Laptop Vs. Pen And Paper

Which Note Taking Method Enhances Students Grades?

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This document is a report on the statistics and results of whether taking lecture notes with a laptop will enhance a student's grade compared with taking lecture notes with pen and paper.

Executive Summary

This report provides results and conclusions to determine whether or not taking lecture notes with a laptop can enhance a Universities student's grade compared to taking lecture notes using pen and paper. It consists of data that has been collected though a survey of 76 University Students from a diverse range of degrees. The results for each question can be found in the body of the report with a brief description of the question. An analysis of this data can be found in the Summary of Results section. The summary is based on the criteria of: Time, Cost, Usability and Performance. It has been concluded that there is not one *best* way to take lecture notes as it is up to personal preference, confidence of using a laptop, and the particular subject students are taking.

The main results to take away from this report are that:

- *Recalling* information is easier using pen and paper compared to using a laptop
- *Revising* notes on a laptop is easier than revising notes on pen and paper. However more people prefer to revise notes using pen and paper.
- More people find it easier to *take* notes using a laptop than taking notes on paper
- 87% of laptop users think using a laptop has given them a better grade

The results indicate that those who do not use a laptop may like to use a laptop to take notes however are not comfortable in doing so. Therefore, lectures should encourage students to use laptops to take notes as there are many advantages in doing so.

One downside, Universities need to take action by installing power points in lectures as 40% are unaware of charging facilities in lectures or there aren't any.

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Introduction

Background

The use of technology is being used more and more throughout the world. With the Australian government new scheme of every student in secondary school having access to a computer, Universities should encourage students to take notes using a laptop, and move away from the old fashion way of taking notes using pen and paper. Currently, 64% of Australian tertiary students own their own laptop (Microsoft, 2010), but students may not be utilising the full potential of them. Many students still use the old fashion way of taking notes with pen and paper. This can be a slow and timely process of taking notes.

This survey was conducted with the focus of whether Universities should encourage the use of laptops to take notes in lectures compared with using pen and paper.

Aim

The aim of this project is to analyse the use of students using a laptop to take notes from lecture slides compared to students taking notes using pen and paper, and to determine which method could give students a higher grade.

If the outcome is successful, Universities should introduce, promote and encourage the use of laptops as a core learning tool for University students.

Objectives

The primary objective of this project is to determine which form of note taking (either on laptops or using pen and paper) is more beneficial for students in terms of producing the highest possible grade.

To do this, the results will be measured against the following criteria:

- Time – which form of note taking takes less time
- Cost – which form of note taking costs less
- Useability – which form of note taking is more usable (ease of use)
- Performance – which form of note taking will give better final results for students

How The Project Was Carried Out

To determine whether using a laptop will enhance student's grades, a survey was conducted which had a total of 76 participants from a diverse range of degree backgrounds and locations.

The survey was split into 3 sections. The first section asked for information about the participant's age, gender, the course they are doing and general comments about using both methods of taking notes. It also asked the key question of "What is you preferred method of taking notes in lectures?" If the participants answered "With a Laptop" or "A laptop provided by the University" they completed the Laptop questionnaire. If the participant answered "Using Pen and Paper", participants completed the Pen and Paper questionnaire.

Participants could only do one or the other. The survey was created in this format to ensure bias is eliminated from the people who prefer one method over the other. It allowed people to give their reasons and promote their reasons on which is the best note taking method. The only downside to this is that participants could not express their views about the other note taking method.

With both sides of the argument heavily promoted, the reader of this report can decide which note taking method is better.

From the questionnaire, 23 people completed the Laptop questionnaire, and 53 people completed the Pen and Paper questionnaire.

Report Data

The following section outlines the results that have been collected from the 76 participants. All names and email address collected from the survey data has been removed.

Participants Information

All 76 participants were asked the following questions. Their responses are as followed.

Gender

The following table shows how many of the respondents are male and female. The majority of participants surveyed are Male.

Table 1: Gender

Gender	Count	Percentage
Male	54	71.05%
Female	22	28.95%
Total	**76**	**100%**

Age

The following table shows the average age of participants. The majority of people surveyed are under the age of 25.

Table 2: Age

Calculation	Result
Average Age	22.18
Minimum Age	18
Median age	20.5
Maximum Age	50

Still Studying At University

To get the best, up-to-date results for this survey, respondents should be still studying at University or have left University within the past 2 years. Figure 1: Study at University shows the percentage of students that are currently at University (Yes) and those who have left University within the past year (No).

The results show that the majority of participants are still studying at University.
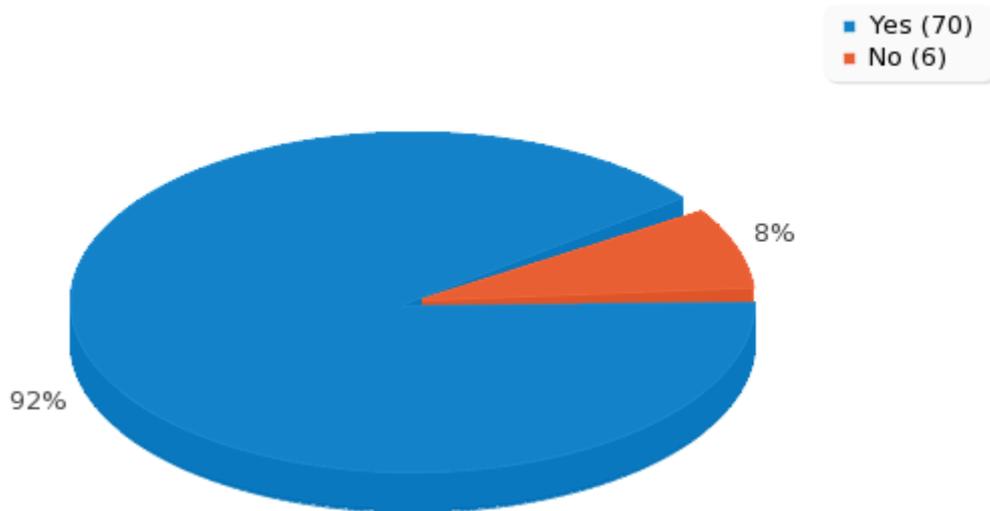
Figure 1: Study at University

What Participants Are Studying

Table 3: Courses Studying are results of what participants answered for the question "What are you studying at University?" The ID is the participants ID which is uniquely assigned which can be cross referenced with other results in the report.

Table 3: Courses Studying

ID	Answer
2	bachelor of science and bachelor of computer science
3	Business information system
4	Psychology/Criminology
7	Business/ IT
8	Business Information Systems
9	Bachelor of Business: Tourism Management
10	Business Info Systems
11	-
12	Science, Medicine and Surgery (Health Sciences)
13	Business Information Systems
14	B.Comm/B.BIS
15	-
17	engineering
18	Bachelor of Social Science (Psychology)
19	Bachelor of Business(Marketing) followed by Masters
20	bachelor of early learning/human services
21	Urban and Regional Town Planning
22	Literature, German, Philosophy, Travel writing
23	Bachelor of Science
24	Software Engineering
27	Arts/Computer Science double degree
28	Software Engineering

ID	Answer
29	Bachelor of Computer Science
30	Information Systems
31	Science
35	Business
36	International Relations
37	Engineering/Science
39	Arts/Law
40	Bachelor of Laws
41	Electrical Engineering, Computer Science, Mathematics
42	IT
43	Computer Science and US History
44	Computer Science and Engineering
45	B.Tech (IT)
46	Psychology
47	BA, DipLang
48	Engineering
50	Civil Engineering / IT
51	Law
52	ba artys & biz
53	Commerce
55	Bachelor Education
57	I.T
59	IT
60	bachelor of international development
62	Computer Science
63	Accounting
64	Bachelor Computer Science / Bachelor Of Law
65	B.Comm + Masters of Information Technology
66	-
67	Business IT
69	Computer Science (BSc)
70	Computer Systems Engineering/Computer Science
72	-
73	Bachelor of Medicine. Finished Bachelor of Medical Science
74	Bachelor of Arts
75	Business
76	Business Information Systems
77	Economics, Finance
79	Science
80	Information Security (Computer Science and Mathematics)
83	Biology
84	Law
85	Computer Science and Engineering
86	IT
88	engineering
90	International Relations & Law
92	Ed
93	Accounting
94	Information Technology
95	Psychology
96	BSc Computer Science
97	Physical Science/Biology
98	PGCE ICT Secondary Teacher
99	psychology astronomy pre-cal English film

As you can see, participants have been surveyed from a diverse range of courses. It is important to note that some courses may benefit more by using a laptop such as IT or Law Degrees compared to Arts or Science degrees which may affect the result.

Do You Have Your Own Laptop?

Table 4: Participants Who Own A Laptop shows how many people own their own laptop. Surprisingly 97% own a laptop.

Table 4: Participants Who Own A Laptop

Answer	Count	Percentage
Yes	74	97.37%
No	2	2.63%
Total	**76**	**100%**

Preferred Method Of Taking Notes

Figure 2: Preferred Method of Taking Notes is the most important question in the survey. Depending on the users response determines what questionnaire they receive. Out of 76 participants, 22 people prefer to use a laptop to take lecture notes.
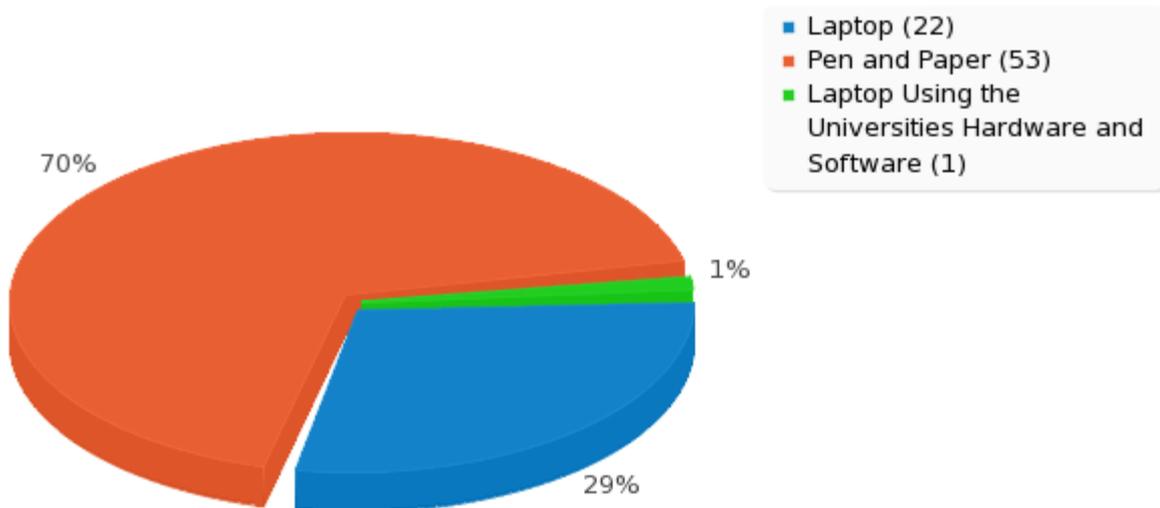

Figure 2: Preferred Method of Taking Notes

Based on the last two questions, the majority of people choose to take lecture notes with pen and paper, even though they own their own laptop.

Do You Prefer To Revise Lecture Notes With A Laptop?

The following question asked whether or not participants prefer to take notes with a laptop (Yes) or not (No). Over half said they prefer to revise lecture notes with a laptop, one quarter said they don't, and 13% said they are unsure. A reason for being unsure is because they have never tried revising notes with a laptop.

Table 5: Revising Notes with a Laptop

Answer	Count	Percentage
Yes	47	61.84%
No	19	25.00%
Uncertain	10	13.16%
Total	**76**	**100%**

The participants who answered that they prefer to take notes with a laptop, 50% of them said that they prefer to revise notes with a laptop.
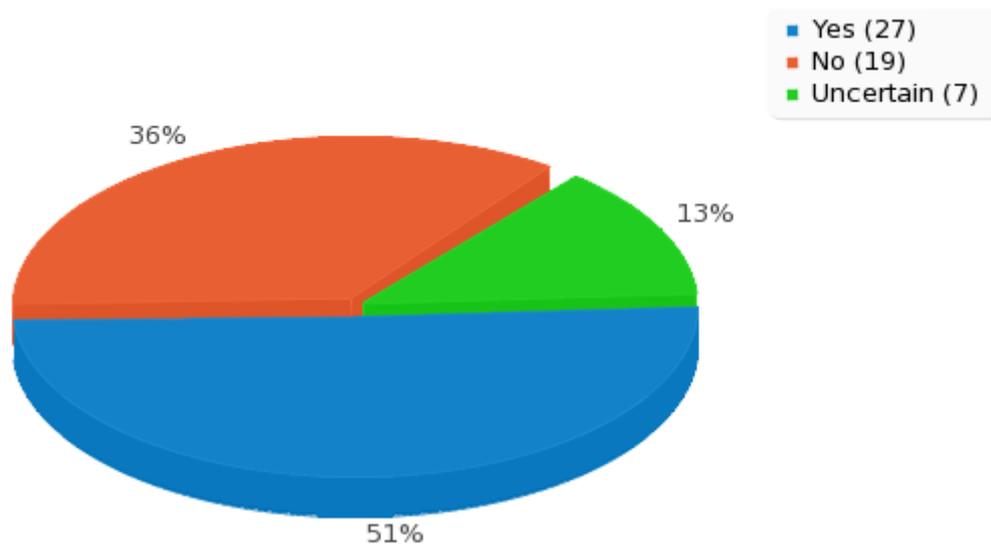
Figure 3: Prefer to revise with laptop based on results of participants who prefer to take notes with pen and paper

Do You Prefer To Revise Lecture Notes Using Pen And Paper?

The following question asks whether those surveyed preferred to revising lecture notes using pen and paper. More people said yes that they prefer revising lecture notes using pen and paper compared to using a laptop as asked in the previous question.

Table 6: Revising Notes with Pen and Paper

Answer	Count	Percentage
Yes	51	67.11%
No	20	26.32%
Uncertain	5	6.58%
Total	**76**	**100%**

How Easy Is It To Recall Information Using A Laptop?

When asked how easier it is to recall information after taking notes with a laptop, the average response was 6.41. Results are a rating between 1 to 10 with 10 being easy and 1 being difficult.

Table 7: Recalling Information Using a Laptop

Calculation	Result
Average	6.41
Minimum	1
Maximum	10

How Easy Is It To Recall Information Using Pen And Paper?

More people thought it is easier to recall information using pen and paper after they have taken lecture notes compared to recalling information after using a laptop. Results are a rating between 1 to 10 with 10 being easy and 1 being difficult.

Table 8: Recalling Information Using Pen and Paper

Calculation	Result
Average	7.63
Minimum	3
Maximum	9

Using A Laptop

The following questions were asked to those people who preferred taking lecture notes with a laptop.
The following results are based on 23 participants.

Why Do You Use A Laptop?

Participants were asked to give a rating between 1 and 5 with 1 being low, and 5 being high on why
do they use a laptop compared to using pen and paper.

It's Cheaper

Most participants say that using a laptop is more expensive then using pen and paper.

- 1 (19)
- 2 (2)
- 3 (1)
- 4 (1)

9%
4%
4%
83%
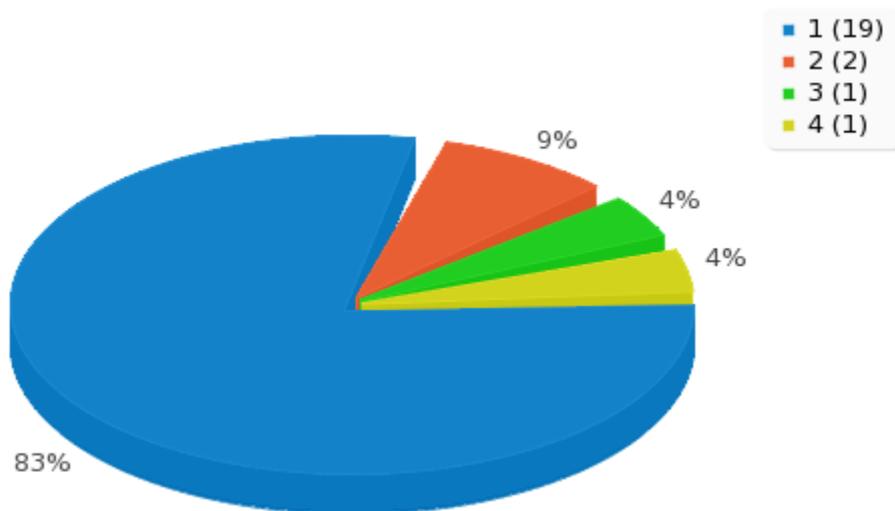
Figure 4: Using Laptop [Cheaper]

It Is Easier To Use

The majority of laptop users say that a laptop is easy to use. Only a few find it somewhat difficult to
use a laptop.

- 1 (1)
- 2 (2)
- 3 (3)
- 4 (7)
- 5 (10)

43%
4%
9%
13%
30%
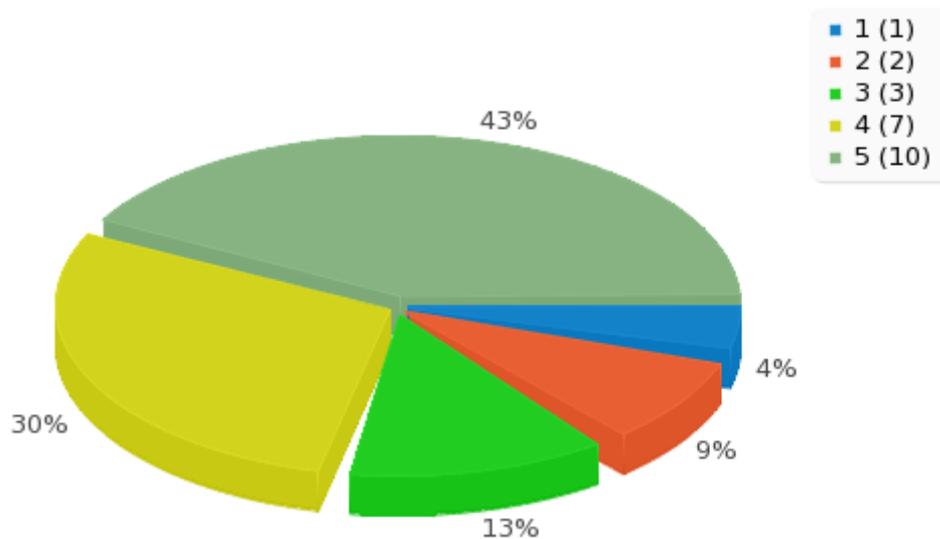
Figure 5: Using Laptop [Easy of Use]

It Saves Time And Is Quicker To Take Notes

Almost all laptop users agree that using a laptop saves time and is quicker to use compared to using pen and paper.
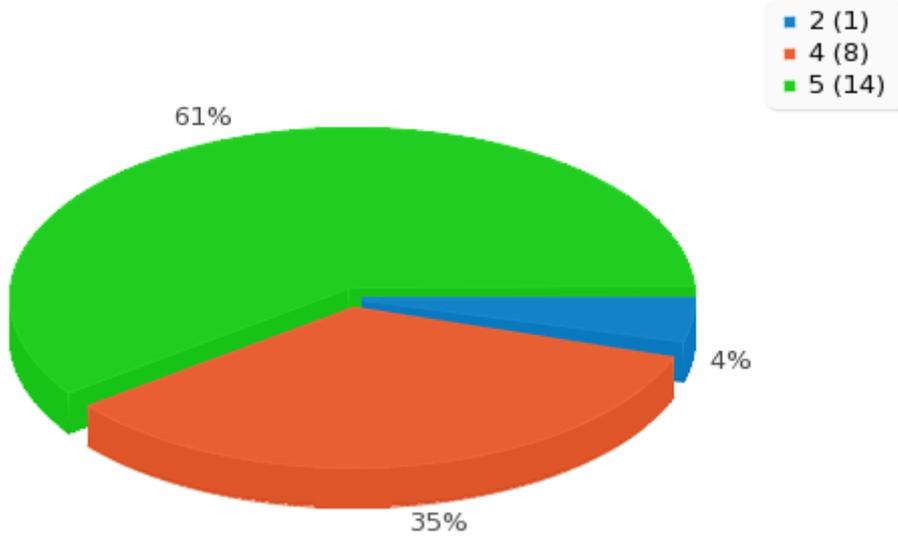
Figure 6: Using Laptop [Time]

I Get Better Final Grades

In Figure 7: Using Laptop [Grades] the results are diverse. Participants don't find that using a laptop has given them a better grade; yet don't think it has decreased their grade.
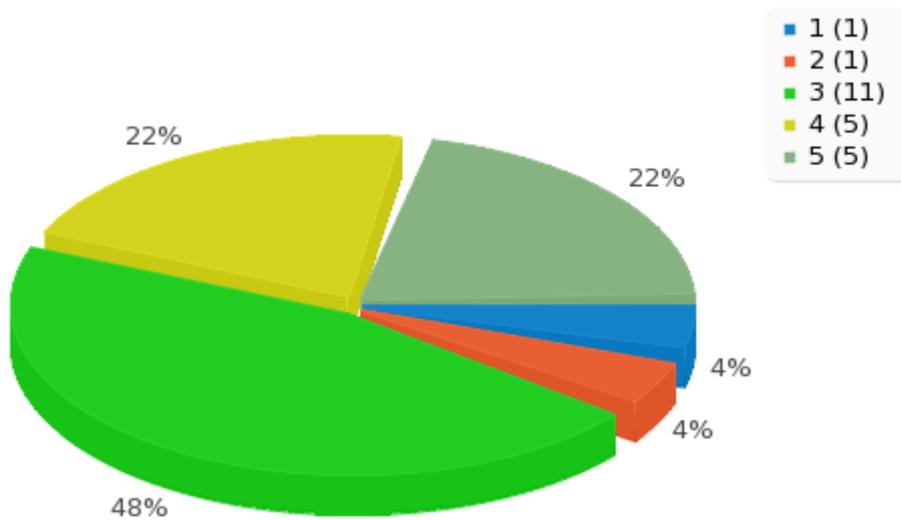
Figure 7: Using Laptop [Grades]

If The Lecture Is Boring, I Can Do Other Things

39% of participants say that they will use a laptop to do other things if the lecture is boring. Only a few will not use a laptop for other things whilst in a lecture.
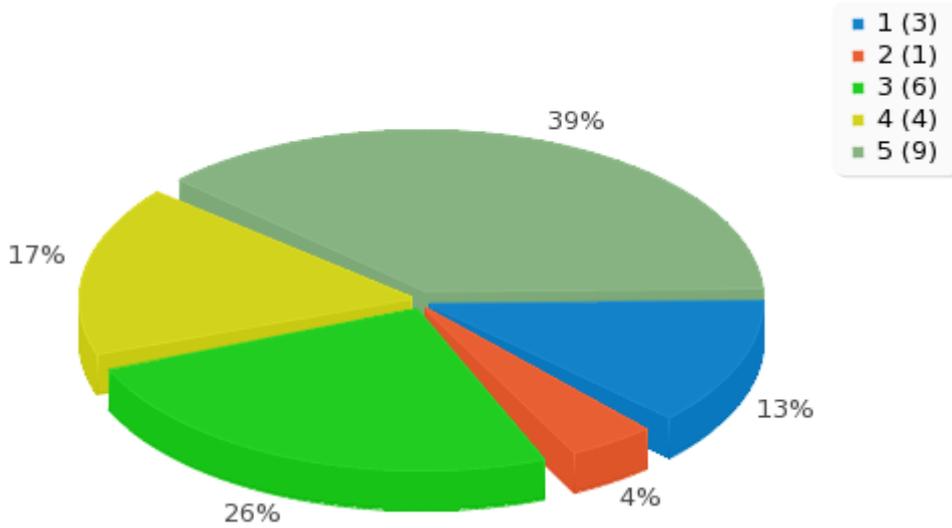
Figure 8: Using Laptop [Boredom]

It Is Quicker To Boot Up Then Getting Pen And Paper Out

Over 75% of participants agree that it is quicker to get pen and paper setup compared to booting up a laptop.
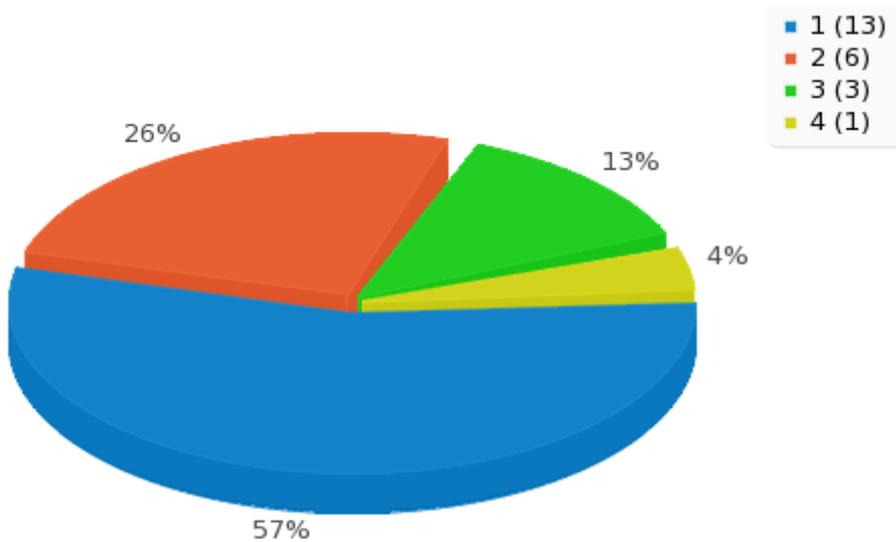
Figure 9: Using Laptop [Speed]

How Much Money Did You Spend On Your Laptop?

For those who use a laptop to take notes, the average cost of purchasing a laptop is $1421.74. Depending on what else the laptop will be used for, a laptop can be from any price from $200 to $4000+.

Table 9: Laptop Cost

Calculation	Dollars
Average	$1421.74
Minimum	$200
Median	$1050
Maximum	$4000
Count	23

Do You Have To Charge Your Laptop At University?

Since laptop batteries do go flat, the following questions were asked to see if Universities currently have enough facilities to charge students laptops up. 65% of participants said that they are required charge their laptop up at University.
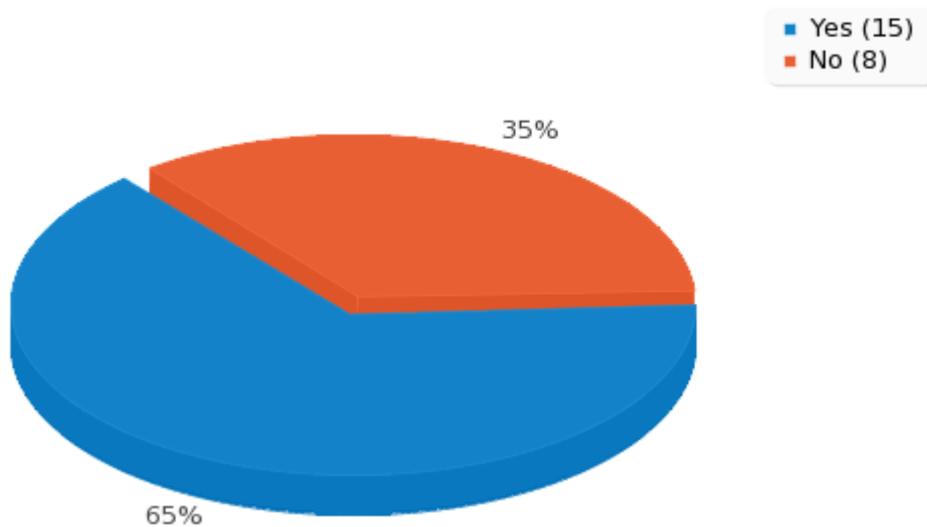
Figure 10: Charge Laptop at University

Can You Charge Your Laptop in?

The following questions ask where students can charge their laptop's at Universities.

The Library

The majority of participants say they can charge their laptop in the Library.
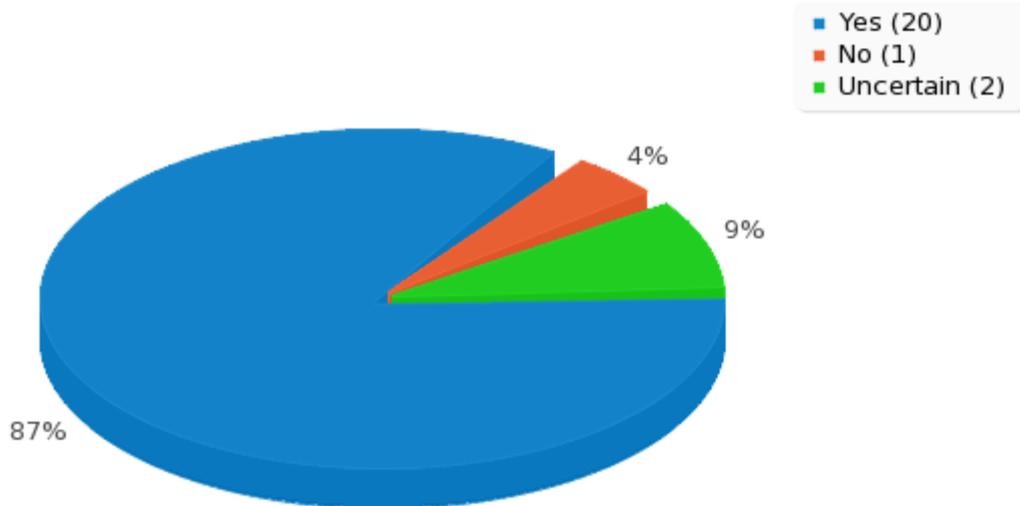
Figure 11: Charge Laptop [Library]

Lecture

There are mixed reviews of whether or not people charge their laptops in lectures. This ultimately means that power points should be installed in lectures if laptops are a key note taking method.
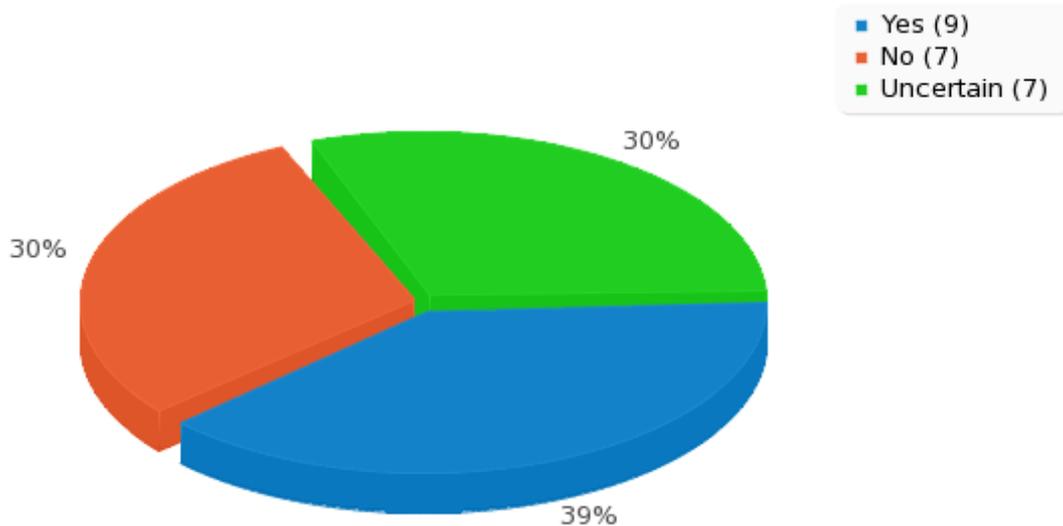
Figure 12: Charge Laptop [Lecture]

Tutorial/Lab Room

The majority of participants can charge their laptops in class whilst in a tutorial or a laboratory.
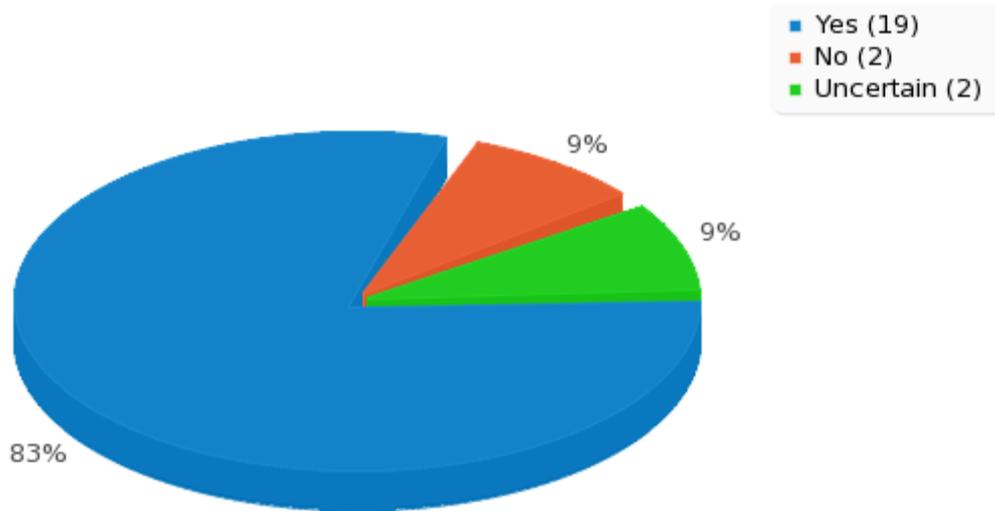
Figure 13: Charge Laptop [Tutorial]

Cafe/Food Court

Similar results as with charging laptops in a lecture, there are mixed reviews of charging a laptop whilst in a food court. 30% say there are power points while 35% are uncertain or there are not power points available. You can conclude that chagrining a laptop at a Café is not required.
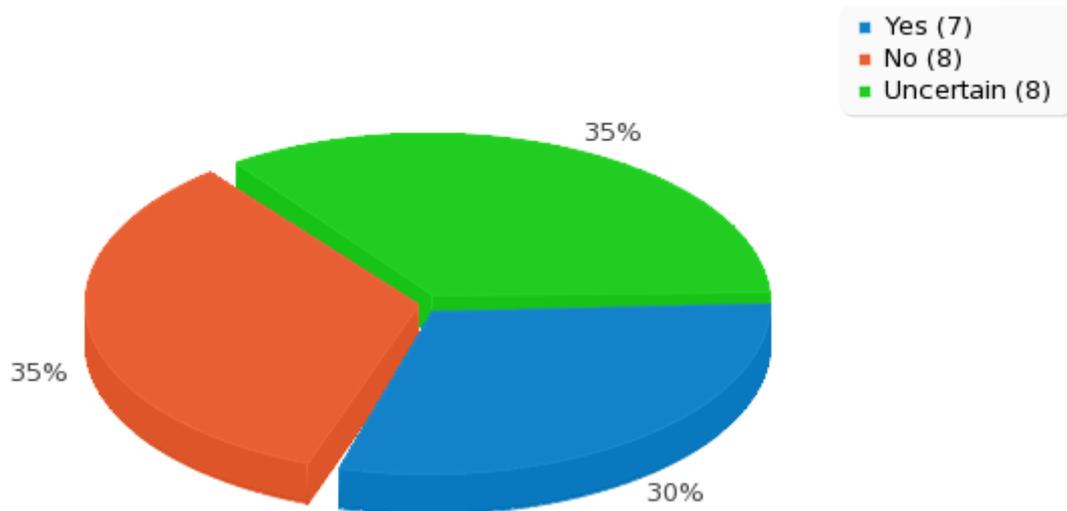
Figure 14: Charge Laptop [Cafe/Food Court]

Outside Area's

The majority of people say there are no places to charge a laptop outside or uncertain of any area's on where they can charge there laptops outside.
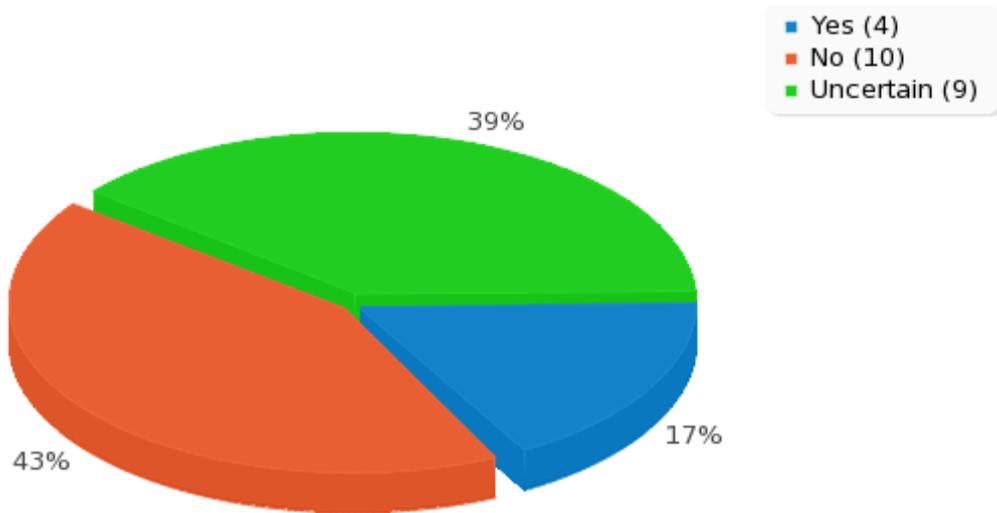
Figure 15: Charge Laptop [Outside]

Do You Have Time To Charge Your Laptop In?

The following questions asked whether or not students have time to charge laptops in these areas.

Library

The majority of participants say they have time throughout the day to charge their laptops in the library.
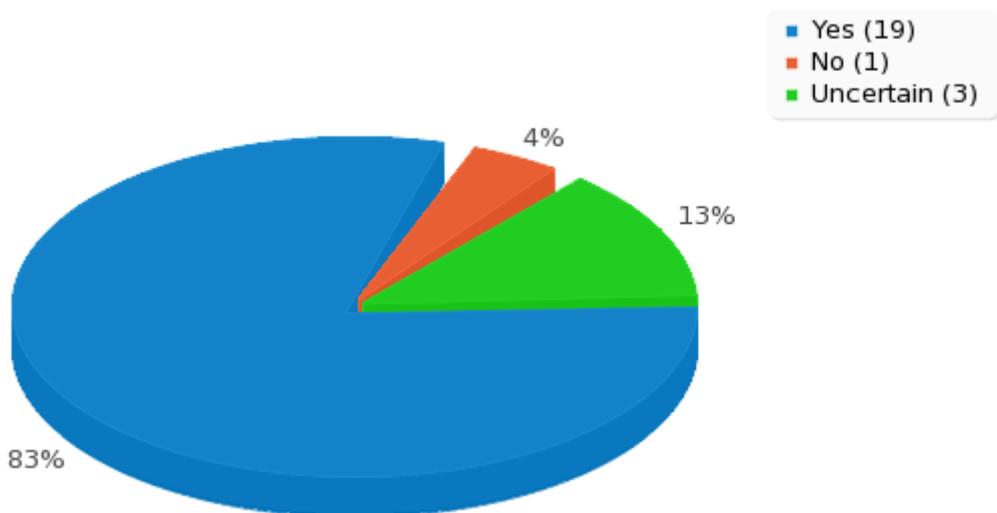
Figure 16: Time To Charge [Library]

Café/Food Court

Over half say they do not have time to charge their laptops in food courts or at Café's.

- Yes (5)
- No (8)
- Uncertain (10)

43%

35%

22%
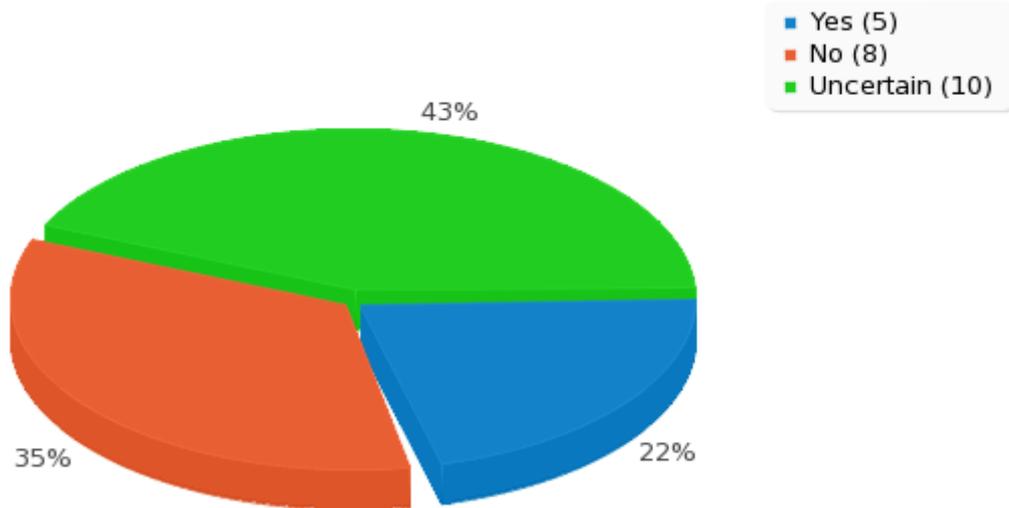
Figure 17: Time to Charge [Cafe/Food Court]

Outside Area's

The majority of people say they do not have time to charge their laptops in outside areas.

- Yes (3)
- No (12)
- Uncertain (8)

35%

13%

52%
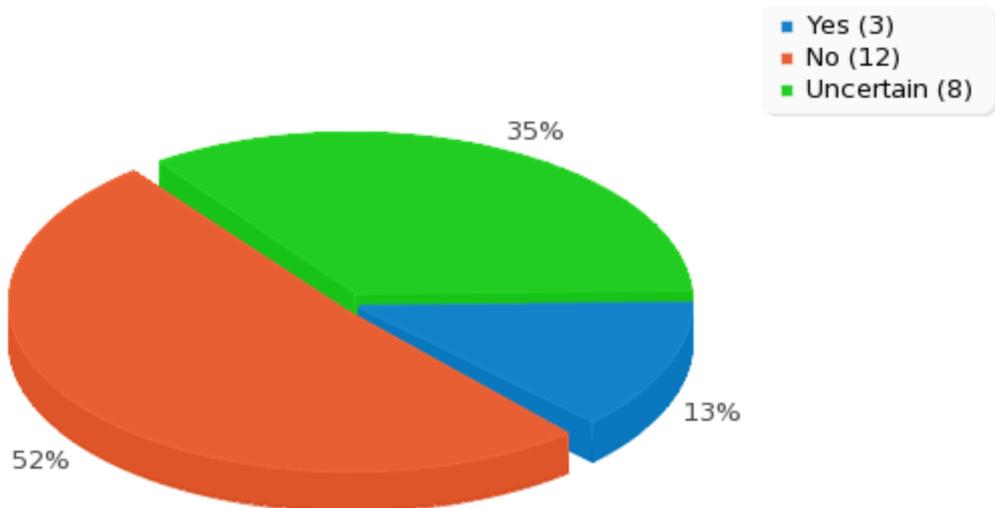
Figure 18: Time to Charge [Outside]

In Another Location

The majority of people have time to charge their laptops in other locations.
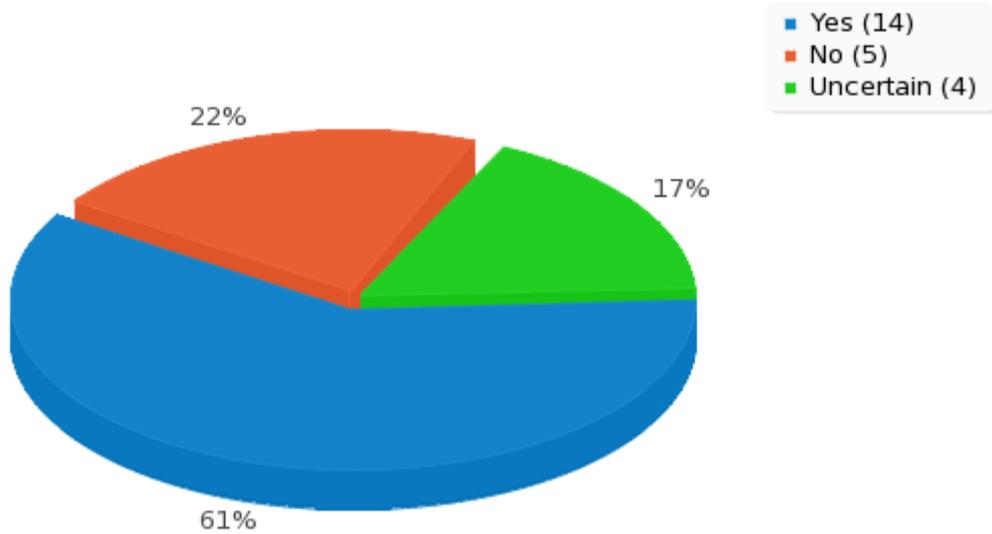
Figure 19: Time to Charge [Other Location]

Why Don't You Use Pen And Paper To Take Lecture Notes?

The following question was asked to all people who prefer to take lecture notes with a laptop. Participants were asked to tick what they agree to on why they do not use pen and paper to take lecture notes. Most people agree that pen and paper is to slow to write everything down and a laptop is a simpler option compared with taking notes with pen and paper.
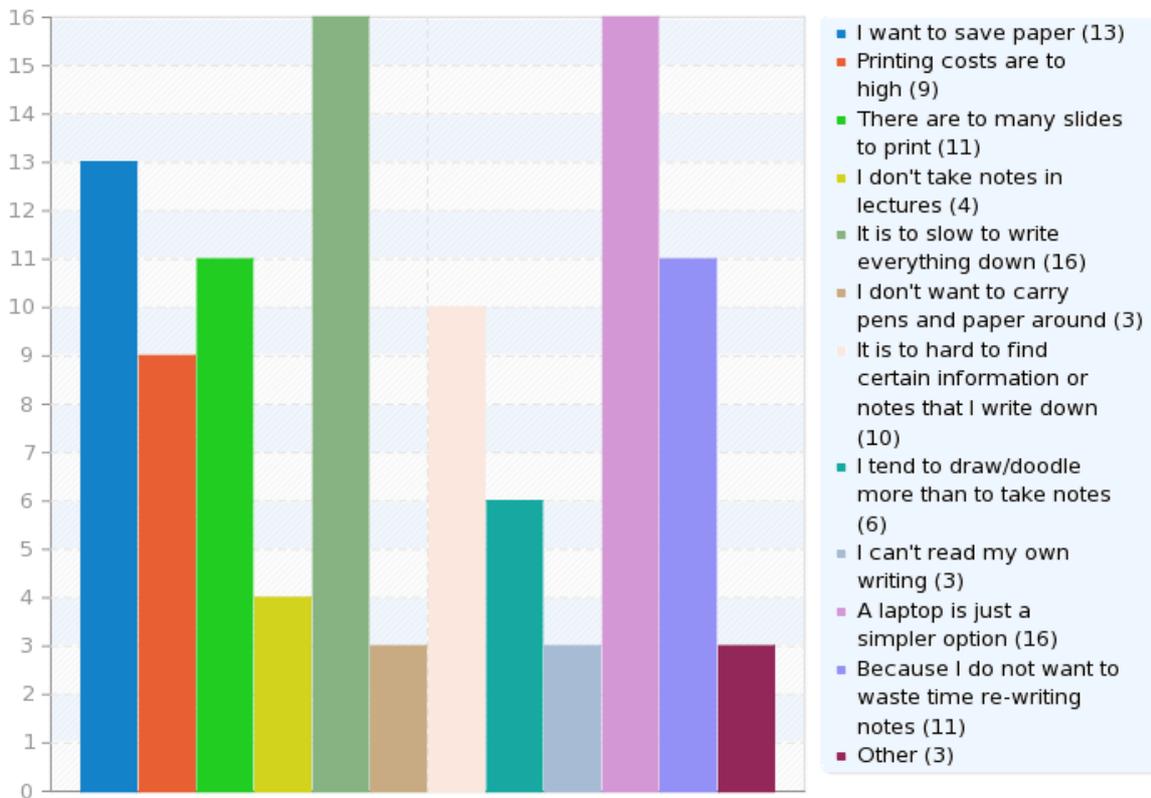
Figure 20: Why Use Pen and Paper

How Easy Is It For You To:

The following questions were asked to determine the usability of a laptop. Participants were asked how is easy is it to preform the following activities. Answers are based out of 10 with 10 being easy, 1 being difficult.

Turn On Your Laptop

Almost everyone said that turning on their laptop is easy.

Table 10: Laptop Ease of Use [Switch On]

Calculation	Result
Average	9.83
Minimum	8
Median	10
Maximum	10
Count	23

Take Notes Using A Laptop

Most people said taking notes using a laptop is pretty easy. The lowest result received was 5.

Table 11: Laptop Ease of Use [Taking Notes]

Calculation	Results
Average	8.96
Minimum	5
Median	10
Maximum	10
Count	23

Connect To University WiFi

Connecting their laptop to the University was the hardest task to do.

Table 12: Laptop: Easy of Use [Connect WiFi]

Calculation	Result
Average	7.13
Minimum	1
Median	8
Maximum	10
Count	23

Troubleshoot Laptop Problems

Most laptop users are confident that they can troubleshoot common laptop problems.

Table 13: Laptop Ease of Use [Troubleshooting]

Calculation	Result
Average	8.48
Minimum	2
Median	10
Maximum	10
Count	23

Revise Notes On A Laptop

The majority of participants say revising notes on a laptop is relatively easy.

Table 14: Laptop Ease of Use [Revising]

Calculation	Results
Average	8.52
Minimum	1
Median	10
Maximum	10
Count	23

Do you think a laptop has given you your best final grade?

When asked do you think a laptop has given you your best final grade, 87% of participants say that it has.
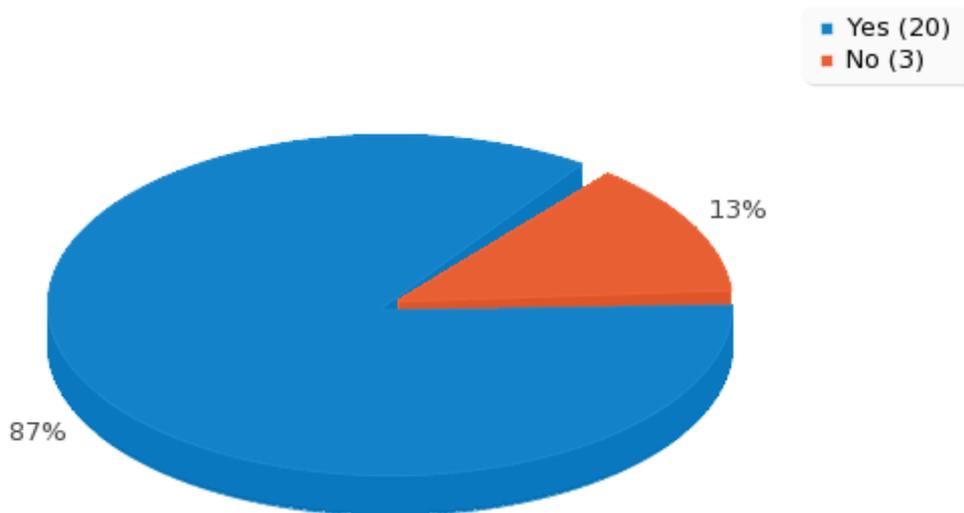
Figure 21: Laptop Grades

Why Do You Think This Is The Case?

The following are participant's answers to why they think a laptop may or may not have given them their best final grade.

Table 15: Why Grade Result

| ID	Answer
3	Nope. Either of them is used for same purpose. just depends which one i prefer
8	Maybe. While it does make studies easier it can be distracting.
9	it allows me to keep my files neatly in place for easy access for revision and information
13	I only got a laptop this year but it is more convenient for me to open up and revise notes, assignments etc
15	It was just easier to organise the files and not lose things. I tend to lose papers or they get ruined. A lap top can be more efficient.
20	Had the notes neatly in a word document to it was easier to print out and revise using that rather than having to type everything up again and then print it out to revise
29	Well the laptop has made it easy in terms of everything in regards to the subjects I been doing of late. For example, I have been without my laptop of late, and I'm running around different campuses just trying to find a lab with the appropriate software that has been installed and doesn't have a lab running.
36	I can take notes quickly, meaning I don't miss as much information as I did when I hand-wrote my notes. Also, the final result is searchable--very useful in the event of an exam.
37	Allows internet access
39	I think having readily available law summaries to print out was more helpful than trying to type things up on time, failing, and bringing my lecture notes and printed powerpoints into exams.
42	Easier access to notes and less time wasted on writing down notes and more time spent on revising the notes.
47	I just picked yes because I am in my first semester and have not got any results yet.
52	Yes, but note should be already online (overheads & bulletin points) they should just be downloaded to the laptop. The laptop is crap for taking real time notes, you miss too much!
53	Because I can take more detailed notes when using my laptop.
57	Easier to understand and organise my notes. My handwriting is terrible so much easier to read. Accessing previous notes at will instead of shuffling around for papers.
73	I take good notes on my laptop but I have to print them to revise because if I'm actually trying to study using my laptop during exam time I get side-tracked with internet etc.
74	I don't think so, because it is too easy to be distracted by other things rather than paying attention in the lectures. e.g, msn, facebook etc
90	My notes were easier to read and clean up. I reworked on them every evening, which I didn't do with handwritten notes.
93	If I'm reading through the notes and I see something I don't understand I can easily search for other occurrences of that or copy/paste into a search engine or email to teacher.
94	When I keep notes on paper, I find it hard to keep them organized. Many times I cannot find what I'm looking for. Using the tablet, all my notes are in the OneNote notebooks, organized by year, class, subject and date/time. Plus I can search in my notes (as long as I write in English), because the software uses character recognition to index my notes.
95	It's so easy to search through my notes when they're on the computer. I can search a keyword and find all instances of it in my notes.
98	Should be a middle answer to this. It helps, but don't think it makes that much of a difference!
99	I worry less about not being able to write fast enough and therefore concentrate more on the lecture that is taking place

Using Pen And Paper

This is the 3rd section of the report. The following questions were asked to those only who prefer to use pen and paper to take lecture notes. It consists of 56 respondents.

What Do You Agree To?

In this question, participants were given a range of statements (seen on the right) and were asked to select what statements they agree to. The graph on the left displays the count value of each statement.

Respondents who use pen and paper say that using pen and paper is easier than using a laptop.

- Using pen and paper is cheaper for me than using a laptop (13)
- Using pen and paper is easier than using a laptop (41)
- I find that using pen and paper gives me better results and grades (25)
- I find using pen and paper is quicker than writing notes on a laptop (31)
- I would get distracted by using a laptop, so I need to take notes using pen and paper (35)
- I am not comfortable using a computer. (3)
- Pen and paper is simpler to use than using a laptop (24)
- A laptop is to expensive to purchase (4)
- I don't know what software to use if I use a laptop to take notes (5)
- I don't want to carry a laptop around with me (31)
- I don't have a laptop (1)
- I don't want to buy a laptop (1)
- I cannot afford a laptop (1)
- I cannot rent a laptop from University (1)
- Taking notes using pen and paper keeps me awake (22)
- I find that I process information better by using pen and paper (34)
- When I get bored, I draw or start to doodle on the paper (25)
- Using a computer will be too distracting for me (22)
- Having a laptop is a health concern (3)
- I would probably break my laptop if I had one (2)
- I don't know how to use a laptop to take lecture notes (2)
- Writing notes with paper and re-typing them on the computer is how I learn (16)
- I'd prefer to take notes with a laptop. but I don't have one or know how to take notes with one (1)
- None of the above (0)
- Pen and paper is always available (29)
- It is easy to learn with pen and paper (21)
- Other (10)

Figure 22: Reasons Agreeing To

How Do You Take Lecture Notes?

As shown by the graph below, most people take notes by writing over printed lecture slides or using an A4 notebook and pen.
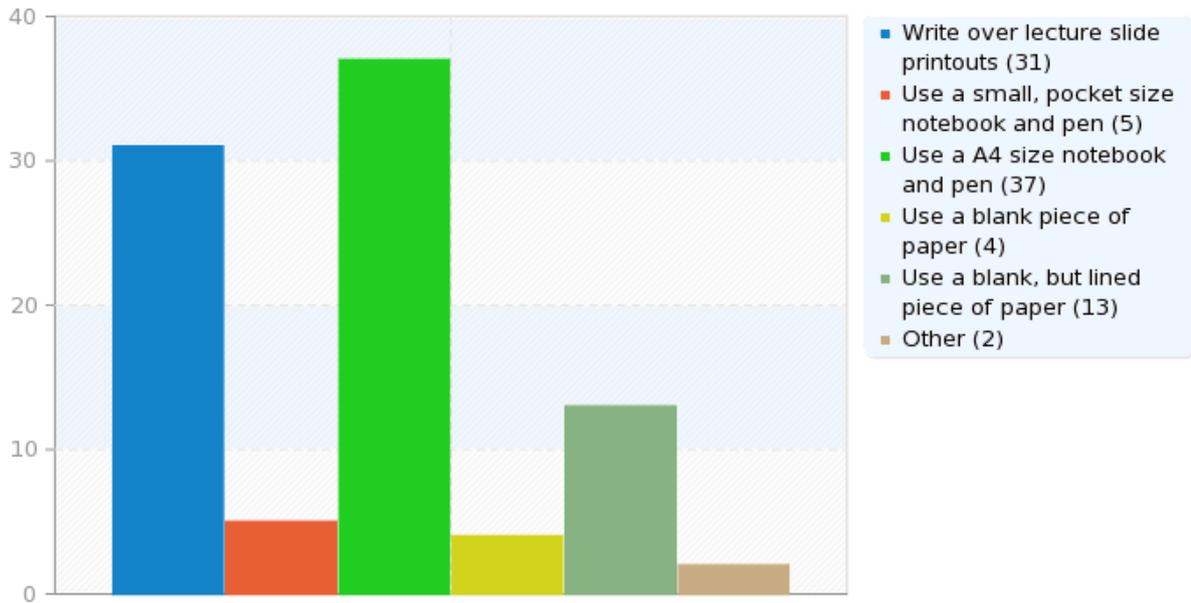
Figure 23: How To Take Notes with Pen and Paper

How Easy Is It For You To

The following questions were asked to see how easy it is to preform the following activities. Each activity is out of 10 with 10 being easy, 1 being difficult.

Taking Notes Using Pen And Paper

Participants gave an average result of 8.47 on the difficulty of taking notes with pen and paper. These results are slightly lower compared with the difficulty of taking notes with a laptop.

Table 16: Pen and Paper Ease of Use [Note Taking]

Calculation	Results
Average	8.47
Minimum	1
Median	9
Maximum	10
Count	**53**

Revising Using Pen And Paper

Participants thought that revising lecture notes with pen and paper is a little more difficult compared with revising with a laptop or taking note with paper.

Table 17: Pen and Paper Ease of Use [Revising]

Calculation	Results
Average	7.64
Minimum	1
Median	8
Maximum	10
Count	**53**

General Survey Feedback

The following comments are those left by all participants regarding how they take lecture notes.

ID	General Comments
3	Using laptop doesn't require printing out lecture notes. Saves time and $$
8	Laptop makes note taking easier.
9	Sometimes it is easier to write using symbols and shorthand writing but most of the time it is easier to type while the lecturer is speaking
18	I find that using pen and paper is more practical for me. I can always carry my notebook around and look up any useful notes that i've taken.
21	I find it easier to listen and hand write at the same time as opposed to listening and typing at the same time. The sound of the keyboard is distracting
22	I prefer using my laptop but it's a hassle taking it to uni.
23	I don't take notes during the lecture.
31	Although a laptop makes taking notes quick, easy and sets them out neatly, writing your notes out by hand is more effective for memorising. Because it takes longer, you think about it more and therefore retain what you have written. You may have had to expend more effort to take the notes, but it is worth it when it comes to exam time.
36	I wish I had my net book back in college; it hardly needs charging at all.
46	It's too bad that MS OneNote is so expensive. It's a perfect solution for drawing diagrams and typing text notes. I have seen classmates use Paint to draw and Word to type notes. Later, they have to somehow figure how to put the notes together. It's such a hassle.
47	I mainly use my computer because the weight of computer, plus books is too much and I don't want to cause an injury to my back. Also, I can study with flashcards, language podcasts and online resources with my computer. And the wait for uni computers is too long.
48	Carrying around a laptop is a pain. Also there is a threat of losing it, damaging it or having it stolen.
52	Pen & paper notes are good reinforcement of ideas but you miss out on important information in lectures. Laptops are worse but they can be used to download the notes online & then can be amended in real-time with the lecture
59	Its great just don't want to carry it around
70	During previous laptop usage, I found it a hassle to start/shut-down during lectures, battery life was a concern if I forgot to charge it, note taking books are still smaller and more accessible than netbooks, mathematical and other sciences requiring formulae or diagrams are easier to handwrite. However, laptops are much easier to take notes with/use in programming classes.
75	Too easy to get distracted by Facebook or various games/music/movies on the hard drive.

77	Laptops seem most useful in non-technical subjects - i.e. humanities - where notes are mostly words, but aren't useful in disciplines requiring mathematical notation. People trying to use laptops in maths classes seem to end up just surfing facebook for the hour.
80	I think I've listed my opinions adequately in the previous sections of the questionnaire. Getting a tablet simply for note-taking is asinine in my opinion, as you're getting an expensive piece of hardware for performing the EXACT same task that the inexpensive pen-paper combo can do. For designers and graphics artists this argument does not hold, as there is a lot they can do with the tablet.
86	If I could take my laptop to college everyday, I would take notes on it. However, I find it distracting sometimes. Taking notes with pen and paper is more natural.
88	About using a laptop- its difficult if you don't type fast, webcam helps recording, its bulky using pen and paper- always available, exams are done with this, HB pencils run out, not very organized when review time comes, time consuming when searching
90	Pen and paper are still great when working on memorizing the notes: I write down the main points after reading my typed notes
92	I sometimes take my laptop into lectures but I only use it to research things online. I do not write my notes on it. Pen and paper is so much easier.
94	I'm not sure if using a laptop keyboard would be as productive as using the tablet pen while attending a lecture. Fumbling with a mouse or touchpad while paying attention to the speaker does not seem a good idea. However, after a three of years of using the computer, I don't think I could do without it. I'm hooked.
96	I've recently just been given a netbook, so I may try using that for notes next year, but will most likely stick to pen and paper because the netbook may be distracting, as I've seen with others.
97	If word processors have an in-built or separate application that the creation of diagrams or complex equations simpler than I might switch to a laptop. But for now, I stick with pen and paper.
98	Both work for different purposes - but electronic means less weight/space

Summary of Results

The following section goes through details a detailed summary of the results based on Time, Cost, Usability and Performance.

Based on the results of the survey data, there is no one best method of taking lecture notes. It is ultimately up to personal preference. The majority of participants own a laptop but still choose to take notes using pen and paper. This is based on a number of reasons which are described in Figure 22: Reasons Agreeing To.

For the 30% who take notes with a laptop 87% agree that using a laptop has improved their overall grade and has benefited them in someway.

Time

The majority of respondents agree that using a laptop does in fact save time. When using a laptop participants said that they can take more notes in a quicker amount of time. This could effectively improve a student's grade, especially if notes are not provided in the lecture. However, for those who are slow at typing, this can be a major disadvantage compared to writing with pen and paper.

Using a laptop also saves time re-writing a good set of notes and this time could be better spent revising, unless of course there are too many spelling mistakes in the typing. Time is also saved because finding particular information is quicker on a laptop than trying to find it in handwritten notes. If something is hard to understand, it is really quick to find the information through a search engine such as Google rather than finding a computer or going to the library to search for the information.

The disadvantages with using a laptop are that it may be slower to draw complex diagrams (unless the laptop has a touch screen). Laptop users may also spend too much time on formatting the text rather than taking notes or trying to figure out where they should write something unlike paper where they can write anywhere they want.

Cost

As the average cost for a laptop was just over $1400 as seen in Table 9: Laptop Cost, using a laptop does have a large up front cost. Since most participants already own a laptop, possibly to preform other tasks, this was not really an issue. However, for note taking, a $200 - $600 cost laptop is sufficient to take notes with. Such laptops can be purchased from leading computer stores.

If you compare this cost for printing out lecture slides, a laptop or computer is usually required or users are faced with expensive printing costs. If it costs $0.12 to print one page and each lecture are about 8 pages long, in a 13 weeks semester with 4 units per semester, printing costs calculates to just under $50.00 per semester. If using a laptop, this money is saved. In a 4 year degree, this adds up to $400 which is the cost for a reasonable priced laptop used for note-taking.

However, if the laptop is damaged, lost, or stolen, users may be disadvantaged. They may lose all their notes if they don't create backups of their files and will have to spend extra money to get the laptop fixed or to purchase another one.

Useability

Useability is a key factor on taking notes. The note taking method must be easy to use. The results in Table 10 to Table 14 suggest that a laptop is quite easy to use for those who know how to use it. If the user knows how to use a laptop properly, it can be quite rewarding.

Access To Power/Power Points

Because laptops do run flat, Figure 10: Charge Laptop at University suggests that 65% of laptop users are required to charge their laptop at University. The majority of laptop users do have some place where they can recharge their laptops whether it is the library, or a class room. If a University does encourage laptop to be used in lectures, more power points are required to be installed in lectures.

Why People Use A Laptop To Take Notes Compared To Pen And Paper

There are many reasons why people use a laptop to take notes instead of using pen and paper. Some of the reasons are as followed:

- It saves time
- It is quicker to use as it's slow to write everything down
- They say it gives them a better final grade
- To save printing costs and paper
- A laptop makes note-taking easier
- A computer can be lighter than carrying around a textbook
- Writing programming code or preforming complex calculations can be easier on a laptop
- No loose sheets of paper to lose
- Notes can be easily changed, or new information can be added quickly without being messy
- Paper notes can get heavier throughout a semester while a laptop stays the same weight
- A laptop is more useful for non-technical subjects
- Notes are presented neater than hand written notes
- A laptop is just a simpler option
- There are too many slides to print
- People don't want to waste time re-writing notes to a computer

However, using pen and paper also has its advantages such as:

- It's easier to draw diagrams
- Can scribble over paper in any direction or form
- Can be easier to express yourself in small pictures
- Pen and paper can be more practical
- A laptop can get damaged or stolen and all notes can be lost
- Pen and paper can reinforce idea's especially transcribing them to a computer

How People Take Their Notes On Laptops

The majority of laptop users take there notes by using:

- A blank Word document
- Annotating PDF slides
- Using Microsoft PowerPoint
- Notepad
- Microsoft One Note

They choose these methods because they are simple to use or it was recommended.

How Easy Using A Laptop Actually Is

Based on the results, it can be assumed that people who take notes using pen and paper do not choose to use laptop because they may not be aware how easy it is to use and to take notes. They are comfortable on their current note-taking method of using pen and paper.

Based on the responses, participants say that it is easier to take notes using a laptop and rated it 8.96 (Table 11: Laptop Ease of Use [Taking Notes]) out of 10 while taking notes on paper gave a result of 8.47 out of 10 (Table 16: Pen and Paper Ease of Use [Note Taking]). Participants also thought it was easier to revise notes using a laptop with a rating of 8.52 out of 10 (Table 14: Laptop Ease of Use [Revising]) compared to 7.64 out of 10 for using pen and paper (Table 17: Pen and Paper Ease of Use [Revising]).

However, less people prefer to revise notes on a laptop with 61.84% agreeing (Table 5: Revising Notes with a Laptop) compared do 67.11% preferring to revise information using pen and paper (Table 6: Revising Notes with Pen and Paper).

Performance

Has Using A Laptop Given The Best Results

When asked whether taking lecture notes on a laptop as given them their best final result for a subject, 87% of participants said that it has (Figure 21: Laptop Grades). A possible reason for this is that people can save a lot of time if they know who to effectively use a laptop. This allows students to spend more time revising information and learning instead of re-writing notes that they have already taken.

Responses suggest that students can recall information better after having wrote in down on paper compared to typing it on a laptop. From a rating out of 10, participants gave an average of 6.41 for the easiness of recalling information after taking notes on a laptop (Table 7: Recalling Information Using a Laptop), and 7.63 for the easiness for recalling information written with pen and paper (Table 8: Recalling Information Using Pen and Paper).

Conclusion

Results

Does using a laptop give students a better grade? The answer is maybe. It is really up to personal preference and the type of subject that students are taking. Some participants say they use a laptop on one subject, but not another. Another key aspect is how people process information. In Figure 22: Reasons Agreeing To, 21% of participants say taking notes on paper and then re-writing them on a computer is how they learn to remember information.

Both taking notes with a laptop and with pen and paper have there advantages in different circumstances, so it is ultimately up to the person to decide which note taking method is right for them. It is also important to note that some people also prefer not to take notes at all and just listen to the lecture.

The results are mixed on which note taking method is better. Participants say that they can recall information and process information better after they have wrote it down on paper, yet some participants say that they prefer to revise notes on a laptop.

Laptops do have the possibility to enhance student's grades and some survey participants prefer taking notes on a laptop compared to taking notes using pen and paper. These students should be encouraged to use their note taking method more and support should be given to them such as providing them with the ability to charge their laptops in lecture theatres.

Since today's world is heading toward a more technical era, laptops should be used more at Universities as they provide many advantages over using pen and paper.

Action To Take

Based on the data colleted, laptops should be encouraged as they can provide benefit to students. The reason why many students prefer to use pen and paper over a laptop is because they don't particular know how to use a laptop efficiently and so they stick with taking notes using pen and paper.

Therefore, laptop's should be encouraged to be used by students who use pen and paper as the more notes they take with a laptop, the more they'll see that laptop may be a better solution for them and ultimately gives them a better grade.

Recommendation

In terms of what note taking method should be used for University students, students who use pen and paper to take notes should at least try taking notes with a laptop. Then that person can judge themselves which note taking method is better for them after experiencing both methods.

Appendices

Bibliography

Cola, J. (2010). *Laptop Vs Pen and Paper Survey.* Retrieved 2010, from JackCola.org:
http://www.jackcola.org/survey

Microsoft. (2010). *Microsoft Marketing Protege Case Study Brief.* Retrieved 2010, from Microsoft
Protege:
http://download.microsoft.com/documents/australia/Protege/Microsoft_Marketing_Protege_CaseS
tudy_brief.pdf