

Village Activity Management Information System with Mobile-Responsive User Interface Design and Usability Test

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ABSTRACT

The village is a small part of the city that manages and regulates the governance system in a smaller scope. In carrying out its work, the village has structured activities in realizing the results of these activities. Village activities include several parts. Activities are often carried out in the village both related to the village office, employees and activities related to the community. So that village activities can be monitored properly and can also be seen directly by the community, this activity needs to be informed to the community through an information system or website that can be accessed directly by the wider community. The current village activity management system still uses a manual system and is not optimal. This research aims to build a village activity management information system design that is responsive to mobile which can provide information about activities carried out through the village office to the general public who live around the village or in other areas. Activity information will be managed by the village office admin directly so that they can read or follow up on feedback given by the community on village activities that have been, are being or will be taking place. The information system that is built is expected to be able to assist the village office in carrying out existing activities in the village of Klambir Lima Gardens so that it can be carried out to improve the quality of subsequent activities.

Keywords: Village, Design and information systems, Management

Introduction

The development of science that is increasing so rapidly is certainly accompanied by technological advances that are growing rapidly and leading humans into the information age [1]. Information systems are formal, sociotechnical, organizational systems designed to collect, process, store and distribute information. Computer information systems are systems consisting of people and computers that process or interpret information [2]. The term is also sometimes used in a more limited sense to refer only to software used to run computerized databases or to refer only to computer systems[3].

The village is a small part of the city that manages and organizes the governance system in a smaller scope. In doing its work, the village has structured activities in realizing the results of these activities. Village activities include several parts. One of the village activities is the use of village funds. This is the choice of activities that take precedence over other activities to be financed with village funds. Prioritization of the Use of Village Funds (PPDD) every year always has its own regulatory reference (Permendes)[4][5].

Activities are often carried out in the village both related to the village office, employees and activities related to the community. So that village activities can be monitored properly and can also be seen directly by the community, these activities need to be informed to the public through an information system or website that can be accessed directly by the wider community[6][7]. The village activity management system that is currently underway is still using a manual system and has not been maximized. User Interface is one of the most important parts of a computer system because the user interface is related to the user, can be seen, can be heard, and can be touched [8].

This research aims to create a system that can provide information about activities carried out through the village office to the general public who live around the village or in other areas. Activity information will be managed by the village office admin directly so that it can read or follow up on feedback given by the community on village activities that have been, are or will take place [9][4].

The Village Information System (SID) is part of the implementation of e-Government which is a tool for villages to solve problems that often arise when managing village data such as village administration, correspondence management, and management of villagers including indigenous and migrant populations. Villages have the right to access information through the village information system that has been developed. This system is an appropriate information system with the aim of advancing the community by simplifying the data management process at the village office [10].

Information Technology is a technology used to process data, including obtaining, compiling, processing, storing and manipulating data in various ways to produce quality information. The information produced must be relevant, accurate and timely so that it can be used for personal, business, education, government and used for decision making [11].

According to Law Number 23 of 2006 concerning Population Administration explains that "Population data is individual data and / or structured aggregate data as a result of Population Registration and Civil Registration activities[12]. The information system that was built is expected to assist the village office in carrying out activities in the village of Klambir Lima Kebun so that it can improve the quality of subsequent activities [13].

Literature study aims to broaden the author's knowledge about the basis of design, theories, and developments that are useful for the process of making designs and iterating prototypes [6][14]. Website is a way to present yourself on the Internet. It can be likened to a website is a place on the Internet, anyone in the world can visit it, at any time someone can find out about themselves, ask someone questions, and provide input or even find out and buy a product [1].

Research Methods

The research method is an important step in system preparation, especially for system design. The method used by researchers consists of two methods, namely software development methods and data collection methods [15][16]. Researchers use the software development method with the waterfall model as the basis for system design. the stages of the waterfall model consist of five (5) stages, but researchers only use two (2) stages of all stages, namely: Software Requirements Analysis and Design [17][18].

Research Flow

The flow of this research can be written as follows:

1. **Problem Identification**
Problem identification is the first step taken in this research. At the problem identification stage, it is intended to be able to understand the problem to be studied, so that in the analysis and design stages it does not get out of the problem under study.
2. **Problem Analysis**
The problem analysis step is a step to understand the problem that has determined the scope or limits. By analyzing the predetermined problem, it is hoped that the problem can be understood properly [19]. Web analysis is often used as part of customer relationship management analysis (CRM analytics) [20].
3. **Determine Objectives**
Based on the understanding of the problem from the problem, the objectives to be achieved in this study are determined. In this goal, the target to be achieved is determined, especially those that can overcome existing problems.
4. **Studying Literature Related to the Title**
To achieve the goal, some literature that is expected to be used is studied. Then the literature studied was selected to determine which literature would be used in this study. Literature sources are obtained from the Pancabudi Development University library, books that discuss web-based information systems.
5. **Data Collection**
The data needed is data on village activities that have been carried out in Klambir Lima village where the data taken is manual data.
6. **Design and design**
At this stage the author will design a new system proposal, the author uses a system design method with the Prototype model. Prototype is a software design method that is widely used by developers so that they can interact with customers during the system development process and consists of 5 interrelated stages.

7. Final evaluation

Make a report of the research that contains a research report on the problems and solutions that exist in the object studied by the author [17].

This type of research is descriptive qualitative research, which is a research method carried out with the main objective of creating a picture or description of the situation [1]. The Human-Centered Design method is an approach method in developing and designing a system that focuses on users according to aspects of the needs and habits of users. Difficulty in accessing information on the website is a problem faced by users and in terms of visual the website cannot be responsive when accessed via mobile [20].

Results and Discussion

System Design with UML

System design in research serves to determine the interface form of the information system built for ease of building the system, the design of this system uses UML which consists of use case diagrams, activity diagrams and squency diagrams [21][22].

Use Case Diagram

Use case is a description of the function of the budget recording information system to be built [23]. The picture below is a use case design for research on budget recording information systems. As seen in the picture below:

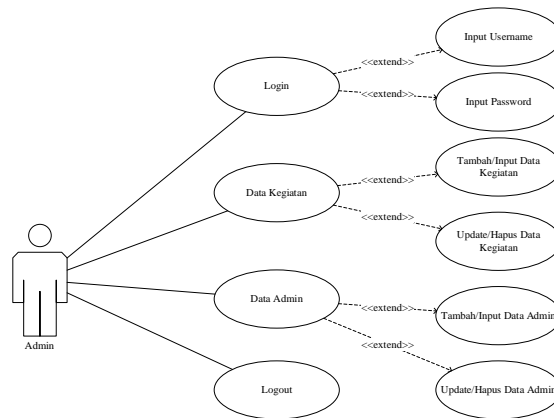


Figure 1: Use Case Diagram

Admin Activity Diagram

The picture below is an activity diagram of the information system. In the activity diagram below, there are several activities that are passed by the admin and the system [24]. In the admin, the admin can log in to the system using the username and password that has been determined, at this time, the system will verify whether the account is registered or not, if registered, the admin will be directed to the system home page.

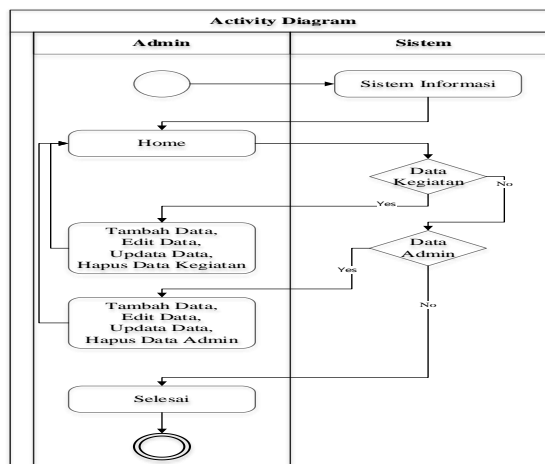


Figure 2. Activity Diagram Admin

Sequence Diagram of Admin System

The following is a sequence diagram used in this study. This diagram explains the flow of the main menu program so that it shows several submenus [25]. The picture below is the Sequence Diagram used.

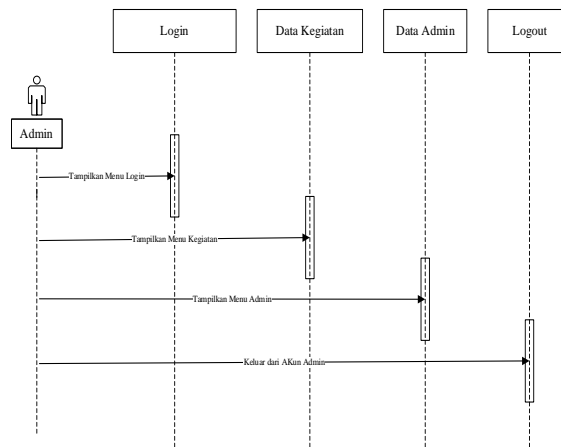


Figure 3. Squencey Diagram

System Interface Design

Interface design is a display design that will be made using Wireframe Pro software. Interface design consists of several pages so that the information system to be created will be more structured and easy to use. The following are the stages of designing an information system [16].

Home Menu Design

The home menu design is the display that appears when the website is first run. The home menu has several components consisting of several parts [26]. As seen in the picture below:

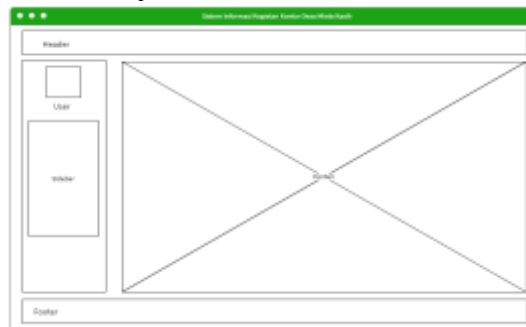


Figure 4. Home Menu Design

Login Menu Design

The login menu is a menu for giving access to information system admins or authorized people. As seen in the picture below:

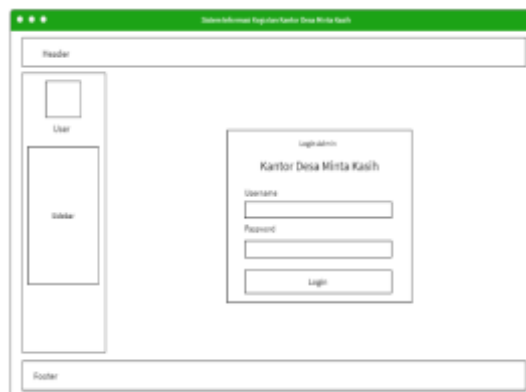


Figure 5. Login Menu Design

Gallery Menu Design

The gallery menu design serves to display photos of activities that take place and are organized by the Minta Kasih village office. The picture below is the result of the gallery menu design.

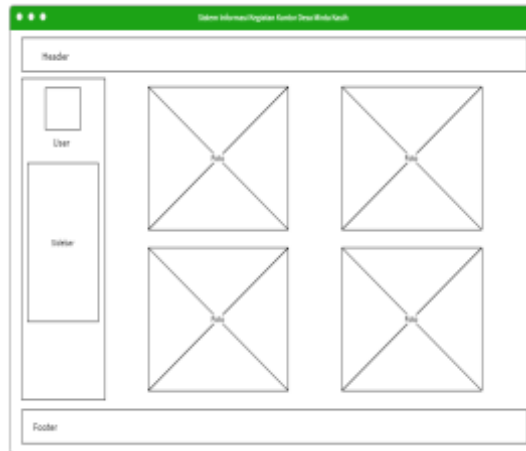


Figure 6. Gallery Menu Design

Activity Menu Design

The activities menu is a menu that will function to record data on activities organized by the Minta Kasih village office. As in the picture below:

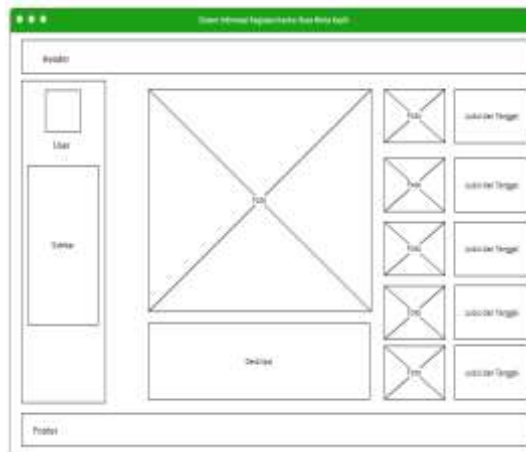


Figure 7. Activity Menu Design

Activity Data Menu Design

The admin menu design functions to manage activity data that will be entered into the information system. As seen in the picture below:



Figure 8. Activity Data Menu Design

System Results

The result of this system is the implementation of an information system that has several menus that can provide functions and uses. This interface is made using the PHP and CSS programming languages which are designed according to user needs.

Home Menu Display Results

The home menu serves to provide the first appearance when the activity information system is accessed. The home menu has another menu located on the left, as seen in the picture below:



Figure 9. Menu Home

Login Menu Page

The login menu functions to give users access to the system. Admins can enter the system that has been provided using a username and password. As seen in the picture below:

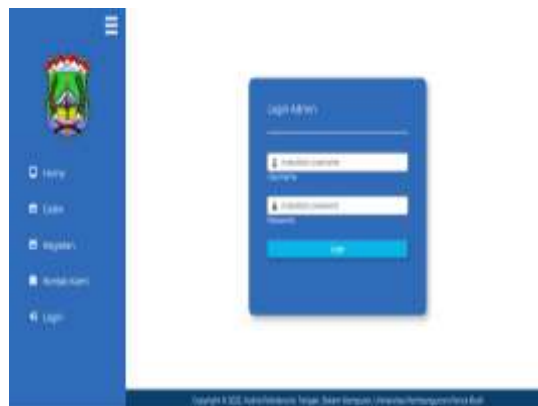


Figure 10. Login Menu Page

Gallery Menu Page

The gallery menu serves to display photos of activities that take place and are organized by the village office, as seen in the picture below:



Figure 11. Gallery Menu Page

Activity Menu Page

This menu serves to view activities organized by the village office, as shown below:



Figure 12. Activity Menu Page

Contact Menu Display Page

The contact menu serves to convey aspirations or constructive criticism and suggestions. This menu will be used by people who want to comment on activities organized by the village office. As seen in the picture below:

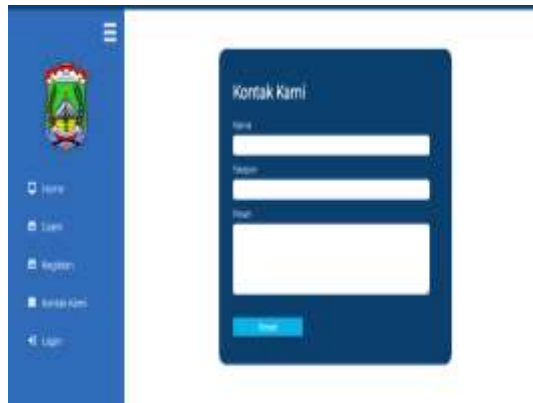


Figure 13. Contact Menu Display Page

Activity Data Menu Page

The activity data menu functions to add and manage activity data that takes place at the village office, as shown below:

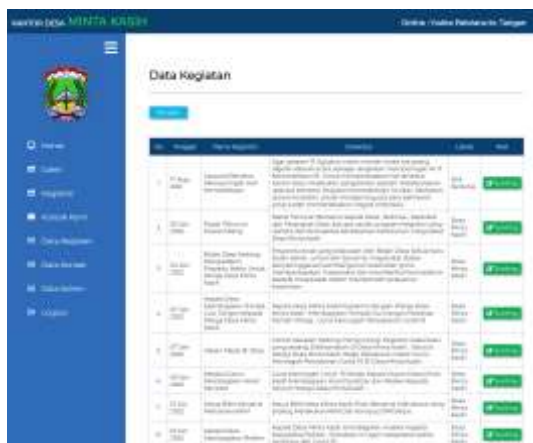


Figure 14. Activity Data Menu Page

Conclusion

The information system in recording activity data at the Minta Kasih village office was designed using Wireframe Pro, then built using the PHP programming language and web-based which can be used by users. The function of criticism and suggestions can be submitted through the contact media in the information system.

Bibliography

- [1] Y. M. Geasela, P.- Ranting, and J. F. Andry, "Analisis User Interface terhadap Website Berbasis E-Learning dengan Metode Heuristic Evaluation," *J. Inform.*, vol. 5, no. 2, pp. 270–277, 2018, doi: 10.31311/ji.v5i2.3741.
- [2] R. R. Putra, H. Hamdani, S. Aryza, and N. A. Manik, "Sistem Penjadwalan Bel Sekolah Otomatis Berbasis RTC Menggunakan Mikrokontroler," *J. Media Inform. Budidarma*, vol. 4, no. 2, p. 386, 2020, doi: 10.30865/mib.v4i2.1957.
- [3] andhika putri Putra, Randi Rian & nadya, "Implementasi sistem informasi perpustakaan dalam meningkatkan pelayanan dan struktur perpustakaan pada smp swasta pab 9 1," *Jar. Sist. Inf. ...*, vol. 6, no. 1, pp. 83–88, 2022, [Online]. Available: <http://ojsamik.amikmitragama.ac.id/index.php/js/article/view/136>
- [4] R. R. Putra, N. A. Putri, and C. Wadisman, "Village Fund Allocation Information System for Community Empowerment in Klambir Lima Kebun Village," *J. Appl. ...*, vol. 3, no. 2, pp. 98–104, 2022, [Online]. Available: <https://journal.yrpiiku.com/index.php/jaets/article/view/681%0Ahttps://journal.yrpiiku.com/index.php/jaets/article/download/681/467>
- [5] Paryanta, Sutariyani, and D. Susilowati, "Sistem informasi administrasi kependudukan berbasis web desa Sawahan," *IJSE – Indones. J. Softw. Eng. Sist.*, vol. 3, no. 2, pp. 77–81, 2017, [Online]. Available: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=pengembangan+sistem+administrasi+kelurahan+berbasis+web&btnG%0Ahttps://ejournal.bsi.ac.id/ejurnal/index.php/ijse/article/viewFile/2980/1929
- [6] A. K. Rianingtyas and K. K. Wardani, "Perancangan User Interface Aplikasi Mobile Sebagai Media Promosi Digital UMKM Tour dan Travel," *J. Sains dan Seni ITS*, vol. 7, no. 2, 2019, doi: 10.12962/j23373520.v7i2.36874.
- [7] V. Tasril, J. Prayoga, S. F. Jayusman, U. Usability, H. Design, and U. Dharmawangsa, "USER INTERFACE DAN UJI USABILITY MENGGUNAKAN PENDEKATAN HUMAN-," vol. 16, no. July, pp. 371–382, 2022.
- [8] F. R. Pambajeng and A. Ardiansyah, "Pengembangan User Interface (UI) dan User Experience (UX) Aplikasi Cashoop Untuk Pengelolaan Keuangan Pribadi," *JSTIE (Jurnal Sarj. Tek. Inform.*, vol. 7, no. 1, p. 20, 2019, doi: 10.12928/jstie.v7i1.15801.
- [9] M. D. Ariawan, A. Triayudi, and I. D. Sholihati, "Perancangan User Interface Design dan User Experience Mobile Responsive Pada Website Perusahaan," *J. Media Inform. Budidarma*, vol. 4, no. 1, p. 161, 2020, doi: 10.30865/mib.v4i1.1896.
- [10] R. Fitri, A. N. Asyikin, and A. S. B. Nugroho, "Pengembangan Sistem Informasi Desa Untuk Menuju Tata Kelola Desa Yang Baik (Good Governance) Berbasis Tik," *POSITIF J. Sist. dan Teknol. Inf.*, vol. 3, no. 2, pp. 99–105, 2017.
- [11] E. Putra, R. R. Putra, and B. Fahri, "Sistem pengolahan data pemerintah desa kelambir v berbasis website kelambir v village government data processing system based on website," vol. 5, 2022.
- [12] S. R. S. Siregar and P. Sundari, "Rancangan Sistem Informasi Pengelolaan Data Kependudukan Desa (Studi Kasus di Kantor Desa Sangiang Kecamatan Sepatan Timur)," *Sisfotek Glob.*, vol. 6, no. 1, pp. 76–82, 2016.
- [13] S. Ernawati and A. D. Indriyanti, "Perancangan User Interface dan User Experience Aplikasi Medical Tourism Indonesia Berbasis Mobile Menggunakan Metode User Centered Design (UCD)(Studi ...," *J. Emerg. Inf. ...*, vol. 03, no. 04, pp. 90–102, 2022, [Online]. Available: <https://ejournal.unesa.ac.id/index.php/JEISBI/article/view/49296%0Ahttps://ejournal.unesa.ac.id/index.php/JEISBI/article/download/49296/40999>
- [14] R. R. Putra, "Perancangan Sistem E-Voting Dalam Pemilihan Osis Pada Smk Yapim Taruna Marelan," vol. 14, no. 2, pp. 23–31, 2021.
- [15] M. Agnitia LEstari, M. Tabrani, and S. Ayumida, "Sistem Informasi Pengolahan Data Administrasi Kependudukan Pada Kantor Desa Pucung Karawang," *J. Interkom J. Publ. Ilm. Bid. Teknol. Inf. dan Komun.*, vol. 13, no. 3, pp. 14–21, 2021, doi: 10.35969/interkom.v13i3.50.

- [16] R. F. A. Aziza, “Analisa Usability Desain User Interface Pada Website Tokopedia Menggunakan Metode Heuristics Evaluation,” *J. Tekno Kompak*, vol. 13, no. 1, p. 7, 2019, doi: 10.33365/jtk.v13i1.265.
- [17] Y. M. Kristania, “Sistem Informasi Pelayanan Administasi Kependudukan Desa (M-Desa) Dengan Metode User Centered Design,” *Indones. J. Softw. Eng.*, vol. 7, no. 1, pp. 1–9, 2021, doi: 10.31294/ijse.v7i1.8972.
- [18] A. Suryadi, “Rancang Bangun Sistem Pengelolaan Arsip Surat Berbasis Web Menggunakan Metode Waterfall (Studi Kasus : Kantor Desa Karangrau Banyumas),” *J. Khatulistiwa Inform.*, vol. 7, no. 1, pp. 13–21, 2019, doi: 10.31294/jki.v7i1.36.
- [19] T. Abdulghani and T. Solehudin, “Sistem Informasi Pengelolaan Administratif Badan Usaha Milik Desa (Bumdes) Berbasis Client-Server Studi Kasus Di Desa Sindangasih Kecamatan Karangtengah,” *J. Ilm. SANTIKA*, vol. 8, no. 2, pp. 241–254, 2018.
- [20] R. Raafi’udin, B. Hananto, and C. Nugrahaeni Puspita Dewi, “Analisa Trafik Pengunjung Website dalam Pengembangan UI dan UX,” *Inform. J. Ilmu Komput.*, vol. 15, no. 2, p. 61, 2020, doi: 10.52958/iftk.v15i2.1419.
- [21] D. Puspitasari, “Sistem Informasi Perpustakaan Sekolah Berbasis Web,” *J. Pilar Nusa Mandiri Vol. XII*, vol. 12, no. 2, pp. 227–240, 2016.
- [22] R. R. Putra, “Sistem Informasi Web Pariwisata Hutan Mangrove di Kelurahan Belawan Sicanang Kecamatan Medan Belawan Sebagai Media Promosi,” *J. Ilm. Core IT Community Res. Inf. Technol.*, vol. 2, no. 7, 2019.
- [23] D. Anggoro and A. Hidayat, “Rancang Bangun Sistem Informasi Perpustakaan Sekolah Berbasis Web Guna Meningkatkan Efektivitas Layanan Pustakawan,” *Edumatic J. Pendidik. Inform.*, vol. 4, no. 1, pp. 151–160, 2020, doi: 10.29408/edumatic.v4i1.2130.
- [24] S. Granita, S. Rohmaniyah, T. Gautama, and Y. Yulianti, “Pengembangan Sistem Informasi Perpustakaan Sekolah Berbasis Web,” *J. Teknol. Sist. Inf. dan Apl.*, vol. 3, no. 4, p. 246, 2020, doi: 10.32493/jtsi.v3i4.7184.
- [25] D. W. Dari, A. O. Sari, and A. Astrilyana, “Rancang Bangun Aplikasi Perpustakaan Sekolah Berbasis Website,” *J. Ilmu Pengetah. dan Teknol. Komput.*, vol. 4, no. 2, pp. 163–168, 2019, doi: 10.31284/j.kernel.2021.v2i2.1893.
- [26] S. Pebrianto, “Pembangunan Sistem Informasi Perpustakaan Pada Perpustakaan Umum Kabupaten Pacitan,” *Sentra Penelit. Eng. dan Edukasi*, vol. 2, no. 2, pp. 43–47, 2010, doi: 10.3112/speed.v2i2.1255.