interactive because teachers can make a mark on the image or short posts on the media during the presentation[16].

Development of information technology in recent years resulted in today's world it is common to use PowerPoint and similar applications in education. Similarly, in the educational process for students who have impaired vision in which the provision of material by the teacher just focus on lectures and oral explanations. This paper gives the results in the form of a software which is tested to students who have visual impairments. Through this software, it is possible to distribute all information both text and graphics material to students according to their respective needs. The result is that the students were able to increase their concentration in terms of listening to the explanation made by educators using experimental software[17].

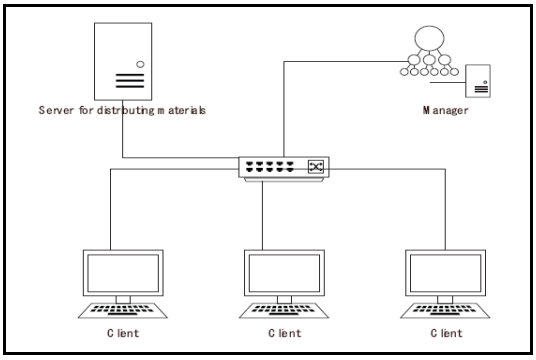

Fig 1. Overview of entire system components[17]

In Figure 1 shows that the software is made up of management tools used by the teacher, the client software to display material, as well as distribution services server that served to connect the connection between software and client management. Service distribution server is also used to distribute material data management to software that was installed on the computer teachers and to help mark the material focus areas and providing instruction to remove the material.

B. Online App or Cloud Based

When a teacher makes a resource containing sound recordings and video by using PowerPoint, it is an easiest way because it does not need to install additional software. But now there is a writing system for e-learning content with Universal Kumamoto name and Multipurpose Authoring (KUMA) system based on cloud computing. How to use this system is an instructor just need to upload a PowerPoint slide that contains the narrative to the web application server (CentOS 5.3), then the results will be presented in the form of streaming video media and slides PDF[18,19]. Below will be described briefly how to display the work of the system KUMA.

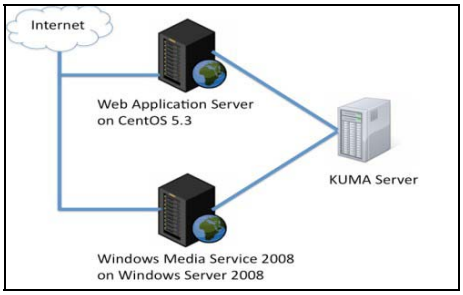

Fig. 2. KUMA System Architectures[19]

The system works in a way that is at the very beginning to collect a number of materials that will be used as video streaming, and then processed in the system by using Pulsed Power so that the system is called "Streaming Book on Pulsed Power Engineering", then publish to the internet so it can be used by students in the form of streaming book, this is already done at this stage of the tests on prototypes that run on blended learning Kumamoto University[19]. The working

process of the system in detail KUMA can be illustrated in the following figure below.

Fig. 3. Streaming Book Process using Pulsed Power Engineering[19]

C. Popular Presentation App

This study provides a questionnaire to students to know the advantages and disadvantages of using Prezi and PowerPoint, but do not make a comparison between the two because the number of students who know about Prezi only slightly so the results are less relevant[15]. However, students can give an opinion about the advantages and disadvantages of using Prezi and PowerPoint, where the result that students are using Prezi states that if making a presentation using Prezi nice because it is free and has the function of *zooming in* and *zooming out* more interesting than PowerPoint.

While the students were not using a device other than a PowerPoint presentation is due to some opinions below[15]:

- "I have never seen a presentation using Prezi, very interesting but I do not use it because I do not know how it works";
- "I'm not using Prezi because the whole room to learn there is no internet connection";
- "I use PowerPoint as more familiar, accessible and many who use";
- "I'm not going to use Prezi as low utilitarian value";
- "Prezi does not support the use of plugins for chemical formulas, physics, and mathematics, while PowerPoint have all functions of it";
- "I do not know the use of PowerPoint for other presentation programs";
- "PowerPoint presentation has met all my needs so I do not use other applications".

III. System Design

A. Control System

On Powerplan application, there is a server module and the client module, wherein after the server module is activated then the entire module client can connect using IP addresses through the same application and can also via a web browser. Built connection between the server and client also allows for display media animation animated PowerPoint eg flowchart or cursor movement media presentation.

In similar presentation applications, will use separate modules to make the data format of presentation, but in powerplan will use PowerPoint data format so that the presenter will continue to use PowerPoint application as usual. But in its development, powerplan will have its own file format, where there are facilities of various types convert presentation files (Microsoft, Apple, Open Office) into powerplan format. This must be done in order to run the application more flexible in the presentation file format to another, so when will do the presentation so that other file formats must first be converted into the format powerplan so as to facilitate the presentation process.

Their audio facilities in the presentations will be given access restrictions for a particular client or security aspect is activated as needed. So that the audio access given only to certain clients or to blocking the audio when the rowdy atmosphere in the presentation room.

B. System Architecture

The design of the proposed Powerplan system architecture can be seen in the Figure 4 below.

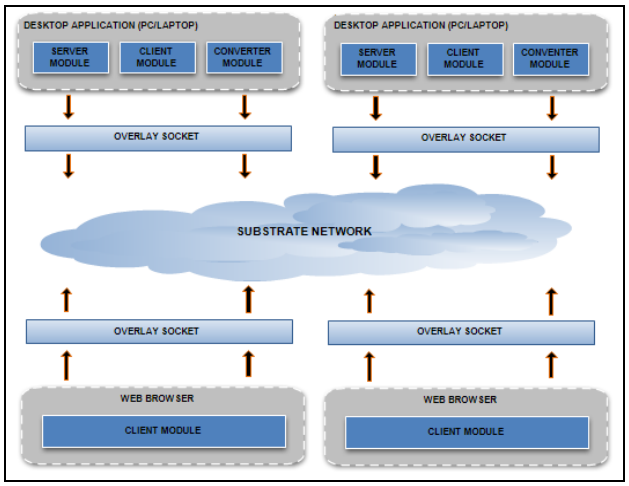

Fig. 4. System Architectures of Powerplan

As we can see in Figure 4 above, the network system of powerplan application connect a desktop PC or laptop applications that have installed the application. On the web browser client involves only the ethernet protocol that powerplan network system will work at layer 1 and layer 2 of the OSI Layer because it does not require an internet connection.

On the Application Server Desktop contained module, Client Modules and Converter Modules, however on a web browser client only contains the Client Module.

Modules on Application Server enables users to act as host for the presenter who provide presentation. While the client (desktop applications and web browsers) can submit a request to attend a presentation by making the connection via a web browser or application respectively.

Client modules contained in the application or the web client allows a user to be able to make the request to attend a presentation. On the Client Module also a feedback facility for further interaction between the client and the server (and if possible between the client and the client).

Converter modules in a desktop application allows for powerplan application can read the file format of a PowerPoint presentation for broadcast. Converter modules are expected in the future can be developed further in order to support other presentation file formats, such as open office presentation files or MacOS presentation files.

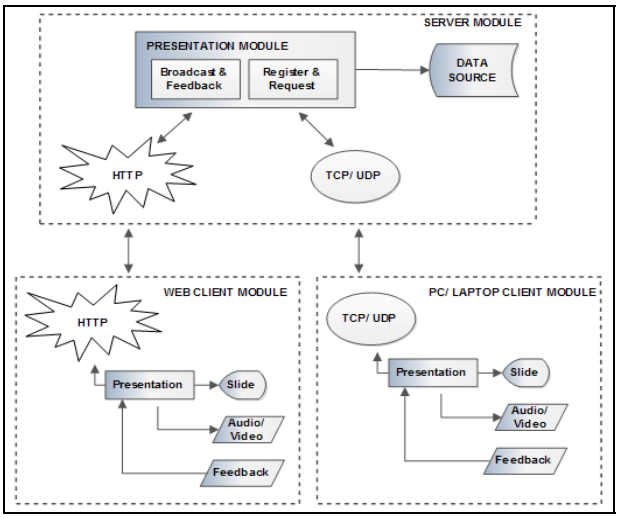

Fig. 5. Powerplan System Interaction Model (Client and Server)

Chart interactions in figure 5 shows that the logical protocol used are HTTP, TCP and UDP.

1) HTTP Protocol at Server Module is only used by applications to provide a host for a web browser client. Web browsers may follow the presentation by typing the IP address of the presenter then asked permission to follow the material, if permission is granted then the browser will be able to follow the presentation. In the HTTP protocol will be provided ping facility by utilizing the operating system timers in certain intervals to check whether there are changes to the display on the server. If there are changes then the browser will refresh automatically so you can stay up to date on the presenters.
2) TCP Protocol at system applications used for the following purposes:
   a. Presentation Material Data Transfer to client applications before following the presentation so that it can be ascertained in advance whether the data on the client had been prepared before the presentation begins. Interaction at the time of presentation is only a request and a command to reduce the load on the network. Update Presentation of data will be conducted if there is change data on the server.
   b. Process requests presentation is a package of commands and requests from the client to the server. Suppose to open a slide presentation on page five, then the server only sends commands to page 5, or to run a third animation on page 2, the server just sends the command for the purposes intended. It is much more effective because the data broadcast presentation that occurs every time that this will change the display, and it will take a much greater bandwidth than the broadcast command (maximum of 20 bytes per command).
   c. Request a package of command from the client to the server, for example, to encircle a point of presentation that need further clarification, notification or inquiry on display speakers so that the participants of another room that can't be face to face with the material can ask questions without having to go to the room presentation or simply through the application Powerplan connected to the LAN network.
3) UDP Protocol at system applications used for the following purposes:
   a. For Client: To search servers are active or are online at the network. From the list of active server client can apply for permission to attend a presentation. Once permitted, the communication between the client and the server will be changed using the TCP protocol.
   b. For Server: For the purposes of broadcast status of the server if the server modules are activated, as well as for broadcast media or media streaming process.

IV. Results and Discussion

Below will be given the results of the comparison in the activities of a PowerPoint presentation that uses a projector and without using projector or in other words just use powerplan application.

As we can see in Table 1, there are some comparative data problems that occur when we use conventional projector and when we use powerplan.

TABLE I. Indicator Problems

No.	Problems	with Projector	without Projector
1.	Visibility	Yes	No
2.	Viewpoint	Yes	No
3.	Limitations of Room	Yes	No
4.	Additional Devices	No	Yes
5.	Software Installation	No	Yes
6.	Communication System	Direct	Direct/ Indirect

Using a projector for a presentation pose some problems, such as visibility problems. The farther to the location of the display projector, the ability to view text, images, and graphics on the projector is getting hard to see.

Viewpoint problems is also affects the ability to see the contents of the presentation contained on display of projector. The narrower the angle of vision, it is increasingly seen less obvious material for example text and images contained on the display of projector.

The following problem that may occur is when the amount exceeds the limit of the capacity audience room. So as to resolve it must find another room or having to increase the number of projectors to be placed in the other room.

All these problems will not occur when we using powerplan, because the use of powerplan based on PC or laptop so that everyone personally can enjoy the view powerpoint presentation on the pc or laptop each. However, because based on your pc or laptop, then to use powerplan in the presentation process requiring additional equipment ie PC or laptop. Then to install the powerplan application in your pc or laptop and just connecting to the LAN. It is not something complicated, because the days are now almost everyone has a personal laptop and at each educational institution almost entirely already have a LAN.

One of the advantages of the system powerplan is a combination of direct and indirect communication. Direct communication can occur between the presenter and the audience, while the indirect communication can be done via the available chat menu on powerplan. Other facilities are using the mark function on powerpoint materials in powerplan application. It can be a solution for an audience that may be less comfortable talking and asking, but have a few questions. This may be a consideration for further discussion by the questions provided through the application powerplan.

The graph at Fig. 6 and Fig. 7 provide a comparison between a PowerPoint presentation using a projector and use powerplan without projector. Indicators in comparison to the number of courses or subjects that is only one or singular, the number of classes, the number of presenters and the number of projectors. The graph explains that with the number of courses or subjects is one, then the number of the projector is directly proportional to the number of classes and the number of presenters. Instead using powerplan, the number of courses or subjects is one and any number of classes that are used, then the number of presenters still amounted to only one person and not using the projector.

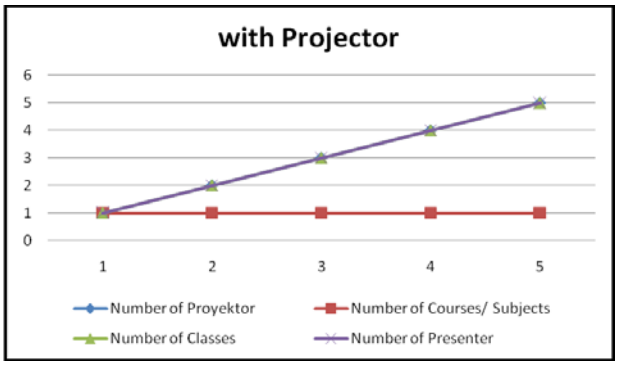

Fig. 6. Presentation using Projector (One Course/ Subject)

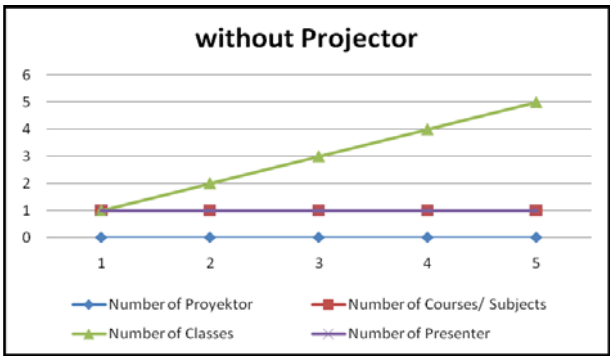

Fig. 7 Presentation using Powerplan (One Course/ Subject)

The graph at Fig. 8 and Fig. 9 are explaining that the indicators of comparison the same but the number of courses or subjects that are more varied, it showed that by using a projector, then the number of classes, the number of presenters, and the number of projectors has increased equal and comparable. It contrasts occur when we using powerplan, which looks at the chart in Fig. 9 that irrespective of the number of courses or subjects and number of classes, that the number of presenters will remain the same due to the fact that the presenters can make presentations on a variety of courses or subjects and the number of different classes. However it is highly dependent on the number of clients connected to the same LAN and obtain permission to take part in the presentation.

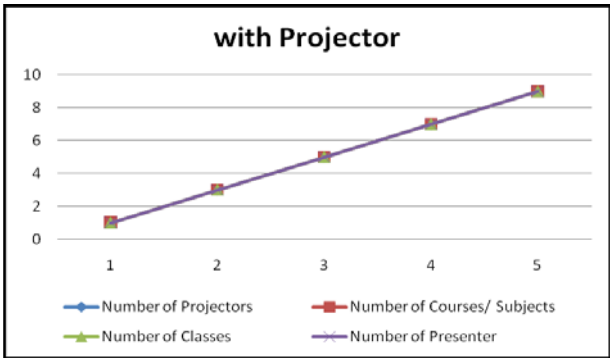

Fig. 8. Presentation using Projector (Various Course/ Subject)

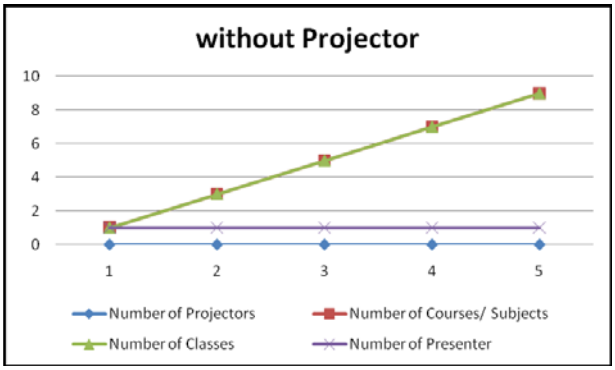

Fig. 9. Presentation using Powerplan (Various Course/ Subject)

The graph in Fig. 9 also shows that although many courses or subjects with the number of classes a lot, but using powerplan, the number of projector use is not required at all, but it can also be used together powerplan. Powerplan be another alternative use projector but also able to complement the functions making it more useful in presentations.

V. CONCLUSION

Powerplan can be an alternative to a projector to make a presentation using PowerPoint. By using powerplan it can reduce power consumption and reduce the cost to purchase the projector and the cost of repairing the damaged projector.

If the presentation made by several people at the same time and performed in a different room it will need a lot of projectors. Another solution is to use powerplan, so the whole PC or Laptop are connected to the same LAN will be able to do presentations without using a projector and internet access.

Powerplan very beneficial if used in universities or colleges and schools because there are many teaching process, learning process and the presentations process on a variety of different rooms.

Powerplan also allows for the presenters and the client can make two-way communication during the presentation. Clients can also make feedback to the presenters about the contents of a PowerPoint presentation given by the presentation.

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