Research: My Tools of the Trade

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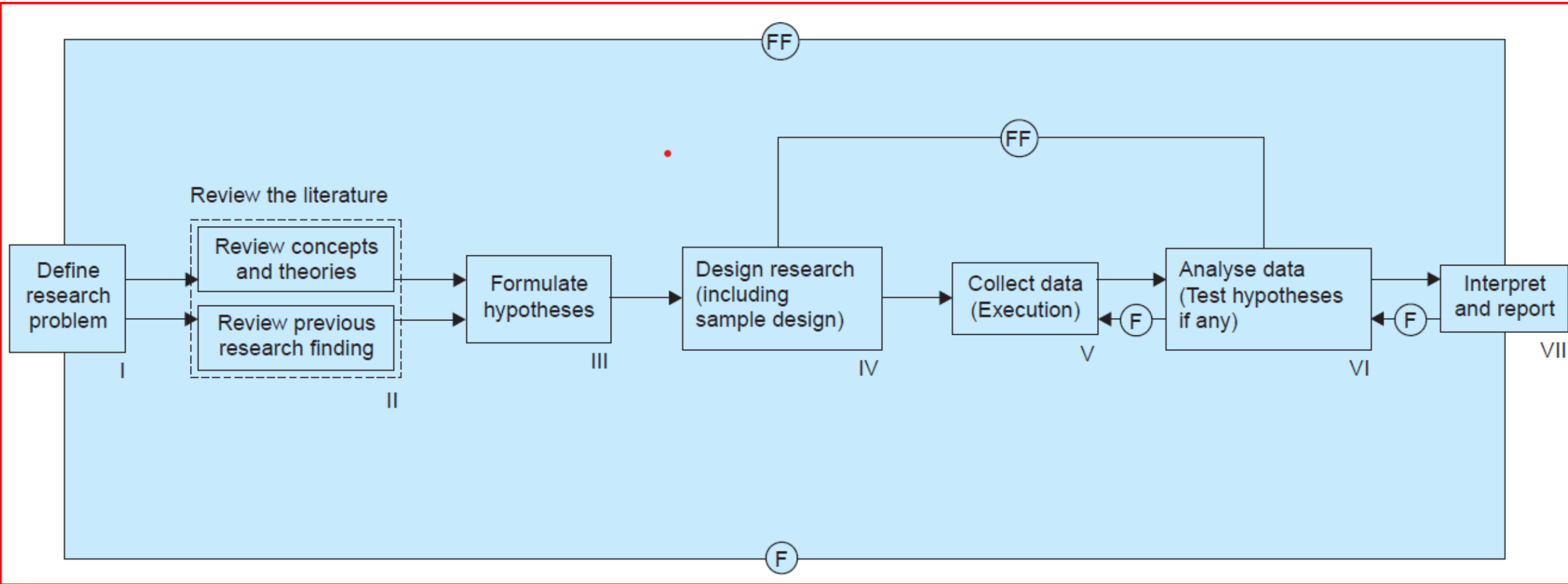Ekiti State University, Ado-Ekiti

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Objective

To recommend to you the software and Internet tools that I have found very useful in my researches.

Your mileage with them might differ, but I guarantee you that if you take time to familiarize yourself with them, it will make writing your dissertation much easier.

The Research Flow Chart

Various tools and techniques are needed at each stage of research for it to be successful

ICT Research tools

- Doing research is difficult, especially in resource-poor settings.

- But things are so much easier with ICT:
    i. The Internet
    ii. The Personal Computer
    iii. Smart phones and tablets

Classes of Research Tools

i.   Literature Search Tools

ii. Word Processors

iii. Reference Managers

iv. Statistic Programs

v.   Archiving and Note Taking Software

vi. Never Lose Your Data Again (Cloud Storage and Local backups)

vii. Learning Epidemiology (and Statistics)

Tools for Literature Search

- Vital for the initial three stages of research

- The internet has replaced traditional libraries and encyclopedias as the primary source of information for most researchers

- To be an effective researcher, then you must be skillful in searching the internet

Tools for Literature Search II

- **HINARI**
- **PubMed**
- **Google Scholar**
- **African Journal Online (AJOL)**: You can get articles from journals based in Africa through this portal. Most of the articles can be downloaded free.
- **General search Engines** e.g. Google, Bing, Yahoo etc.

Word Processors

- Word processors are software that provides the user with tools needed to write and edit and format text and to send it to a printer.

- There are many of them.

- Examples include:
  i. Microsoft Word, (the most popular of them all)
  ii. Open Office (which is a free alternative).
  iii. Cloud based alternatives such as Google Doc and Office 365 from Microsoft.

Reference Managers

- Effective use of reference managers reduces one of the greatest chores in manuscript writing - formatting references. Examples include:
  1. **EndNote** is the most popular of them all. EndNote also has a web-based version, which you can use for free if your institution is registered with HINARI. It has a chapter in my book
  2. **Zotero** (*http://www.zotero.org/*) This is my favorite because it is much easier to use than Endnote and it is FREE. I have a chapter for it in my book. I have also uploaded it as a resource in **Effective use of advanced statistical methods in research III.**

  3. **Mendeley** is another popular reference manager.
  4. Lots more.

Statistic Software

- **SPSS**……Most commonly used statistic software in reported literature. Easy to use. Extensively covered in my book, Getting to know SPSS. My Choice.

- **EPIINFO**….Free, open source and GUI interphase

- **STATA**….Popular among statistician. GUI but programming language required. Steep learning curve.

- **R**….. Free, open source. Programming language required. Steep learning curve.

- **SAS**…. Popular among statistician. Programming language required. Steep learning curve.

- **MedCalc**…Easy to use. Especially useful for ROC curve determination

- **NISS**…..Useful for sample size determination

- **GRAPHPAD**….Has an easy-to-use tutorial section. Also has web-based components

…….and many, many, more

Archiving and Note Taking Software

- This group of programs allow you to capture anything you can think of from any program on your computer or smart devices.

- The captured materials can be formatted

- What makes these software so versatile is that you can attach almost any type of files such as PDF, Word documents, Excel spreadsheets to the notes you have captured.

- The attachments can be fully embedded in the program, or they can be linked to the program. Finally, the notes can be sorted into folders, then tagged, annotated, edited, given comments, searched and exported as part of a notebook. There are many of this programs on the internet, but I have only used three:
    i.   **Evernote** (*www.evernote.com*) and
    ii. **Microsoft OneNote.**
    iii. **Google Keep:** On Android devices

How do I use archive and notetaking programs?

- When a new idea strikes me, instead of scribbling on paper, I open OneNote on my convertible Lenovo tablet (There are Android and IOS apps also). I already have a folder called "*Studies*". All I need to do to start scribbling away is to create a new Note in this folder. If I get any interesting titbits from my searches on the internet or my computer, I'll just capture them into the Note. For me, the programs act like a chest drawer where I can store and organize my research information, and never misplace them.

Never Lose Your Data Again

- Online data storage (also called cloud storage) are used primarily to backup selected files on your computer. While there are many examples, I have only used the following:

- Dropbox *(www.dropbox. com*), 2Gb free, easiest to use.

- Microsoft OneDrive (5 Gb free with live or outlook account)

- Google Drive (15 Gb free with Gmail account)

Learning Epidemiology (and Statistics)

- **Studying Populations:** This is a wonderful program for those intending to learn the basic principles of epidemiology without too much hassles. Here is the description from the program's website:

- Studying Populations is computer assisted learning package for epidemiological methods. It is suitable for anyone working in health sciences including medical students, Masters students, public health practitioners and clinicians. It covers many basic epidemiological concepts in a set of over 80 interactive exercises and simulations.

- Please find the links to download the program here: *http://www.personal.dundee. ac.uk/~cdvflore/Welcome.htm* or you may download it directly from here: *http://www.personal. dundee.ac.uk/~cdvflore/SPv305Setup.exe*. The supplementary files can be downloaded from here: *http://www.personal.dundee.ac.uk/~cdvflore/SPv3ToolsSetup.exe*.

- There is a review of the program in the International Journal of Epidemiology which can be downloaded from the journal website: *http://ije.oxfordjournals.org/content/32/5/890.2.full*
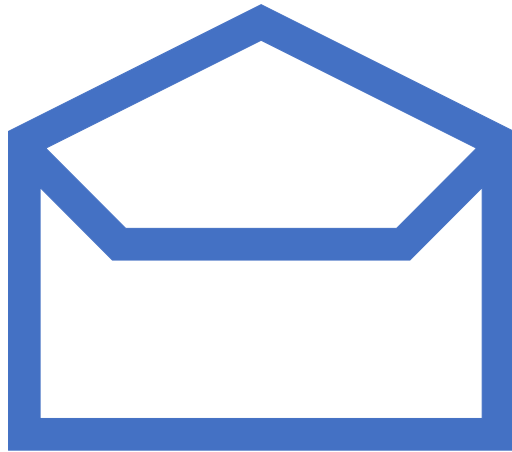
Useful websites

- *www.oluwadiya.com*: My website. The section on SPSS contains some useful links on SPSS. If you are keen on learning SPSS syntax, there are useful links on this site for you.

- *http://www.graphpad.com/quickcalcs/contingency1.cfm*: Online Statistics website.

- *http://www.bettycjung.net/Statfxs.htm:* This **Betty C Jung's Statistical Procedure Site**. It also contains link to other useful sites.

- *http://www.whichtest.info/*: This website is called **Which Test**. It is an online guide to selecting an appropriate statistical test. By following a series of instructions on the webpage, you can easily determine the appropriate statistics to use.

- *https://www.statsoft.com/textbook/*: This is the grand daddy of online statistic resource. This is the description from its website: The only Internet Resource about Statistics Recommended by Encyclopedia Britannica. StatSoft has freely provided the **Electronic Statistics Textbook** as a public service for more than 17 years now.

Useful websites

- *http://www.spsstools.net/SampleSyntax.htm*: If you want to learn SPSS syntax or you want access to syntax files that you can download and (freely) use, **Raynald's SPSS Tools** is for you. Syntax has a steep learning curve, but once you know how to use it, you can easily increase your productivity by a factor of ten! Furthermore some of SPSS's features are only available through syntax. Syntax is the real power house of SPSS.

- *http://calcnet.mth.cmich.edu/org/spss/toc.htm* : This site has some movies which can be downloaded. It is a great site for learning SPSS.

- *http://www.ats.ucla.edu/stat/spss/* : Another great online learning resource for SPSS. Get your hands dirty on it!

- *http://www.uccs.edu/~faculty/lbecker/SPSS/content.htm* : A well organized site, designed to help you choose the right test for your data.

- *http://www.epibiostat.ucsf.edu/biostat/sampsize.html?iframe=tr#ttest* : This website contains a list of mostly free programs for sample size and power calculations.

- *http://www.openepi.com* : Online Sample Size calculator.

Thank You

To ask questions, please join the forum at www.oluwadiya.com