



## Website Development for the Openness of Educational Information in Bandung, Indonesia

Elis Hernawati <sup>a,\*</sup>, Ira Dwi Mayangsari <sup>b</sup>

<sup>a</sup> *Diploma of Informatics Management, Telkom University, Indonesia*

<sup>b</sup> *Bachelor of Communication Studies, Telkom University, Indonesia*

### ARTICLE INFO

Received 07 June 2017  
Revised 22 November 2017  
Accepted 30 November 2017  
Available online 07 December 2017

Keywords  
Application, Web, Online Media,  
Openness of Information, Education

### ABSTRACT

The problems of education in Kota Bandung have not resolved satisfactorily. Some examples of chronic educational problems are the lack of openness of information about the use of government grants by schools, the quota for needy students, and school levies. The cause of this problem is the absence of the media in the form of websites that can be accessed by parents openly to get information about student academic progress and the problems of education in the city. In this study, will create a web application in the form of online media in accordance with the character of the people of Bandung. The Web producing news and information based on users' preferences, and providing spaces for open public discussion. This study uses an Evolutionary Prototyping method. This approach is suitable to be used so that the process of application development is done gradually and faster because there is interaction with the user during the process. This website can encompass all residents to access the openness of educational information in Kota Bandung. The Web testing is done by the user, the test results show three functional items on the web are login member, search news and manage the article. The test result shows each item received by the user. After testing, the website is hosted by the domain name [intipbdg.org](http://intipbdg.org) (Informasi dan Tips Pendidikan Bandung).

\* Corresponding author at:  
School of Applied Science, Telkom University,  
Jl. Telekomunikasi No. 1, Terusan Buah Batu, Bandung, 40257  
Indonesia.  
E-mail address: [elishernawati@tass.telkomuniversity.ac.id](mailto:elishernawati@tass.telkomuniversity.ac.id)

ORCID ID:  
First Author: 0000-0002-5855-3615

## 1. Introduction

Education plays a great role in the development of a country. One objective of the establishment of the Republic of Indonesia is to develop the nation's intellectual life (paragraph four of the Preamble of UUD 1945). To achieve this goal, the development of quality education in Indonesia is required. Quality education will run well if all parties, including parents, participate in implementing a policy.

Bandung, the capital of West Java province, has an area of 167.31 square kilometers with a population of 2,455,517 inhabitants and the number of poor people amounts to 238,830 inhabitants (8% of the population) [1]. Some examples of chronic educational problems are the lack of openness of information about the use of government grants by schools, the quota for needy students, and school levies. This issue makes the government pledge to continue the commitment to enhancing the quality of teaching in West Java province [1].

The openness of information is one of the characteristics of democracy. 51/5000. One of the fundamental human rights is to get information [2]. The transparency of information serves to monitor the government performance in carrying out its duties and responsibilities. The openness of information takes our society towards the information society. The Information Society is a society that prioritizes science as the main ingredient in running economic, social, industrial, technological activities, etc. The Information Society is one characteristic of the development of a country. One aspect of the information society is a high need for information in daily activities [3]. The development of an information society that is aware of education can reduce the information gap and improve the quality of educational development.

The number of internet users in Indonesia continues to increase. APJII, Indonesian Internet Service Provider Association, estimates that the number will reach 139 million in 2015. According to research on female internet users in Bandung, there are 50 percent of the woman in the city using the internet; though as the source of information the internet is in the third rank, under television and relatives. Females also become active in social media such as giving information via status updates and comments on Facebook.

UU 14 /2008 on Public Information Disclosures mandates that every public information is open and accessible to any user of public information. The law also provides that in order to realize prompt, precise and simple services every Public Agency must designate Pengelola Informasi dan Dokumentasi (PPID) [4].

To implement KIP Law in reducing information gaps and improving the quality of education development, it is necessary to develop information media supported by information technology. The purpose of this research is to build a website that is integrated with social media.

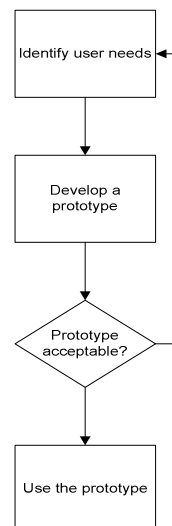
The public can access this site, but if they intend to write content, they must register as member first and wait for administrator approval. This website contains several columns, which are the latest information, most modern information, latest news, top news, galleries, Agenda, interactive, donations, and advertisement on educational information in Bandung.

## 2. Research Methodology

Figure 1 shows system development model Evolutionary Prototyping. This model is used to make the application process is done in stages and faster because web creation time must be completed in less than one year. With this model-making prototype faster because it can interact with the user during the process of building

the application. According to McLeod and Schell [5], stages in Evolutionary Prototype are as follows:

1. The user needs analysis, which is analyzing the needs of information, format, and media content in developing the web-based application for the openness of educational information that is by the needs of Bandung citizens. This first step is done using the FGD (Focus Group Discussion) method and field observation that involves some FGD participants from people related to educational programs, including parents, teachers, and school committees.
2. Developing a prototype, which is building an application that is by the results of user needs analysis.
3. Adjusting the prototype with the user wish, which is the developer asks the user about the prototype that built, whether it is by the system requirements or not.
4. Using the prototype, which is implementing the application with an improved prototype.



**Figure 1** Evolutionary Prototyping

### 3. Related Work

Some studies related to the development of educational information website as a comparative review of previous studies are as follows:

1. Subject: Website Evaluation Questionnaire: Development of a Research-Based Tool for Evaluating Informational Websites [6]. Problem: Many government organizations seem to reinvent the wheel and develop their questionnaire. This research leads to the undesirable situation that website quality often assessed with instruments that are not comparable with each other and are not empirically validated. Method: Website Evaluation Questionnaire (WEQ). Result: Governmental organizations can use the WEQ for evaluating their sites and for benchmarking their results against each other.
2. Subject: Development and evaluation of an educational website for adults with cystic fibrosis [7]. Problem: The high prevalence of Internet use among adults with cystic fibrosis (CF) provides an opportunity for

healthcare professionals to use the Internet as a tool for patient education. Method: The website structure and content were developed following a needs assessment questionnaire. The website was evaluated with a satisfaction survey and through examination of compliance to American Medical Association (AMA)'s guidelines for health information sites. Result: Users showed a high prevalence of internet usage (98.7%), described a need for more information about CF and provided content suggestions. A satisfaction survey revealed that CF patients compose the highest proportion of site users (57.5%), and users perceive the site as useful, with a mean score of 4.3 on a five-point satisfaction scale. Key areas for improvement have been identified. Website compliance with AMA guidelines was excellent at 80%.

#### 4. User Needs Analysis

Based on the obtained data, both the primary data through the interview with the sources (starting from the Pre-FGD to the implementation of FGD). And the secondary data from various library resources (references in the form of books, articles, and data from the Internet), some conclusions and notes that should be a concern are obtained from the first FGD, namely:

1. The types of media used: Website, Social Media (Line, WhatsApp, BlackBerry Messenger) Group. This problem relates to the selection of suitable media to access the information.
2. Obstacles in communication:
  - a. Face-to-face between the homeroom teacher as a representative of the school and parents about the student's academic progress.
  - b. The circulars are directly given to parents, not to the student.
  - c. Limited time and a large number of parents, so that the information is not delivered well to the right target.
  - d. The contents of social media and website are not unusual and there is no socialization to the parents about the website that can be accessed to get information about the student's academic progress.
  - e. The procedure of communication among parents, school, and education authorities is unclear and lack of monitoring.
3. The Contents
 

The contents needed by parents are those related to various children development activities, educational planning, and evaluations of school activities.

  - a. Budget and Spending. Parents need to know the policies made by schools and education authorities through socialization to avoid misunderstandings and information lag. For example, the budgets and spending policies communicated to parents.
  - b. Information about school activity programs routinely given, so that parents are aware of activities in schools.
  - c. School funding sources, both from the government and other sources.
  - d. Complaint mechanisms in schools systematically arranged to facilitate the claim. The system is made simple and uncomplicated.

- e. Financial aid for students, related to scholarships, etc.

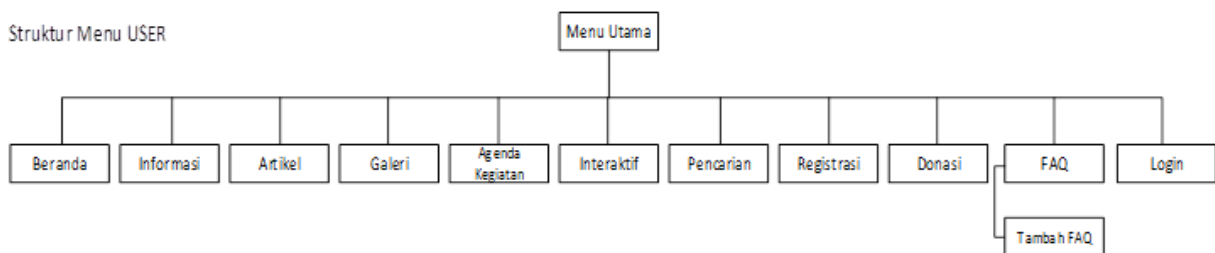
### 5. Application Design

Table 1 shows comparison proposed Website (intipbdg.org) and similar Website (disdik.bandung.go.id). The website to be proposed has an interactive feature of providing services for parents if they want to actively contribute in providing educational information.

**Table 1** Comparison of Proposed Website to Similar Website

No.	Feature	Intipbdg.org	disdik.bandung.go.id
1.	Users can register to log in as a member.	Yes	No
2.	Information	Yes	Yes
3.	Gallery	Yes	Yes
4.	Agenda	Yes	Yes
6.	Interactive	Yes	No
7.	FAQ	Yes	No
6.	Donation	Yes	No
8.	Link Google Drive Disdik Kota Bandung	No	Yes

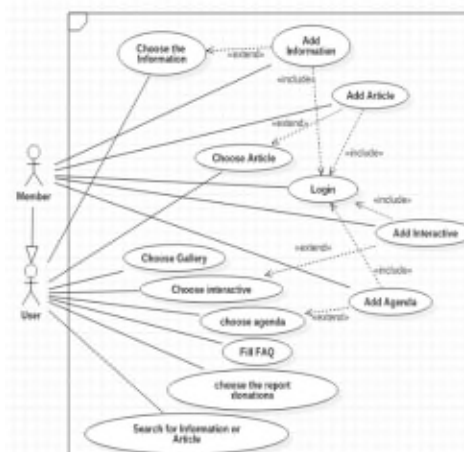
Figure 2 shows the web navigation diagram. The Web has eleven main menus. Each menu consists of one homepage.



**Figure 2** Web Navigation

#### 5.1. Use Case

Figure 3 shows the system functionality found in web applications. Any functionality that is described by the symbol use case can represent features that must be present on the application.



**Figure 3** Use Case Diagram

### 5.2. Features Design

Designing the application elements is done to identify whether the features in the system is by the required functionality. Table 2, Table 3 and Table 4 show features of the prototype.

**Table 2** The Features of Frontend Page for Public Users

Feature	Description
Main Menu	Consists of Home, Information, Articles, Galleries, Interactive, and Events Agenda, which displays the complete archive for each menu.
Information	File view, contains all information, both new and old information, by displaying information titles, images, posting dates, authors, brief contents, keywords, the number of views, likes, and comments. Click on the title to go for the detail information.
Articles	Archive view, contains all items, both new and old articles, by displaying article titles, images, posting dates, authors, brief contents, keywords, the number of views, likes, and comments. Click on the title to go into the detail articles.
Galleries	Galleries, displaying photographs of events or activities that have been holding by schools in Bandung. An administrator has the right to add photos.
Interactive	Interactive, displaying questions about education from members, which will be answered by the administrator.
Events Agenda	Events list, displaying information about activities will be held.
News Search	News search for information, articles, events list, and interactive
Login Form	Members can fill in the email address and password. Meanwhile, public users should select the "Registration" button. Members can also log in by using the Facebook account.
FAQ,	Provides a guide to public users or members about how to register and add articles, information, and agenda.
Donations	Displays information for donors who wish to participate in supporting a better education world and intelligence about donors who have joined. Meanwhile, the "contributions report" button will provide a report to the visitors about the use of donations that have given.

**Table 3** The Features of Frontend Page for Members

Feature	Description
Registration	Before becoming a member, public users are required to fill in data such as name, email address, password, etc. All data must fill out completely. After all, data are filled out, users must agree to the rules and conditions to become a member.
Member Login	Members can login by typing the email address and password. Meanwhile, if public users have a Facebook account, they can enter the website without registering.
Dashboard for Members	Panel menu will appear after members successfully log in. The menus provided in the panel are Profile, Articles, Information, Events Agenda, and Exit. For public users who log in by using the Facebook account, there will be no Profile menu.
Profile	This feature is used to view, to change the password, to upload member's photos, and to edit member's data.
Articles	This feature is used to add new items to members and will display the articles ever added by the members.
Information	This feature is used to add information to the members and will display information ever added by the members.

Feature	Description
Events Agenda	This feature can be added by members if they have information about an event or activity related to the education world.
Exit	This feature used if members want to leave the website page.

**Table 4** The Features of Backend Page for Administrator

Feature	Description
Administrator Login	This feature is the homepage of the administrator in which the administrator must input username and password. If username and password are correct, it will go to the administrator dashboard.
Article Management	In the Articles page, an administrator can view all items. However, there are only ten recent articles will be displayed on one page. An administrator can publish or unpublish articles by clicking "publish" or "unpublish" in the action column.
Information Management	In the Information page, an administrator can view all information. However, there is only ten recent information will be displayed on one page. An administrator can publish or unpublish information by clicking "publish" or "unpublish" in the action column.
Galleries Management	In the Galleries page, an administrator can view all photos. However, there are only ten new photos will be displayed on one page.
Interactive Management	In the Interactive page, an administrator can answer questions from members, delete, publish, and unpublish.
Events Agenda Management	In the Events Agenda page, an administrator can view all events list. However, there is only ten recent events list will be displayed on one page. An administrator can publish or unpublish events agenda by clicking "publish" or "unpublish" in the action column.
Donations Management	In the Donations page, an administrator can view all gifts given as well as the types and the amounts of contributions.
Banner Management	This feature is to remove banners. The "edit" button is for changing articles, and the "publish" or "unpublish" button is for editing in the frontend (user/member) page. The "add" button on the left top is for adding new information.
Advertisements Management	An administrator can view information about who is advertising on the website. The time duration of advertising is determined by "active since" and "active until." If the advertisement has passed the "active until" period, it should be unpublished or removed.
Members	It will display information about schools in Bandung that registered on the website to all members. An administrator is not allowed to edit the members' data, except removing the members.

## 6. Implementation

### 6.1. The Display of Homepage Frontend for Public Users

This Display is the first display when public users enter the website. The website will show a glimpse of articles, information, galleries, interactive, donations, and activities to be held. The following is the display and little explanation for the homepage. Figure 4 shows upper homepage.



Figure 4 Upper Homepage

Figure 5 shows the homepage of Archives. It contains all information, both new and old information, by displaying the information titles, images, and posting dates. Figure 6 shows the homepage of Galleries.



Figure 5 Article (Archives)

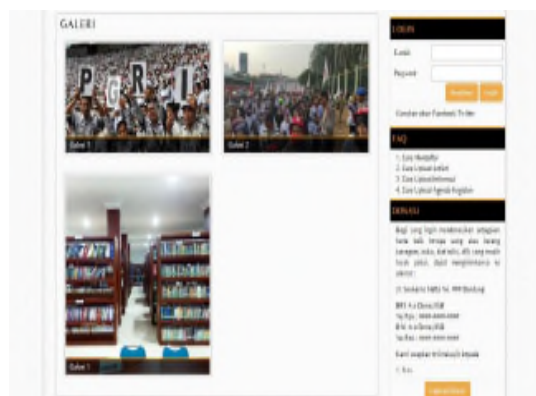


Figure 6 Galleries

The frontend page for members has the same display as that of for public users. However, there is one advantage for the members, which can add information, articles, and events agenda. The followings are several explanations for members.

Registration. Before becoming a member, public users are required to fill in data such as name, email address, password, etc. All data must fill out completely. After all data are filled out; users must agree to the rules and conditions to become a member. Figure 7 shows the homepage of member registration



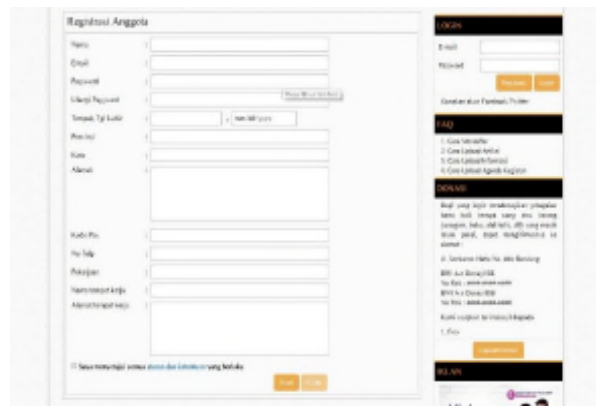


Figure 7 Member Registration

After sending the data for membership, public users can log in by typing the email address and password. Meanwhile, if general users have a Facebook account, they can enter the website without registering. Figure 8 shows the homepage of login panel.

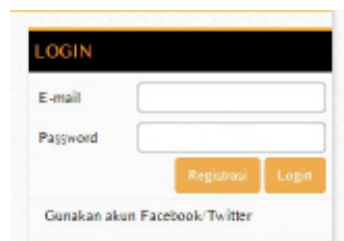


Figure 8 Login Panel

Figure 9 shows the homepage of Dashboard for members. The panel menu will appear after members successfully log in. The menus provided in the panel are Profile, Articles, Information, Events Agenda, and Exit. For public users who log in by using the Facebook account, there will be no Profile menu.

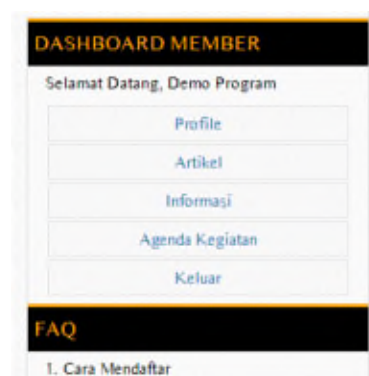


Figure 9 Members Dashboard

### 6.2. User Feedback

The testing phase is performed on websites using the user testing method. The type of testing with the user testing method used is the Alpha testing. The details of testing on the site are shown in the Table 5, Table 6, Table 7 and Table 8:

**Table 5** Testing Plans

Testing Items	Testing Details	Testing Types
Member Login	Member Login Verification	User Testing
News Search	Searching for information, article, events agenda, and interactive	User Testing
Item Management	Adding Article	User Testing

**Table 6** Testing - Login

Case and Test Results (Normal Data)	
Action	Input email address and password
Expectation	Input the correct email address and password so that the menu of member dashboard will appear
Observation	When clicking the "login" button, the entered email address and password are accepted and opening the menu of member dashboard
Conclusion	Accepted
Case and Test Results (Wrong Data)	
Action	Input wrong email address and password
Expectation	An error message appears and cannot enter the menu of member dashboard
Observation	An error message appears when clicking the "login" button
Conclusion	Accepted

**Table 7** Testing - News Search

Case and Test Results (Normal Data)	
Action	Input keyword
Expectation	Input the correct keyword so that the searched information, article, events agenda, and interactive will appear
Observation	Searched information, report, events list, and interactive appear when clicking the "enter" button
Conclusion	Accepted
Case and Test Results (Wrong Data)	
Action	Input wrong keyword
Expectation	Information appears: "Found in the Articles: 0." "Found in the Information: 0"
Observation	Information is displayed when clicking the "enter" button
Conclusion	Accepted

**Table 8** Testing - Add Article

Case and Test Results (Normal Data)	
Action	Input title, write the article, upload image, link as reference, categories (keywords) of the topic of the written article, click the "Save" button after finished.
Expectation	Input title, write article, upload image, link as reference, correct categories (keywords) of topic of the article, all material data are saved
Observation	Item data appear in the table of "Written Article" when clicking the "Save" button
Conclusion	Accepted
Case and Test Results (Wrong Data)	
Action	Data input is not complete
Expectation	A message asking to complete the data appears (red colored symbol * appears in the unfilled or blank textbox)
Observation	A message appears when clicking the "Save" button
Conclusion	Accepted

## 7. Conclusions and Suggestions

This study aims to develop a website that integrated with social media. The designed website hosted with the domain name intipbdg.org (Informasi dan Tips Pendidikan Bandung). The development of the site of intipbdg.org is the result of focus group discussion of all education stakeholders. Therefore, the internet site of intipbdg.org has four administrators that are representatives of teachers, parents, and education activists. Public users can access this website. If the public users

intend to write contents, they must register to become a member and wait for the administrator approval.

According to the results of research, the interest of Bandung citizens in using websites as a medium for the openness of educational information is still in its early stages. They are more interested only in reading light information such as tips to educate children. Meanwhile, to monitor the transparency of education budget in schools, they just know the information about BOS funds and do not find more details about its utilization.

Therefore, the researchers will do several things that can help in developing this website, which is collaborating with Komisi Informasi Jawa Barat. To create an annual event in the form of an open discussion to teach about the roles of citizens in monitoring the educational funding in schools, to hold articles writing competition about the utilization of school budgets, and to give a reward to the most transparent school in the use of government funds.

One obstacle emerging after the development of this website is the quality of members and administrators that still needs further training. From the results of the training of writing articles, creating infographics, and management and administration of website that has been carried out, it can be seen that the members and administrators have the quiet computer and technical skills. Besides that, they rarely read the education news so that they do not know any website for guidance in school. They also have difficulty in writing articles and creating informative graphic media.

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