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Building an Access Database for Cookstove Research

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Abstract

This paper takes the reader through the thought process and actual instructions to create your own Microsoft Access database, or how to use the one provided with this paper. Also, instructions to use the HBLL resources of Compendex and RefWorks are covered. While this work was built specifically for Cookstoves research, it could be adapted to any research where you would need to maintain a record of the journal articles that you are using. It has been discovered that building a database is a time consuming and difficult work, but once done, Access provides an easy way to work with your information.
Building an Access Database for Cookstove Research

It has been my observation that many of the professors at Brigham Young University (BYU) travel to remote places around the world to do much of their research. They, along with their research assistant students, study and learn while in locations that have neither cell phone coverage nor internet access. My project was to provide a method of storing research reference information in such a way that they can either read on their computer (if they have access to electricity), or print a form that is easy to take, read & sort through. Microsoft Access is my database of choice for many reasons: 1) It is readily available on all BYU campus computers. 2) The student edition of Microsoft Office, which is available through the BYU Bookstore, comes with Access. 3) Access provides a method of storing, sorting, and printing data in such a way that it becomes easy to use. 4) Even though Access is not builder-friendly, it is user-friendly, making it a program that can be used by most people, once the original format has been set up. 5) Access has a large storage capacity, making it almost endless in its years of use.

This paper will discuss my processes of building the database, instructions for use, and possible further development of the database.

Building the Database

The idea of building a database came from Dr. Matthew Jones (Jones, 2012), who had several uses in mind when he asked me to look into the project. His ideas became my guiding principles as I made decisions in building the database.

As I worked with Peter Zuber (Zuber, 2012), the Engineering & Computer Science Librarian at HBLL, he was invaluable in guiding my research, looking for similar articles, and finding the resources I would use both to design the database and to fill it with articles for Dr. Jones’s research group.
My first project was to decide on the database program for use. I considered OpenOffice’s Base (Apache OpenOffice Base, 2013), Google’s Spreadsheet (Google Drive, 2013), and Microsoft Access (Microsoft Office Access, 2013). I chose Access, as it seems like it will be around and available for a long time, while I was unsure of the others. Also, it has been my experience with other Microsoft programs that they are easy to use and understand.

My original intent was to zip through the programming part of this project, then fill the database with journal articles for Dr. Jones’s research, and move on to the next project. I thought through what I wanted the database to do for me, and began looking for directions to do each part. The in-program Help was not very helpful, but it got me started. I found a dozen Access help books in the Herald B Lee Library (HBLL) e-book collection, but had trouble understanding the technical jargon, remembering where I last saw an item, and feeling very overwhelmed with the whole process. I then found a copy of the Microsoft Access 2010 Bible (Groth, 2010) in the library, and subsequently bought a copy. In this, I could add my penciled notes and stickers to find my place again.

I began with Dr. Nick Ball (Ball, 2012), who ran me through a half-semester overview course in a couple days, teaching me the basics of Access. His help and direction was invaluable in my initial stages.

I soon discovered that unlike most Microsoft programs, Access is not an easy program to use, if you are building the database. However, once a database has been designed, putting the data into it is as easy as the designer made it to be. In my search for help, I found very few people who knew anything about designing a database, and most of them knew only what they had been taught in an overview class. Luckily, at the end of my timeline, I found one person, Jim Brown, who built Access databases for a living, and could point me in the correct directions.
to finalize my project. He told me two things that made my frustration reasonable: 1) He said that, “You can do 90% of the programming in the first 10% of the time and then it takes 90% of your time to do the final 10% of the work!” and 2) “Because Access is so difficult, this is why you can make big bucks!” (Brown, 2013). I am very grateful for his help.

Some sources suggested that I would need several tables to add the various pieces of information about each journal article; however I wanted to keep it all in one table to simplify my understanding. Others suggested that I would need to build several linking tables and queries, but again, I wanted to simplify my work space. I began by following all their suggestions, and ended up not using most of them. However, the process of building the tables and queries was educational and valuable, some of which I used in my final result.

Adding new articles to the database is an essential part of this program, so I wanted to ensure that it was an easy process. However, I did not want someone to accidentally (or maliciously) mess up the data that was already there. To ensure both easy and secure, I set the form so that no one can change the information, once it is in the database.

I wanted to make a simple search bar that would be familiar to users who would be using familiar Boolean search terms. This became a larger project than I realized. I thought of making a drop-down list of all the data, but that became rather large in scope very quickly. I finally decided that a simple “search through the data” page would have to be my solution. This is not my favorite result, but with my limited knowledge and time, it was the best solution.

I wanted to make the data easy to read and print, as one of the fundamental ideas of being able to take it on the road. Therefore, the format for printing was easy to decide on.

It dawned on me that whoever would use my database would need some directions, so I created the forms in such a way that the directions for use were very simple. Also, I included those
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directions right on the page where they would be adding or searching, eliminating the possibility of losing or forgetting them.

I did end up using a query in the search process. This allows the user to view or print only one reference, as opposed to all of them.

While only one journal reference might be wanted at a time, I assumed that the user would probably want all references available to him also. This called for an option to view and print all references without having to search them all out separately.

I finalized the project with several journal articles discussing “cookstoves” already entered into the database, as this is the direction of Dr. Jones’ research. I created a couple PowerPoint presentations that give extensive, detailed directions to use the database and finding more articles that a user might want to add. These presentations are included digitally next to the Access database, as well as summarized in the next section of this paper.

How To – Step-by-Step to Build the Access Database

When you open Microsoft Access, it begins in the New page, allowing you to choose your basic design. I chose a Blank Database to create.

1) The first task is to build a Table. Labels go across the top of the page (I used A, B, C, D, etc), with your data underneath. If you need to rename a column, right click on the current title and choose Rename Field, then type what you want. Tab between columns, and Enter to drop to the next line. When you get to a comfortable spot with your Table, right click on the tab to save it (I used the default, Table1), but leave it open. It might be helpful to add a few rows of data so you can see it working.
2) On the top Ribbon, click Create, then choose Query Design. When the popup shows up, you can close it with the X in the corner, then right click on the tab to change to the SQL view. Then type the following:

```sql
SELECT Table1.*
FROM Table1
WHERE (((Table1.A)=[Forms]![Searach for an Table1]![A]));
```

Once again, right click on the tab and save (I used the default, Query1), then close the Query. Note that this query searches by the data in the first column. If you want to search by other data, list that column field name instead.

3) Next we’ll build a Form to see all the data from the Table. On the top Ribbon, click Create, then choose Form. Access will automatically take all the column labels from your table and create a Form using them as labels for the Fields. You will see the first row of data from your table; to see other rows of data, click on the forward or backward arrow at the bottom of the page. Once again, right click on the tab at the top to save the Form; I chose the default, Form1). Note that at this stage, you can edit the data from this form.

To change how this form looks and works, right click on the top tab and choose Design View. Ensure that the Property Sheet button is on from the Ribbon across the top of the page. This is where most of the changes happen.

Note that the page will be broken into Form Header, Detail, and Form Footer. The Header and Footer information show up on every page, so this is where things like page titles, numbers, etc. show up. The bars that separate the sections are click & drag, so are easy to resize.

4) To create a button on the Form, look under the Form Design Tools tab (the default location when you enter Design View), then on the Controls section of the Ribbon, choose the Button icon (it looks like 4 x’s inside a box), and place it wherever you’d like it to show up. At
any time, you can go back and forth between the views to ensure it looks right. When you place the Button, the Command Button Wizard box will popup and lead you through the process of giving the button an assignment. Browse through the categories to become familiar with them. In this case, I will choose the Form Operations category, then choose the action of Print Current Form. Click next & decide if you want words or a picture on your button, and click next. Give your button a real name that makes sense to you, as Command31 doesn’t really mean much to most people. Then click Finish. On the tab, right click to Save your work, then return to the Form View & try it out. At this point, you may want to play with the several options of the Button Wizard, and choose the procedure you really want.

5) Last, create a Report to show your data the way you want it. On the top Ribbon, choose Create, then choose a Report wizard to help you through. If you choose the first, Report, it will create the simplest design the computer can think of – it looks much like your Table. If you choose Report Design, it will give you a blank form complete with Page Header, Detail, and Page Footer for you to drag your Table Fields onto & design as you wish. If you choose Blank Report, it will show you the margins for your printed page, and allow you to drag the Table Fields wherever you wish.

Again, you can add a Command Button to print, if you so desire.

Instructions for Use

I have created two PDF files, entitled 1) How Do I Find Articles to Add Into My Database, and 2) How To – Working With the Research Papers Database. Both files provide an easy, visual, step-by-step method of finding, using, and working with this database. Their contents are somewhat replicated below.

How Do I Find Articles to Add Into My Database?
If you know the specific journal or article you are looking for, you can go there directly from BYU’s Herald B. Lee Library (HBLL) web site, http://lib.byu.edu/. On the home page, find Journal finder (for when you know which journal you are looking for), or ScholarsArchive (for research and journals by BYU faculty or students) to find information to the physical location or online copy.

If your search is more broad or less specific you can search for a keyword. Log in to the HBLL web site with your MyBYU login data, then choose a Subject Guide; I chose Mechanical Engineering. In the Subject Guide, there are tabs across the top of the page; choose “Get Journal Articles”, then click on the link to Compendex. Compendex is a part of Engineering Village, a database of journal articles that are available for your use. You will probably have to sign in again to have the free access that the HBLL offers for free for BYU’s students, staff, and faculty.

Once in the Compendex web site, put a keyword into the search box, and click the Search button. Once the results come up, you can filter them by several choices in the left-hand column, and sort them by different choices from the dropdown arrow on the right. At this point, you have a couple options to choose from: you can open an electronic copy of the article through the BYU HBLL web site by clicking on the button that says “Get It at BYU”, or you can export the information to another program – specifically RefWorks.

If you choose to export the information into RefWorks, click on the hyperlink “Download”, where a popup window will take you through the next steps. In the Record Output, choose “detailed record”, and click on “RefWorks direct import”, then click on the button “Download”. This will take you to the RefWorks web site, where you will be asked to log in or create an account (also free). During the login process, you may be asked for the Group Code.
This may be found back on the library web site, under the Subject Guide / Bibliographic Help / under RefWorks, there is a link to a PDF file entitled “How to Import into RefWorks…” The Group Code is on that document. Double check the document periodically, as the code may change. Continue logging in, as usual.

If you are importing from Compendex, the web sites do it pretty automatically – just follow the directions on the screen. Don’t forget to check for duplicates – this is a great place to get that done. If you are going into RefWorks directly from the HBLL web site, you will be able to see all your saved data.

When a group of data in imported into RefWorks, it initially all goes into a temporary folder called “Last Imported.” Be sure to move your data into another folder, or it will be overwritten the next time you import something. To create a new folder to put your information into, click on the folder icon at the top of the page and choose “New Folder.” Rename your new folder as you wish, & move your data into it. Once again, you can change how you view the information – Standard view, One Line view, Full view, or as a citation in AMA format. Choose what works best for your current job, as you can always change it.

Once again, if you want a copy of the entire article, you can open an electronic copy of it through the BYU HBLL web site by clicking on the button that says “Get It at BYU.”

From the data in RefWorks, you can get the information you will use to put data into the access program.

Use your Subject Librarian – listed on the home page of the Subject Guide. He or She can guide you through the process!
Read first; ask questions after! Don’t ask someone else to do your work for you – they have already done it & all you need to do is read!

There are LOTS more resources on the HBLL site! Like a Treasure Hunt, you must look around, explore, and discover!

*Working with the Research Papers Database*

Begin by downloading the Access program to your computer. Thus any changes you make will be uniquely yours.

Right-click on tabs to Save or Close – do not go into the other views, as small changes in the program tend to make huge changes in results, which tend to be a bear to fix!

When you open the Research Papers Database, it will automatically open to the Article Chooser page. To view the various articles, you can spin your mouse wheel or pull on the slide bar on the right of the screen.

If you would like to print only one article’s information, highlight the title of the article and copy it (Ctrl + C). Click on the button at the top of the screen that says “Preview Article Info,” and paste (Ctrl + V) the title into the popup box, and click OK. Your selected article will result, ready for you to read or print. To either print or close the selection, click the Print Preview tab at the top of the screen, and choose your action. When you close the tab, it will take you back to the Article Chooser tab, as at the beginning.

If you would like to add new information to the database (such as from your RefWorks import), double-click the Add New Articles option in the left-hand column, which will open a new tab. Carefully add the new information to the form, tabbing from field to field, and ensuring
that each piece of information is in the correct place. Once you click the forward button at the bottom of the form (>|), the data is saved into the database & cannot be edited or deleted. The forward button also will take you to another blank form to add more information.

When you are finished adding new articles, left-click on the Add New Articles tab, then Save, then Close. To see your new data in the Articles Chooser tab, you will need to close that tab too, and then reopen it.

If you are heading out into the remote places in the world or would simply like to have a printed hard copy of the information to write notes on, dogear the pages, and use in non-internet places in the world, click on the report View or Print All Articles. Once the print preview opens up, if the print ribbon is not showing, click on the down arrow in the upper right corner to open it. From there, you can print or close the preview.

**Discussion - possible further development**

If someone was to rebuild or even update the database that I designed, I would recommend that they first go through the series of magazine articles by Patricia Cox in *Strategic Finance* magazine, which begins in the November 2008 issue. (Cox, 2008) At the time of writing this paper, the series was still continuing. I recommend that you go through the entire series, creating the Access file as you go – this will help immensely in your understanding of the program.
Works Cited

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How do I find articles to add into my database?

Using resources from the HBLL website

Margaret Weddle
“Let’s start at the very beginning – a very good place to start...”

Working in the HBLL web site
http://lib.byu.edu/
1. Log in

2. Choose your subject guide (I like Mechanical Engineering)
Using Compendex

Part of Engineering Village – a database of journal articles
The HBLL has an agreement with Compendex that allows you to use their resources for free, instead of buying your own license.
Choose your sort and filters

- Filter by a number of choices
- How do you want it sorted?

Look how many there are!
Click on your favorite articles

Download to Refworks

Click here to get the article
Use the popup window to transfer data into RefWorks

- I prefer to take all data into RefWorks – in this case, more is better!
Working with RefWorks

Either transferring data from Compendex or going straight into Refworks from the HBLL web site
Group code??
How do I get in?!
Find it in the HBLL site!

Bibliographic Help

How to import...

Check this periodically as the code may change!
Add the Group Code (from the HBLL web site), and click on Go To Login.
Login or Sign Up for a New Account (free) to access RefWorks
If you are transferring data from Compendex, follow the directions on the screen (don’t forget to check for duplicates!).

If you are coming into RefWorks straight from the HBLL web site, you will see all your saved data.

In RefWorks
Easy to use, easy to work with!
Always move data from the Last Imported folder!

Click the folder to create a new location

Or it will disappear when you next import
Choose the view you want

Different views for different uses
Getting the actual article

Different places to start from!
The HBLL web site

When you know what you are looking for, consider the HBLL Journal finder (for when you know which journal you are looking for), or ScholarsArchive (for research and journals by BYU faculty or students)!!
Or maybe Google??

You need to buy the copy.
Get there from Compendex!

Just click on the Get It! @ BYU button to get your free copy!

Evolution of cookstove designs and manufacturing techniques
Ceramic engineering and science proceedings [0196-6219] Kopplin yr:2
<table>
<thead>
<tr>
<th>Ref ID</th>
<th>Journal Article Reference 7 of 31</th>
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</table>


**Get there from RefWorks!**

Just click on the **Get It! @ BYU** button to get your free copy!

**Evolution of cookstove designs and manufacturing techniques**

*Ceramic engineering and science proceedings* [0196-6219] Kopplin yr:2
Most of the time, you can link directly to the text online. Click here!

Get your free PDF here!

Again, entering from the HBLL website gives you free access.
HBLL tools to make your work & your search easier

- Use your Subject Librarian – listed on the home page of the Subject Guide. He or She can guide you through the process!
- Read first; ask questions after! Don’t ask someone else to do your work for you – they have already done it & all you need to do is read!
- There are LOTS more resources on the HBLL site! Like a Treasure Hunt, you must look around, explore, and discover!
Working with the Research Papers Database in MS Access
When you open the database, it will automatically open the Article Chooser page.
Spin the mouse wheel, or pull the right slider, to quickly scroll through the collection of records.
Highlight the title of the article you are interested in; Copy (Ctrl + C); click on the Preview Article Info button to open a popup.

Paste (Ctrl + V) the title of your selected article into the space provided. Click OK.
Your selected article’s information will result, ready for you to read or print.
Click the Print Preview tab at the top left of your screen to either print or close the selection. When you close it, the program will take you back to the Article Chooser screen (at the beginning).
Not enough?! How to add to the database
Double-click on **Add New Articles** to open the database adder.

Enter the new article info in the appropriate spaces – be careful to place everything correctly, as once it is saved in the form, you cannot edit it.
Click the forward button on the bottom of the screen to add the information you just typed into the database & begin another article.
When you are finished adding new articles, right-click on the Add New Articles tab & Save and Close.

To see your new data in the Article Chooser, you will need to close that tab also, and then reopen it.
But wait! There’s more!

Print everything that is in the database
Are you the type of person who prefers a printout to thumb through and write notes on? Click on the report **View or Print ALL Articles** for a print preview of all articles in the database. From there, you can print all of them in whatever format you choose.
Click the down-arrow to open the print ribbon, and print as usual.
Extra notes of worth:

• Download this Access program onto your computer, and work from there, saving as you go. Do not upload your changes to Dropbox, as there are others who are doing the same thing.

• Right click on tabs to save or close. Do not go into the other views.

• While you are probably a computer whiz, don’t go into the background properties of this program. It changes drastically with the smallest adjustment & is a bear to fix!

• Have fun!