

Plaz's Note Taking Essay

Wednesday, September 24, 2008
9:27 AM

Note-Taking

Reconstruction (1863-1877)
 1862-1864
 1867-1870

Info: 1862 Congress: 9,000 black soldiers to fight against the rebels
 Congress will break a black voting register
 white congress - war left black political + civil rights
 black - white radical - series of acts
 as Union troops approached many blacks deserted + plantations empty
 met African sharecroppers or renters
 but for them "sharecroppers" black people + white came
 reconstruction only partially successful

United States began singular - federal case to be more important
 white code post big price for war - riots, riots, + violence
 south did not want to give in much
 still more resistant more thought slaves were less intelligent

Lincoln wanted to integrate south in a different period (1863-1865)
 south would recognize state of 2 1/2 years before progress + progress
 Radical Republicans wanted more punishment + control of states
 radicals wanted 50% to be transition southern society + they were not

1862 Ben Butler put slaves to work as they labor under supervision
 Jan 1862 Sherman issued order to give sea soldiers to blacks
 Freedman's Bureau provided supplies + heard + observed level
 3 months after southern + 1864 amendment + passed a law

Andrew Johnson followed Lincoln - third year post + plebeians
 after 1864 became more radical + wanted to punish south
 fed + freed from the states + poor people to receive voting
 but rich people had to be punished individually - 10% were
 at state of Congress but he operated who then
 was very anti black + sympathetic to South

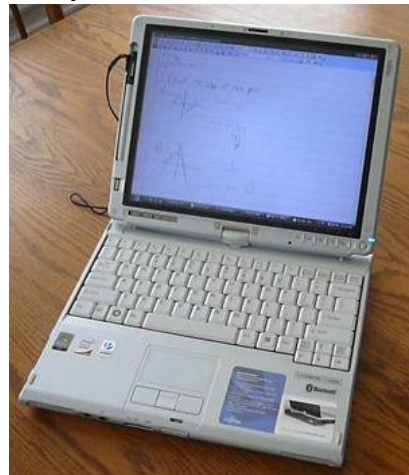
Example of Headline Notetaking Format

Diligent note-taking is one of the most important keys to being a successful student. I have found that recording information helps me slow down and remember it better. It also forces me to process and review the information in order to make it more concise for the page. One of my teachers, Dr. Reilly, agrees that writing down the information helps students remember. I have even developed formats for taking notes, such as the [Headline Notetaking Format](#) I developed in [American Studies](#) which tries to shrink the information to one line of loose leaf formatted like a newspaper headline. These efforts have paid off. At the Pennsylvania Governor's School (described below), Professor Song, the UML/Systems professor at Drexel's Graduate School in Information Science said that I would "graduate *summa cum laude* from Harvard" due to the quality of my notes.

I also post my notes online at [ThePlaz.com](#), my website with about 4,000 pages of content viewed over half a million times. As I describe in the site [Mission Statement](#), I try to share my knowledge with the world. In addition, I have found that knowing that others will read my notes motivates and focuses me to do my best, even on days when I don't feel like it.

Notes are critical for me to succeed in school; however the process and overhead of taking them on paper slows me down. I set out to find a better way of taking notes that would give me more time to concentrate on my classwork, my business, and my volunteer efforts. I purchased a Fujitsu T4220 Tablet PC several months ago and I decided to use it to take notes in school.

Computer



Carrying a computer around school is useful. I am able to quickly look up unfamiliar words and research more information about a topic by Google-ing or reading an encyclopedia. I remain connected to the outside world with email and the news. I can maintain my to-do list in one place as it is automatically synchronized between computers. I can get a quicker start writing papers because I can type whenever I get inspiration, rather than waiting until I get home.

How about just wanting to succeed?

In my opinion way do others, change it!

But the most useful part of having a laptop is the ability to collaborate. During a group project, I can write or type what we talk about and email it to the group with 4 clicks. For the American Studies Decades Project, I set up a group discussion forum where we could all post ideas. However, at this point in time, my other group members were not carrying around laptops. This slowed the discussion down, but it was still beneficial for me to have a laptop because I could integrate group member's work into our project when they sent it to me. This streamlined my day enabling me to take care of simple tasks as they come up, without having to wait for the end of the day, which is less efficient.

Efficiency is key. For years, I have been trying to be more efficient and more effective. Carrying a laptop means I can take care of simple tasks immediately, not write them down on paper and then process them when I get home to my computer. For example, if I want to change something on this essay draft, I can make the change immediately. If I have a spare moment, I can open my laptop and start editing this very essay. I don't have to remember to print it out the day before, make changes on paper, and then type in those changes. Thus I can accomplish more in less time.

Taking Notes

2.1 Differentiation
November 18, 2008

Slope, $\frac{\text{rise}}{\text{run}}$, average rate of growth

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 1}{1 - 0} = -1$

The rate of change, changes (changing at a different rate)

$m_{\text{tan}} = \frac{5-3}{4-1} = \frac{2}{3}$

Slope of the tangent is an approximation of the slope of the tangent at (4,5)

The smaller Δx is - the more accurate you can find the tangent

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{f(x_0 + \Delta x) - f(x_0)}{(x_0 + \Delta x) - x_0} = \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x}$$

As Δx gets smaller - the better approximation of a slope of a tangent line which tells us the slope of a curve

$$\lim_{\Delta x \rightarrow 0} \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x} = \text{slope of tangent line}$$

Called the difference quotient (used to find the slope of a tangent line)

ex) $f(x) = x^2 - 6x + 11$

$$\lim_{\Delta x \rightarrow 0} \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x}$$

$$\frac{[(x_0 + \Delta x)^2 - 6(x_0 + \Delta x) + 11] - [x_0^2 - 6x_0 + 11]}{\Delta x}$$

$$\frac{x_0^2 + 2x_0\Delta x + (\Delta x)^2 - 6x_0 - 6\Delta x + 11 - x_0^2 + 6x_0 - 11}{\Delta x}$$

$$\frac{2x_0\Delta x + (\Delta x)^2 - 6\Delta x}{\Delta x}$$

$$\frac{\Delta x(2x_0 + \Delta x - 6)}{\Delta x}$$

$$2x_0 + \Delta x - 6$$

$$\lim_{\Delta x \rightarrow 0} 2x_0 + \Delta x - 6$$

$2x_0 - 6$ is the equation for finding the slope of the tangent line at any slope that we pick.

derivative function or $f'(x)$

So $f'(x) = 2x - 6$ is the derivative = slope

p 104 #18 Find the derivative

$$f(x) = 1 - x^2$$

$$\lim_{\Delta x \rightarrow 0} \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x}$$

$$\frac{[1 - (x_0 + \Delta x)^2] - [1 - x_0^2]}{\Delta x}$$

$$\frac{1 - x_0^2 - 2x_0\Delta x - (\Delta x)^2 - 1 + x_0^2}{\Delta x}$$

$$\frac{1 - \frac{(x+0)^2}{1-x^2} - \frac{1-x^2}{1-x^2}}{1 - \frac{(x+0)^2}{1-x^2} - \frac{1-x^2}{1-x^2}}$$

$$\frac{-2x \cdot 0x - (0x)^2}{0x \cdot (2x - 0x)}$$

$$\frac{-2x - 0x}{-2x - 0}$$

$$\frac{-2x}{-2x}$$

24 $f(x) = \frac{4}{\sqrt{x}}$

$$\frac{4}{\sqrt{x} \cdot 0x} = \frac{4}{\sqrt{x}}$$

Multiply by conjugate
 not 1/3 but 2/3 rationalize
 and get a common denominator

$$\frac{4 \cdot \sqrt{x} - 4 \sqrt{x} \cdot 0x}{\sqrt{x} (\sqrt{x} + 0x)}$$

$$\frac{4\sqrt{x} - 4\sqrt{x} \cdot 0x}{\sqrt{x} (\sqrt{x} + 0x)} \cdot \frac{1}{0x}$$

$$\frac{4\sqrt{x} - 4\sqrt{x} \cdot 0x}{\sqrt{x} (\sqrt{x} + 0x)} \cdot \frac{1}{0x}$$

Multiply by conjugate

$$\frac{4\sqrt{x} - 4\sqrt{x} \cdot 0x}{\sqrt{x} (\sqrt{x} + 0x)} \cdot \frac{4\sqrt{x} + 4\sqrt{x} \cdot 0x}{4\sqrt{x} + 4\sqrt{x} \cdot 0x}$$

$$\frac{(4x - 16)(x + 0x)}{(\sqrt{x} \cdot \sqrt{x} \cdot 0x) \cdot (4\sqrt{x} + 4\sqrt{x} \cdot 0x)}$$

$$\frac{(4x - 16) - (16) \cdot 0x}{(\sqrt{x} \cdot \sqrt{x} \cdot 0x) \cdot (4\sqrt{x} + 4\sqrt{x} \cdot 0x)}$$

$$\frac{-16}{(\sqrt{x} \cdot \sqrt{x} \cdot 0x) \cdot (4\sqrt{x} + 4\sqrt{x} \cdot 0x)}$$

$$\frac{-16}{(\sqrt{x} \cdot \sqrt{x}) \cdot (4\sqrt{x} + 4\sqrt{x} \cdot 0x)}$$

$$\frac{-16}{\sqrt{x} \cdot 0x}$$

$$\frac{-2}{x \cdot 0x} \cdot \frac{\sqrt{x}}{\sqrt{x}}$$

$$\frac{-2\sqrt{x}}{x^2}$$

Go back to $2x-6$

$f(x) = x^2 - 6x + 9$

We want slope of tangent line at $f(3)$

$$y - y_1 = m(x - x_1)$$

$$y - 0 = 2(x - 3)$$

$$y = 2x - 6$$



Calculus Notes

The greatest difference with taking notes on the computer rather than on paper is the ability to easily add information from the internet. For example, one of my teachers posts assignments on the internet. I can easily copy the assignment into my OneNote notebook and highlight key points. If a teacher distributes notes on a PowerPoint, I can import the PowerPoint and write on top of it. If I need to research something, I can go online instantly and I can import my research into my notebook and highlight important info.

In addition, electronic notes can be easily searched. With only a few clicks I can search everything I ever wrote in a class. If someone missed a class, I can also easily provide them with a copy of my notes. If I had used paper, I would have had to find a copy machine.

Electronic notes are also more flexible. I can move around every word, image, or diagram. With paper, I sometimes realize after the fact that what I have written should have been on a new page. However, with a computer, I can select what I want to move, cut, and paste. In addition, when something needs to be erased, it erases clearly with no trace.

Types of Classes

I have discovered that using a computer and electronic notes is more helpful in some classes than in others. In one class, the teacher taught mostly from PowerPoints and would often spontaneously turn to

be erased, it erases cleanly with no trace.

Types of Classes

I have discovered that using a computer and electronic notes is more helpful in some classes than in others. In one class, the teacher taught mostly from PowerPoints and would often spontaneously turn to the internet to look something up or research a topic. This was partially because she was a new teacher and did not have the course locked down in a format she had been using for years. In addition, the other students in the class were using laptops provided by the school as part of the "Classrooms for the Future" program. Since the other students were also working electronically, it was easier for me to work electronically as well.

However, this experience is not shared among all of my classes. In most of my other classes, the teacher did not let students use the provided laptops most of the time or they were not part of the CFF program which provided the laptops. These teachers also generally taught mostly from a textbook or from their own experiences. They did not make much use of PowerPoint or the internet. They also handed out many, many worksheets. In most cases, these types of classes have also been taught almost exactly the same year after year. It is harder to work electronically in these types of classes. I must manually scan handouts into my notebook or keep them separate. In addition, the key benefit of being able to quickly import internet research or teacher-provided notes into my notebook is diminished.

Handwriting with Ink



The Fujitsu Tablet PC also has the ability to be written on using a pen. The writing is then converted to electronic ink which appears on the screen. Using the pen to write onto a OneNote notebook is like writing on a big pad of paper.

Using a Tablet PC's writing capabilities (called "ink") rather than typing has some pros and cons. It is much slower to actually write on my computer than it is to type. Even just surfing the web using the pen as a mouse feels slower than using a trackpad.

On the other hand, ink is useful in 3 cases: for drawing diagrams, writing on top of other documents, and writing is less "intimidating" than typing. Fortunately, the program I use, Microsoft Office OneNote, can combine typed text and written ink fairly seamlessly.

Drawing using a pen is much faster than creating diagrams using the drawing tools in Microsoft Office or even making something in Photoshop or InkScape. I need diagrams because, as a visual learner, I need to see things, and diagrams are the most efficient way to communicate. As the saying goes, a picture is worth a thousand words. I can draw in 30 seconds (and have it digitally stored) what would take me 5 minutes using a mouse and drawing tools. As you can imagine, I can not spend 5 minutes replicating a diagram.

In addition, when I get content either from a teacher or off the internet, it is helpful to be able to draw on top of it. First of all, using existing notes lets me skip recording the basic information and write more advanced notes or personal anecdotes which help my memory. Plus, being able to write on top of lets me add stuff without disturbing the original and lets me see where my notes stop and the given ones start.

In my [AP Psychology](#) class, the teacher handed out PowerPoints of each chapter in the beginning of the year. I did not have my tablet then, but I used this "write on top of" strategy on printed paper PowerPoints as I read the textbook. I found it useful, because as a visual learner, I was able to connect my notes I created with the PowerPoint as the teacher went over the content in class. As the teacher went over the slides, I added what he said around the margin of the slide he was talking about. Using this method, I had all of my notes in one place. I started with the basic information already printed, added helpful explanations from the textbook, and finally I added the useful stories the teacher gave. All of this was centralized onto one stack of paper.

Lastly, writing is less intimidating than typing. When you have a laptop open for typing, the screen cuts you off from other people. Typing is louder than writing on paper. Writing feels more natural than typing. My [American Studies](#) teacher thinks that writing helps one memorize and that typing does not provide the same benefit. In all, writing feels more open than typing.

Gov School

Day 3 Natural Language
November 10, 2016
1:00 PM



https://www.govschools.com/.../.../...

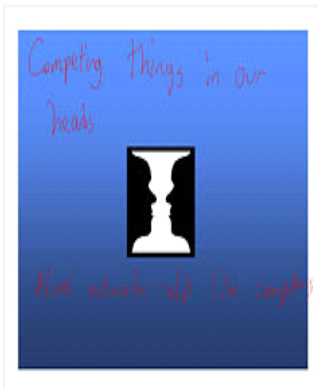
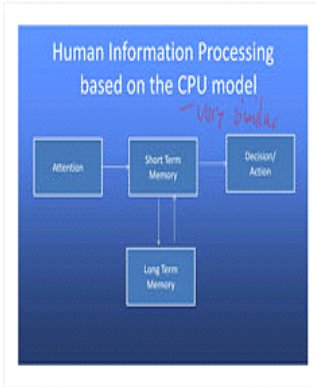


You don't really list 3 reasons

stylus pen

→ writing
its not
sohy
e-ink,
Better
for old
people.

Don't forget
chem
formulas
and
exponents.



- Dictionary Definitions
- hard edged
Aristotle view of world - categories
Not people are not
- Why don't we have consistent definitions for things?
 - Bachelor
 - A man of any age who has not been married
 - An unmarried woman.
 - A person who has taken the first or lowest degree in the liberal arts, or in some branch of science, at a college or university, as, a bachelor of arts.
 - A knight who had no standard of his own, but fought under the standard of another in the field; often, a young knight.
 - In the companies of London tradesmen, one not yet admitted to wear the livery; a junior member.
- Some are conflicting

- A knight who had no standard of his own, but fought under the standard of another in the field; often, a young knight.
- In the companies of London tradesmen, one not yet admitted to wear the livery; a junior member.

A bachelor dog

A baby that is just born
 - technically a bachelor
 - but would never say that

Mental Models and Context

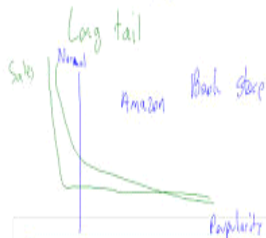
- Impressions we have about other people in a conversation.
- What does a computer "know" about users?
- Could we make a model of what users know and what their preferences are?
- What's the best representation for that?
- Should an avatar have a model of you?

Implication "It's hot in here"
 imply → Turn on AC
 We also have irony

First goal of computers

- Shoot down incoming missiles during WWII
- Code breaking Enigma

Today the NSA employs many figure at paths of code



Natural Language Processing

- Natural Language Processing (NLP)
- Question Answering
- Translation
- Cross Language Information Retrieval
- Summarization

- Question Answering
- Translation
- Cross Language Information Retrieval
- Summarization
- Conversation
- Computational Linguistics
- Speech Processing

2 approaches

DB
Aristotle

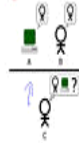
People do
Plato

Really hard

Turing

How do you know if a
computer is intelligent?

Can you tell
a human + computer
apart



Is it intelligent?

Eliza -

Simple problem

Trick to model lang passing

Does simple therapy

Translation

Have to look at context

Not good on prose
but good on simple stuff

Could be based on a lot of stats
- matching translation

What is a Language Anyway?

In math and computer programming:

Language = Grammar + Lexicon

• Grammar = A model for generating a sequence

• Lexicon = The "words"

But, is a Natural Language a
Formal Language in the same sense that a
Programming Language is a Formal

But, is a Natural Language a Formal Language in the same sense that a Programming Language is a Formal Language?

Can we write a complete grammar for English?

No
not structured right
Always a bucket of things

Aristotle type models work ok
Have not gotten Plato-like models

Components of Language

- Syntax - Structure
 - Can be modeled by the grammar
- Semantics - Meaning
 - Is there a single (absolute) meaning?
- Discourse - Use in human interaction
 - Conversation, Narrative, Explanation

Parse languages

Alan Turing | No Turing
Alan Turing | Turing, etc.

But a lot of what we say does not work
** Formal lang does not always work*
Processing

Grammars and Parsing

- Parsing analyzes a statement to see if it follows a grammar.
- We can parse a computer program as part of a compiler.
- We can parse a natural language statements.
 - Garden Path: "The who hunts ducks ... out on weekends"
 - Ambiguous: "I saw the man on the hill with the binoculars"



Not clear

The Grammars you Learned in Grade School

- Parts of Speech (Lexical Categories)
- Who decided whether those were the right categories?
- For example, what is an adverb?
- How do we explain the inconsistency with which people use language - lots of times people seem not to be too worried about grammaticality.

Statistical Approximations to Rule-Based Grammars

- Some traditional linguists such as Chomsky and Pinker believe human language processing rule based. Others believe that it is statistical
- Markov Models
 - Chains of probability

What is Language Understanding?

Eliza:

http://www.ai.ijs.si/cgi-bin/eliza/eliza_script
http://www.ai.ijs.si/cgi-bin/eliza/eliza_script

Summarization

- Techniques
 - Extractive Summarization
 - Summary Synthesis
- Projects
 - News in Essence *slipped on*
<http://lida.si.umich.edu:8080/clair/frnk1/frnk.cgi>
<http://lida.si.umich.edu:8080/clair/frnk1/clair.cgi>
 - Summary Street
 - Automatic Test Grading *could you give it?*
Makes you give assignments

Translation

- The Issue
 - Most of the time, we can't just translate surface words
 - Possible exception is French-English weather reports in Canada
 - But we also can't do full language understanding
 - Reverse translation
<http://babelfish.altavista.com/>
<http://babelfish.altavista.com/>



Narrative

- What is the structure of a story?
- What makes a good story?
 - Character
 - Coherent action
 - Resolving a problem

- Coherent action
- Resolving a problem

Discourse Processing

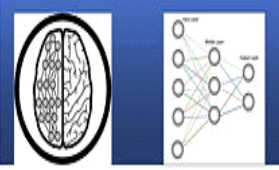
- Can we identify functional units of a discussion
 - Argumentation System
 - Could keep track of pro and con points in a discussion

Machine Learning

- What are good algorithms for computers to learn about language, about users?
- Supervised learning (feedback)
- Un-supervised learning (clustering)

10⁺ Neural Networks


- The brain seems made up of a lot of simple processors (neurons and synapses) rather than one really powerful, very complex processor.



The diagram on the left shows a cross-section of a human brain with a grid-like pattern overlaid, representing neural connections. The diagram on the right is a schematic of a neural network with three layers of nodes: an input layer, a hidden layer, and an output layer, all interconnected by lines representing synapses.

*Why are owls see so good in the dark?
Could we build a chip to do that*

"Artificial Life" and Simulation



The screenshot shows a top-down view of a simulation game, likely SimCity, with various buildings, roads, and terrain elements. The interface includes a toolbar on the left and a status bar at the bottom.



Separate things working together
for larger synthesis
Physical networks

Get cultures from people
working together
Emergent learning



In the summer of 2008, I attended the Pennsylvania Governor's Schools of Excellence in Information, Society & Technology at Drexel University in Philadelphia. The Governor's Schools are free 5-week summer programs paid for by the Pennsylvania State Government. They are open to rising high school seniors, and in some programs, rising high school juniors. There are eight subject areas, each one held at a different university or college throughout the state. Tuition, as well as room and board, is paid for by the state. The entire program is free for the student. Admission is very competitive because, unlike most for-profit summer camps that tend to accept anyone willing to pay, there is no financial barrier to entry. Because I had purchased the tablet to test streamlining my note-taking for college, I thought that the Governor's School, as a college precursor, would be a perfect test. I decided to take all electronic notes. The key benefit of electronic notes existed; with computers, topics tend to have much information available online. So, in Linux System Administration class, I imported tutorials from the internet into OneNote and highlighted the important steps and added notes in the margin about what worked for me. I did not have to write out every step and command - I only had to add clarification every so often.

taxes

Paper vs Computer

As a result of using a tablet, I discovered that there are a few places where paper outshines a computer. I am familiar with paper, and writing on a computer just feels different. In addition, being on a computer can be distracting if you are not disciplined. However the main disadvantage, which I mentioned earlier, is that paper handouts given out by teachers need to be scanned in. In addition, items which have to be turned in that day must be printed, and a printer is not always easy to come by. In the future, more teachers may accept, or require, electronic submissions of work. Power and battery issues also do not exist on paper but must always be in the back of one's mind as one uses a laptop.

change to some

Lastly, some teachers may have reservations about a student using a computer in a classroom since many students are unable to focus if they are in front of a computer. So all in all, I look forward to giving computer note-taking a try in [12th Grade](#). I think my trial run at Gov School showed how much overhead of time and "mental cycles" I was able to save. Having all my notes on the computer will significantly reduce the weight and volume of stuff which I need to carry around. I'm also looking forward to the day when electronic note-taking becomes so easy and viable that everyone is able to enjoy the benefits I will find next year on my digital journey.

Yeah right
Plaz
V
know
no
linux

Paper	Computer
A few sheets: not so bad; a few binders : heavy	Medium heavy always
Uses paper from trees	Uses electricity from coal :-(
Not easily searched	Easily searched
Find a copy machine	Email in 4 clicks
Print info from internet	Paste in info from the internet
Does not sync	Sync with all of your computers
Does	May break down

and starting at
UP

Does not sync	Sync with all of your computers
Does not crash	May break down
Not easy to backup	Easy to backup
I am more neat with it	Can be a distraction
\$5	\$1,300

Stuff Not Talked about

Leaving binders home since don't want to carry - problem if I need it Easy to backup "I can also easily back up my notes to Amazon S3 using JungleDisk over the internet, so if something happens to my tablet, I will not miss any work." Laptop: lost or stolen risk
 There is also much less organizational overhead. I can put things in their final organized place instantly. When I had used a paper notebook before, I had to spend time organizing the papers

Pasted from <http://theplaz.com/wiki/index.php?title=The_Quest_for_the_Perfect_Notetaking_Medium>