EDUCATIONAL SOFTWARE WEB SITE
GRADUATE PROJECT

BY
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ABSTRACT

This project is the design and implementation of a web site to aid teachers using the Coastal Bend Department of Technology lab at Texas A&M University-Corpus Christi in locating and obtaining educational software. The user is directed through graphical presentations to a variety of choices to assist in locating, evaluating, downloading, and choosing educational software products. A database that contains a listing of software, evaluations and details about the software, and a listing of educational web sites has been developed and presented on the Internet, which eases and encourages teachers to choose and integrate the most suitable educational software into their teachings.
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Introduction and Background

I. CPDT

The Center for Professional Development and Technology (CPDT) at Texas A&M University – Corpus Christi (TAMU-CC) is a project that focuses on increasing field experience for education students, enhancing professional development opportunities of practicing teachers, and improving technology and communication links between the public schools, the Education Service Center and the University. The technology allows administrators, teachers and education students on all of the project campuses to share information or take part in interactive programs based at the University and other sites.

The Coastal Bend Center for Professional Development of Teachers Laboratory facility was made possible by the CPDT grant. It serves as a training center for pre-service teachers, Texas A&M-CC College of Education students, and as a staff development for teachers practicing within the public schools in Texas' Coastal Bend region. The CPDT Lab coordinates the training and use of technological hardware and software of TAMU-CC pre-service teachers, staff and clinical master teachers in local schools.
II. Initial Need

The initial need for this project came about when several classes began to use and evaluate the educational software in the CPDT lab. They wrote their evaluations on paper for their professors, but that information was never used again. There were piles of evaluations for more than 50 pieces of software by more than 60 students per year! It was very time consuming for students to sort through all that paper work, not to mention the waste of paper and the constant use of the laser printer. In summation, the evaluations were not being used.

Another problem was that every time students and in-service teachers searched for available software, they spent too much time searching and would become frustrated. The resource most commonly used by teachers are the search engines on the Internet; however, they get discouraged because it is very time consuming to search using web engines when most of the information they receive is unrelated to what they search for. As it is, it is difficult enough to get teachers to incorporate educational software into their curriculum because of their reluctance to use computers; they did not need the added frustration. Someone needs to provide a means of collecting information for as many educational software products as are available in the market, since there are so many valuable pieces of software out there. After all, the teachers must know the software exists before they can use it or we can even think of them using them. The solution to their problems is to build a custom educational software web site that serves those needs.
The reasons for building a custom educational-software web site on the World Wide Web were to decrease their search time and to add convenience when compared to other methods. Teachers and students can use the database at the same time. Also, it allows those students who get familiar with the web site to be able to continue using it once they become teachers. Next, it will reach many more people than just those who will use it at the CPDT lab. Finally, non-CPDT lab users will get a chance to add their opinions about software they have enjoyed using, hence, improving the web site.

III. Previous Work

Two similar previous projects have been created concerning educational database systems. Yali Lei created one of them, and this author did the other one. Lei took advantage of the World Wide Web. However, her web site is not user friendly. First of all, the organization of the web site needs improvement. It is very hard to follow because there are some links do not belong in the web site, for instance, “My BBS,” and “author utility.” Secondly, some of the of the information displayed on the web pages should be presented in layman’s terms. For example, she uses titles on buttons like \textit{view table}, \textit{select}, \textit{insert} and \textit{update}. Finally, and most importantly, the authors added more functionality since Lei’s web site does not meet all the requirements of the CPDT Lab.

This author did the other previous project for the CPDT lab. This author worked there for almost two years and decided to create a database last year so that students could evaluate the software in the lab, and at the same time, be able to search and sort the evaluations easily. This project received numerous complaints and suggestions for improvements from the students. The most common complaints received were that the
program is just located on one computer, people overrode and deleted others' evaluations, and the project is not user-friendly. This author plans to use their feedback to greatly improve the program. This author will eliminate the problems by serving the database on the web, adding security, and designing the web site to be user friendly.

The other part of the project that needs improvement deals with the hidden design of the project. This author designed a simple table using FileMaker Pro. This author was not aware that FileMaker Pro has relational database capabilities since each table is considered a file, and it does not allow more than one table in the same file as with, for example, Microsoft Access. Therefore, no database design was used. It does not take advantage of any of the features of a database system. It is just one giant table so it is not relational and definitely not normalized. Therefore, its storage and retrieval operations are not efficient. Also, validation and integrity constraints are not used. Consequently, there are no primary keys; time is wasted using a sequential search. This program does not check the validity of the data entered, so there are many blank fields in the records. Also, there are records that have the same information in some fields, which frustrates the users since they have to sort through the search results. Finally, the database needs some security features that the users have requested. For instance, the users should be able to edit only records that they added into the database.
IV. Satisfies my requirement for a masters degree project

This project satisfies the requirement for master’s degree project because a graduate project must relate to an established application area. My application areas are biology and chemistry. Also, I have worked in the CPDT educational lab for almost 2 years. Even though it might not be apparent that this satisfies a biology or chemistry application, it does. For instance, this software package can easily be used by biology or chemistry teachers or a biology or chemistry software distributor to present their software to the consumer.
Narrative

This project is the design and development of an educational-software web site to aid teachers using the Coastal Bend Department of Technology lab at Texas A&M University-Corpus Christi in locating and obtaining educational software. The web site consists of several static and dynamic web pages that will access different tables from the Educational-Software Database. Both the web pages and database are located on a web server in the CPDT computer lab. The web pages are used to present the information to the users. The user is able to access the web site both through a link on the College of Education Main Web Page and through popular search engines by searching with the key words “Texas A&M-Corpus Christi, TAMU-CC, CPDT Educational Web Site Coastal Bend Department of Technology.”

The following part describes what the end-user sees when using the Educational Software Web Site. It describes the initial page and the pages that follow based upon the users’ decisions.

I. Purpose Page

The “Purpose page” of the web site serves to provide the purpose of the web site. It also contains three links. The main link is the “Enter” link. This allows the user to log-on to the system. The other link is the “Background” link that takes the user to a description of the problem, and the background of this project. The final link is provided to allow the user to send an email to this author for any comments or suggestions.
II. Background

The "background page" serves to provide some information on the CPDT and reasons that led to the development of this project.
ECDC's Interactive Repository for Educational Software (IRES)

Background and Rationale

I. Initial Need

The initial need for this project came about when several classes began to use and evaluate the educational software in the CPTT lab. They wrote their evaluations on paper for their preference, but that information was never used again. There were piles and piles of evaluations for more than 50 pieces of software by more than 60 students per year. It was very time consuming for students to sort through all that paper work, not to mention the waste of paper and the constant use of the time printer. In summation, the evaluations were not being used.

Another problem was that every time students and in-service teachers searched for available software, they spent too much time searching and would become frustrated. The resource most commonly used by teachers are the search engines on the Internet however, they get discouraged because it is very time consuming to search using web engines when most of the information they receive is unrelated to what they search for. As it is, it is difficult enough to get teachers to incorporate educational software into their curriculum because of their reluctance to use computers, they don't need the added frustration. Someone needs to provide a means of collecting information for as many educational software products are available at the market and in many valuable pieces of software out there. After all, the teachers must know the software exists before they can use it or we can even think of them using them. The solution to their problem was to build an Electronic Composite Database (ECDB). The ECDB will collect software information...
Figure 3
Authorization Page (Existing User or New User)

The “Authorization Page” has two options. If the user has logged on before, then she will click on the “Existing User” link, and then enter her “User ID” and “Password” in the “Existing User” section.
However, she will select the “New User” link if the user has never logged on before; then, she will log-on through the “New User” section by providing a User ID, Password, Last Name, First Name, Email Address, and Phone #.
If the user tries to log-on through the “Existing User” section and the database cannot find her information because she did not type in the correct User ID/Password combination, then the following error page will appear:
If everything is successful with each page, the user will always see a *success web page*. However, if it is not successful, an *error web page* displaying the error is displayed to the user, and she is asked to select the *back* button on the web browser to try to fix the problem. Also, each page contained in the whole Educational-Software Web Site will contain a link to a help page that will explain how to use that page.
Another feature about this web page and every web page in the entire "CPDT Educational Software Web site" is that the software checks to make sure that the user has filled out, and entered the correct data type information for each field. For instance, if the user forgets to type in her password, then the following screen appears:

![Authorization Page (Pop-up Error)](image)

Figure 7
Authorization Page (Pop-up Error)
III. Main Page

The "main page" serves as a welcome page and from here the user is allowed to access all five different "sub web sites." The user has the option to choose from five links depending on what her purpose is. Also an information area box is provided to give the user a brief explanation as to what the purpose of each link is.

![ECDC's Interactive Repository](image)

**Figure 8**
Main Page
The links allow the users to:

I. Search for and add educational software.

II. Evaluate, read evaluations, edit and/or delete own evaluation(s).

III. Search for information on users of the “ECDC Software Educational Web Site.”

IV. Search for educational web sites, and/or add information about an educational web site.

V. Describe educational software that the user would like developed.

Note: From now on, three links are provided at the bottom of each page. The first link is the “FAQ” link, which takes the user to the Frequently Asked Questions page. The second link is the “Home” link, which will take the user back to the “Main Page.” The third link is the “Contact” link, which allows the user to e-mail a comment or suggestion to the author.

IV. **User chooses to search for and add educational software.**

The user is presented with an interface with two main links. One of the links allows the user to search for educational software. The other allows the user to add an educational software product to the database.
a. Search

When the user chooses to search for educational software, she is presented with a form with 6 field options, a Start Search button, Find All Records, and a Reset this form button. The option fields consist of the title, subject, grade-level, format, operating-system. The title field is a pull-down menu with all the titles of all the software as options. The subject field is also a pull-down menu that consists of the subjects: Computing, English, Geography/Social Studies, Graphics, Internet, Language Arts, Math, Reading, Science. The grade-level field will have a pull-down menu associated
with it. The pull-down menu has these options: Pre-Kinder, Kinder, First Grade, Second Grade, Third Grade, Fourth Grade, Fifth Grade, Sixth Grade, Seventh Grade, Eighth Grade, Ninth Grade, Tenth Grade, Eleventh Grade, Twelfth Grade, and College. The format field has a pull-down menu with these options: CD-ROM, Floppy Disk(s). The operating-system-of-the-software option also has a pull-down menu with these options: MacOS, Windows 95 & 98, Windows 3.1, and DOS.

Finally, the Reset this form button will Reset Form all the fields, the Find All Records is used to find all educational software in the database, and the Start Search button is used to send the information filled by the user to the database to perform that search.
Figure 9
Search for educational software page

Once the user presses the **start search** button, the user sees the results or “hits” of her search query presented on a new web page. The results will only show the title of the records, and the titles are linked to a web page that displays the educational software’s information.
Figure 10
Results page of Search (Educational Software)

Once the user notices a software product or component that is of interest, she can click on it and it is presented on a new web page with all the information of that software title. The new web page presents the information using the following fields: Software Title, Subject, Grade-Range, Format, Operating-System, and Description.
b. Add

When the user chooses to add an educational-software product to the database, the user is presented with a web page with six fields to fill-in, an Enter New Educational Software button, and a Reset Form button. The six fields consist of the title, subject, grade-level low, grade-level high, format, operating-system-of-the-software, and the description-of-the-software. The title field is blank. The subject field is a pull-down menu that consists of the subjects: Computing, English, Geography/Social Studies, Graphics, Internet, Language Arts, Math, Reading, Science. The grade-level-low and
grade-level-low fields have a pull-down menu associated with it. The pull-down menu has these options: Pre-K, Kinder, First Grade, Second Grade, Third Grade, Fourth Grade, Fifth Grade, Sixth Grade, Seventh Grade, Eighth Grade, Ninth Grade, Tenth Grade, Eleventh Grade, Twelfth Grade, and College. The format field has a pull-down menu with these options: CD-ROM, Floppy Disk(s). The operating-system-of-the-software option also has a pull-down menu with these options: MacOS, Windows 95 & 98, Windows 3.1, and DOS. The location field is a text box where the location of the software is added. The Description is a text area. Finally, the Reset Form button will Reset Form the fields, and the Enter New Educational Software button will send the information filled-in by the user to the database to add the new record.
Figure 13
Add new software (Educational Software)

V. User chooses to evaluate, search for evaluations, edit or delete evaluation(s).

The user is presented with an interface with three main links. One of the links allows the user to evaluate educational software products. The second one allows the user to read evaluations of educational software products by students. The last link allows the record creator to edit and/or delete evaluations.
a. Evaluate

When the user selects to evaluate an educational-software, the user is presented with a web page with all the fields of the evaluation. The different questions have been grouped and links have been provided to all groups to give the user a friendly environment. For example, some of the fields the user answers are: Software Title, Star Rating, Comments, Strengths, Weaknesses, Packaging Integrity (Does the box represent software?), Ease of Use, Childproof (Designed with Child-Reality in Mind), Educational, Entertaining,
Design Features (How smart is this program?). At the end of the web page, the user is presented with a submit button, and a Clear Form button.

Figure 15.a
First page of evaluation form (Software Evaluation)
Figure 15.b
Second page of evaluation form (Software Evaluation)
Figure 15.c
Third page of evaluation form (Software Evaluation)
Figure 15.4
Fourth page of evaluation form (Software Evaluation)
**Figure 15.e**

Fifth page of evaluation form (Software Evaluation)
Figure 15.f
Sixth page of evaluation form (Software Evaluation)
Figure 15.7
Seventh page of evaluation form (Software Evaluation)
Figure 15.h
Eighth page of evaluation form (Rate Product)
Figure 15.i
Ninth page of evaluation form (product's three main strengths)
Figure 15.j
Tenth page of evaluation form (product's three main weaknesses)

After the user goes through all the questions and clicks on the Submit Evaluation button, the system shows the user a "confirmation" page that states that the record has been successfully added to the database or if the user did not fill in all the required fields, she will be asked to fill them in first.
b. Search for evaluations

When the user selects to search for educational-software evaluations, she is presented with a web page with ten input fields, a Reset Form, Find All and a Search button. The input fields are the Title, Star Ratings, Implementation, Last Name, First Name, User ID, and Sort results by. All have pull-down menus with all the options for each field located in the menu. The Reset Form button is used to Reset Form the form of all previous choices the user has selected. The user will use the Search button after she is done selecting.
After the user presses on the *Start Search* button, the results are shown. In addition, the system is smart enough to show information according to the user’s search criteria. For example, the user searched by *Title* only; therefore, the title of the software is not shown in every record of the table. However, if the user would have search by *Last Name* every record would show the title of the software and not the last name in every record of the table. Also, to make the site more user friendly, three links have been
added on the side, *Search for Evaluation of Educational Software*, Edit or Delete your own Evaluation, and Add a new Software Evaluation.

![Educational Evaluations](image)

**Figure 18**
Search Result (Software Evaluation)

The user can click on a link to see the evaluation. These web pages are the same as the web pages used in the "Evaluate software pages" above except that the fields are filled-in.
c. Edit and/or delete evaluation(s)

When the user chooses to edit and/or delete evaluations, she is presented with a list of all her evaluations.

![Educational Evaluations](image)

**Figure 19**
List of own evaluations (Software Evaluation)

The user can either "click" on the link with the name of the software, link labeled delete, or link labeled edit. If the user clicks on the link with the name of the software, the
evaluation is displayed. If the user clicks on the link labeled delete, the evaluation is
deleted from the database. If the user clicks on the link labeled edit, the evaluation is
displayed, but each field can be edited.

![Educational Evaluations](image.png)

**Figure 20**
Edit evaluation (Software Evaluation)

**VI. User chooses to search for information on current users.**

This part of the web site allows users to view information about other users. This web
page has two fields to search by. A user can search by Last Name, or First Name.
Figure 21
Search (Users)

After the user clicks on Start Search the following “Results Page” appears.
Figure 22
Search Result (Users)

From here the user can click on the name(s) that appear and see detailed information on the “Details Page.”
VII. User chooses to search for an educational web site, or add information about an educational web site.

The user is presented with an interface with two main links. One of the links allows the user to search for educational web sites. The other allows the user to add educational web sites to the database.
a. Search for educational web sites

When the user chooses to search for educational web sites, she is presented with a form with three field options, a search button, a find all web sites button and a Reset Form button. The options will consist of the name of the web site, and the subject of the web site. The name of the web site, and the subject of the web site field are pull-down menu that consists of the following subjects. The third field is a blank field for the Last Name.
Figure 25
Search Page (Educational web sites)

Once she presses on the *start search* button, she sees the results or "hits" of her search query presented on a new web page. The results show only the title of each web site. The titles are linked to their full detail pages.