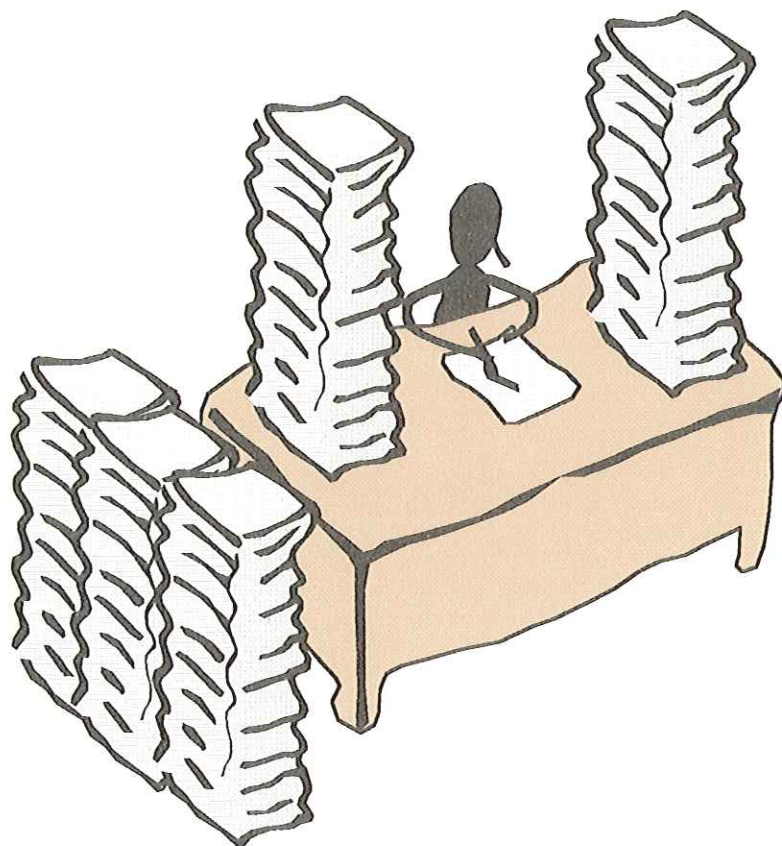# Paper Work

**Environmental Science 411**
**Sustainable Campus**

Dr. Richard Hansis
Fall 2003
12/15/03

Julia Freewoman
Elizabeth Johnson
Alison McKay
Laura Rolfe

\* Please note that the paper this document was printed solely on came from Library 121, and has reduced spacing as an effort to reduce paper waste.

# Table of Contents

# Table of Images

**Problem Statement:**

An excessive amount of paper is used in HSU's computer labs on a daily basis.

**Problem Situation:**

Most of the student-generated waste on the Humboldt State University Campus occurs in campus computer labs in the form of one-sided paper. This is due to several factors including, but not limited to, the lack of access to the double-sided print option on the printers, students not using the print-preview feature and consequently printing more pages than they intended, students printing multiple copies deliberately or accidentally, and a majority of students not using the paper that has been printed on one side for notebooks or other use.

While the computers are theoretically restricted to students and faculty only, there is no monitoring of the amount of paper wasted in the labs. As a consequence, there is little to no incentive for students or faculty to conserve the paper they use, and lab users feel free to print lengthy documents or multiple copies of their work. Many don't even realize how many pages will be processed when they hit the print option, and toss the extra sheets in the bins if they don't just throw it away. This wasteful behavior costs the university and unknowing students tens of thousands of dollars each year.

Compounding the problem of uncontrolled printer use is the fact that students do not have access to the double-sided printing option, which exists, but is not activated, and because of frequent paper jams, students are highly discouraged from re-feeding paper into the trays.

The amount of paper that is not put to its full use not only has an effect on the University's budget, but also on the environment. While some paper is removed from the bins by students for use in notebooks, papers, or scrap paper, a majority is left behind, and then trucked hundreds of miles to Oregon, via the following process. First, workers from Plant Operations have to come around to each lab and pick up the materials, then all the paper is sent to Arcata Recycling Center. Once at the recycling center it then has to be shipped to Oregon to be recycled and turned back into paper. The recycling process itself has its own environmental effects, as the re-bleaching of the pulp includes the use of dioxin, which is "considered to be the most potent chemical toxin known, and studies have shown it to be highly carcinogenic." http://www.treecycle.com/papers/we_lived.html. Even then, not all the paper printed in the labs is recycled and much of it reaches the landfills in Medford, Oregon, where it can take decades to decompose if not exposed to sunlight.

For all these reasons and more, we feel that Humboldt State University needs to find a. way to reduce the amount of paper that is used in its Interdisciplinary computer labs, ultimately benefiting the environment and saving students and the university thousands of dollars.

**Goals and Objectives:**

*Goal 1*: Reduce the amount of per capita paper use in HSU's interdisciplinary computer labs.

*Objective 1*: Reduce the amount of paper waste by 15% by Fall 2004.
*Objective 2*: Reduce the amount by 25% by Fall 2005.
*Objective 3*: Reduce the amount by 50% by Fall 2006.

**Description of Solution Alternatives**

*1. Double-sided printing* – This alternative would call for enabling the "double-sided" print option in HSU's computer lab printers. This would become the default mechanism. This might be implemented solely in smaller labs, or only with designated printers in each lab.

The most attractive benefit for this solution is that it theoretically cuts paper use by half. Initializing the software to enable a double-sided printing option costs $400 per printer, but it is only a one-time expense. This option appears to be supported by both students and the head of computing staff as long as funding is made available outside of Computing Service's budget. Ultimately, and ideally, this tactic would raise student awareness of the amount of paper they use on a regular basis.

The potential negative aspects to the double-sided printing option are the cost of initializing the software, the rebuilding of the printers, and the extra maintenance, which comes with an added monetary cost for the staff that have to maintain the rollers. According to staff, the quality of printing is also reduced due to shrinkage of the paper, and the loss of absorption of toner on the other side because of the prolonged exposure to heat inside the printer. Printing time would also be prolonged, which can be problematic for those last-minute students. In order for this alternative to be the most efficient, the printers would have to be completely replaced which is simply financially impossible at this time.

An unexpected outcome of this option includes the potential for students' confusion (or just impatience) regarding the new process, leading to multiple printings of the same document, thereby defeating the purpose.

*2. Student Paper Quota* – This alternative would require students to log in or run their student ID (or both, depending on the security of the system) in order to be able to print. The way our group envisions this is at the beginning of each semester, students are allotted half a ream of paper at a set price. Software would be installed that would require students to enter an id code and password each time they hit the print option. After logging in, students would be able to see how many pages they have used up to that point, and how many they have left. Scanning a card would ensure that students aren't leaching off of someone else's quota. At the end of the year, students who exceed their quota are fined an interest price, and those who fall below the quota can choose to extend the remainder over the next semester ("roll-over"), or get their money back. As an added incentive, those same students who fall below their allotted amount would be rewarded with a free gift from the campus bookstore (mug, tee-shirt, hat, pen, etc).

The benefits of initiating a paper quota are many, but at the top of the list is heightened awareness on behalf of the students who print in the campus labs. By having to go through the

process of entering information and scanning a card, tedious though it might seem, students would be forced to be constantly aware of exactly how much paper they are consuming. This alternative requires no extra maintenance of the printers themselves; however there is an added risk of buggy system software and problems with gummed up scanners and cards. One of the most significant bonuses of this idea is the support of several members of HSU's Academic Computing staff.

The cons for this alternative are minimal. Extra software would have to be installed which would cost $30,000, but this is a one-time expense. Another cost would be the $60,000/year staff person hired to monitor this system. In addition, implementation of this requires that an initiative is passed that overturns the unlimited printing option at a flat fee.

An unexpected outcome from this alternative would be student disgruntlement over a more complicated printing process as well as a raise in computing fees.

Paper Conservation Awareness Campaign

*3. Department or club printing on used or 100% post-consumer waste (pcw) paper* – While this alternative does not focus specifically on our problem statement (excessive paper waste in student labs), it addresses the need for campuswide reduction in paper use. University Departments and clubs would be required to print (and photocopy) intra- and inter-office documents on already used or 100% pcw paper. Ideally this would include handouts from faculty to students.

The benefit of implementing this tactic is that our group does not have to deal with AS or Academic Computing. However, we'd have to deal with faculty/staff who might not be so excited about this idea as we are. The other bonus is that conservationist-minded students would be made aware of the club labs who would be welcome to additional student usage and therefore seek them out.

A negative effect of this option is that 100% pcw paper tends to cause a lot of wear on the rollers in printers, so there would possibly be a need to replace them (the printers) in order to make this option the most efficient, which would cost a lot. Another drawback is the heightened potential for paper jams when used paper is fed into the trays of printers.

*4. Electronic submission* – This option involves approaching professors and various departments and getting feedback on electronic submission of assignments via email (webmail or digital dropbox through Blackboard), or disc (zip or 3.5). For students who don't have an internet connection in their homes and can't (or don't want to) afford discs, we are considering a "Disc Drive" where students campuswide would donate used discs, and we would alert students to CRP's stock of used, available discs.

It is inevitable that some professors will not be in favor of this idea for various reasons, some being they don't have and/or don't want a computer in their homes and would rather grade on paper, or the assignment includes graphics that need to be printed in order to be properly evaluated with corresponding text. Others simply don't want to be tied to a computer to do their grading. However this method could drastically cut back student paper use, and gives students a break from having to come from a distance to campus just to submit a paper, or from waiting for their paper to print in queue after thirty other students who are also waiting for somebody else's

50-page paper to clear. Another benefit is that professors would no longer have to hear any printer excuses from slacker students (it ran out of ink, it died, I threw it out the window, my cat ate all my paper, etc...).

An unexpected outcome from this alternative is that professors may end up printing a copy of students' work anyway, which doesn't save paper, it just displaces the source.

*5. Alternative paper use for submission* - This alternative involves requesting that professors allow student work to be submitted on already-used paper or printed on both sides.

The benefits of this option are that it involves a more efficient use of paper, and that it is more flexible financially and administratively (we won't have to deal with AS or Computing Services).

However, some professors might not like the look of already-used paper, or might want to see each paper individually without having to flip each page back and forth.

*6. Paper Demonstration* – This is not really an alternative but part of the larger effort/campaign for raising student awareness of paper consumption in campus computer labs by -
   1. requesting that CRP collect but not move the paper off-campus, rather keeping it, and after about two weeks, creating a display of the paper gathered from the labs. We feel that a visual demonstration such as this will be an effective step in showing students the current situation of this campus's paper problem. The best thing about it is that it costs nothing financially, just some space and a little time.
   2. making new posters and placing them (along with old versions) in computer labs detailing how students can reduce their paper use. This has a minimal cost and only requires attention from the students in the labs and cooperation from computing staff.

## Analysis of Alternatives

When weighing our alternatives, we narrowed our original six to the two we deemed the most solid based on the pros and cons of each, as well as a simple feasibility analysis. For each, we weighed practicality versus overall impact, ease versus what might have the most visible/effective results. One significant factor (though not necessarily the deciding one) is cost. In other words, we determined that while some alternatives were simpler and easier to implement, they were not necessarily as effective as some that might be more time consuming and/or expensive. Since our focus is reducing paper-waste, it made the most sense to target the hardest-hitting alternatives that were guaranteed to make an impact.

As a result, we settled on focusing our efforts on the double-sided printing option and the student quota alternative over the last four which are lumped under a "Paper Conservation Awareness" campaign, targeting the university as a whole (students, faculty, and staff).

**Table 1: Alternative Matrix**

| | Staff/ University Support | Student Support | Time Intensiveness | Affordability | Feasibility | Effectiveness |
|---|---|---|---|---|---|---|
| **Double-sided printing** | Potential | Yes | More maintenance of printers | Yes, eventually | 2 | High |
| **Paper Quota** | Yes | Potential | Initially | $30,000 startup, $6k salary | 3 | High |
| **Department/ Club Alternative Paper** | Probable | Yes | NA | Potential (might require new printers) | 1 | Limited |
| **Electronic Submission** | Potential | Yes | NA | NA | 1 | High |
| **Student Alternative paper use/submission** | Potential | Yes | NA | NA | 2 | Limited |
| **Demonstration** | Yes | Yes | Slight | NA | 3 | High |

## Implementation Strategies

*Paper Conservation Awareness Campaign*
  1. Sculpture (display December 1st – 5th)
     - Research who to talk to in order to have sculpture (Elizabeth, ASAP)
     - Coordinate with Alec Cooley regarding construction of (All, Nov. ?)
     - Signs for display (Due Nov. 12th)
       ~ Amount of trees = HSU yearly consumption (Julia)
       ~ # of paper used this semester, also how we can reduce (Elizabeth)
       ~ how much students will have to pay (Alison)
       ~ Paper trail (Laura)
       Group work (Nov. 17th)
       Signs completed (Nov. 19th)
     - Consult Carolyn regarding interp signs for spring semester (Alison)

2. Petition showing Student support of Initiative
   - Pick up and fill out paperwork (Elizabeth, in progress)
   - Work on framework of initiative with SCTF (All, begin Nov. 6th)
   - Research Tabling (Laura, ASAP)

3. Faculty Approach (Taking place Nov. 17th – 21st)
   - Paperwork for survey, same as above (Elizabeth, in progress)
   - Lists of professors to survey (Alison, in progress)
   - Wording for survey (All, Nov. 3rd)

4. Paper Pick-Up Stations (Beginning November 10th)
   - Punch holes & leave in tray (Julia, Nov. 10th)
   - Computer Labs:
     ~Library 121
     ~Gist 218
     ~Harry Griffith Hall 105
     ~Siemens Hall 118
   - Call CRP (Julia, Nov. 3rd)

*Regarding the Quota*

1. Meet with:
   - Jeanne (academic computing)
     ~ more facts and figures
   - Madeline (academic computing)
     ~ ideas regarding display and quota
   - Michael
   - Alec (CRP)
   - RJ (possibly only email may be needed)
     ~ amount of paper leaving labs in bins

2. Coordinate with SCTF (All, Nov. 6th)
   - Framework
   - Continued program after semester

## Monitoring and Evaluation

*Monitoring*

- Checking logs at Academic Computing to see how numbers have changed. This will take place every three months.
- Maintain relationship between Academic Computing and Sustainable Campus Task Force.

*Evaluation*

- Percentages reduced
- Initiative passes

**Appendix I: Petition Cover Letter and Form – note: 166 signatures collected 12/5/03**

Currently there is unlimited printing in the HSU interdisciplinary computer labs. This lack in accountability has perpetuated a cycle of wasteful and irresponsible printing, and you are paying for it. Between June 1st and November 16th 2003, 1,502,634 sheets of paper were printed in the campus' interdisciplinary labs. This means that in a single school year, more than 3,005,300 sheets of paper are printed. This amount would stand higher than 5 of the tallest redwood trees stacked on top of each other.

Some may think that this use is acceptable because we have such a good recycling program on campus. However, recycling is not a substitute for reducing use. The re-bleaching and de-inking of used paper during the recycling process releases carcinogenic chemicals (dioxins) into the local watershed. In addition, approximately 680 gallons of diesel fuel is burned in transporting a school year's worth of HSU's paper to be recycled.

Per capita paper use in interdisciplinary computer labs is at an all time high. Currently you pay $10 a year for computer lab use. However, if printing continues at the existing rate you could end up paying as much as $40.

Stop paying for other people's negligence. Don't let HSU's image as a green university be only skin deep. You can reduce paper use on campus, save trees AND money by making students responsible for their individual printing.

Help us by adding your voice to the support for a student initiative to implement a printing quota in the interdisciplinary computer labs. This would ensure you only pay for the paper you use and not for other who flagrantly abuse printing privileges.

I support the placement of an initiative to implement controlled printing in HSU's Interdisciplinary Computer Labs on the Associated Student's Spring 2004 ballot.

| | Name (print please) | Signature | Major and year |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |

**Appendix II: Faculty Survey – note: 25 responses from 50 requests**

Do you currently accept assignments from students turned in via (please check all that apply)

__Email
__Digital drop box on Blackboard
__On paper previously printed on one side
__Double sided printing
__On a disk

If not, which ways would you be willing to accept submissions (please check all that apply)

__Email
__Digital drop box on Blackboard
__On paper previously printed on one side
__Double sided printing
__On a disk

If you are opposed to submissions in these forms, please explain why?

If you do receive assignments electronically, do you print them out at any point?

On average, how many written assignments do you require of your students per semester?

What is the average length of assignment?

Do you require more than 1 copy to be turned in?

What is your average class size?

# Graph 1: Current Ways of Accepting Assignments

**Current Ways of Accepting Assignments**



Legend: Series1

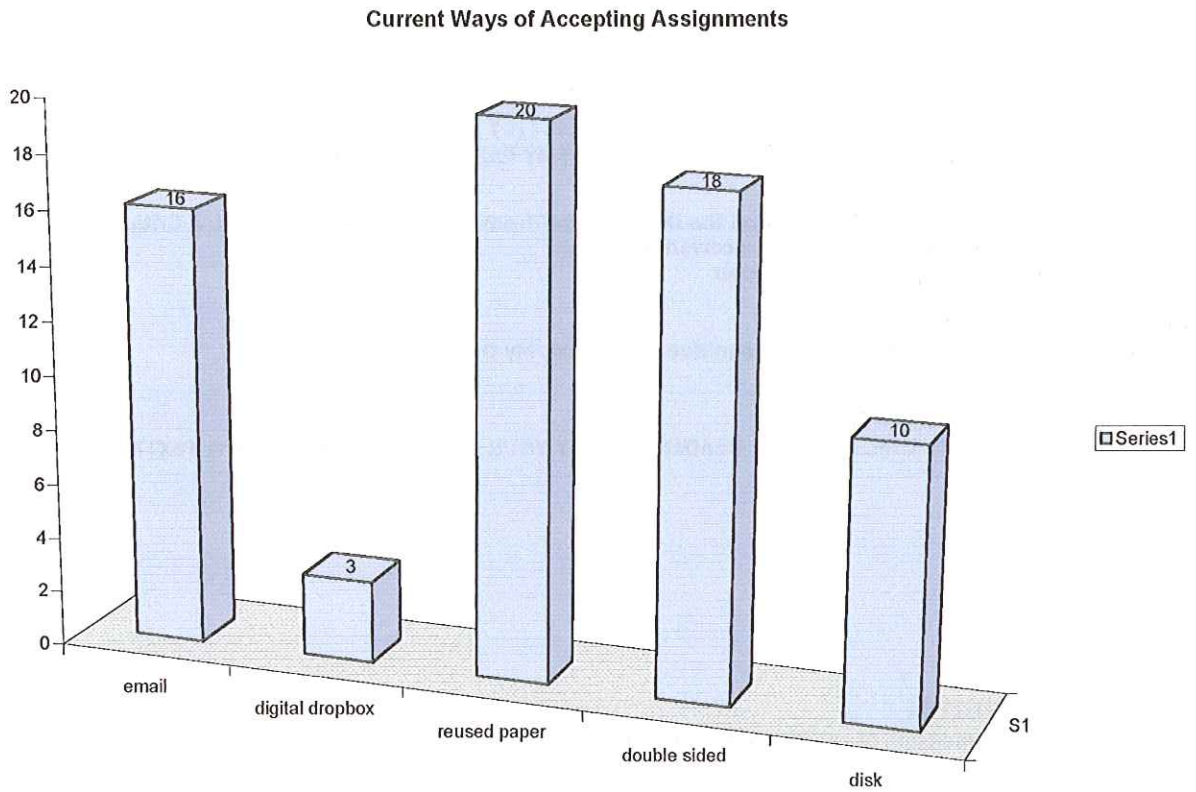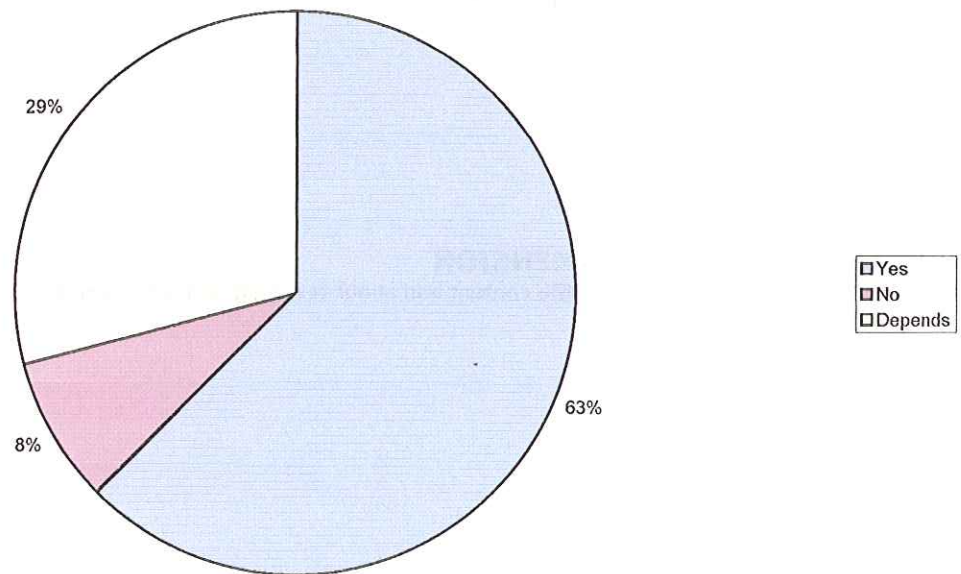Bar values: email 16, digital dropbox 3, reused paper 20, double sided 18, disk 10

# Chart 1: At any point do you print electronically submitted assignments?

**At any point do you print electronically submitted assignments**



29%

63%

8%

Legend: Yes, No, Depends

## Appendix III: Paper Count

**Table 2: Paper totals from AC's 13 Interdisciplinary Computer Labs**

| Lab | | Lab Total (sheets of paper) |
|---|---|---|
| Founder's Hall | 202 | 25,174 |
| Gist Hall | 215 | 164,458 |
| Gist Hall | 218 | 279,479 |
| Harry Griffith Hall | 105 | 81,136 |
| Harry Griffith Hall | 229 | 103,501 |
| Jenkin's Hall | 212 | 15,851 |
| Library | 121 | 378,434 |
| Library | 310 | 76,848 |
| Science A | 364 | 56,732 |
| Siemen's Hall | 1 | 64,960 |
| Siemen's Hall | 118 | 150,899 |
| Siemen's Hall | 119 | 105,162 |
| **Total** | | **1,502,634 sheets** |

Jeanne Wielgus of Academic Computing was kind enough to grant us access to their printing logs which had each lab divided by printer, each of which had its own daily count. By finding the total, between July 1, 2003 and November 16, 2003, we were able to extrapolate the sum for the full year (through Spring 2004) – 3,005,268 sheets of paper used in just one school year. At approximately 7,000 students enrolled for this semester, we estimated that each student would have used 215 sheets apiece.

**Appendix IV: Correspondence with RJ Wilson**

**Letter 1 - In response to word of mouth that RJ was less than pleased with our campaign**
From: avm4@humboldt.edu
Date: Tue, 2 Dec 2003 15:52:04 -0800 (PST)
To: rjw7001@humboldt.edu
Cc: jw7001@humboldt.edu, anc1@humboldt.edu, lkr6@humboldt.edu,
julia@humboldt1.com, erj2@humboldt.edu
Subject: Environmental Science capstone course information

Dear Mr. Wilson,

We are currently enrolled in Environmental Science 411, the capstone course for our major. During this course we are given the task to undertake a project that will help better our campus. Our group decided to focus on the area of excessive paper use on campus, more specifically on excessive printing in the interdisciplinary computer labs.

Our group met with several people and campus organizations in order to better understand the situation and how it can be remedied. Jeanne Wielgus was especially helpful in explaining Academic Computing's views on the situation.

We are aware that the paper pick-up stations we established were taken down and we do understand why. Our group thought that since we discussed this idea with Jeanne that we could go ahead and go forward with that portion of the project. That was our error. The idea was to demonstrate the reuse potential for one-sided paper. Do you have any ideas as to how to accomplish this while accommodating your labs?

In addition, our group wanted to let you know that as part of our project we have been organizing a paper conservation awareness campaign. This Wednesday, December 3, 2003 we will have a display on the quad presenting statistics from various campus organizations including academic computing. We will be tabling on the quad advocating more responsible printing habits as well as gathering signatures to gauge student support for a monitored/controlled printing system in order to reduce supply consumption.

If you have any questions, please feel free to contact us at the below email addresses.

Thank you,

*ENVS 411 Paper Files Group*

Julia Freewoman    julia@humboldt1.com
Laura Rolfe      lkr6@humboldt.edu
Elizabeth Johnson  erj2@humboldt.edu
Alison McKay     avm4@humboldt.edu

**Letter 2 – Response from RJ Wilson**

Subject: Re: Environmental Science capstone course information

From:    "R.J. Wilson @ HSU Axe" <rjw7001@humboldt.edu>

Date:    Fri, December 5, 2003 5:21 pm

To:      avm4@humboldt.edu

Cc:      "Bruce Tiffee" <bjt7001@humboldt.edu>

"Christi Hawkins-Smith" <clh7002@humboldt.edu>

"Dan Moskaly" <dmm7001@humboldt.edu>

"Jeanne Wielgus" <jw7001@humboldt.edu>

"John Adorador" <jra1@humboldt.edu>

"Kim Moon" <kjm7002@humboldt.edu>

"Kim Vincent - Layton" <kbv7001@humboldt.edu>

"Laurie Takao" <lat1@humboldt.edu>

"Madeline Myers" <mlm7001@humboldt.edu>

"Mark Hendricks" <mdh3@humboldt.edu>

"Rocky Waters" <rrw1@humboldt.edu>

"Tim Kohberger" <trk2@humboldt.edu>

Hello,

I have serious concerns about your assessment that computer lab paper usage for completion of University assignments as "excessive printing"; simply because wood fiber is consumed in the process. Notice, I purposely did not use the term "waste". The University is a multi-million dollar a year enterprise with a primary endeavor consisting of faculty and students putting their thoughts on paper in an organized manner. The faculty present material, some of which is in the form of paper sheets and the students labor for many hours crafting reports and similar assignments; which some end up on paper.

I believe your enthusiasm is misdirected. Just because paper is placed in the recycle bins in the computer labs, is may have served a useful purpose and conscientious students simply prefer to recycle here rather than trash it at home. We all want to reduce waste and improve our recycling efforts.

Have you thought of a comparative analysis of the percentage of the U.S. Pulp and Paper consumption of Writing and Printing Paper that is used by Humboldt State University? According to industry reports, that category was 24 million tons for the U.S. What is the various paper consumptions within HSU? Do you have a useful and safe alternative to paper consumption?

Our Professors' collective eyesight is enormously more important (by thousands of times) and not renewable; therefore requiring well printed material produced by our students. In a Professor's lifetime, the collective effects of eyestrain from reading and grading thousands of students reports and printed projects surely must have some more important measure in a grander strategy of conducting University business.
Especially something other than in reams of paper as perceived as waste!

I suggest you wouldn't get very far discussing alternatives to paper use with the faculty at large; who, after all make assignments requiring students to write and turn in those assignments on

paper for effective grading. Currently, it is the best and most economical tool for the job.

I would like you to email me your instructor's name so I may discuss an issue I have of requesting University staff to assist with class projects for Environmental Science without the permission of their immediate supervisor. The University staff are generally not given assignments to perform research for students' class projects.

Until I talk with your professor, would you please refrain from further contact with the Academic Computing staff.

--
R.J. Wilson, Manager
Academic Computing
Information Technology Services
Humboldt State University
Arcata, CA 95521-8299
Desk# (707)826-4201, FAX # (707)826-4202,
Msg.# (707)826-4205, Alt Msg.#(707)826-3815.
--
Never ascribe to malice that which is adequately explained by incompetence
-- said Napoleon Bonaparte.


### Letter 3 – Plea to Dr. Hansis…

From: avm4@humboldt.edu
Date: Sat Dec 6, 2003  22:28:14 US/Pacific
To: rah14@humboldt.edu
Cc: julia@humboldt1.com, lkr6@humboldt.edu, erj2@humboldt.edu
Subject: Project Issues

Dr. Hansis,

Recently we received information from people within the Campus Recycling Program that RJ Wilson (of Academic Computing) was upset about the paper pick-up stations that we had put in some of the more popular computer labs. It was our understanding that he wanted to talk with us about this. So we decided to email him to let him know that we understood his concerns and why he had removed those paper pick-up stations, as well as to inform him that we were going to be tabling on the quad. He sent a response to our email which we received on Friday, December 5th. From reading his response, he clearly does not know what our project is about and we are not sure where he received his information. In any event, you can read both our email to him and his response, further down in this email. Please note that he would like to talk to you about a few things regarding our project. However, we would like to talk to you about this further before you contact RJ Wilson. We just wanted to give you a "heads up" about this and to let you know that we need to talk to you about this on Monday.

Thanks,

Alison, Elizabeth, Laura and Julia

**Letter 4 – Response letter to RJ Wilson**

From: avm4@humboldt.edu
Date: Tue Dec 9, 2003 15:30:43 US/Pacific
To: rjw7001@humboldt.edu
Cc: rah14@humboldt.edu, julia@humboldt1.com, lkr6@humboldt.edu, erj2@humboldt.edu
Subject: In response to your concerns

Dear Mr. Wilson,

Thank you for your thoughtful and timely response to our email. We may have overlooked AC's chain of command in our youthful enthusiasm, but our main concern was not wanting to create a burden for your busy schedule. Therefore we communicated directly with AC staff. Please note that we did all of our own research and AC staff only provided access to information.

We are sorry that the purpose of our project was unclear to you. Academically related printing is obviously a necessity on campus. However, as you know there is a substantial amount of superfluous printing that occurs as a result of non-academic activities and carelessness/ignorance of printing practices. It is this behavior that we believe is wasteful and deserves attention. By reducing this type of printing less toner, rollers and maintenance are required thereby benefiting AC.

You would be happy to know that the opinions of HSU professors have been taken into account in regards to this issue and has been included in our project from the beginning.

We hope this clarifies any misconceptions you have had about the nature of our project. If you are still concerned our professor's name is Dick Hansis, Environmental Science.

Respectfully,

ENVS 411 Group

Julia Freewoman
Elizabeth Johnson
Alison McKay
Laura Rolfe

**Appendix V – Notes from Power Point Presentation**

**Choosing our topic**
Bob Schulz and
Michael Winkler
Problem Situation
*Narrowed scope to computer labs for the sake of time/accuracy
Recycling not the solution
>      dioxins
>      diesel fuel

Unlimited Printing initiative passed in 1997
Lack of access to double-sided printing
Lack of awareness and irresponsible printing habits
Burden of printing shifted from faculty to students
*Excess printing from profs-students because of budget crunch, departments have less money to spend on making copies of handouts and various copy-packets, so place online with Oncores or Blackboard for students to print in the computer labs.

**Financial Effects**
>      Student lab fee increase
Current fee is $10/year
Projected fee increase to $40/year
*While we're focusing on paper, excessive printing also impacts AC's toner and roller supply which have higher financial costs than paper alone, leaving them with no option but to raise student fees potentially as high as $40/year if current rate of printing continues

Majority of AC budget goes toward rollers and toner (maintenance in general) so a shift to duplex printing would not necessarily mean a drop in cost to AC because it still would involve the same amount of toner.

**Environmental effects**
Trees
Average tree produces 290lbs of paper
Between July 1 and November 16, 2003, 1,502,634 sheets (at an average of 12k lbs) were printed in AC's Interdisciplinary Computer Labs
This amount, after calculating weight/ream, equaled 29 trees
At 50 lbs a day, approximately 1.2 trees' worth of paper is sent to ACRC to be recycled each week
For all these reasons and more, we feel that Humboldt State University needs to find a way to reduce the amount of paper that is used in its Interdisciplinary computer labs, ultimately benefiting the environment and saving students and the University thousands of dollars.

**Goal and Objectives**
**Goal** - To reduce the amount of paper used (per capita) in HSU's Interdisciplinary Computer labs

**Objective 1**: Reduce per capita use by 15% by Fall 2004
**Objective 2**: Reduce per capita use by 25% by Fall 2005
**Objective 3**: Reduce per capita use by 50% by Fall 2006
*We had originally been discussing simply reducing general usage by these percentages but realized that with the expected increase in enrollment over the coming years, this would not be as effective as reducing use per capita. We began at 15% so as not to reach too high. Ideally it would be great if use dropped more than 50%, but that's going to be up to those individuals who seem to feel they can't go without printing their emails and favorite websites.

**Alternatives**
Duplex printing
Student paper quota
Paper Conservation Awareness Campaign
Department and/or club printing on 100%pcw paper
Faculty outreach
Paper demonstration
*Duplex printing - this had been our original goal, but after several discussions with staff and Mr. Winkler, it was determined that duplex printing was a pipedream. As it is, the university, namely AC, cannot afford to purchase new printers and to implement duplex printing with current printers would involve purchasing parts for the printers as well as maintaining them much more frequently because of the higher risk of frequent paper jams. They would also be slower than they already are, which could lead to impatient students hitting "print" several times and wasting even more paper.
We had also toyed with the idea of just asking clubs and departments to implement duplex printing, but did not pursue it.

The student paper quota was an idea we actually got from Dr. Hansis. This involved implementing a printing limit in AC's computer labs, and charging students only for the paper they use, ideally making those who print wastefully pay for themselves rather than everyone else paying for them. This would also, hopefully, lead to a reduction in printing and allow AC to implement technical updates with the saved money, allowing for the possibility of purchasing faster, more efficient printers and also perhaps color printers for general use.

The Paper Conservation Awareness Campaign was a general educational tool, as the name says, trying to raise awareness on this campus as to how much paper is used and wasted on a daily basis.
This alternative involved several methods, the first being campaigning for departments and clubs to print on 100%pcw or reused paper. We did not pursue this.
The faculty outreach involved asking the opinions of various faculty members about the ways they request their students to submit work, ie - handing it in physically with only one side, using already used paper, or printing on both sides, via email, blackboard, or disk. We asked why they chose the methods they used, and if they were opposed to a more efficient means.
The paper demonstration was meant to be a physical representation of exactly how much paper is used on this campus and how much is wasted. Alison will be discussing this alternative in a moment.

Weighing Alternatives
*We weighed the alternatives based on several factors, and measured the results of those in terms of feasibility and effectiveness.

The first question we asked was will the campus staff and the university in general support it?
The second was will the students support it?
Next we asked how much time would have to be put into it.
After that came affordability, and how it would impact students.
We examined the outcomes of each category and determined feasibility, giving each a value between one and three with one being the lowest and three being the highest. This determined the effectiveness.

*After discussing the potentials for our project with these staff members (Michael Winkler, Jeanne Weilgus, Alec Cooley, and Alison King), our group concluded that it would be best to combine the student quota as part of the Paper Conservation Awareness Campaign in an effort to narrow our focus.
While a student paper quota is the ultimate solution, our group was technically inexperienced in the politics and procedures involved in implementing an initiative, so rather than applying the majority of our time on the wording of a proposal to go on the Spring '04 AS ballot we decided to concentrate on raising student awareness and support to show that such an effort would ultimately be necessary.

**Paper Conservation Awareness Campaign**
- Educate students about the problem
-Demonstrate student support
-Educate faculty, gather information/responses
*Education - conservation techniques
Student support for more efficient printing in AC IL's

**Student Outreach**
Display
  - educational posters
  - paper tree
  - bins
Trays
*Posters - techniques for conserving
      money
      facts about printing on campus

Student Support
Petition
  " I support the placement of an initiative to implement controlled printing in HSU's Interdisciplinary Computer Labs on the AS Spring 2004 ballot."
166 signatures
*Garnering student support for the placement of an initiative in support of controlled printing was essential since students passed an initiative in 1997 allowing for unlimited printing in AC's IL's for a flat fee.

Research
AC printing logs

Recycling process
How much paper comes from the computer labs
*Daily log of how many sheets printed from each printer in each lab
July 1 - Nov 16 2003
1,520,634 sheets total printed in 13 labs
Projected approximation of year total (Fall '03 - Sp '04) 3,005,268

Recycling - collected from lab bins weekly by plant operations, sent to Arcata Community Recycling Center, combined with community paper and shipped twice a week to Springfield, OR (297 miles)

Faculty Outreach
Survey participation request
50 requests, 25 responses
*The purpose of the survey was to gather statistics regarding different professors' methods of receiving assignments from students, but had the added impact of raising faculty awareness of their own paper use.

## Monitoring and Evaluation
*Monitoring*
Track AC logs once a semester
Develop long-term partnership between AC and SCTF
*Evaluation*
Initiative passes
Percentage reduced

## Unintended Outcomes
Negative
 Grievances
Positive
 Networking between campus organizations

The saga continues…
*Even though the semester is at an end, several members hope to continue our efforts toward the initiative for the quota to be placed on the Spring '04 AS ballot through working with the SCTF (Michael Winkler in particular) and other students who displayed uncanny interest in our efforts through the demonstration.

## Appendix VI - Time Table

| Date | | Alison | Elizabeth | Laura | Julia |
|---|---|---|---|---|---|
| 08.25.2003 | Intro to problem solving | 2 | 2 | 2 | 2 |
| 08.27.2003 | Bob Schulz | 3 | 3 | 3 | 3 |
| 09.03.2003 | Choosing problem/Michael Winkler | 3 | 3 | 3 | 3 |
| 09.08.2003 | Brainstorming | 2 | 2 | 2 | 2 |
| 09.10.2003 | Creating goals and objectives | 2.5 | 2.5 | 2.5 | 2.5 |
| 09.15.2003 | Brainstorming solutions | 2 | 2 | 2 | 2 |
| 09.17.2003 | Goals and objectives | 2 | 2 | 2.75 | 2.5 |
| 09.22.2003 | Goals and Interim objectives | 1.5 | 1.5 | 1.5 | 1.5 |
| 09.24.2003 | Group discussion | 2 | 2 | 2 | 2 |
| 09.29.2003 | Group discussion | 2.75 | 2.75 | 2.75 | 2.75 |
| 10.01.2003 | Problem Statement and Situation | 3 | 2.75 | 3 | 3 |
| 10.06.2003 | lecture | 2 | 2 | 2 | 2 |
| 10.06.2003 | lecture | 2 | 2 | 2 | 2 |
| 10.08.2003 | problem development (new project), group discussion | 3.5 | 3.5 | 3.5 | 3.5 |
| 10.09.2003 | solidification of goals and objectives | 1 | 1 | 1 | 1 |
| 10.12.2003 | Drafting goals, objectives, and problem situation/statement | 2 | 2 | 2 | 2 |
| 10.13.2003 | lecture (discussion of goals, obj's, and pstmt)/consulting with Bill Cannon | 2 | 2 | 2.75 | 2 |
| 10.15.2003 | Strategies for implementation/arranging meeting with Alec Cooley | 2 | 2 | 2 | 2.2 |
| 10.16.2003 | meeting with Michael Winkler | 1.6 | 1.6 | 1.6 | 1.6 |
| 10.20.2003 | lecture (discussion of weighing alternatives) | 2.5 | 2.5 | 2.5 | 2.5 |
| 10.21.2003 | arrangements with Alec Cooley | 2 | 2 | 3 | 0.5 |
| 10.22.2003 | lecture/group discussion of Weighing alternatives/contacting Jeanne Welgus and computing staff | 2 | 2 | 2 | 2 |
| 10.26.2003 | drafting Weighing Alternatives | 2 | 2 | 3 | 0.1 |
| 10.27.2003 | Discussed Alternatives/met with Jeanne Welgus | 2 | 2 | 2 | 3.5 |
| 10.28.2003 | contacted Alec Cooley for meeting | 3.5 | 3.5 | 3.5 | 3.5 |
| 10.29.2003 | Implementation lecture/Meeting with Alec Cooley/discussion of implementation strategies | 2 | 5.5 | 2 | 2.4 |
| 11.02.2003 | composition of Implementation strategies | 1.5 | 1 | 3 | 0.2 |
| 11.03.2003 | lecture/paper count/contact Alec Cooley for another meeting/contact CRP about trays | 3 | 3 | 3 | 3.1 |
| 11.04.2003 | correspondence with SCTF/CRP/Alec Cooley | 1.5 | 1.5 | 3 | 1.25 |
| 11.05.2003 | presentation of Implementation strategies/meeting with Alec Cooley for display (part I)/CRP Rose | 3 | 2.5 | 4.5 | 0.6 |
| 11.06.2003 | CRP pickup/meeting with SCTF | 2 | | | 2.5 |
| 11.09.2003 | faculty survey research/label/research (Weyerhauser, ACRC) | 3 | 3 | 3 | 0.1 |
| 11.10.2003 | lecture/paper count II/paper trays/more faculty research | 3 | 3 | 2 | 3 |
| 11.11.2003 | refill paper station | | | | 2 |
| 11.12.2003 | lecture/wording for survey and petition/meeting with Alec Cooley | 0.5 | 0.4 | | 1 |
| 11.17.2003 | lecture/brainstorming monitoring and Evaluation/faculty survey | 1 | 1 | 1 | 0.5 |
| 11.18.2003 | drafting of M&E/discussion of display w/library staff and UC staff | 2 | 2 | 2.5 | 1.5 |
| 11.19.2003 | presentation of M&E | | | | 1 |
| 11.21.2003 | meeting with Alison King/making posters | | | | 0.5 |
| 11.23.2003 | picking up paper from CRP | | | | 1.5 |
| 11.28.2003 | gathering supplies for demo | | | | 1 |
| 11.30.2003 | construction of base for paper tree | | | | 1.5 |
| 12.01.2003 | lecture/group discussion/petition drafting/calling lib staff and UC staff | 2.5 | 2.5 | 1.5 | 1.5 |
| 12.02.2003 | Email #1 to RJ Wilson | 0.5 | 0.5 | | |
| 12.03.2003 | meeting with Alec Cooley/Paper demo | 3.5 | 3.5 | 5 | 4 |
| 12.06.2003 | organizing presentation | 10 | 10 | 10 | 4 |
| 12.08.2003 | class presentation/presentation/fiddling with projector/drafting response letter to RJ | 3.75 | 3.75 | 3.75 | 3 |
| 12.09.2003 | response to RJ | 0.5 | 0.5 | | |
| 12.10.2003 | presentation | 2 | 2 | 2 | 2 |
| 12.14.2003 | composition of final paper | 5 | 9 | 2 | 2 |
| **Total (in hours)** | | **98.6** | **107** | **89.85** | **84.3** |

**Conclusion**

Though we started big and ended small, it is agreed that our project was ultimately successful. It was certainly a learning experience. While we might not have revolutionized printing in the AC Interdisciplinary Computer labs, we feel that we have raised enough awareness in our brief campaign that further efforts will help the project attain our final objective – to reduce paper consumption per capita by 50% by Fall of 2006.

It appears that the important achievement in all of this was discovering that there is a receptive audience on this campus. Our efforts were not disparaged by the majority of the people we approached in our campaign; rather we were met largely with enthusiasm and creativity. It was surprising how many students actually put a lot of thought into the same efforts we were striving to implement, and the most common question we were asked was "Why hasn't anyone taken care of this sooner?" Well, that's what we're here for.

The most valuable asset we take away from this class is a new awareness of the way people function, including ourselves. We have learned how to think together, how to focus on a specific solution that is the most effective at accomplishing our goal in the most time- and resource-efficient manner, and how to read the underlying motives that drive those around us. We certainly never expected a crash course in diplomacy, but we believe it will take us far in the future.

In closing, we feel we have done the most we could with the time we had. We found it unfortunate that we did not have longer to see it through and that we did not have the foresight to create a tighter network to guarantee that our efforts will be carried forward into following years, but we feel secure that certain members of campus organizations, namely the Sustainable Campus Task Force, bear enough interest in our purpose to not let all our work end in vain. All in all, this has been an enlightening endeavor and it is certainly one that will follow each of us into our careers.