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Uplifting Student Project Contribution toward Society Through Multimedia Repository

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Abstract. As a developing country, the application of information technology is uncommon in daily business at many fields in Indonesia. On the other hand, information technology students such as in Computer Science Department Universitas Surabaya had created plenty of projects which had been underexposed. Those projects usually created as an answer for the real public issues and problems, therefore they might be an effective means to address some of the community requirements. This research propose a solution in the means of a digital multimedia repository to boost the contribution of the students towards the development of the society.

1. Introduction

Indonesia is a developing country currently embracing the adaptation of information technology in their daily business. While some of business institution and government institution already adapt to the digital changing by incorporate information technology in some ways, many small to medium business still mystify in the process of implementing technology in their business.

On the other side, student's projects in the field of Computer Science are frequently addressing the real problem in the society as has been observed in Computer Science Department in Universitas Surabaya, Indonesia. While project based learning typically required more time and preparation which appears ineffective, the positive aspects of it which include motivational and self management character building regarded to be worth the hassle [1]. Moreover, as previously mentioned, project based learning allegedly to be means to bring the students understand more on the real world problem since the project itself mostly touch the real situation and challenge. However the result of student's projects are commonly undervalued since the preservation focused more on the grading and evaluation [2] rather than the artefact as the real manifestation of learning process resulted from student's projects [1] which in reality has more value and significance.

As people by nature always attempting to collect, preserve and store any kind of information, concepts and knowledge; the idea of digital repository is quite appealing [3]. Especially when considering the advantage of digital repository which is the ability to share works and knowledge [4]. Furthermore digital repository offer the ability to surpase the time and space obstacle [5] since it does not really had to be formed as a physical object that has to be located at some place while eat up some space there and required user to reserve some time in order to visiting and access it [4]. If the easiness of being accessed is used as a measurement to judge the succeed of any repository of works, then digital repository would be rated quite high.



The benefits of digital repository are evident for the students as the academic research users in two different roles, the one who create the content and the one who read and learn from the content [6]. This state hence creates some kinds of communication among students and provide an instrument to allow student shares the works in different approach from the usual journal method [7]. Students whose works are shared to public gain more confidence on their academic performance [8] while at the same time motivated to create a better projects to prevent embarrassment [9]. Additionally, digital repository would create a binding between different class of students and alumni, and in some way with the almamater as well [7].

Regarding digital repository, previous research typically works on the documentation of student's thesis and not discuss about other student's projects such as the result of project based learning in many subjects. However as stated previously, the works are too valuable to be set aside. Therefore the requirements for the propose digital repository is to be able to preserve student's projects which may include any kind of software or multimedia results along with text documents. Multimedia counterpart such as a screenshot image or a video on how to use a software or application make an important role especially since apparently user dislike long line online text documents [10], hence the short documents accompany with multimedia product guarantee a better chance to be observed. This hypothesis raise a research question on how to elaborate the nature of digital repository to preserve and present many forms of projects artefact which usually contain multimedia product while maintaining the nature of common repository.

2. Methodology

This research started by carry out an observation regarding the nature of student's projects applied in Computer Science Department Universitas Surabaya. Some lecturers and students are questioned about students project have been conducted previously. To analyze what had been developed before to help public preserve its works, a benchmarking with some repositories is performed. The result of observation, survey and benchmarking conducted would be analyzed to form system requirements. These requirements would be translated on the design phase and implemented as a multimedia repository. The result of the implementation process would be verified and validated to the target user whose are the lecturers and students.

3. Analysis and Design

Analysis phase begun with the analysis of current state which was conducted by interviewing some lecturers about their habit regarding the preservation of previous projects artefacts. Another survey would be performed to some students concerning their experience on previous student's project.

From the interview with lecturers some points has been collected relating to their student's projects preservation habit. Most lecturers keen in documenting the marking and grading components during evaluation and only some of them give an effort to conserve the software or any form of results such as a website, an application, an algorithm, screen shots of the software interfaces, diagrams, tables, images, and other multimedia products which depict the whole learning process of the subject. While some lecturers already attempting to preserve the product results, the persistent tools utilized is varied and the procedure of preservation itself is unstructured, hence the future discovery of the items is uncertain since the product location might tucked away or the persistent itself might be broken. For example some lecturers used to ask the students to submit their projects in the form of CD or DVD, next time when the lecturer need to access the project sometimes the disc had broken and the file inside cannot be accessed or sometimes the disc itself cannot be found since the lecturer forget the exact location of the disc.

Students of Computer Science Department Universitas Surabaya had created projects since the first semester of study. However when they asked about the ability to find their previous works most of them stated their uncertainty. This condition due to their lack of resource to save their projects, their disorganized ways of preservation and their lack of confidences regarding its own works. When they

turn to their lecturer in order to ask for their previous works, they find out that the lecturer had facing the similar problems of tracing the student's projects.

Benchmarking is conducted with some repositories which already provided publicly such as DeviantArt or GalleryToday, and repository along with digital library provided by Universitas Surabaya to held research documentation and research article which can be accessed by both lecturers and students. This phase discover that some repositories quite usable to build personal portfolio and help user find the best projects based on the rating provided by other user, however all of those repositories usually had limited type of media which are texts and images and not categorized to suited the Computer Science student's projects.

From the problem analysis, the system requirements focused on two big parts. First the system should provide spaces for preserving student's projects. Secondly the system should help user which are lecturers or students tracing preserved projects either when the projects are their own or other student's projects. Some features needed to adopt are sorting projects based on certain criteria, user ratings, the Quick View feature to help user having a quick view of the whole project without downloading. All the projects should be categorized properly to support ease of access. And the system should maintain rule and proper user registration to help students learn from previous works from previous students but prevent any plagiarism attempt. Based on the previous requirements, design phase has been accomplished for designing the whole process, data structures, tables, and user interaction as well.

4. Implementation and Testing

Implementation phase develop a multimedia repository system based on the design phase. The multimedia repository system developed provides the ability to upload projects as shown in Figure 1 below. User is able to upload a student thesis or student's projects. To upload a project, some details is required, such as the title, short title, description, study program name, subject's title, and an image in jpg or png for the cover of the project. The details can be edited in the future if required.

The screenshot shows a web application interface for uploading a project. At the top left is the UBAYA logo (Universitas Surabaya) and 'Digilib Teknik Informatika'. At the top right, it says 'Welcome, THEA DONATA PUTRA' with links for 'Download Berkas', 'Ubah Kata Sandi', and 'Logout'. Below this is a navigation bar with tabs: 'Tugas Akhir', 'Karya Mahasiswa', 'Upload Tugas Akhir', 'Upload Karya Mahasiswa' (selected), and 'Album Karya'. The main form area is titled '* Required' and contains the following fields:

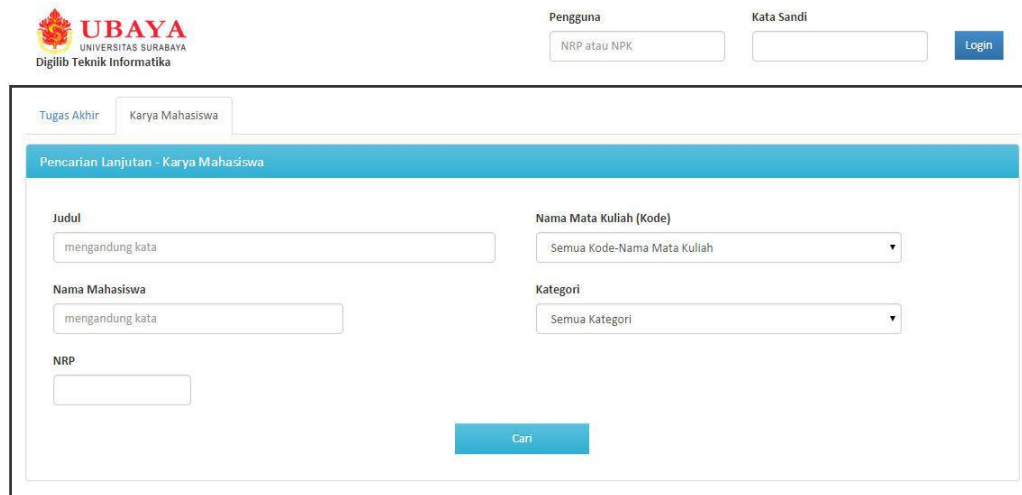
- Judul Lengkap ***: A text input field.
- Judul Singkat ***: A text input field with a note '20 karakter tersisa' (20 characters remaining).
- Deskripsi ***: A text area with a note '150 karakter tersisa' (150 characters remaining).
- Jurusan-Kategori ***: A dropdown menu showing 'IF - P. K. Multimedia - Branding and Graphic Design'.
- Nama Mata Kuliah (Kode) ***: A dropdown menu showing '-'.

Below these fields is a section titled **SAMPUL ALBUM *** with a note 'Ukuran maksimum sampul: 1 mb' and 'Tipe file yang diperbolehkan: jpg/png'.

Figure 1. Upload Project

Another feature provided in the multimedia repository system is Searching Projects based on the project title, subject name or other key as shown in Figure 2. Student only can view and use quick view to observe other student projects, for example to learn about how the project of certain subject

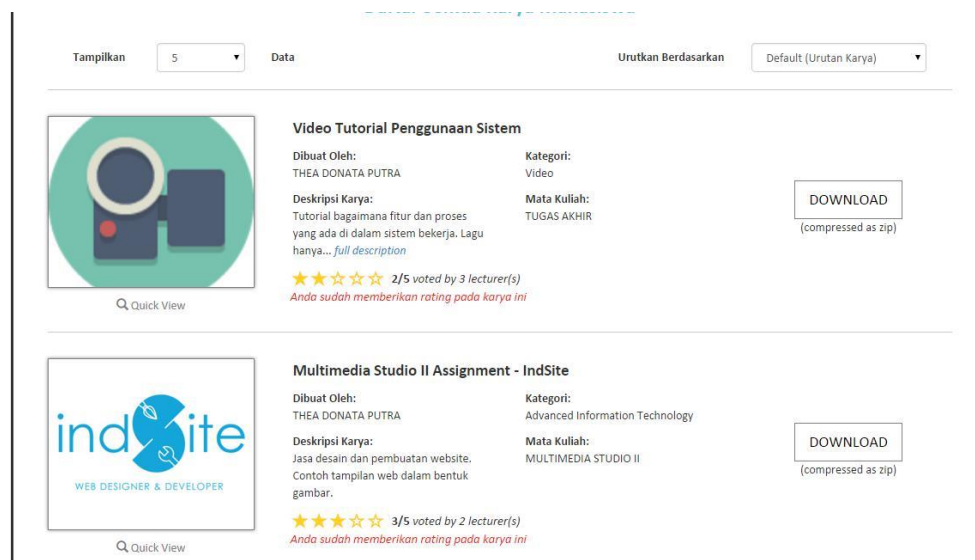
should be done. Student is able to download its own work but prohibited to download another student's projects.



The screenshot shows the login and search interface of the UBAYA Digilib Teknik Informatika system. At the top left is the UBAYA logo. To the right are login fields for 'Pegguna' (Username) with a placeholder 'NRP atau NPK' and 'Kata Sandi' (Password), followed by a 'Login' button. Below the login section is a search form titled 'Pencarian Lanjutan - Karya Mahasiswa'. The form includes fields for 'Judul' (Title) with the placeholder 'mengandung kata', 'Nama Mata Kuliah (Kode)' (Course Code) with a dropdown menu showing 'Semua Kode-Nama Mata Kuliah', 'Nama Mahasiswa' (Student Name) with the placeholder 'mengandung kata', 'Kategori' (Category) with a dropdown menu showing 'Semua Kategori', and 'NRP' (Student ID) with an empty text box. A blue 'Cari' (Search) button is at the bottom right of the form.

Figure 2. Searching Feature

The rating feature developed to help student view the best possible example of projects. In order to maintain the rate quality this rating only available if the user is a lecturer. Another feature available only for the lecturer is the download project feature, since the institution sometime organizes an exhibition or creating promotional products which require to shows its student's projects.



The screenshot displays a list of student projects with search and rating options. At the top, there are filters for 'Tampilkan' (Show) set to 5, 'Data', and 'Urutkan Berdasarkan' (Sort By) set to 'Default (Urutan Karya)'. Two project entries are shown:

- Video Tutorial Penggunaan Sistem**: Created by THEA DONATA PUTRA, Category: Video, Course: TUGAS AKHIR. It has a rating of 2/5 stars from 3 lecturers. A 'DOWNLOAD' button (compressed as zip) is available.
- Multimedia Studio II Assignment - IndSite**: Created by THEA DONATA PUTRA, Category: Advanced Information Technology, Course: MULTIMEDIA STUDIO II. It has a rating of 3/5 stars from 2 lecturers. A 'DOWNLOAD' button (compressed as zip) is available.

Each entry includes a thumbnail image, a 'Quick View' link, and a 'full description' link.

Figure 3. Rating Feature

On evaluation phase, students and lecturers as the targeted user requested to execute a scenario to upload, search and rate on student's projects. Afterward they are questioned regarding their experience using the multimedia repository. Around 40% of respondents strongly agreed and another 55% respondents agreed that this multimedia repository help them to explore student's projects which match their interest in detail. The search feature help user to find the projects match their interest, this claim supported by 55% respondents who strongly agreed and 45% agreed respondents. Overall the

respondents agree that multimedia repository developed useful to help preserve student s project. Since the multimedia repository maintain the organization of the category, all respondent find it easy to search and view student's projects. All respondent find that ranking feature is helpful to make the searching process more efficient. The rating in multimedia repository itself encourage students as the creator to create a useful project to be uploaded and help another user who act as the consumer to pick the best possible projects for their requirements.

5. Conclusion

In conclusion, multimedia repository system created has proved as an effective means to preserve student projects as whole which allow user to inspect and learn from the previous works from other students. The rating feature provides an effective way to help user find the best works and therefore increase the contribution of student's projects toward society.

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