

Research **without spending a dime**: Open source and other alternatives to cut your costs and improve productivity as a graduate student.

Here some steps and guidelines that will allow you to do your research effectively and at no additional monetary cost. After one semester you should feel comfortable enough using most of these applications to have them as a default, allowing you to save money and time in the long run. I will not get into operating systems and other applications that might have some indirect relevance to the research process.

I. First suggestion: Stay on campus

- A. Your tuition and fees already pay for a vast amount of software that would cost an individual thousands upon thousands of dollars to own on a single computer. Use it. Furthermore, you are likely to be much more productive on campus than home.

II. Writing

- A. Basic to any education is putting thought to paper (electronic or otherwise) in order to exhibit well reasoned positions born about by evidence.
 - i. [Open Office](#): Open office is an open source alternative to the MS Office Suite of products and works on Windows, Mac and Linux. With [Writer](#), the MS Word equivalent, you have pretty much the same experience as MS Word (though far less annoying in my opinion), however you can save the files as *.doc if others need it, and has a built in PDF converter. This was written using it.

III. Researching Articles

- A. First of all, you do not have to be on campus to use the library. With your UNT ID you can have access to the electronic library for article searches and download in exactly the same fashion. The drawback is that their proxy seems to be pretty much broken and throttles download speeds to ridiculously slow levels despite your own connection.
- B. The library for a variety of reasons does not have electronic access to all journals, and even some that do have a moving wall (e.g. no access to anything within the past year). For those with the wall I honestly recommend refusing to cite those articles as they are published in unscientific fashion given today's standards (and I would send your own work elsewhere). One of the fundamental things that separates science from other means of knowledge acquisition is its openness, and people who engage in such practices should not be encouraged. However you may still have access to things we don't have here on campus with web searches, e.g. [Google scholar](#), searching the web for that article title with .pdf in the search, and visiting the author's own webpage. The latter should be something you visit for any work of primary relevance to your own.

IV. Data collection

- A. Web-based Surveys
 - i. RSS supports survey construction using Zope and Rich Herrington is the primary source of contact on that. To be perfectly honest, I don't recommend it.
 - ii. Many seem to use SurveyMonkey, but aside from the stupid name its free version is a joke and is not supported on campus (i.e. until you can get it into a stat package RSS can't help you).
 - iii. There are not a whole lot of options out there but LimeSurvey appears to be the front runner among open source alternatives and worth looking into.

B. Elbow grease

- i. Collect data yourself rather than hiring an undergrad (it's too easy to find volunteers for course credit or future recommendations) or paying for convenience sampling of students (it's already biased enough but also easy to get a volunteers or mandatory participants from the research pool).

V. Data entry

- A. If you are on campus you can use a stat program with a good spreadsheet such as S-Plus or SPSS for data entry.

- B. For more flexibility, use Excel (all stat programs can read it), and for an open source alternative to that use Open Office [Calc](#), which can be saved in Excel or other formats for easy porting to stat programs.

VI. Data compression

- A. Got big files? [Use 7zip](#).

VII. Statistical Analysis

- A. I have many suggestions, and all begin and end with the letter [R](#). It does more than SPSS or SAS and is free. Furthermore, to use in an applied fashion takes very little (i.e. although you can go nuts with programming it is not required), but given how long a graduate education requires one can be efficient enough by thesis time and an old pro by dissertation. However, there are of course [alternatives](#).

VIII. Quality reports.

A. Document

- i. Using MS Word is a bare minimum means, sufficient for class assignments but which does not produce a quality report, and anyone that's fought it over the course of a long paper trying to do simple paragraph, table and figure formatting probably would prefer something else. Again, Writer (mentioned above) is viable for simple text, and highly recommended for that. However, for really great looking scientific documents, one might try [Latex](#) even if they aren't expecting to do mathematical writing (e.g. equations¹), because it allows for fine control over the look and feel of your output without too much hassle, assuming you take a more applied approach. I've recently been turned on to [Lyx](#) and it's seems to be exactly what I was looking for in a wysiwyg approach (like Open Office, it runs on Windows, Linux and Mac). Because I use R, I can use a package such as xtable (or its Rcmdr gui addon) to convert tabled output to the appropriate Latex, and then just copy that into the Lyx document where it can eventually be saved as pdf, or insert an awesome R graphic that already looks exactly like I want because I controlled all details before production. Probably even more relevant to psych students, it has an APA format template! You can also use [Bibtex editors](#) to keep a running database of citations that can easily be called within any Lyx document, and you can visit Google scholar and set the "Scholar Preferences" to output BibTeX . Furthermore, [your own graduate school is hip to all of this](#), and provides sample

¹ Technically you probably should be reporting your model in formula form somewhere in the paper like the hard sciences do as well as some social science disciplines (mathematical psychology, political science etc.). Not only is it clearer compared to tabled coefficients and related clutter, but some readers might actually prefer it and others from outside the discipline will be able to understand it more easily. Furthermore, it isn't hard to do.

templates, bibliography file etc.

In short you don't need a publisher to produce book quality documents.

B. Presentation

- i. Many use PowerPoint, which isn't too bad but again, unless you want to shell out the cash you'll be stuck to campus use only. Open Office [Impress](#) is an alternative there, but you'll also want to use high quality graphics from a statistical program like R (presentation software graphical capabilities are awful, as are those found in stat capable programs like Excel and SPSS).

In summary, the graduate student conducting research can do so at low to no cost if they don't mind a little discomfort getting used to new software. From the initial literature searches, to collection, analysis and publication of data, the determined student has a plethora of choices and means to be productive on a budget.