Benchmarks Online

Volume 7 - Number 3 * March 2004

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Questions, comments and corrections for this site: lynch@unt.edu

Site was last updated or revised : February 12, 2007

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untWebdev@unt.edu: Building Community

By Shannon Eric Peevey, UNT Central Web Support

Here at the University of North Texas, we are part of a very unique community. Thousands of faculty, students, and staff, are striving to better themselves, the educational experience, and the organization itself. But, in this community, do we really feel that we are a part of a family of like-minded people that desire to help each other to become more than we are?

How many people do you know as, “Hey, how's it going?”, “What's up, man?!”, or just simply, “Hi!”? In my overly-long college career, I would say that our interest in self-achievement is taking away from the community, and leaving us alone out in the cold...

In an effort to help build community here at the University of North Texas, Central Web Support has started a listserv that is geared towards all things Web. This list, (untwebdev@unt.edu), is a place where Web developers can get to know each other, be able to exchange Web development ideas, answer each other's questions, and ask questions of the Web developers and system administrators that bring this universities Web presence to life.

To help achieve this, Central Web Support has dedicated itself to constantly monitor this list and readily answer questions about our services, 508 compliance, and Web development requirements here at UNT.

Please, feel free to join our list and become a part of the community!!

How?!

Well, I'm glad you asked. It is very simple. First, you will need to send an E-mail to listserv@unt.edu, with the body of the email containing the following:

subscribe untwebdev first_name last_name

(i.e. subscribe untwebdev shannon peevey)

After you send this E-mail, the listserv software will send a reply, to which you simply hit reply, and replace all text in the body with “ok”. (sans quotes)

Please, this list is watched by staff and volunteers, so please be a good netizen and refer to the mod_perl list guidelines, which outline good mailing list etiquette: http://perl.apache.org/maillist/email-etiquette.html

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Spring Break Hours

By Claudia Lynch, Benchmarks Online Editor

Following are the hours for Computing Center-managed facilities over Spring Break. (March 15-19). All staff offices will be closed Monday, March 15 through Friday, March 19. The Helpdesk, ACS General Access Lab and Mainframe Print Services will maintain services during much of the four day weekend, however.

- **Print Services** will be open 8 a.m.-Midnight, March 15-19. Regular hours on the weekend preceding and following break.
- The **Helpdesk** is planning on being **open their normal hours** during this time.
- The **ACS General Access Lab** (ISB 110) **Closed** Sunday March 14; **Open** Monday - Friday March 15 - 19 from 9:00 a.m. - 6:45 p.m.; **Closed** Saturday March 20; resume normal hours Sunday March 21.

Hours for Other Campus Facilities

The University is officially closed for Spring Break Monday, March 15 through Friday, March19.

General Access Labs

- WILLIS:

  Saturday, March 13 close at 11:50 p.m.
  Sunday, March 14 **Closed**
  Monday-Friday, March 15-19 Open at 8:00 a.m. - 5 p.m.
  Saturday, March 20 **Closed**
  Sunday, March 21 Open at 1 p.m. (back to 24 hrs)

- SLIS:

  Monday, March 15 through Sunday, March 21, **Closed**

- MUSIC:

  - Friday, March 12: 7:30 a.m. - 5 p.m.
  - Saturday - Saturday (March 13-20) **Closed**
  - Sunday, March 21: 1 p.m. - Midnight

- SCS:

Friday, March 12th: 7:30 a.m. - 5 p.m.
Saturday, March 13 - Saturday, March 20 **Closed**
Sunday March 21: 1 p.m. - Midnight

- SOVA:

  Close March 12 at 5 p.m.
  Reopen March 22 at 8 a.m.

- COE:

  - Close March 12 at 5 p.m.

  Reopen March 22 at 7 a.m.

- COBA:

  - Sunday, March 14 through Sunday, March 21, **Closed**

- CAS:

  - All CAS labs (GAB 550, Terrill 220, Wooten 120):
  -
  - Close March 12 at 5 p.m.

  Reopen March 22 at 8 a.m.

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EIS News

By Cathy Gonzalez, EIS Training/Computing Administration Manager

EIS Status Report

The Purchasing and Procurement (PPS) completed the first three training sessions of EIS eProcurement with the ePro Pilot group on March 3. Members of the Pilot Group began entering requisitions into ePro during the week of March 8. After the initial pilot period is completed, other departments will be phased into the program. If a department is interested in being in the next group implementing ePro, please e-mail Sandy Shelton, sandy@unt.edu.

While ePro is being implemented, PPS will continue to accept paper requisitions.

PPS has established an ePro Help Desk (x2506) and an e-mail address specifically for ePro assistance (ePro@unt.edu). In PPS, ePro Support Services includes Craig Thorp as the supervisor and Julie Lauderdale working the Help Desk. Tina Koenig, PPS Training Coordinator, is conducting the ePro training sessions.

Equipping Students with Real World Experience

While attending the Higher Education User Group – PeopleSoft (HEUG) conference in Atlanta, I attended some sessions in a track known as *On Campus*. Last year was the first time the HEUG conference offered this track.

The purpose of the track is to bring together faculty who are interested in incorporating PeopleSoft into their course offerings as a way to enhance their institution's IT programs. Many higher education institutions recognize the value of integrating information technology but struggle with exactly how to integrate new, "real world" enterprise systems into their established business curricula. Examples of such systems include human resource information systems (HRIS), financials, supply chain management (SCM), and other enterprise solutions. These systems, many of which are Web-based, represent the tools that graduates ultimately will work with in their chosen professions. Students who gain experience in working with these technologies while in college will likely possess marketable skills they can apply in their post-graduation careers.

PeopleSoft's On Campus program is a comprehensive industry-academic

partnership that helps colleges and universities integrate enterprise software into their course offerings. The program awards training and academic grants of PeopleSoft 8 enterprise management software. PeopleSoft On Campus awarded Dakota State University (DSU) a $2.8 million grant to upgrade to PeopleSoft 8, making DSU the first institution to receive the new, Internet-based software. In the fall of 2001, DSU began implementing these Internet-enabled products, including PeopleSoft Human Capital Management, Financials, and Supply Chain Management.

PeopleSoft and Dakota State University

DUS worked closely with PeopleSoft to ensure a smooth transition to its new technology-enhanced curriculum. The first step was a commitment to ongoing faculty training on the new enterprise software. To date, DSU business information system (BIS) faculty have attended more than 60 weeks of PeopleSoft functional and technical training, providing them with a unique and outstanding faculty development resource. To meet the challenge of continuous improvement and development, BIS faculty worked with industry-leading companies to build relevant classroom programs. The main focus was to create programs and courses with real-world technology applications, augmenting curricula with the functional and technical skill sets required in today's workplace. These companies often extend internship offers to students.

Today, DSU offers multiple technology-based one- and three-hour courses in enterprise software. The courses cover Internet architecture, application design, installation and the fundamentals of enterprise systems and PeopleSoft. Additionally, Dakota State University is developing enterprise system software minor in Computer Information Systems.

Interestingly, Dakota State took its growing partnership with PeopleSoft a step further. A natural extension of the On Campus experience is the institution's Center for Remote Enterprise System Hosting (CRESH). Through CRESH, DSU offers other interested schools remote-hosted access to PeopleSoft's suite of applications. Institutions around the world are interested in utilizing enterprise systems in their courses, but not every school has the time or technical where-with-all to support complex systems infrastructures. At CRESH the technical infrastructure is in place, and they are developing business models and access and delivery options that schools may wish to.

"At Dakota State University, we learned first-hand that a successful, enterprise-software implementation—even for academic uses—involves a significant investment of time and resources," says President Jerald A. Tunheim.

"The implementation process—contracting, installation, training, testing, maintenance, and support—are very similar to the implementation cycles of a commercial project. But then we had to add curriculum development to the mix too! With the technical infrastructure completed, we now have a multi-year plan in place that focuses on faculty and curriculum development and the CRESH remote-access initiatives, all of which will allow us to exploit the capabilities of this new enterprise software, while offering an exciting new resource to other institutions around the country."

During the HEUG conference, I experienced great enthusiasm for PeopleSoft's On Campus program and the camaraderie that results from alliances such as

CRESH. The latest pure Internet enterprise software opens doors for remote access to applications and to new styles of teaching and learning. With the use of these technologies, industry and academia collaboration can enrich courses and provide a direct benefit to our students.

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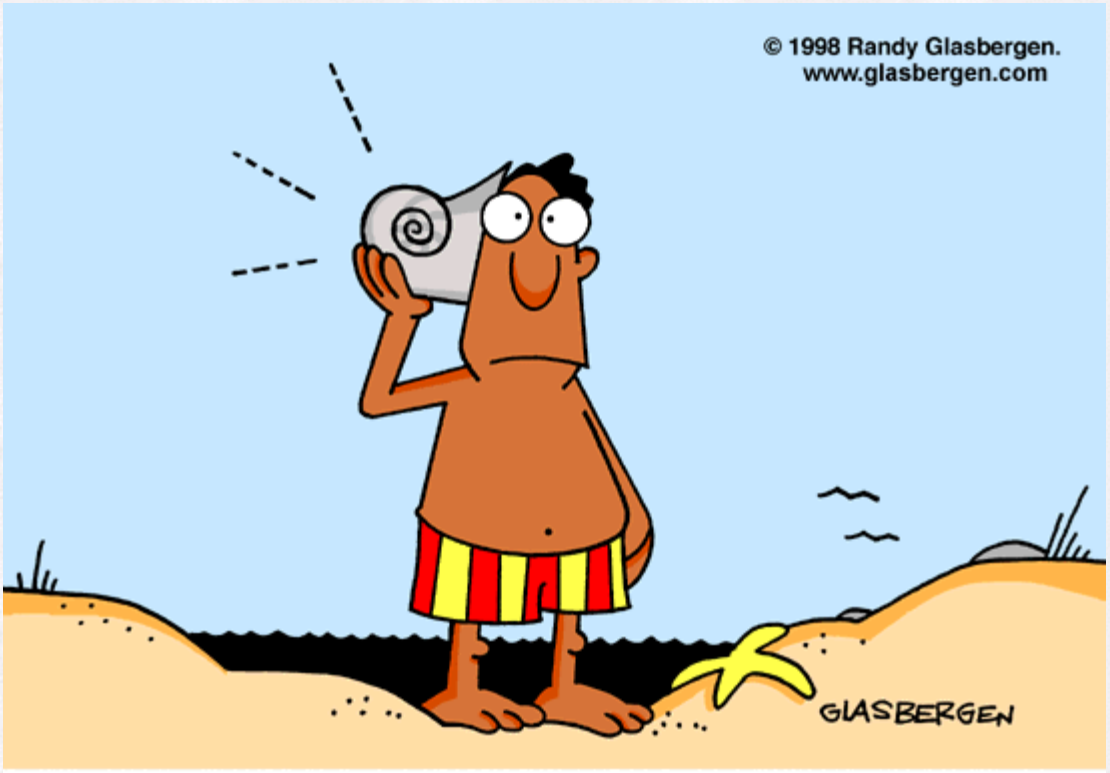

"Tom, this is Kate from the office. Boy, you're a hard person to reach when you're on vacation!"

From "Today's Cartoon by Randy Glasbergen", posted with special permission. For many more cartoons, please visit www.glasbergen.com.

Network Connection

By Dr. Philip Baczewski, Associate Director of Academic Computing

Open Source . . . Learning?

Perhaps you've heard of open source software. Open source software has been one of the Internet's greatest success stories. Perhaps you know it as Linux or through various GNU applications, or even as Apple's Darwin, the UNIX core of Mac OS X. Open source software exists in many forms and under a variety of licenses, but the basic idea is that a bunch of people in different places around the world can collaborate to produce sophisticated software that can be made available for use with no charge to the user.

The Internet is a great body of open source knowledge. From its inception, people, mostly in higher education at the time, published information that would be useful to many across the net. Even in these post commercialized Internet times, there are freely-accessible encyclopedias and dictionaries, plus countless information sites on topics ranging from aardvarks to zymurgy, provided by universities, organizations, corporations, or just plain individuals with a dedicated interest to a certain topic.

A systematic acquisition of knowledge

Knowledge, however, is not the equivalent of learning. Learning, whether self-directed or instructor-led involves a systematic acquisition of knowledge. Often, it is necessary to have some kind of structure to support the acquisition of knowledge. Some bodies of knowledge are so vast that without some external direction, a self-directed learner could become lost in many details without ever acquiring a useful set of knowledge. Obviously, learning is the primary "product" that Colleges and Universities have to sell. Universities employ people who are experts at creating learning structures and in conveying knowledge via one or more possible venues, the most common still being the classroom lecture.

A number of factors have recently combined to exert economic and social pressure on processes of delivering or acquiring knowledge. Recent copyright law is heavily weighted on the side of intellectual property holders. A threat of litigation can make it difficult to use materials within a learning structure, even if the fair use doctrine seems to apply.

A self-directed learner still can take advantage of textbooks without enrolling in a formal course, but even the textbook market is not without its controversy these days. One report accuses the publishing industry of using tactics to artificially drive up the cost of college textbooks. However, new college textbooks have never exactly been a bargain, since they are usually published and also sell in small quantities as compared to even the average-selling trade book.

Open Source Learning

Just as draconian software licensing has helped spur the growth of the open source software movement, draconian intellectual property laws may spur a movement toward open source learning materials. A number of open access learning environments already exist on the Internet. Some of these are well established, some are individual efforts, and others seek to develop information sources which are royalty free for use in education; that is, open to fair use without the ever-present threat of litigation.

Since 2001, the Massachusetts Institute of Technology has placed materials for over 500 courses online via their Open Courseware initiative. They state as their goals, to "provide free, searchable, access to MIT's course materials for educators, students, and self-learners around the world" and to "create an efficient, standards-based model that other institutions may emulate to openly share and publish their own course materials." A quick survey of courses will find syllabi, course calendars, detailed listings of related readings, study materials, and sometimes course notes. While the MIT site may be useful to those developing learning structures or as a source for references, it is not a primary source for knowledge. The one thing that's missing, in most cases, is the content of the lectures, in other words, the information which ties together the readings and other resources to make them more meaningful to the learner. The MIT site explicitly states that it does not provide access to MIT faculty.

Another approach to open access learning is that taken by Professor Kenneth Mentor of New Mexico State University in Las Cruces, New Mexico. During a recent presentation at the EDUCAUSE SW regional meeting in Dallas, Texas, he described his effort to create a portal for access to courses he teaches in that institution's Criminal Justice department.

Using open source software, he has developed his own interface to course materials and resources, but does not limit access only to his students. Even his class discussion forums are open to individuals who happen to access his site on the Internet and wish to add their opinion or ask questions amid the discussions of Criminal Justice graduate students. Professor Mentor will even respond to online inquiries, other than those from students who ask him to tell them everything he knows about topic "X" for their term paper.

While free access to complete University courses is rare, projects such as Professor Mentor's and the MIT Open Courseware site raise the question as to what Colleges and Universities will sell if this trend continues. The one thing they can sell is accreditation. A college degree is their stamp of approval that you have obtained a level of learning that somehow qualifies you as more qualified than your average self-directed learner. If MIT's Open Courseware site continues to be developed, other institutions may follow suit with their own courses as a competitive move. The problem for self-directed learners, however, is that access to primary materials as part of an on-line course may be difficult, since it's economically counterproductive to seek fair use permission for a course that you are providing at no cost.

The Realia Project

The Realia project is one effort to develop materials that can be used royalty free in an academic situation. Started primarily as an effort to support language and humanities instruction , it features a database of photos along with information which describes and catalogs the image as well as provides cultural cross references. It is a searchable archive which allows development of personal collections of URLs which provide quick access to various images you might wish to tie together as part of your learning structure. The Realia project relies on contribution of images and input and cataloging of those by academic community members. They currently facilitate this process via summer workshops and

grants to support expansion of the collections. It currently features numerous images and efforts continue to develop the descriptions and keyword references for the individual images.

While there is still an economic incentive for faculty to write and publish textbooks, college texts generally do not generate large incomes on their own. Just as has happened with software, it may be that other factors will soon outweigh the economic one as incentives for publishing academic materials. The ability to share the workload in the development process, the ability to quickly make available and update materials, and a lack of expense to students all combine to make online publishing a popular venue. All it may take is one "runaway hit" of an online text to provide a model for others to follow.

It still is an impediment that copyright law makes it difficult to bring together diverse materials for online publishing without an extensive process of gathering permissions. In the process of publishing a printed text, it is usually the author's responsibility to gather the permissions, but publishers can be of assistance. Having access to online materials, royalty free, makes online publishing an easier task, but a culture of open access learning will need to develop before such a scenario becomes common place on the Internet. If projects such as Realia serve as a successful model, it may be commonplace in a few years to see thriving open source learning projects.

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Each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or Website(s).

Like the site says:

> Now there's a university
>
> just right for you
>
> just where you need it

If you've been wondering about the UNT Dallas Campus (also known as the System Center), wonder no more. Point your browser to http://www.unt.edu/unt-dallas/ and see what is they have to offer. Campus news, events and Web resources are featured on the UNT Dallas Campus homepage.

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IRC News

Minutes provided by Sue Ellen Richey, Recording Secretary

February 17, 2004

VOTING MEMBERS PRESENT : PHILIP TURNER, Chair, ELIZABETH HINKLE-TURNER, COY HOGGARD (for JONEEL HARRIS), DON GROSE, JUDITH ADKISON, CHRISTY CRUTSINGER, BRUCE HUNTER, RAMU MUTHIAH, LOU ANN BRADLEY, JON NELSON, CHUCK FULLER, WIL CLARK (for JOHN PRICE), ERUM SHAIKH **NON-VOTING MEMBERS PRESENT:** JOE ADAMO, MAURICE LEATHERBURY, PATRICK PLUSCHT, SUE ELLEN RICHEY (Recording Secretary) **MEMBERS ABSENT:** RICHARD HARRIS, ABRAHAM JOHN, SCOTT KREJCI, JENNY JOPLING, KATHY SWIGGER, MAX KAZEMZADEH, CENGIZ CAPAN, KENN MOFFITT, DONNA ASHER, JIM CURRY, ROBERT NIMOCKS, DOUG MAINS, ARMIN MIKLER, BOBBY CARTER

The minutes of the January 20, 2004, meeting were approved as submitted.

IR Steering Committee

The Chair reported that there has been no IR Steering Committee meeting since the last IRC meeting. However, Richard Rafes has asked for a copy of the GroupWise Email policy and guidelines for review.

Distributed Computing Support Management Team

Maurice Leatherbury reported that the Distributed Computing Support Management Team (DCSMT) met last Friday, at which time the main topic of discussion was a division of responsibility between CITC and distributed areas for the remediation of security violations. Maurice explained that the first line of support for this type of thing is in the distributed area and the second level of support is in CITC.

New Representative

The Chair introduced and welcomed a new member of the IRC, Erum Shaikh who is the new Graduate Student Council representative.

Communications Planning Group

Lou Ann Bradley reported that the Communications Planning Group will meet Thursday, February 19th.

EIS Planning Group

Coy Hoggard reported for the EIS Planning Group. He stated that detail expense reports are now available in Excel spreadsheet format, with payroll data in summary form in those reports. They have discovered that there are certain error conditions in the financial system that can cause a purchase order or invoice to hang up and not get processed. As a remedy for this, queries will have to be written to search for these. Hoggard announced that the E-Procurement training has been scheduled for the first pilot group in the first week of March. In addition, the Student System Go-Live date for the Health Science Center, as well as the Financial Aid System in Denton is April 1st. He noted that continuing students are scheduled to register for the Fall semester using the legacy system; summer registration and enrollment will be on the legacy system also.

Hoggard explained that they plan to roll dates forward on the PeopleSoft servers to emulate certain dates that are critical during the year, to test automatic functions to be sure they take place as they should.

Research Planning Group

Maurice Leatherbury reported that since there have been questions about the role and function of the Research Planning Group, he, in conjunction with Armin Mikler, Angela Wilson and Kathy Swigger, have called for a meeting of a group of faculty members. They have asked faculty members who have a heavy need for computational intensive computing research support to state their research needs. It has been determined that their most critical need is for technical support personnel, not hardware or software. To meet this need will require CITC to hire an additional staff person to help with Linux systems. The group that met has agreed to write a white paper to make a case for an additional support person for Linux. In addition, they will ask the Research Office if they want to add some funding for this new position. In response to questions, Maurice explained that they will go back to faculty to find out who specifically needs support with Linux, and that this new position will not provide teaching support.

Standards & Policy Planning Group

Maurice Leatherbury reported that there has been a request from the current Chair of the committee to find new members and a new chair for the Standards & Policy Planning Group. As a result of a request from Dr. Turner for appointees from various departments, Maurice has been given the names of about 10 faculty/ staff that he will contact to set up a meeting to reorganize this committee.

Student Computing Planning Group

Elizabeth Hinkle-Turner reported for the Student Computing Planning Group that they are compiling the raw data from the student survey. She stated that even though the data is rough right now, her initial observation is that students are pretty happy with what UNT is doing in all areas.

Distributed Learning Team

Patrick Pluscht reported that the Distributed Learning Team has not met, but he reported that the ground-breaking for e-campus was held, with Chancellor Jackson and Dr. LaBrecque as speakers. Media coverage included local and regional newspapers and radio, including the Dallas Morning News and KRLD. Patrick reported that there have been over 28,000 hits to

the website. He reminded the council of an upcoming satellite program on the real cost of on-line courses which will be held Thursday, February 26, 2004, in Chilton Hall, Room 245 from 1:30 – 3:00 pm.

Virus activity on campus

Maurice Leatherbury announced that the latest virus, bagel.b, has hit UNT, explaining that it grabs a machine and sends spam from it to everyone in the world. Occasionally CITC has to shut down machines, because this kind of thing overloads UNT's Internet connection. To combat the virus, CITC has facilitated a method of blocking mail going off campus in any way other than through the central mail host. At the central mail host, mail is filtered to be sure this virus is not going out from UNT.

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* For a list of IRC Regular and Ex-officio Members click here.

IRC Meeting Schedule

The IRC generally meets on the third Tuesday of each month, from 2-4 p.m., in the Administration Building Board Room. From time to time there are planned exceptions to this schedule. All meetings of the IRC, its program groups, and other committees, are open to all faculty, staff, and students.

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Research and Statistical Support
University of North Texas

RSS Matters

Link to the last RSS article here: Resolving A Case of An Expired SAS 8.2 Installation. -- Ed.

Null Hypothesis Significance Testing

By Mike Clark, Research and Statistical Support Services Consultant

This is the beginning of a series discussing methodological approaches used in the social sciences. This article outlines the general problems and difficulties associated with a common method of statistical inference in psychology (my background) and other social science fields: null hypothesis significance testing (hereafter NHST). This introduction can serve as a starting point for researchers that are interested in examining these important issues in further detail. Subsequent articles will discuss alternative inference frameworks such as Bayesian analysis and Likelihood Estimation.

A Conceptual Overview

Statistical hypothesis testing involves setting up an initial hypothesis, and then performing a set of calculations on the data that give us some basis to judge as to whether our initial hypothesis should be retained or rejected. A common example in the social sciences is the situation where the researcher is interested in whether the means of various groups differ in a specified population. For example, we may want to see if grade point averages vary across college classification (freshman, sophomore, junior, senior). Following NHST procedures, a hypothesis that we might initially hold is that there is no difference among the groups (i.e. that their means are equal). We then perform our statistical analysis, and our procedures may lead us to say that we have not provided enough support to reject our initial hypothesis, or our procedures may lead us to believe that the initial hypothesis is untenable, whereby we would conclude that there are differences in the population groups. Subsequently, more statistical analyses, using similar logic, would be performed to discover specifically which groups differ.

The Problems

A thought that might occur to many researchers in a discussion of NHST is that they didn't know there was a problem or they may have been only vaguely aware of viable alternatives to NHST. This has been the case in many basic statistics courses – students are not told that there are some subtle difficulties with NHST, and that other alternatives might be more appropriate depending on what the researcher is trying to accomplish.

An important issue which is sometimes overlooked involves the practical interpretation of what we are doing. In NHST, we may state a null hypothesis that the difference between population groups are zero, or if we have more information, we may specify a specific value (or in a single sample case, we may specify that the mean of the sample data is equal to the population mean). Nonetheless, it is almost impossible to come up with that exact specified value in the sample under any circumstances of adequate sampling of data. For example, in a two-group design, our null hypothesis states that there are no population group differences while the alternative hypothesis states that the population groups are not equal. Below is an example of a more formal expression of hypotheses (null and alternative) regarding the difference between two group means:

$$H_0 : \mu_X - \mu_Y = 0$$
$$H_A : Not \;\; H_0$$

No matter how much the freshmen and sophomore populations look similar, the odds of them having *exactly the same sample GPA*, regardless of class sizes, is next to zero, and yet this is what our null hypothesis is suggesting. This null hypothesis of no difference in the population is sometimes thought of as a "straw-man" statement since we know that group samples will reflect some differences to some arbitrary decimal point. Having the observed sample difference, however small, be declared as statistically significant, is then a function of having a large enough sample size (all other things being equal) – if statistical significance is needed for the observed sample difference, one only needs to increase the sample sizes until the observed p-value reaches the cut-off criterion for significance.

Another source of confusion is related to the interpretation of NHST analysis results. Common sense would suggest that we are trying to determine the viability of a hypothesis. In other words, what the probability is that a hypothesis is true given the data at hand [p(H|D), the probability of an hypothesis given the data]. On the contrary, NHST actually involves a different conditional statement. We are not looking for the probability of the hypothesis tested but rather the probability of the data if some hypothesis (the null hypothesis) *were true* [p(D|H), the probability of the data given some hypothesis]. The goal of NHST is such that if the probability of the data given the null hypothesis is low enough, we might start thinking the data come from a world in which the null hypothesis is not true. Consequently, we reject the null hypothesis as a believable description of the population, and decide to believe an alternative explanation of events. Unfortunately, many researchers make the mistake of thinking that a failure to reject the null hypothesis has provided a probability that the null hypothesis is true – researchers may say: "a failure to reject the null hypothesis means that my groups are equal within some specified probability" – however, this is a conditional hypothesis that NHST is *not* testing.

Another misunderstood issue is interpreting the observed p-value in a valid way and choosing a corresponding cut-off value for the observed p-value. For some researchers, there is a rigid adherence to p = .05 as a cutoff point for significance (or some other e.g. p=.01). In other words, if the probability of the data under the null hypothesis is .045, these researchers will conclude to reject the null hypothesis. However, if the probability value is .055 (slightly above the cut-off), many researchers may not even discuss the result, or at best give it lower class status of significance (i.e. "marginal significance"). However, the decision whether to accept or reject the null hypothesis is inherently a subjective one, despite many interpretations to the contrary. To conclude that a result is "marginally" or "highly" significant is nonsensical. A statistical result is or isn't statistically significant depending on the researcher's point of view, and *regardless of the p-value obtained*. But what is exactly does this p-value represent?

P-Values and Error Rates

As mentioned previously, the observed p-value doesn't represent the probability of the null hypothesis. Furthermore, the p-value also doesn't tell us about the likelihood of any alternative hypothesis. Even if we had a specific alternative hypothesis, the p-value obtained with NHST only deals with the null hypothesis distribution of values (and a hypothetical one at that – e.g. can we really obtain a random sample from the population of all kids with ADHD?).

Historically, there have been at least two ways to approach "statistical significance". In much of the social sciences, these two approaches are blended together in an almost incoherent fashion – and this hybrid has been promulgated in methodology texts. Fisher, a developer of the NHST methodology, even seemed to change his mind at one point as to how to interpret a NHST p-value. Fisher's stance was that the observed p-value in NHST reflected our confidence in the null hypothesis. However, we already know is a problematic interpretation in the sense that the p-value is attached to the data (D), not to the hypothesis (H). Fisher also made no claims to an alternative hypothesis.

Neyman and Pearson, also developers of NHST, disagreed with Fisher's approach. Neyman and Pearson's approach was to specify an acceptable significance level before the experiment was conducted, and introduced the alpha cut-off (a) level, or Type I error rate (along with the concepts of: Type II error rate, power, and the alternative hypothesis). In the Neyman and Pearson approach: a researcher should, before data analysis, specify the probability of making a type I error (probability of incorrectly rejecting the null hypothesis when it is actually true). This specification will determine decisions about the design of the experiment (e.g. sample size for the experiment).

Thus, if I set the error rate at 5%, or a = .05, and I conduct the same experiment many times (all things being equal), and perform the corresponding analyses of the data, rejecting the null hypothesis 100 times, I will only be incorrect in doing so no more than five of those 100 replications. With this approach, it makes no difference whether the obtained p-value is .045 or .001, since we would make the same sort of decision, to reject the null, as long as our test statistic (e.g. observed t-value) falls beyond our specified cutoff point (critical value). In fact, the reporting of a specific p-value makes no sense in this approach - our statistic either makes the cut or it doesn't based on our chosen

alpha level.

The drawback with the Neyman-Pearson approach is that though we do have an idea as to a hypothetical long run situation of events, we are at a loss as to where our particular scenario resides within those hypothetically infinite number of random samples and analyses. In other words, we've rejected the null, but we'll never really know if this is the time that we've made the type I error.

What if the analysis does not allow a rejection of the null hypothesis- what does that mean? Fisher thought that it meant we weren't trying hard enough. Essentially, since we can't prove any hypothesis, only falsify it (e.g. in a Popperian sense), conclusions can't be drawn from a non-significant p-value. In other words, no matter how many white swans I see I can never prove that no black one exists, so if I don't see a black one I must keep looking. Despite these issues, Neyman and Pearson took a practical stance regarding this procedure. If we don't reach our cut-off, then according to the rules we've laid out, we act as though the null hypothesis were true (i.e. decide one course of action rather than another).

There are instances, however, where researchers using the N-P method will use Fisherian phrases like 'fail to reject the null'. In many journal articles and textbooks, researchers blend the two interpretations of NHST- the *epistemic* approach of Fisher: a procedure that tells us about the falsehood of a nil hypothesis, and the *behavioristic* Neyman-Pearson approach that allows for making decisions but does not really infer anything. These researchers will often specify an alpha level (cut-off level) and then interpret the p-value in the Fisherian sense. In fact, some researches will erroneously interpret the p-value as a kind of *effect size*, or strength of the finding (correlation, difference of means etc.) such that a p-value of .005 is representative of a stronger result than .035.

In Summary

The crux of the matter is that as researchers, sometimes little attention is paid to what the results mean practically, before moving on to a next set of analyses. Poor research design in the social sciences often make it difficult to detect important phenomenon from study to study (i.e. low sample size leading to low statistical power). Additionally, practices like rigid adherence to cut-off values despite inadequate sample size contribute to a lack of replicability of important phenomenon in the literature. Furthermore, editorial practices that tend only to publish statistically significant results (publication bias) have also led to spurious findings being reinforced in the literature as non-chance findings.

Poor methodological practice in the social science is a practice that encourages finding a significant result for data rather than approaching data with a thoughtful, problem-solving approach. Researchers that find themselves worrying about finding an observed $p < .05$, will find that their design will often ensure that such a result is found, and often be based on questions that are not all that interesting, with results that may be largely unenlightening. Confirmatory approaches combined with exploratory approaches (techniques that allow the data speak for itself), are flexible in the face of contradictory evidence, and assumes enough competency on the part of those who will be interested in the results to make decisions about the data for themselves.

What To Do?

A first step toward good statistical inference would be to recognize that the process of data analysis is more subjective than it was previously presumed to be. Researchers must make decisions every step of the way: interpreting previous results, formulating hypotheses, designing potential experiments, analyzing results, and deciding what is important to investigate further. As statistical methodology is a major tool that researchers use to study the data collected, researchers must be thoughtful in their approach and decision-making with regard to how they proceed at each stage of the analytical process. Decisions will have to be made on the part of the experimenter, and the researcher would be advised to be flexible, cautious, open-minded, and to use modern methods appropriate to the analysis situation.

Some Guidelines

1. The method of NHST described above and which is pervasive throughout much of the social sciences is not the only way to proceed with statistical inference. There are alternative methods like Bayesian and Likelihood inference.

2. Do not underestimate the initial analysis of data. Descriptive information is extremely important in understanding what information is in the data. It is in this initial stage that one can: find highly influential cases, detect errors in data entry that would otherwise bias the inferential statistics, discover other things to explore that hadn't been thought about previously, and better understand the results of the inferential analyses conducted later. One may even find that the initial type of analysis one wanted to carry out would perhaps not be the best choice, and that there may at the very least be a better way of going about it. In fact it might be the case that no further analysis is necessary.

3. When conducting NHST, report as much as possible- the more information the better. Report exact p-values, confidence intervals, effect sizes, any and everything you can think of that will help get your point across. Also do not be rigid in your interpretation of "significance". If it looks interesting to you, it probably would to someone else as well.

4. In the end, the p-value is of little importance on its own. More information about the result is to be gained from the reporting of an effect size, and there are various ones to choose from depending on your situation. Effect sizes give a measure of practical importance. As an example, I've shown my stats classes the "non-significant" result of a difference in grade average in which people were divided according to how often they attended class. The practical difference was 3 or 4 percentage points and a letter grade change, obviously important to them.

5. Be open-minded as to other interpretations. Your theory might be wrong. You should be more interested in finding out what is really going on than making the data conform to your expectations.

Significance testing is problematic, much more so than talked about here, and

one is invited to look into some of the references provided below. Much of the problem seems to stem from a misunderstanding of the results. With a more careful approach and a basic understanding of the origins of the analyses we are conducting, NHST can provide much insight into the constructs social scientists concern themselves with.

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Informative Web Links

http://www.cnr.colostate.edu/~anderson/thompson1.html

WWW@UNT.EDU

Goings-on in Streaming Media Land

By Jon Ingle, UNT Central Web Support

As many of you know, Austin Laird retired as the media server administrator and passed the baton on to me, Jon Ingle. This transfer of power happened over last summer. So please welcome your new streaming media server administrator! In this article, I'm going to cover some of the changes that have occurred since the summer and give a peek into future projects.

Media Server Upgrade

The major change that occurred was the upgrade from RealNetworks media server 8.0 to their newest server called Helix Universal Server. Helix offers many benefits over the previous versions. One feature is a wider array of media formats that it is able to stream. Below is a table that displays the formats available for streaming:

RealNetworks: RealAudio (.rm), RealVideo (.rm, .rmvb), RealPix (.rp),

RealText (.rt)

Macromedia: Flash (.swf)

Microsoft: Windows Media (.asf, .wma, .wmv)

Apple: QuickTime (.mov)

Standards-Based: MPEG-1, MPEG-2, MPEG-4, MP3

Image Formats: GIF (.gif), JPEG (.jpg, jpeg), PNG (.png)

Other: AU (.au), AIFF (.aif, .ief), WAV (.wav)

Another benefit is the ability to have redundant servers. Soon the media server will be attached to the SAN with two computers fielding the streaming media requests. Though the problems with the media server being down have been few, as more people use it, the need for high availability increases.

Future plans?

Regarding future plans for the media server, there has been interest on campus to use the

server as a digital library. The Media Library in Chilton Hall has expressed interest to buy digital rights to stream media on the server. Some rights allow them to digitize media they already possess but many media companies are beginning to sell digital formats outright. I have been working with Sue Parks over in the Media Library and within the next year, it is projected that there could be 1,100 titles on the media server available for streaming.

Though this is an exciting use of the media server, there are many hurdles. One is the management of the specific rights connected to each piece of media. Different media companies allow different kinds of rights so there will need to be some way to automate this process. Another hurdle is authentication. Lately, I have been looking into how to authenticate from LDAP to the media server. To my knowledge there is no way to pass a token to the media server to authenticate to it. Helix has its own authentication "database" which means it is necessary to put information there to authenticate to it. As of yet, I have not found a way to automatically get around this.

Recently, UNT hosted a live satellite program titled the Real Cost of Online Courses. We obtained a license to digitize the program and make it available to stream. The license required that only people from the UNT community (faculty, student, staff) could watch the stream. Since there was no direct way to authenticate to Helix from LDAP, I had to write a CGI program in PERL that would authenticate off of LDAP and create an account on the media server. With the creation of the account, a person could then watch the secured stream. This "work-around" was acceptable for the scope of this particular program, but would not fill the need for a more robust way to secure media. Though I will be researching this more, I welcome any advice you would have to give.

Any questions, suggestions or ideas you have about the media server, please do not hesitate to let me know. I can be reached at 369.6464 or by E-mail at joningle@unt.edu.

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Short Courses

By Claudia Lynch, *Benchmarks Online* Editor

The spring Short Courses started are officially over. Surf over to the Short Courses page to see the types of courses we will most likely be offering this summer.

Customized Short Courses

Faculty members can request customized short courses from ACS, geared to their class needs. Other groups can request special courses also. Contact ACS for more information (ISB 119, 565-4068, lynch@unt.edu).

Especially for Faculty and Staff Members

In addition to the ACS Short Courses, which are available to students, faculty and staff, staff and faculty members can take courses offered through the Human Resources Department, the Center for Distributed Learning, and the UNT Libraries' Multimedia Development Lab. Additionally, the Center for Continuing Education and Conference Management offers a variety of courses to both UNT and the general community, usually for a small fee.

GroupWise Training

Information about GroupWise training can be found at the GroupWise course site.

- Basic GroupWise 6, Class 2, is being offered on March 23rd and again on March 24th, 2004.
- Intermediate GroupWise 6, Class 3, is being offered on April 20th and again on April 22nd, 2004.

See the GroupWise course site for more information on these classes.

If would like to have a Basic GroupWise seminar for your area, please contact Jason Gutierrez, Network Computing Services, jasong@unt.edu.

This just in - GroupWise Special class: Using GroupWise to Combat Unsolicited Email (a.k.a SPAM) is being offered on March 25th, 2004. If you would like to learn how to deal more effectively with junk mail, then this class is for you. This class is designed to help you effectively deal with unsolicited email, otherwise known as SPAM, using tools available to you through GroupWise. We will cover rule creation and the new Junk Mail filtering

capabilities of GroupWise through hands on demonstration and tutorial. This class is for all GroupWise users of all skill levels.

This class is offered on:
March 25th, 2004
ESSC 152
10:00 a.m. - 11:50 a.m. *(There is a 10 minute break at 10:50.)*

You may register by calling Human Resources at x4246.

Center for Distributed Learning

The Center for Distributed Learning offers courses especially for Faculty Members. A list of topics and further information can be found at http://www.unt.edu/cdl/training_events/index.htm

The center also offers a "Brown Bag" series which meets for lunch the first Thursday of each month at Noon in Chilton 245. The purpose of this group is to bring faculty members together to share their experiences with distributed learning. One demonstration will be made at each meeting by a faculty member with experience in distributed learning. More information on these activities can be found at the Center for Distributed Learning Website.

Technical Training

Technical Training for campus network managers is available, from time to time, through the Network Computing Services (NCS) division of the Computing and Information Technology Center. Check the NCS site to see if and when they are offering any training.

UNT Mini-Courses

There are a variety of courses offered, for a fee, to UNT faculty, staff and students as well as the general public. For additional information surf over to http://www.pware.com/index.cfm?clientid=2694a

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. For example, the College of Education has Macromedia Tutorials for DreamWeaver 4.0, Flash 5.0 and Fireworks 4.0.

The Training Web site has all sorts of information about alternate forms of training. Computer Based Training (CBT) is one of the alternatives offered.

PLEASE NOTE: The SkillSoft/SmartForce server has been taken offline because the Campus application was not compatible with the necessary patches needed for a robust and secure Windows2000 server. *Most courses listed at the old SmartForce Website are still available on CD-ROM for your use by contacting Claudia Lynch in Academic Computing Services. Additionally, the Microsoft e-learning library of courses is available for UNT faculty and staff members under our Microsoft Campus license agreement.*

For further information on the future of CBT at UNT as well as the Microsoft e-learning library, see "What's up with computer-based training at UNT?" in the February 2004 issue of *Benchmarks Online.*

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Staff Activities

Transitions

New Employee:

- **Frank Lugo**, Information Security Intern, CITC Administration, Information Security (part-time).

No longer working in the Computing and Information Technology Center:

- **Anup Pachlag**, ½ time programmer on EIS project.
- **Howard Draper**, Information Security Intern, CITC Administration, Information Security (part-time).
- **Arvind Srinivasan**, Lab Monitor, ACS General Access Lab, ACS (part-time).

Awards, Recognition, Publications

- Janice Madlock, Systems Programmer/Analyst, Enterprise Systems Technical Support, was honored at a celebration of UNT's African-American pioneers of desegregation during a black-tie optional gala on February 14 at the Winspear Hall of the Murchison Performing Arts Center.
- **Dr. Philip Baczewski**, Associate Director of Academic Computing presented a paper entitled, "Modeling Music Perception: Untangling Methods and Methodologies" at the 2004 annual meeting of the Texas Society for Music Theory held at Texas State University in San Marcos on February 27-28.

  Dr. Philip Baczewski and **Dr. Elizabeth Hinkle-Turner**, ACS Student Computing Services Manager, presented a poster entitled, "Checkin 4.0: A Computer Lab and Facilities Management System at the University of North Texas" at the 2004 EDUCAUSE Southwest region meeting, held in Dallas, Texas on February 25-28.
- **Dr, Elizabeth Hinkle-Turner** had her work, "Finishline" for videotape and
  electronic soundtrack presented at the State University of New York at StonyBrook on March 5, 2004 and also at the Women and Technology Music Festival at California State University at Fullerton on March 13,

2004.

- **Cathy Gonzalez,** EIS Training/Computing Administration Manager, and **Vicky Walker-Brooks**, EIS Application Infrastructure Management Programmer/Analyst, gave presentations at the 2004 HEUG (Higher Education User Group – PeopleSoft) Conference in Atlanta, G on March 8.

  Cathy presented in the category of Training Strategies on the topic "Standardizing Learning Events". Vicky co-presented in the Technical category with a Quest software vendor on the topic "Change Management in Higher Ed: The Stat Experience at University of North Texas." Cathy also sat on a panel of training experts presenting the topic of Training and PeopleSoft Implementations.

- **Mike Williams,** Desktop OS Support, Network Computing Services, was recognized in the February 27, 2004 issue of *InHouse@unt* for an interview he gave on the dangers of a recent-email worm in the January 28 issue of the *Fort Worth Star-Telegram*.

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Don't Forget Our Monthly Columns!

By Claudia Lynch, *Benchmarks Online* Editor

In addition to our feature articles, *Benchmarks Online* publishes monthly columns that are focused on specific aspects of computing here at UNT (and beyond, in some cases). Check out what is waiting for you this month:

- **RSS Matters** - "RSS Matters" is the monthly column written by the Research and Statistical Support Group in Academic Computing Services. Their articles focus on topics of a statistical and/or research methods nature. **This month's article is by Patrick McLeod and is titled "Got EBCDIC? Take This PROC and Call Me in the Morning"**

- **The Network Connection** - "The Network Connection" may well be the longest running column in computer publishing history. Certainly in University of North Texas computer publishing history.

  This month's column is titled "Open Source . . . Learning?" Dr. Baczewski discusses a new concept -- open source learning.

- **Link of the Month** - As it says on the top of the "Link of the Month" page, "each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or Website(s)." Lately we have been confining ourselves to featuring UNT specific sites. **This month we focus on the UNT Dallas Campus.**

- **WWW@UNT.EDU** - "WWW@UNT.EDU" is a monthly column written by the Central Web Support Group in Academic Computing Services. The topics usually focus, in some way, on World-Wide-Web-related issues. **This month's topic is "Goings-on in Streaming Media Land."**

- **Short Courses** - Every semester, Academic Computing Services (ACS) offers short courses on computer-related topics, many of them having to do with statistical research. This column keeps you up-to-date on what is being offered and when as well as other training opportunities. **This month, read all about the GroupWise courses including a GroupWise Special class: "Using GroupWise to Combat Unsolicited Email (a.k.a SPAM)."**

- **IRC News** - As their Webpage says, "the IRC is an advisory and oversight body created to foster communication and cooperation between and among UNT information resources providers and users." We publish the minutes of the IRC meetings each month, when they are available. This month you can read the February IRC minutes.

Staff Activities - This column focuses on new employees, people who are no longer employed at the Computing and Information Technology Center, awards and recognitions and other items of interest featured here.