

Developing Online Database of Food Recipes with Indigenous Ingredients

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Abstract— This paper presents the development of an online database of food recipes with indigenous ingredients. The system is called “dapogan” which is aimed to allow food developers to share and promote foods made from indigenous ingredients using the Internet. It is a content management system integrated with social networking facilities and multimedia capabilities. A rapid application development was used during the development. Development tools include Windows 7, WAMP Server 2.0, PHP, Notepad++ and Adobe Photoshop CS5. The proposed system was evaluated by 24 student-users it yields a 9.7 weighted mean which is described as compliant. This entails that the proposed system is highly acceptable in terms of its usability among the users.

Keywords— DBMS, local knowledge computing, indigineous ingredients.

I. INTRODUCTION

Filipino foods reflect the blending of the country’s wide and varied cultures. It evolves over many centuries back from its Austronesian origins to a mixed cuisine with the Malay, Indian, Arab, Chinese, Spanish, Japanese, American, and other Asian and Latin influences adapted to indigenous ingredients and the local palate [1]. CNNGo published the top 10 Filipino foods which include adobo, lechon, sisig, crispy pata, chicken inasal, taba ng talangka, pancit palabok, bulalo, arroz caldo, and fish tinola [2]. Garcia (2010) concluded that food frames up identity and it bridges the cultural gap [4]. Moreover, traditional food is at the foundation of indigenous cultures and economies [3]. Indigenous food is defined as foods that are “made up of crops that grow abundantly without using chemical fertilizers and pesticides, so its cultivation is not harmful to people’s health and the environment” [5]. However, due to the changing generations of lifestyle, people tend to embrace modernized and processed foods. This may imply that the generations of today forgot the desire to have locally grown food and even unfamiliar with the so-called traditional food and/or indigenous food. Experts rationalize that the vanishing indigenous food ingredients is due to many considerations such as unavailability of garden and backyard, distance, the difference in climates, soils, and among others [6]. Undeniably, food with indigenous ingredients is healthy. Indigenous food helps improve overall diet quality including health market food choices [7]. It was concluded in a study that other alternative preservation techniques of traditional foods like vegetables should be explored [8].

The use of digital technology is one of the many powerful techniques in preserving and sharing local knowledge and indigenous practices. The Asian University Digital Resource Network (AUDRN) proves that digital technology is a powerful tool in the preservation, sharing, and dissemination of local knowledge and indigenous practices. Internet, videos, databases, and software packages are among the few tools that can be used in the process. Most importantly, digital

technology provides significant impact in many fields like in the nutrition and dietetics. In a study published in the Journal of the American Dietetic Association, asserts that visually based recipes like the online video recipes have a positive impact in providing culinary inspiration and motivation. It was recommended in the study that healthcare professionals can utilize digital tools for motivation building in their counseling and preventive care practices [9].

Further, Silliman University is among the many universities in the Philippines active to its role in the preservation of local knowledge and indigenous practices. The Nutrition and Dietetics (ND) department is “designed to adequately equip the students with the fundamental knowledge, attitude and skills in foods, nutrition, dietetics, management and allied fields in order to prepare them for responsibilities in teaching, food and nutrition research, hospital dietetics, commercial food service, and public health nutrition” [10]. Aside from its role in the health and environment, the department is also active in preserving local knowledge and indigenous practices of Filipino food ingredients. Students enrolled in ND 81 (Fundamentals of Food Technology) are expected to develop new food products not currently available in the market applying the principles of food preparation, preservation, and nutrition. Students have to do a demonstration on the preparation of food products made from indigenous materials as part of their Service-Learning program of the department. At the end of the laboratory, students are expected to submit a final paper and documentation of product development. [11] Newly developed recipes accumulate every 1st semester in the Nutrition and Dietetics Department.

However, promotion and sharing of this novel discovery of Filipino foods by the students are not as fast as expected because of its paper-and-pencil-based collections. In a study entitled “Home Food Preservation Education: Contemporizing a Tradition through the Use of the Internet” concludes that the “website has been extremely successful in meeting objectives of providing resources to educators, and increasing public

awareness of USDA-endorsed food preservation methods” [12]. Similarly, Lutongbahay.com promotes Filipino recipes, cooking tips, and meal planners. In the website, the Automatic Metric Calculator can be used when the subscribers want to compute for metric equivalent measurements of the recipe ingredients [13]. Likewise, a Filipino-American who is based now in the USA authored an online blog on Filipino recipe called Filipino-Food-Lovers.com. It is a recipe sharing site that aims to showcase and share Filipino favorite recipes and exchange ideas about cooking delicious and native dishes [14]. Moreover, the project of Garcia (2010) successfully demonstrates that indigenous food ingredients can be promoted using digital social tags [4].

It is in this context that an online database of recipes of foods made from indigenous ingredients and materials developed by ND students was proposed. The proposed online repository will not replace the requirements of ND 81. Instead, the paper-and-pencil based collections will be digitized and published on the Internet. This project differs from the earlier promotion of Filipino food ingredients by Garcia (2010) for this will not focus on field collection of Filipino food ingredients and social tagging. Instead, this project focused on the development of the web-based information system with a well-organized database management module, easy to use content management module, user-friendly social networking feature, and multimedia publishing. The web-based system is called “Dapogan,” a Visayan term of a stove that uses firewood, which depicts Philippine tradition and its local knowledge and indigenous practices in food production. The system offers a systematic collection of procedures used to manage processes in a collaborative and interactive environment. It allows SU students, faculty, researchers, and other food enthusiasts to be online for them contribute information to and share a database of knowledge.

II. PROJECT OBJECTIVES

The main goal of the project was to develop an online database of recipes of Filipino foods that will allow ND students in Silliman University, including the larger community, to share and promote foods made from indigenous ingredients using the digital technology. Specifically, this project aims to:

1. digitally preserve indigenous practices involving Filipino food ingredients through the Internet;
2. develop a content management system available for ND students to publish and share their newly developed recipes with indigenous ingredients as their output in ND 81 Laboratory;
3. provide a social networking facility where food enthusiasts can interact virtually for the improvement of the teaching-learning process;
4. provide a 24/7 online, systematic and up-to-date database management system of food recipes with indigenous ingredients;

5. develop a multimedia module that is capable of uploading photos and video clips about the ingredients, procedures, and preparation of the food.

III. ANALYSIS, DESIGN, AND DEVELOPMENT

A. Conceptual Diagram

The Online Database of Food Recipes focuses on the convenient submission, storage, and viewing of local knowledge from recipe contributors to the viewers using the Internet to connect to the Dapogan website as a communication channel. The main flow of the local knowledge submission process begins with the contributor, limited to Silliman Nutrition and Dietetics department students and faculty, posting their recipe knowledge through the internet on the website. This recipe is then received and viewed by various viewers. Viewers can then communicate and post comments on the website to further contribute to the recipe.

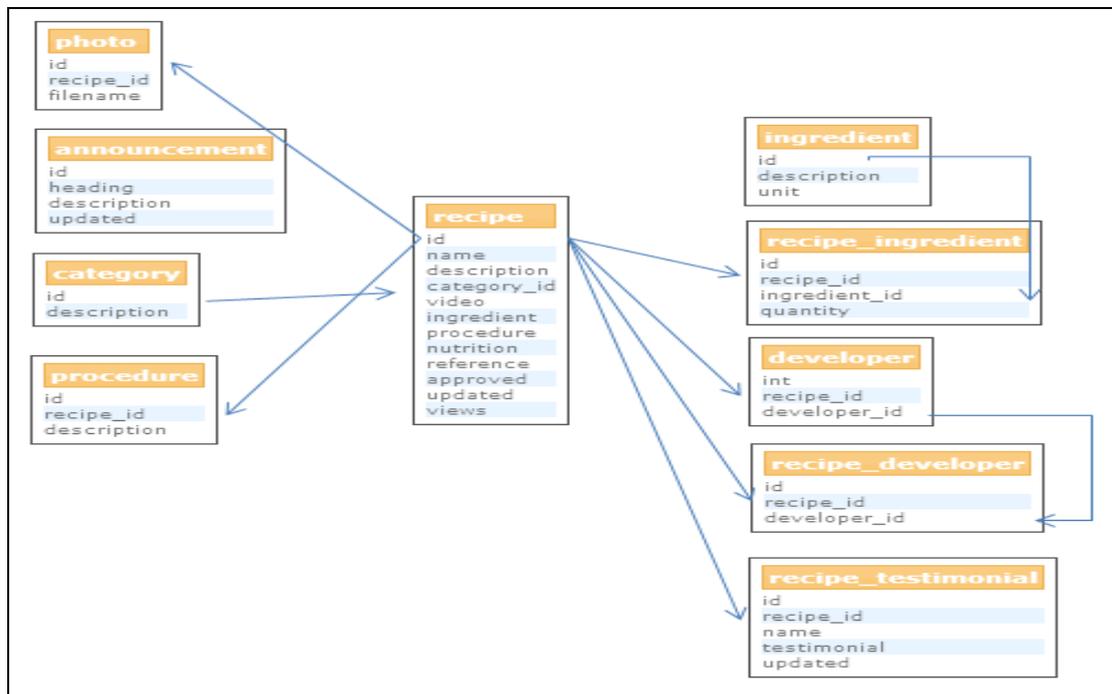
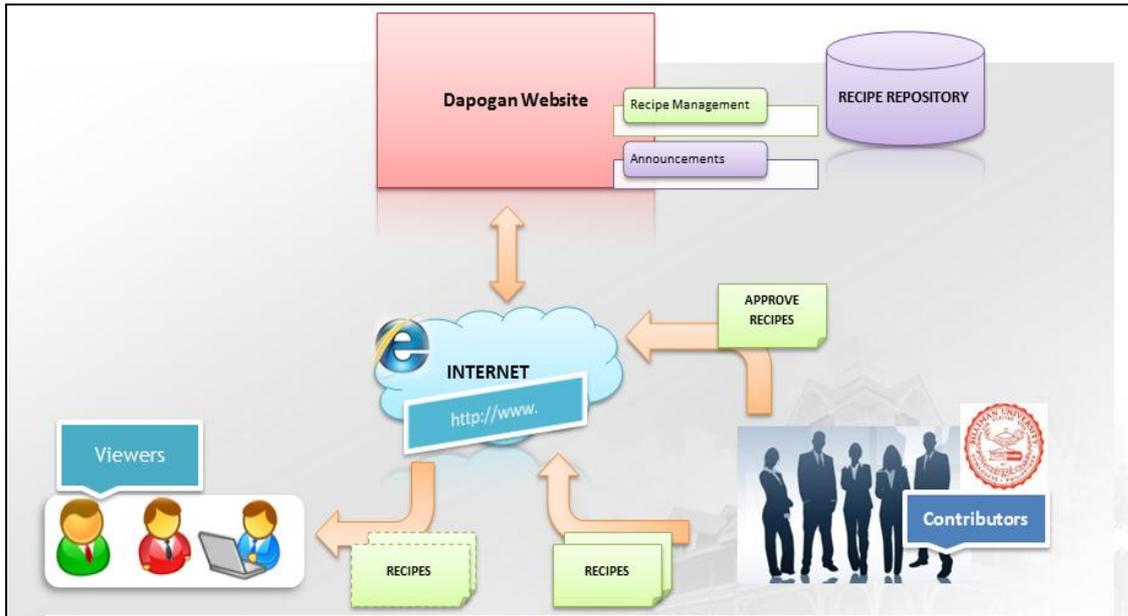
B. Database Diagram

The Recipe table holds the main records for the recipes. It holds the basic information of recipes such as name, description, and references. It also holds references to other tables which contain related data. The Category table is referenced by the Recipe table to contain the category of the recipe. The Recipe_Ingredient table contains references to a recipe and a specific ingredient, allowing ingredients from the Ingredient table to be related to a recipe. The Recipe_Developer table contains references to a recipe and a specific Developer or Contributor (student, employee) of the recipe, allowing developers from the Developers table to be related to a recipe. The Procedure table is referenced by the Recipe table to contain records of the procedures. The Photo table is referenced by the Recipe table to contain image location of the recipe. The Announcement table contains the records for announcements used in the website.

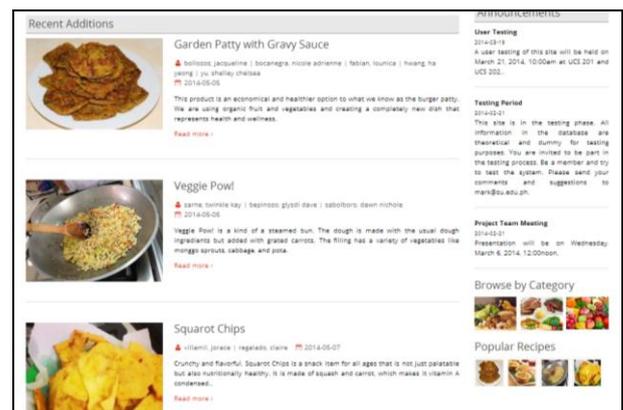
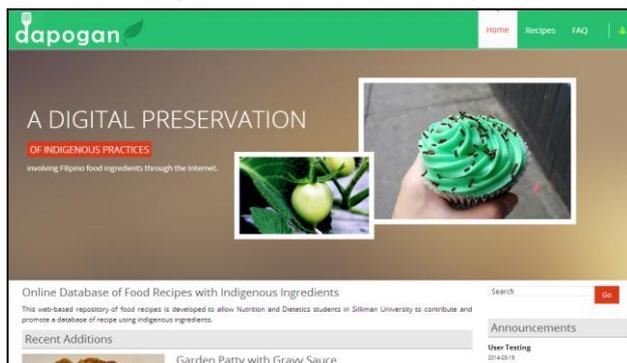
C. Development Tools

A rapid application development was employed during the analysis, design, and implementation of the system. Further, the tools used during the development of the system are as follows:

1. OS Platform – Windows 7 is used as a sample to host the Web application (Linux, Mac OSx could also be used).
2. WAMP Server 2.0 – Web server package that contains the Web server Apache used to interpret PHP files and MySQL database.
3. PHP – The dynamic Web pages that provide the interface and functions to the user.
4. Notepad++ – used as the tool to create and update web pages that contain the core functions used.
5. Adobe Photoshop CS5 – used as a tool to create the graphics used on the website.



D. The User-Interface



IV. SYSTEM EVALUATION

The proposed system was evaluated by 24 ND students. The evaluation tool used was an adopted web usability tool and was administrated online. It was evaluated in terms of General Aspects, Identity and Information, Structure and Navigation, Labeling, Layout of the page, Comprehensibility and Ease of Interaction, Control and Feedback, Multimedia Elements, and Search functions. In summary, the proposed system was evaluated 9.7 which is described as compliant. This entails that the proposed system is highly acceptable in terms of its usability among the users. The result also suggests that the proposed system can be launched as scheduled. According to the qualitative remarks by the students, the majority of the evaluators said the online repository showcases the products of ND students, and it provides the students an opportunity to make their products available to the entire world through the World Wide Web. Based on the testing and evaluation, it was concluded that this project had achieved its objective that is to develop a web-based repository of food recipes developed by the Nutrition and Dietetics Students in Silliman University that will preserve and promote indigenous ingredients.

Usability Functions	Mean	Description
General Aspects	9.1	Compliant/Very minor
Identity and Information	9.4	Compliant/Very minor
Structure and navigation	9.6	Compliant/Very minor
Labeling	9.8	Compliant/Very minor
Layout of the page	9.7	Compliant/Very minor
Comprehensibility and ease of interaction	9.9	Compliant/Very minor
Control and feedback	10.0	Compliant/Very minor
Multimedia elements	10.0	Compliant/Very minor
Search	9.4	Compliant/Very minor
Aggregate Mean	9.7	Compliant/Very minor

Likewise, the output of the project was presented at a public forum last May 7, 2014, which was attended by faculty and students coming from other schools in Negros Oriental. According to the participants, the project is incredible, informative, well-planned, and an excellent reference for local knowledge endeavor.



ND Students pre-tested and evaluated the system

V. CONCLUSION AND RECOMMENDATION

The development and implementation of the proposed system greatly impact to the teaching-learning process in Silliman community across the discipline. Likewise, this project helps in the preservation and sharing of local knowledge of and indigenous practices concerning Filipino food recipes with indigenous ingredients. To sustain this project, the following are the activities to be done:

Silliman University shall host the web application. It shall be accessible through the website of the University.

Necessary maintenance of the web-based system shall be done once in a year for the database security.

User's utilization and accessibility of the proposed system shall be monitored and evaluated accordingly.

Develop a need-based support application for the improvement of the system which shall be proposed and developed by the undergraduate BS in Information Technology students in the College of Computer Studies.

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