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April 8, 2010

### **Section 1: Introduction**

#### **Research Question and Motivation**

We propose to answer whether Carnegie Mellon undergraduate students are aware of the academic archives kept by fraternities, sororities, and other campus organizations that may contain old class notes, exams, projects, and homework. Also, we propose to find out whether students have access to such documents, whether these documents are used, and if they believe that the use of these documents is ethical, with hope of evidence to push for a new officially-sanctioned old course material system.

As Carnegie Mellon University is a world-class institution known for its rigorous academics, we would like to use this study to find out whether students understand and know all the academic policies that Carnegie Mellon University enforces. Also, we would like to find out about what students feel about old test and course material stockpiles and lastly, their opinion on a possible proposed solution. Using these results, we hope to possibly propose to the university administration, with strong statistical backing, about the possible implementation of a campus-wide, official university-sanctioned system of old academic materials for all classes to ensure all students have the same advantage in achieving academic success.

#### Citations to literature on this topic

- 1. CMU's *The Tartan* published an article in late 2008 surveying members and leaders of Greek organizations, clarifying official CMU academic policies on the issue of old stockpiles, and referring to Case Western Reserve University's approach. It can be found here: http://www.thetartan.org/2008/11/10/news/greeks
- 2. The Journal of College Student Development also published an article about an examination involving academic dishonesty between sorority and non-sorority women. The article talks about the significant differences between the frequency of occurance of academic dishonesty between greek and non-greek students, which helps to show a divide between the greek and non-greek student population. It can be found here:
  - http://muse.jhu.edu/journals/journal\_of\_college\_student\_development/v048/48.6willi ams .html
- 3. Case Western's *The Observer* published an article in late 2007 reviewing the actions of the Academic Integrity Board there and highlighting the ambiguity of the issue. It can be found here:
  - http://observer.case.edu/Archives/Volume 40/Issue 9/Story 2145/
- 4. A good potential reference to the scale of the problem can likely be found by Case

Western Reserve University's statistics on how many students were investigated for academic dishonesty (essentially, how many were "caught" as opposed to the estimated percentage of students who have used questionable material before): http://studentaffairs.case.edu/groups/aiboard/statistics.html

#### **Quick Summary of Main Results**

We did not yet reach our goal of 150 responses, so we will continue to monitor and collect data until we do so. Preliminary trends show that informal social networking seems to be the strongest source for old course archives, that many students do not consider using these material to be cheating even though university policy may state otherwise, and that students are generally receptive to the ideal creation of a university-wide system of public archives from old courses.

## **Section 2: Methods**

#### **Target Population and Frame:**

The population we targeted for sampling is the undergraduate Carnegie Mellon population of 5705 students<sup>1</sup>. In order to extract a random sample from this population we used a comprehensive list of undergraduates that was provided by Stafford Brunk, a fellow student in our class. Stafford Brunk wrote a Ruby script to compile a list of all names of undergraduates at Carnegie Mellon by using the online student directory.

Our random sample was selected by assigning a random number between 0 and 1 to every individual in our list of undergraduates. We then ordered the individuals numerically, from 0 to 1. From this list, we selected our subsamples, beginning with individual 1, and working our way down. In effect, we created a completely random listing of the undergraduates at Carnegie Mellon and selected a subset without bias.

#### Sample Size:

In order to calculate our sample size we used the formula presented in class:

$$sample = \frac{Z^2p(1-p)}{error^2} = \frac{1.96^2(0.5)(1-0.5)}{0.08^2} = 150$$

As seen above, our confidence interval is 95% with a  $\pm 0.08$  error rate. In order to be conservative, we selected a probability of 0.5.

The sample size we required for a  $\pm 0.08$  error rate was 150 students.

#### Sample Design and Methods:

We decided to use Two-Phase Sampling in order to gauge our response rate before sending out the bulk of our emails.

In Phase I we send out 150 emails requesting students to complete our survey, this first email had an 11% response rate. After about five days we sent a reminder email, and in this email we detailed that a \$20 Starbucks gift card would be raffled off to those who took our survey. By the end of Phase I, we had 36 responses, which is a 24% response rate.

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<sup>&</sup>lt;sup>1</sup> http://en.wikipedia.org/wiki/Carnegie\_mellon

We used this response rate to determine the size of our Phase II subset. Of the required 150 responses, we had 36, and still needed 114. Based on a response rate of 0.24, we determined we needed to send a minimum of 475 Phase II emails. However, we felt this was too high of a response rate in relation to those discussed for email surveys in class. A 0.20 response rate would have required that we email 570 individuals; we decided to email 579 individuals in Phase II.

#### **Response:**

We have a current response rate of 19.9%, with 145 responses from 729 requests. Of those 145 responses, 129 individuals completed the survey, giving a completion rate of 89%.

We would rather not impute the data, so we plan on sending a third email in order to have 150 completed survey responses. We would like to use all the data we collected, however, when we compare information from different questions, we will only use respondent's answers that answered both questions. By sending out a third email we will raise our response rate, and avoid having to impute the data.

We have had a few issues in our data collection. We have had individuals protest to taking our survey because they felt it unfairly targeted the Greek community. We have also had Greek members openly admit to lying on our survey to avoid implicating the Greek community.

#### **Post-Survey Processing:**

The largest issue we will have is dealing with data from people who did not complete the survey. We do not want to exclude their responses, but will have to exclude their responses if they did not answer all questions when comparing variables. For example, if we wish to compare question 1 and 2, but the individual only answered question 1, their responses will not be included in the analysis.

We will have to code some responses, for example, we used an open text field for people's primary major. We will have to assign values to all their answers. We also have multiple "other" categories that we will have to encode.

Our survey has a fairly accurate representation of Greek and non-Greek students on campus, we do not feel that we need to weight the responses in either way. We may have to weight the responses based upon class level, because of our extremely high sophomore response rate, and extremely low senior response rate. The same may hold true for sex and major, though we have yet to decode the primary major category.

#### **Section 3: Results**

Restate research question(s), show statistical analyses, discuss how they answer each research question (gory stat details in another appendix?)

The primary question that we wanted to answer was exactly how aware Carnegie Mellon undergraduates are of the usage of old academic materials and what their attitudes are towards such usage. We were very aware of how sensitive these topics are and tried to make our questions as objective and direct as possible in order to try to account for potential student disinterest or cautiousness.

At the time of this draft, 138 undergraduates started our survey, 122 completed it (for a completion rate of 88.4%), and therefore the non-response rate is 11.6%. Please see the attached PDF file for a summary report of our survey results and the response rates for each question.

The following is a list of key topics that we indicated we would investigate in our research questions and a briefing of the results that we found:

#### **Demographics:**

Although we conducted a large sample, we found discrepancies when comparing the class levels and gender of our respondent group. In particular, we had an abnormally large proportion of sophomores respond to the survey while also experiencing a low response rate from seniors and 5<sup>th</sup> year students. Surprisingly, 53.5% of our respondents were female, which is interesting because nearly 60% of the undergraduate body is male. 26% of our respondents indicated membership in a social fraternity or sorority, which is relatively close to the 21% of the student body that is in a recognized Greek fraternity or sorority.

#### Student awareness of academic archives possessed by Greek organizations:

Some members of our group are part of Greek fraternities and sororities, and we can also confirm as upperclassmen at CMU that in addition to these organizations, we know various clubs and networks of friends most certainly share old academic material with one another. Our results show that 75% of our respondents believe that Greek organizations have academic archives.

#### Student access of old course materials not provided by the professor:

Just over half of the students (52.9%) surveyed admitted to having some kind of access of old course materials that weren't provided by the professor. Another section of our paper addresses our group's qualitative concerns that students were not entirely honest for certain portions of our survey.

#### Student usage of the aforementioned old course materials:

We received a slightly lower response rate for this question (8 fewer than in the previous question only asking about access), and a slightly higher percentage (50.8%) of respondents now claimed to not have access to any materials. However, this still means that 49.2% of students admitted to using some kind of academic material. Again, we have sufficient reason (through verbal communication by friends who took our survey) to believe that a higher-than-recorded percentage of students actually use old course materials.

## Student perceptions of the advantage to be gained by using old course materials:

A whopping 89.7% of students think that old course materials do provide some kind of advantage for students. However, at the same time, 63.5% still believe that using these materials is fair. This appears to indicate an inability by students to access what they believe to be legitimate academic resources.

## Student perceptions of how possessing additional materials affects course grades earned:

In terms of majority responses, students don't think possessing anything other than old tests (or the equivalent, which is programming for technical majors) has a significant effect on course grades.

#### Access to individual organizations' academic archives:

The majority of respondents (50.8%) believe that all students should be able to access archives, if there are any available ones.

#### Ethics: Are the usage of various old academic materials cheating?

No matter what kind of material was asked (even old exams), the majority of respondents always believed that using old materials was not cheating.

#### Awareness of CMU policies on academic materials and their usage:

According to the article in *The Tartan* that we cited as part of the basis for our initial interest in this research topic, the Director of Student Life was quoted as saying that the usage of old academic materials is completely legitimate unless a professor explicitly states otherwise regarding sharing materials with other students, etc. However, when asked what the official university policy is on the usage of old materials given a range of choices, only 29% of students correctly identified the appropriate response.

It seems that the combination of low student awareness of official policies and surprising student attitudes and perceptions of what is fair and what can be shared with others makes our topic one that should be examined in much closer detail than it has been already.

# Student views toward a hypothetical official campus academic archive supported by professors:

Over 84% of students support the idea of such an academic archive and 73.8% believe they would benefit from one.

Overall, our data seems to suggest that the university and/or faculty members could do well to adopt a more consistent, widely known stance on the usage of certain academic course materials. Students seem to strongly believe that with the exception of tests, all other material should be made available to the undergraduate body. The great majority are well aware of the regularity with which old academic material is shared between friends, members of the same organization, Greeks, etc. In addition, students appear to overwhelmingly favor the establishment of an academic archive. Although our description of such an archive in the actual survey is neither extensive nor detailed, our research has shown that Case Western Reserve University has already set a precedent by moving forward in such a direction.

### **Section 4: Discussion**

#### **Our Research Questions:**

Post-survey, we found that our research questions, which are:

- 1. Are Carnegie Mellon undergraduate students are aware of the academic archives kept by fraternities, sororities, and other campus organizations that may contain old class notes, exams, projects, and homework?
- 2. Do students not affiliated with such organizations have equal access or any access to those resources?
- 3. Are these resources and archives used?
- 4. If used, is the use of these resources ethical (to students both in the organizations and outside of the organizations)?
- 5. Would an officially-sanctioned old course materials system benefit the Carnegie Mellon academic undergraduate community?

turned out to be more sensitive than we had originally perceived. They were all answered within our survey because we had specifically designed the survey around these questions, to make analysis easier at the end. However, we did not realize that students would have a hard time answering them, not because they were difficult questions, but because the questions themselves made the respondents feel uneasy.

The question people probably had the most trouble with was question (4) because it specifically looks at people's moral standards for themselves. We promised that results of the survey would remain confidential, yet participants still approached members of our research team, telling us that it was not our place to determine whether or not their "study rooms" were ethical, moral, etc. So perhaps our survey would have sparked less controversy or would have had a higher response rate if we had left the "cheating" aspect out of it.

#### **Surprising/Unexpected Results:**

A few aspects and results of our survey were indeed very surprising to us.

1. CMU students do not know what the University policy actually is in regards to cheating and academic integrity, as 71% of respondents got the question wrong on our survey. This is most likely because professors usually give students their own guidelines as to what does and what does not constitute cheating within their own classrooms, and

then students may extrapolate those policies to other classes. An interesting study would be to look at what percentages answered incorrectly across schools because some colleges have more strict disciplinary actions than others. Thus students in those colleges may be less likely to cheat than students in more lax colleges.

- 2. 75% of students would appreciate an overall academic archiving system of old materials, even though over 50% of students reported having some type of access to old materials. We would have thought that only the students with no access would have favored this system. Perhaps the students with access but only limited access to old materials would like to see their resources multiplied. For example, someone who only had old notes would clearly favor this system more than someone who had old notes, homeworks, exams, programs, and papers.
- 3. Even though the Greek community is often looked upon negatively for having unshared stockpiles of old course materials, 55% of students receive archives from previous courses from informal social networking. This is particularly interesting because even if the Greeks were told to liquidate their study rooms, the cheating issue would still largely remain unsolved on campus.
- 4. It was interesting to see that around 60% of students thought that access to old archives is fair/ethical, even though about 50% of students have access to these archives. For example, one thing that especially caught our attention was that 60% of students thought the use of old exams was ethical. Again, it would be interesting to see which majors and schools responded this way. Some majors such as ECE, math, and computer science may find it difficult to re-write their exams, particularly if some of the questions are based on unchanging proofs or methods to solve a problem. We would like to see if students in those majors would consider using old exams to study.
- 5. Finally, we found that 90% of students think that archiving gives students a define advantage over their peers who do not have access to old course materials. With that information, it is interesting to see that only 75% supported the idea of a university-wide archive system. It seems as though students are saying that they know the advantage exists, yet having an advantage over other students is okay and can be justified through their social or organizational connections.

#### **Strengths and Weaknesses:**

The biggest strength of our survey was that it answered all of our research questions very thoroughly and provides us with a good basis for analysis. Assuming that we get enough responses within the next couple of days, we will not have to impute data and our results

will more accurately reflect the beliefs of the campus community. Our survey is also extremely relevant to campus life and, with proper analysis and conclusions, could potentially serve as a human-interest article in The Tartan or other local newspapers. We hope to spark change with our survey and at least suggest the notion of a campus-wide archives system to Carnegie Mellon Academic Development, since students (thus far in our survey) seem to be in favor of such a system.

Though our topic is useful and relevant, one of its weaknesses lies in its own subject matter. We found that many people did not want to take our survey because it made them feel uncomfortable, and some even lied on the survey itself (though we insisted that their names and organizations would be in no way connected with their responses). Another weakness was the definition of an informal social network, because that could mean different things to different students. If we had more time, we would have worked on the wording of the phrase "informal social network" so that it would better express our preconceived image of it. Some of our respondents also said our wording was, at times, harsh and accusatory, so in the future we will have to watch our wording more carefully.

One of the potential reasons for this problem was that we did much of the pre-testing of our survey on freshmen at Schatz and on members of a particular newly-formed fraternity that had not yet made an academic stockpile for themselves. In hindsight, it would have been more helpful to pretest the survey on a few of the organizations that publicize their access to old course materials.

#### **Take Home Message:**

Our survey taught us a great deal about students' behaviors in the academic world. Carnegie Mellon is known for being one of the most challenging academic communities in the United States and perhaps even the world. If students are accepted into this school, assured in a letter by the President himself that each student accepted is capable of achieving academic success, then why does over half of the undergraduate population rely on old course materials to get them through four years of study? And if we happen to publish our survey results to university superiors in Academic Development, will anything be done to correct this inequity and unsure a fair learning experience to all students?

## **Sources**

 $Greek\ Life\ proportions\ and\ general\ data:\ \underline{http://www.studentaffairs.cmu.edu/student-life/greek/about/reports/fraternity-and-sorority-life-report-spring-2009.pdf}$ 

Enrollment data: <a href="http://www.cmu.edu/ira/factbook/pdf/facts2010/2\_factbook">http://www.cmu.edu/ira/factbook/pdf/facts2010/2\_factbook</a> webversion 2009 10 enrollment1.pdf

#### Request Email:

Dear CMU student,

We are interested in gauging public opinion concerning perceptions of academic integrity on the Carnegie Mellon campus among undergraduate students for our statistics class, 36-303.

Your help is crucial to the success of our class project. We would greatly appreciate it if you could take our survey, which is estimated to take around 10 minutes of time and is completely confidential. Also, all participants in our survey will be automatically entered to win a \$20 Starbucks gift card!

Our survey can be found at: <a href="http://www.surveymonkey.com/s/TJYZ3CJ">http://www.surveymonkey.com/s/TJYZ3CJ</a>

Thank you very much for your time and we hope to hear from you within the next couple of days!

With gratitude,

Victoria Docherty William Ouyang Daphne Tsatsoulis Bin Yang

#### Reminder Email:

Dear CMU student,

You were recently contacted because you were randomly selected by our research group to complete a survey on perceptions of academic integrity. If you have already completed the survey, thank you and please disregard this e-mail.

If you haven't had the chance yet, your help is crucial to the success of our class project. We would greatly appreciate it if you could take our survey, which is estimated to take around 10 minutes of time and is completely confidential. We would also like to remind you that all participants in our survey will be automatically entered to win a \$20 Starbucks gift card.

Our survey can be found here: http://www.surveymonkey.com/s/TJYZ3CJ

Thank you so much for all of your help and please let us know if you have any questions,

Victoria Docherty William Ouyang Daphne Tsatsoulis Bin Yang **Consent Form:** 

This survey is part of a study on the Carnegie Mellon undergraduate student body.

Specifically, our group is examining student perceptions of academic integrity and

archives of old course materials. We hope to be able to utilize the information to gain a

solid, realistic understanding of what students actually think about sensitive academic

policies and ultimately, to be able to make a recommendation regarding how to best

distribute and regulate the use of academic materials.

This is a one-time study that will be conducted through an online survey that should not

last longer than 10 minutes. As a participant of this study, you were provided a link to

this page through email. There will be no cost to you if you participate in this study,

which is entirely voluntary. We do not foresee any risk or discomfort that will affect you,

the participant. There is also no personal benefit from your participation.

Refusal to participate or discontinued participation in the study will not result in any

penalty or loss of benefits or rights to which you were otherwise entitled to.

Your anonymity will be closely guarded and thoroughly maintained during our data

analysis and publication/presentation of results. This will be achieved through the

following steps:

· Your responses will be assigned a number and no names will be recorded.

· Only authorized researchers will be allowed to access any and all data compilations.

· All files will be stored in a secured location accessed only by authorized researchers.

If you have any questions about this study or if you have questions about your rights as a

participant, please contact one of the following members of our team:

Victoria Docherty: vdochert@andrew.cmu.edu

William Ouyang: wouyang@andrew.cmu.edu

Penelope Daphne Tsatsoulis: ptsatsou@andrew.cmu.edu

Bin Yang: biny@andrew.cmu.edu

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This study is not funded by the Department of Statistics, and is entirely being supported by the personal finances of the research team. There are no anticipated financial benefits to any group or individual based on the results of the study.

I understand the specifications of the study and my rights as a participant and therefore agree to participate. I give the research team permanent permission to present this work in written and/or oral form for teaching or presentations regarding the properties and opinions of the Carnegie Mellon undergraduate student body. I understand that in no event will my identity be disclosed.

By clicking next, I give my consent.

Survey:

2.	Questions					
*	* 1. Do you intend to go to graduate school?					
	Yes					
	Unsure					
	○ No					
*	2. Which academic campus services do you use, and with what frequency?					
		Never	Semesterly	Monthly	Weekly	Multiple times per week
	Office Hours	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	
	Academic Development (SI, Study Groups, Tutors, Etc.)	O	0	0	O	O
	Career Center		$\bigcirc$	$\circ$	$\bigcirc$	
	Other (Which other acade	mic campus serv	vices do you use, and	with what frequen	cy?)	
	3. What is the Un					
	study for a curre	nt course	a student is er	rolled in? C	choose the b	est fitting
	choice:					
	Entirely Prohibited					
	Prohibited unless giv	en by professor				
	Not prohibited unless	s professor says	otherwise			
	Not prohibited					
	On't Know					

professor) can be used as supplemental information for a course you are taking? Choose the best-fitting choice:						
	Never	Rarely	Sometimes	Often	Always	N/A
Old Notes	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Old Homework	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Old Exams	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Old Projects/Programs	$\bigcirc$	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$
Old Papers Old Lab						
Materials/Papers						
internet Sources	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
in-Class Peers	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Students Who Have Completed the Course	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0
Projects Papers						
Exams  Homework						
Homework  Lab Data/Reports						
Homework  Lab Data/Reports  Programs/Code						
Homework						
Homework						
Homework  Lab Data/Reports  Programs/Code						
Homework  Lab Data/Reports  Programs/Code						
Homework  Lab Data/Reports  Programs/Code						
Homework  Lab Data/Reports  Programs/Code						

If the respondent said they had access the were asked the following, if not, they were directed to the next page.

## 1. What is the source of your access?

Fraternity/Sorority
$\square$ Officially Recognized CMU Student Organizations
$\square$ Informal Social Networks
$\Box$ Other (please specify)

4.					
* 1. Out of the materials that you have access to (that were not provided by your professor), which do you use? (Check all that applies)					
No Access					
Homework					
Notes					
Projects					
Lab Data/Repo	orts				
Papers					
Programs/Cod	e				
Exams					
* 2. How much	do you believe posse	essing supplemental ma	terials (not		
		d affect the average stu			
performance	?				
	Does not help at all	Helps but does not affect grade	Changes letter grade		
Notes			$\bigcirc$		
Homework					
Projects  Lab Data/Reports			O <sub>I</sub>		
Papers					
Programs			Ŏ O		
Exams					
		<u></u>			

5. Questions part ii
* 1. Do you think that Greek Organizations have archives of old class materials?
○ No
* 2. If such materials existed, would you consider joining a Greek Organization to gain access to them?
Yes No
* 3. Did the possibility of having access to potential academic archives affect your choice to join a Greek Organization?
Yes No
Not in a Greek Organization
* 4. Thus far this semester, how many of your professors provided old materials to study with?  * 5. How many professors do you have?
* 6. Do you believe that old course material (not provided by your professor) provides students with an advantage?
Yes  No
* 7. Do you believe that access to old course materials (not provided by your professor) is fair?
Yes  No

	are kept by var	lld be able to access the archives of ious organizations assuming that		
No Students				
Students in the Organizations				
All Students				
* 9. Do you consider the use of following materials (not provided by your				
professor) cheating?				
	Cheating	Not Cheating		
Old Notes	O	$\bigcirc$		
Old Homework	$\circ$	$\bigcirc$		
Old Exams	$\bigcirc$			
Old Projects/Programs	$\bigcirc$	$\bigcirc$		
Old Papers				
Old Lab Materials/Papers	$\bigcirc$	$\bigcirc$		
Internet Sources				
In-Class Peers				
Students who have completed the class	Ō	Ō		
		s-wide archive of old course would be accessible to all		
* 11. Would you personally benefit from the creation of a campus-wide archive?				
Yes				
○ No				

6. Demographics					
1. Primary Major					
* 2. Year					
<u>)</u> 2					
<b>○</b> 3					
O 4					
<u></u>					
* 3. Gender					
Male					
Female					
* 4. QPA					
0.00-2.00					
2.01-2.50					
2.51-3.00					
3.01-3.50					
3.51-4.00					
* 5. Where do you live?					
On campus University Housing (Excluding Greek Lease Housing)					
Greek Lease Housing					
Off Campus University Housing					
Private Off Campus Housing					
* 6. Are you a member of a fraternity/sorority (Excluding professional, service, and honor societies)?					
Yes					
○ No					

\*7. Are you currently a member of an officially recognized campus student organization (Not including a fraternity or sorority)?

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ی Yes
ی No
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## 7. Thank You Page

Thank you very much for completing our survey. Have a nice day :)