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Bringing You The Inside Scoop on Ph.D Life

The Ultimate Time Saving Combination
Latex – Mendeley – Bibtex

In a Ph.D, most of your time is spent researching. Sadly, your results will not be introduced to the community until you write about them in format specified by your journal of choice. Done manually, this ~~can be~~ is tedious and time consuming. Infact, probably more time would be spent doing this than actually writing the document.

However, journals generally offer templates to use. This usually includes a Microsoft Office template or a LaTeX style. The Office template is fairly basic, and merely offers you a starting point. As you add new text to the template, you must remember to format it the correct way. This gives a rather sloppy solution to the problem – but can we do better?

Try Using Latex

Coming from a physics background, the common way of conforming to the standards is through using a journal specific LaTeX style. In this case, all the formatting is done for you. All you have to do is enter the text and then compile the document.

Maybe I should be a bit more specific - sadly, there is a small amount of coding involved which may prove a little daunting to begin with. Here is an example document using one of the Institute of Physics LaTeX styles named iopart:

```
\documentclass[12pt]{iopart}
\begin{document}
\title{My Example LaTeX file}
\author{Stuart }
\ead{www.indoctorate.co.uk}
\begin{abstract}Write your report in less than 150 words please … \end{abstract}
\section{Introduction}Now the article begins ...
\end{document}
```

Ok, so before you panic, let's just digest what's going on here. First of all, I've highlighted in bold the text that will actually appear on the screen. The other junk is just code to tell your willing computer where you want the text to appear. Thankfully, it automatically knows what format to give to each section of the document. Clever LaTeX.

So I have given a very basic example of a document. Obviously, you will want to add figures with captions, perhaps some mathematical equations and of course a bibliography. For all your needs, the journal usually provide a helpful 'readme' file which detail the small snippets of code needed for each part. There are plenty of LaTeX forums for all the niggling problems.

How Do I Get LaTeX Running?

As LaTeX is generally already installed on Linux distributions, I'm just going to stick to explaining the windows installation process. You will need to download two free programs: MiKTex (the

brain) and TeXnicCenter (the text editor). It also requires a post-script viewer – if you don't already have one I recommend GSview.

Basically, TeXnicCenter is a text editor specifically designed for LaTeX documents. This makes life even simpler as it includes nearly all the snippets of code as preset buttons. Now, I'm not going to go through the actual steps of installation as this has been done already by numerous websites. After first glance, this article seems to have some pretty clear steps to this process.

One thing I will note though is that it is best to have MiKTex and GSview already installed before you set up TeXnicCenter. On the initial start-up screen of TeXnicCenter it asks for the location of the MiKTex bin folder. This can be set later, but it is a bit fiddly to find the specific tab again if you are new to the layout of TeXnicCenter.

With this all in place, the text editor provides some nifty options from a drop-down menu which allow you to convert your ugly, messy LaTeX document into a nice and shiny formatted pdf file. Or, you can produce a post-script file if you so wish. You can see in my example at the end the exact steps for creating the final document.

If you are reading this and using a Linux machine, then it is even simpler to use LaTeX. Simply type your document using any editor you choose (I prefer ones which have highlighting enabled – gedit is a fail safe). Then, in the command line, type:

$ latex *documentname*
$ bibtex *documentname*
$ latex *documentname*
$ latex *documentname*
$ dvipdf *documentname*

This will produce a PDF file. Yes, I do realise I've typed the same command three times. This is one of the little quirks of LaTeX. When it is compiling all the references, it needs to run a few times to sort it self out ... I can sympathise. If you want a post-script file, then type dvips instead of dvipdf – sorted. One other point is that when typing the *documentname*, leave out the .tex file type. The compiler automatically knows which file type to look for.

Ok, I've brought up bibtex here without any real mention. Bare with me – I will go on to describe this next, but I thought I should just add this in here for completeness.

Adding References To Your Document

Another task that can be handled by LaTeX is the bibliography. This is perhaps one of my favourite features. Instead of having to keep track of your numbering system (for those of you using the Vancouver reference style), LaTeX knows when your references appear in your document, and fills out the bibliography section for you.

To do this, firstly you need a piece of software that can manage all of your references. There are plenty of free programs out there, but personally my favourite is Mendeley. The easiest way to describe Mendeley is by saying it's like iTunes for geeks; instead of music, your library holds references.

Not only is this program essential for what I'm about to describe, but it is great for keeping all those references organised. If you want to read more about what Mendeley has to offer, then feel free to browse one of my earlier posts which provides a review :-). There are other options such as Qiqqa,

Zotero and Endnote each with their advantages and disadvantages. However, I will leave it up to you to explore those.

Once you have uploaded all of your pdfs to Mendeley, you now have to turn this library into a Bibtex file. This is easily done by highlighting all the references in Mendeley that you would like to use in your document. Personally, I just select all as you decide later which references will appear in your bibliography. However, if you like the thought of organising your references into 'playlists', then I won't complain. Once highlighted, click File -> Export and you're almost there! It is best to save this file in the same folder as the LaTeX document.

I purposefully glossed over Bibtex as this comes pre-installed in TeXnicCenter. This is merely another compiler to add the collection. What is important however, is how you add Bibtex to your LaTeX document. Don't worry – it is simple. If we take the LaTeX example document I gave earlier, simply add the following lines just before the \end{document} statement:

```
\section*{References}
\bibliographystyle{IEEEtran}
\bibliography{ref}
\end{document}
```

In this case, IEEEtran is the reference style I have used. As you would expect, there are many different styles of referencing systems to choose from within Bibtex. Some journals provide a file, most unfortunately don't. Luckily, there are plenty of preset styles to choose from. All you have to do is download the file, save it in the same directory as your LaTeX document and change 'IEEEtran' to whatever the file is called.

Next, the 'ref' part of the above example refers to the file you exported from Mendeley. For piece of mind, this file is best stored in the same directory as the LaTeX as well. Lastly, to actually insert a reference into your text, right click a reference in Mendeley and click 'Copy Latex Citation'. Now paste this into the text where you would like it appear and it will look something like:

```
\cite{myref}
```

With that in place, you are now ready to face the academic world with piece of mind that noone's going to comment on the layout of your paper – only the content …

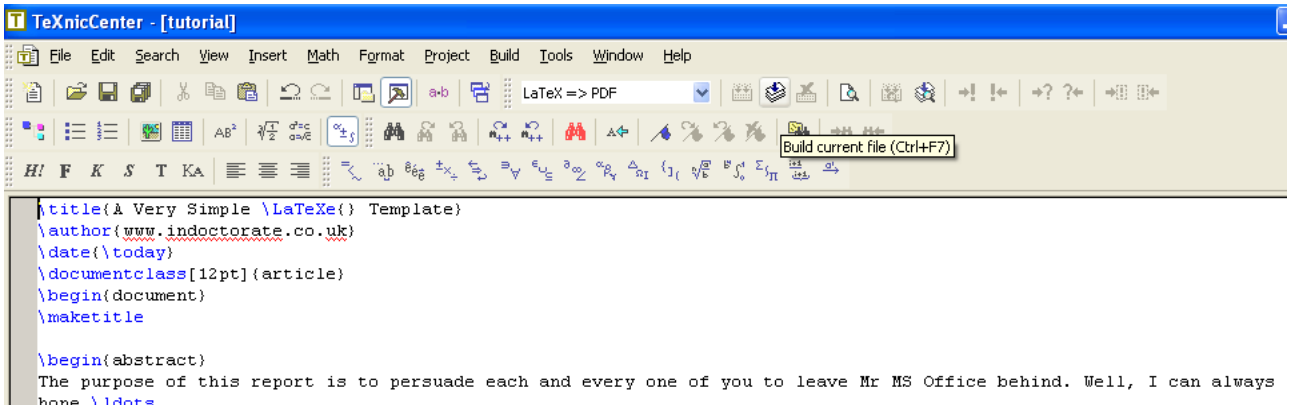
Walk-through Example

I didn't get it the first time, so don't be put off if you haven't either. This is an entirely different way of thinking to that of MS Office. To try and ease you into it, I've provided a step-by-step example. Don't panic, I've used a preset document class and reference style so you don't have to download anything extra to use other than TeXnicCenter and MiKTex:

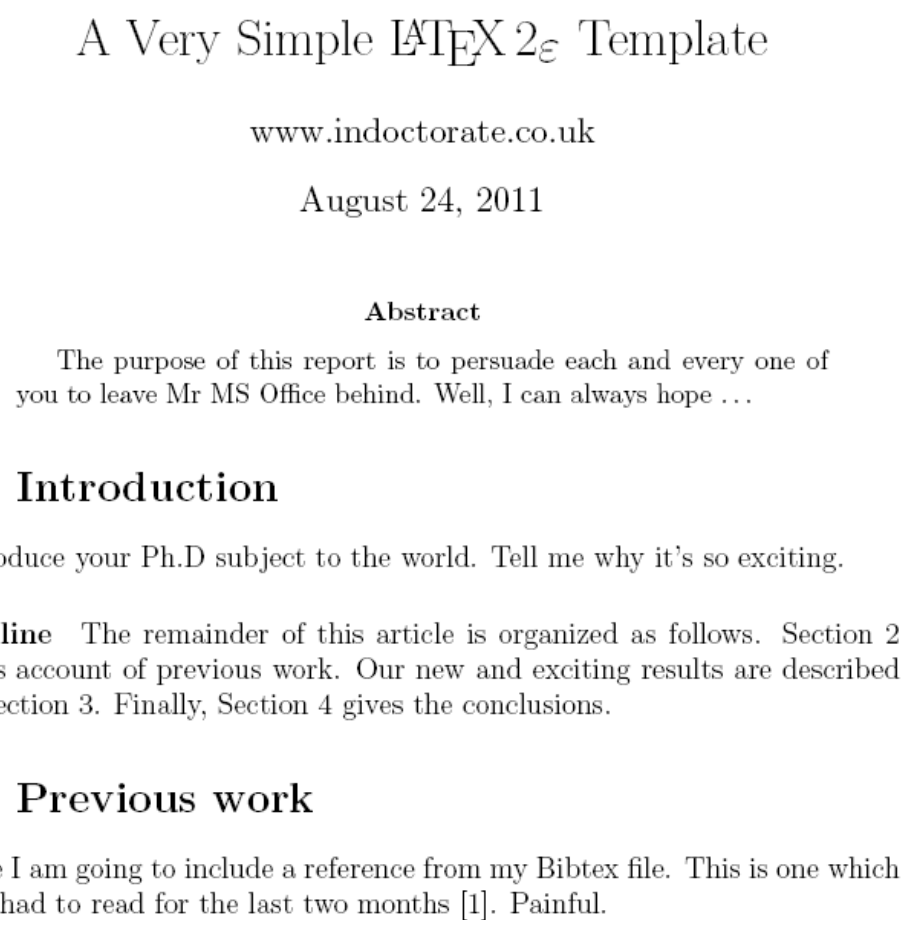
1) First let's write a LaTeX document in TeXnicCenter:

```
\title{A Very Simple \LaTeXe{} Template}
\author{www.indoctorate.co.uk}
\date{\today}
\documentclass[12pt]{article}
\begin{document}
\maketitle

\begin{abstract}
The purpose of this report is to persuade each and every one of you to leave Mr MS Office behind. Well, I can always hope \ldots
\end{abstract}

\section{Introduction}
Introduce your Ph.D subject to the world. Tell me why it's so exciting.

\paragraph{Outline}
The remainder of this article is organized as follows.
Section~\ref{previous work} gives account of previous work.
Our new and exciting results are described in Section~\ref{results}.
Finally, Section~\ref{conclusions} gives the conclusions.

\section{Previous work}\label{previous work}
Here I am going to include a reference from my Bibtex file. This is one which I've had to read for the last two months \cite{Hinton1976}. Painful.

\section{Results}\label{results}
In this section we describe the results. If only I had results.

\section{Conclusions}\label{conclusions}
We worked hard, and achieved very little. Learning curve, etc. etc.

\bibliographystyle{abbrv}
\bibliography{ref}

\end{document}
This is never printed
```

2) Now, select the LaTeX → PDF option from the drop-down menu and hit 'Build Current File' as shown. This needs to pressed around 3 times otherwise you will get a ? symbol in place of where the references should be. One of the many quirks in LaTeX ...



3) To view our output PDF, we then click 'View Output'. Hopefully you get something like:



A Very Simple LaTeX 2ε Template

www.indoctorate.co.uk

August 24, 2011

Abstract

The purpose of this report is to persuade each and every one of you to leave Mr MS Office behind. Well, I can always hope . . .

1 Introduction

Introduce your Ph.D subject to the world. Tell me why it's so exciting.

Outline The remainder of this article is organized as follows. Section 2 gives account of previous work. Our new and exciting results are described in Section 3. Finally, Section 4 gives the conclusions.

2 Previous work

Here I am going to include a reference from my Bibtex file. This is one which I've had to read for the last two months [1]. Painful.

Fingers crossed it worked!!

I know through experience that LaTeX can be fiddly. But it is definitely worth it in the end. If you have any problems or queries installing or using any of the above programs on Windows or Linux, please feel free to get in touch on Twitter @indoctorate or leave a comment and I will do my best to get back to you :-)