

Purpose of this segment:

In this segment we will consider the motivation for frequent and immediate feedback to students based on conventional testing instruments. We will also point out the possible vulnerability of such an approach to cheating and dishonesty.

Space For Your Notes

Grading Exams and Quizzes Online in FirstClass

Professor Thomas B. Barker
COE/CQAS

OV01



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Motivation

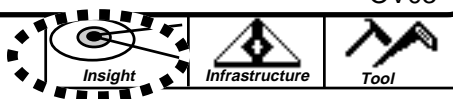
- Technical subjects build on earlier infrastructure.
- Better to find misconceptions in the 3rd week rather than after the midterm exam.

OV02



Can you think of any additional motivational reasons?

OV03



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Alternative: Proctored Exams

- Great support by Distance Learning.
- "Usual" approach.
- Up to 2 weeks delay in feedback.

OV04



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Non-Proctored Problem

- Students can easily cheat.
 - More prevalent in UG.

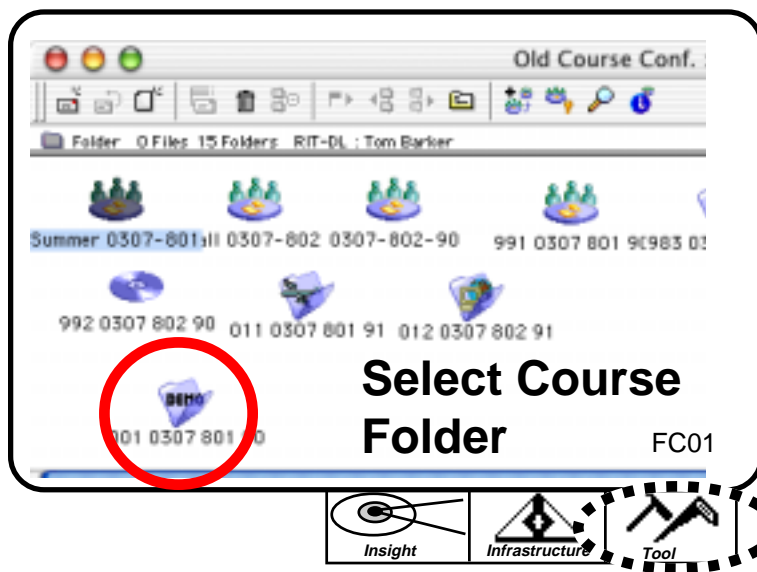
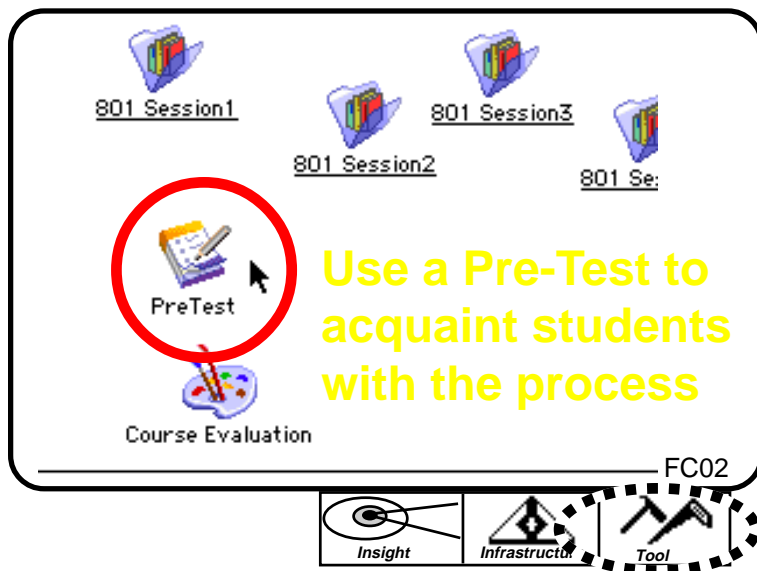
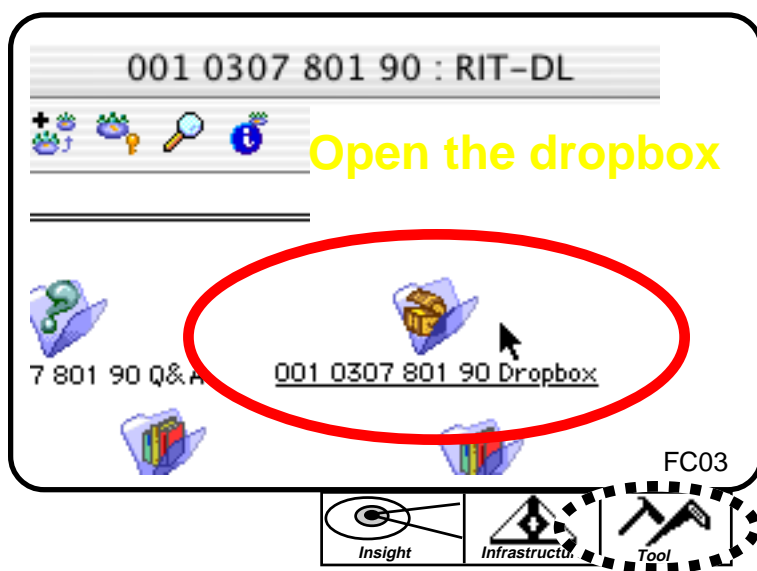
***My experience is with mature,
Graduate Students.***

OV05

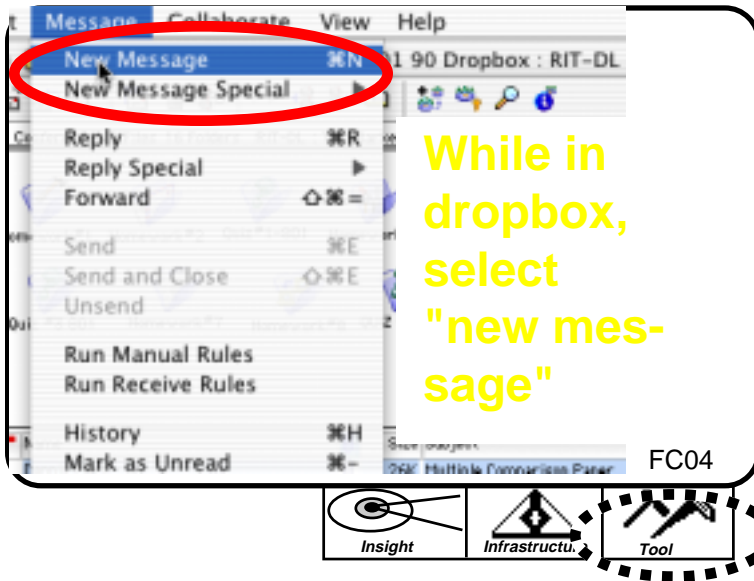


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Grading Exams and Quizzes Online in FirstClass

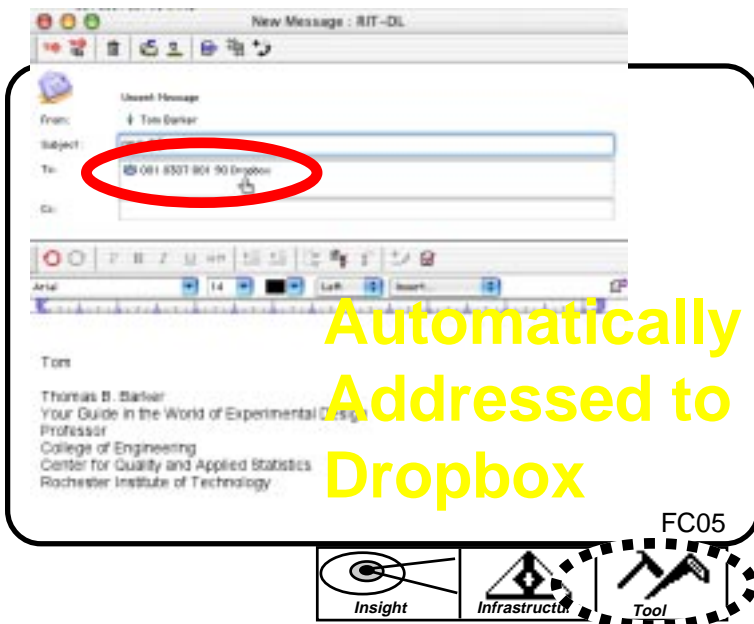


While in dropbox, select "new message"

Insight Infrastructure Tool

FC04

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Automatically Addressed to Dropbox

Insight Infrastructure Tool

FC05

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Don't send this message!

Copy the Quiz from your word processor.

Insight Infrastructure Tool

FC06

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Grading Exams and Quizzes Online in FirstClass

October 22, 2002

801
Quiz #5

Name _____

Please use First Class to send this quiz to the drop box (this quiz is automatically addressed to that conference) by Noon (EDT) on Wed., October 23, 2002

1) Why do we use blocking in experimental design? {2}

1.

2.

2) If we did not remove the blocked effect from the residual sum of squares, then the sensitivity of the experiment would be _____. {0.5}

3) If we have no replicates in an experiment with two or more factors, where does the residual come from? Be specific about a two factor experiment with no replicates. {0.5}

4) Why is the correlation coefficient a better measure of the relationship between variables than the covariance? {1}

5) Compute the covariance of the following 3 pairs of data: {2}

x	y
2	8
4	4
8	2

6) Compute the correlation coefficient for the data in question #5. {1}

7) The following measurements were made by 5 different operators using the same micrometer and on the same standards that were supplied by NIST. Is there a statistically significant difference between the two standards? Use a 5% alpha risk level. {1}

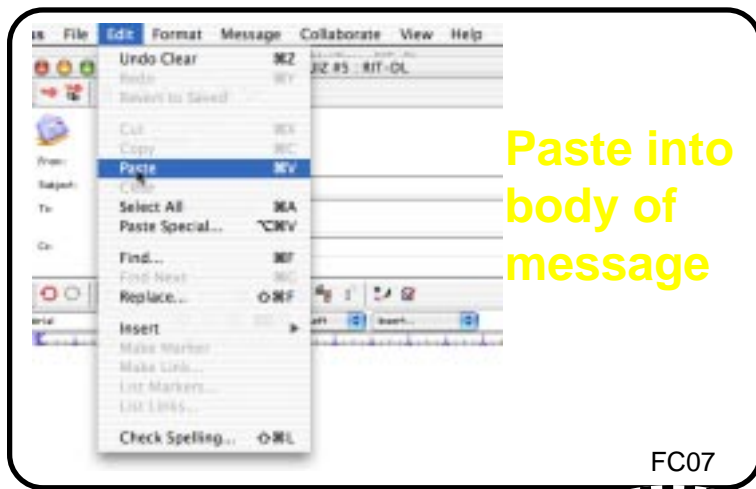
	Standard A	Standard B	difference
Operator #1	1.5	1.6	-0.1
Operator #2	1.8	1.7	0.1
Operator #3	1.3	1.5	-0.2
Operator #4	1.9	2.1	-0.2
Operator #5	1.1	0.9	0.2
Xbar(A)=	1.52	Xbar(B)= 1.56	dbar= -0.04
s(A) =	0.335	s(B)= 0.434	s sub d= 0.182

State hypotheses:

8) State the probabilities of the type I and type II errors when you have made your decision in the above experiment (#7). {2}

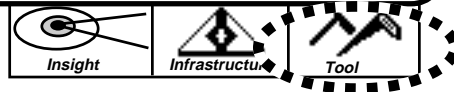
Type I: _____ Type II: _____

Grading Exams and Quizzes Online in FirstClass

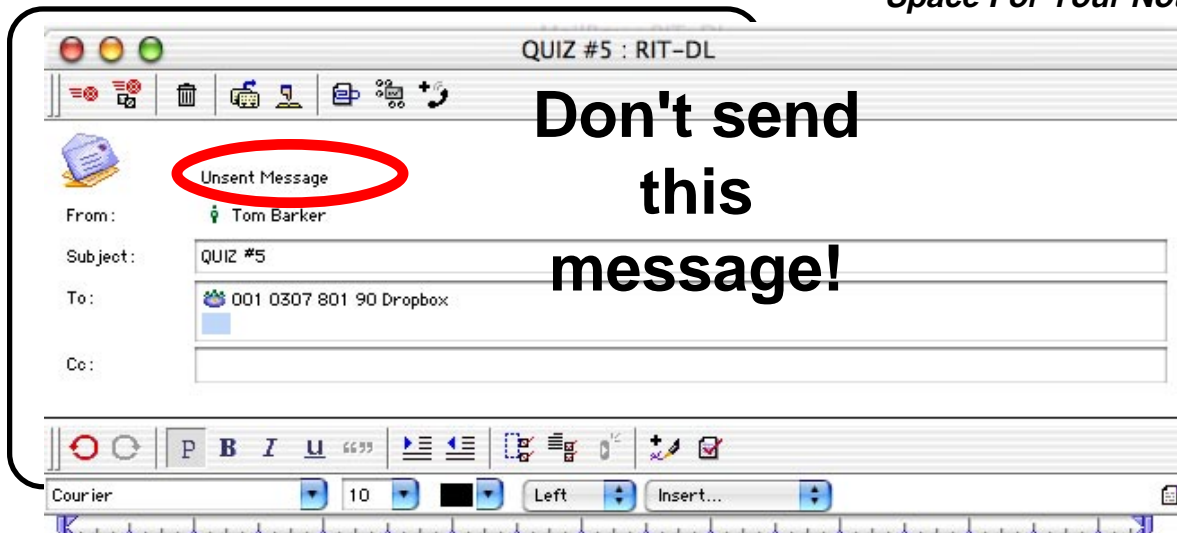


Paste into
body of
message

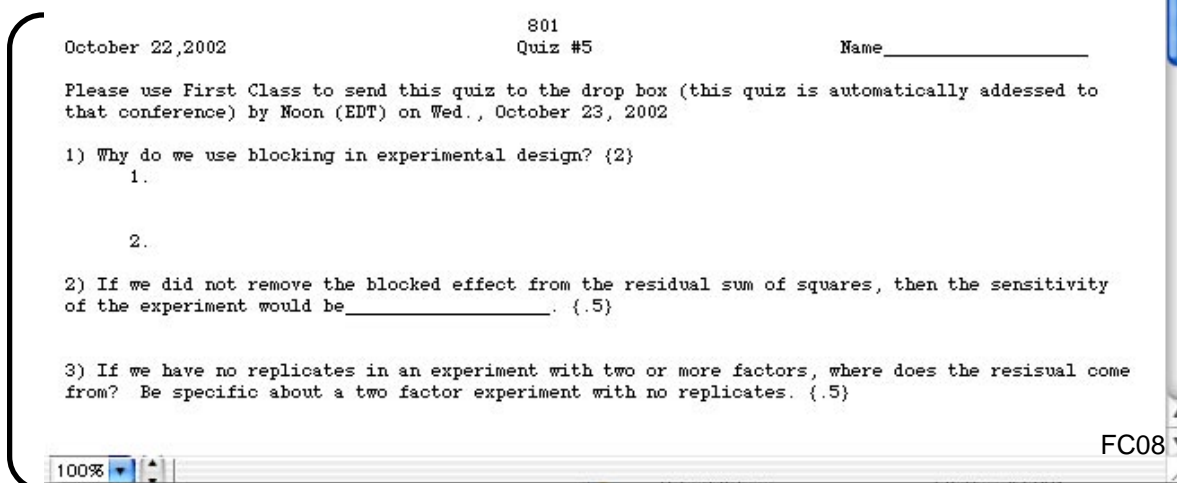
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Space For Your Notes



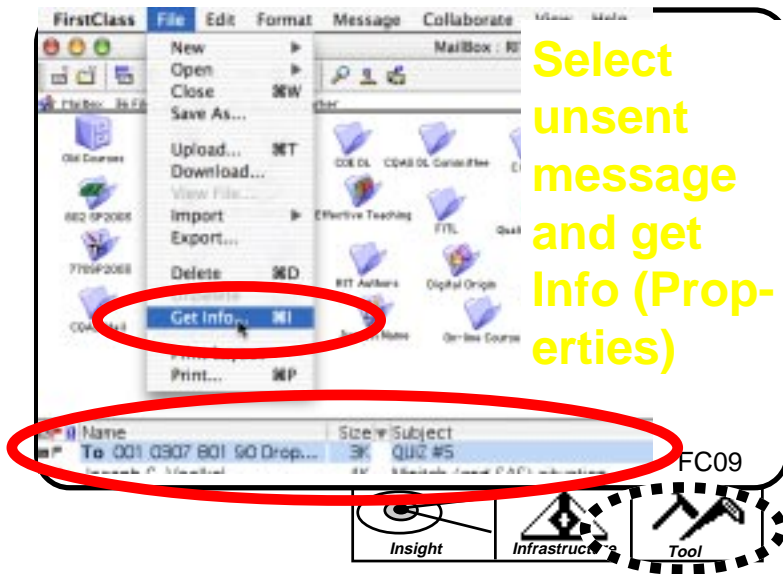
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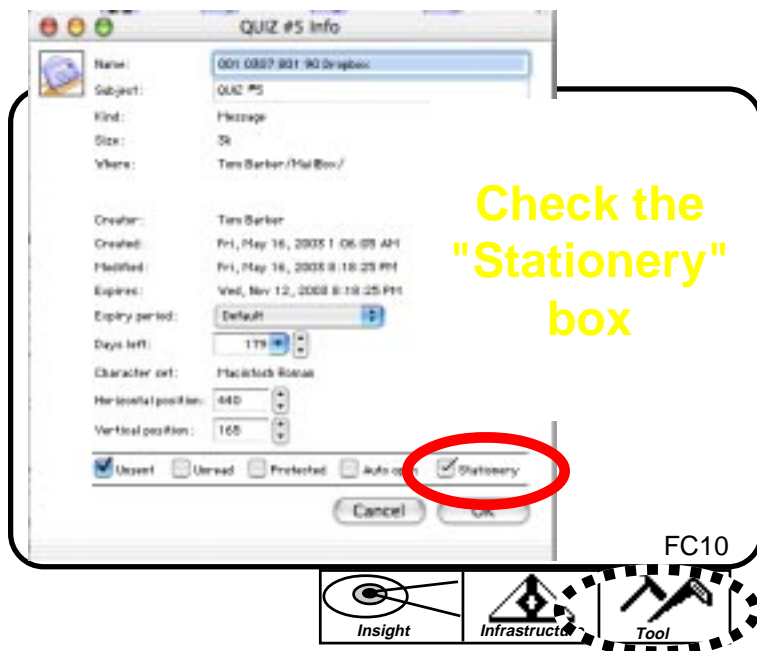
FC08



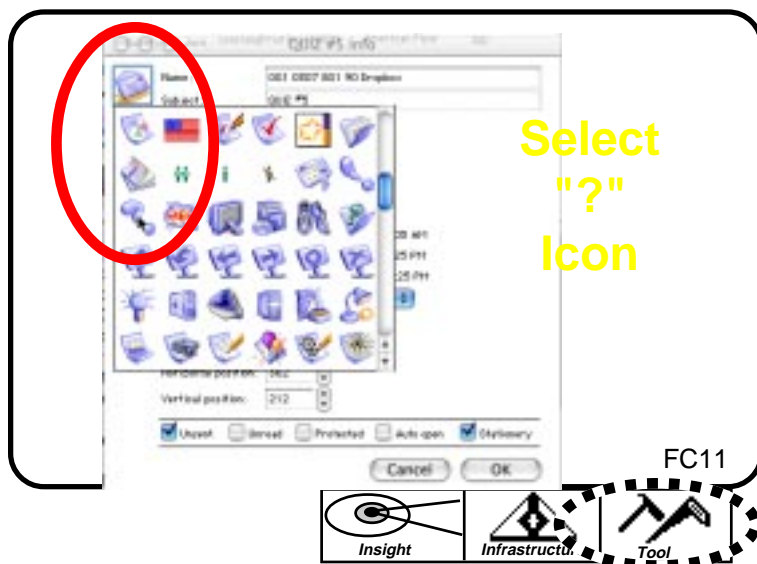
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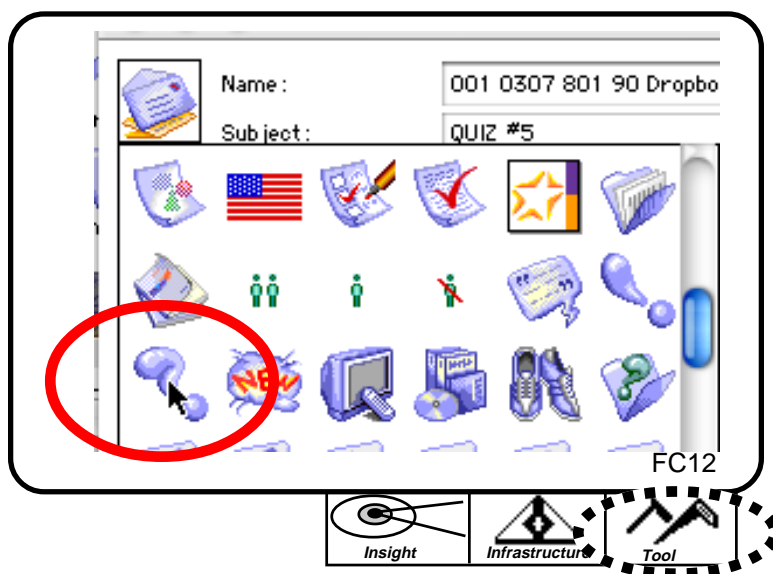
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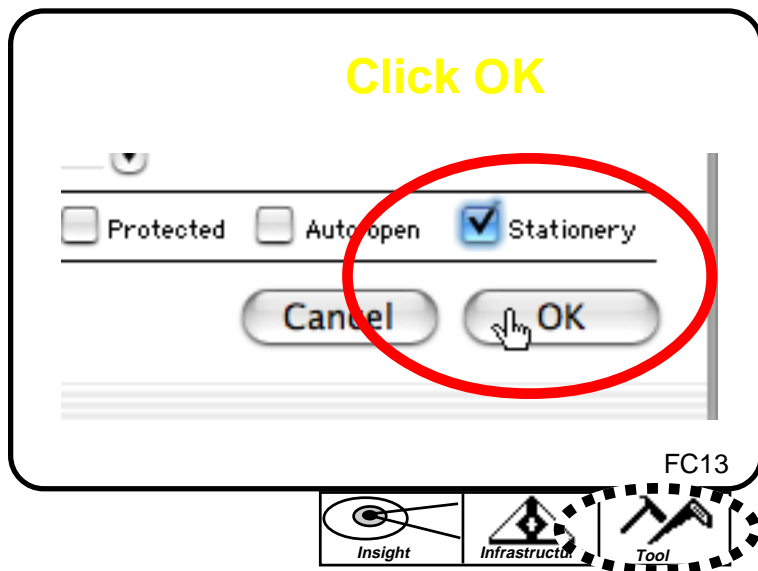
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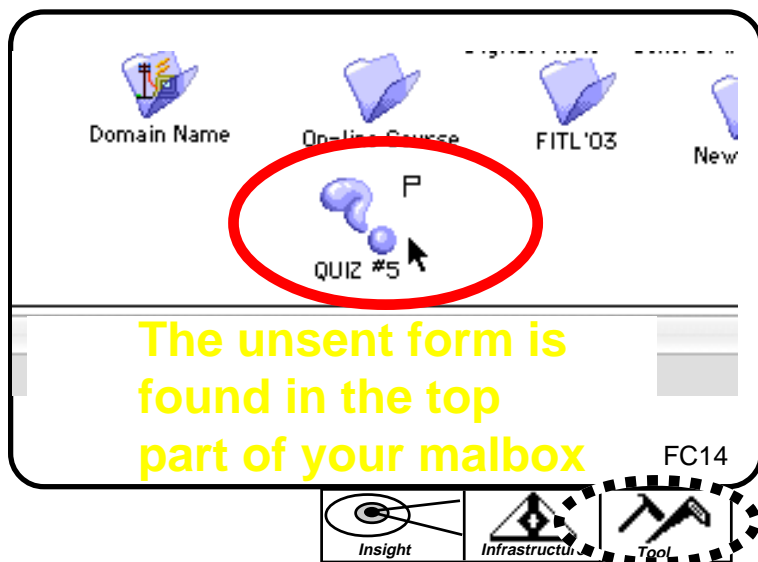
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Space For Your Notes

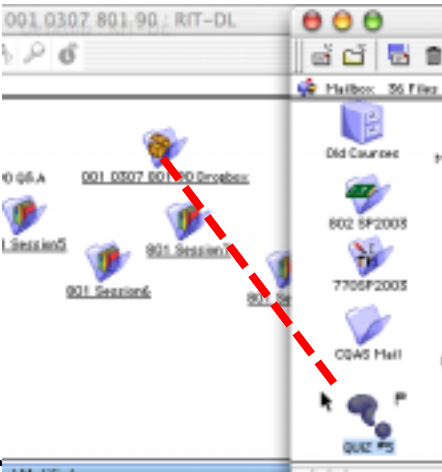


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Grading Exams and Quizzes Online in FirstClass

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001 0307 801 90 : RIT-DL

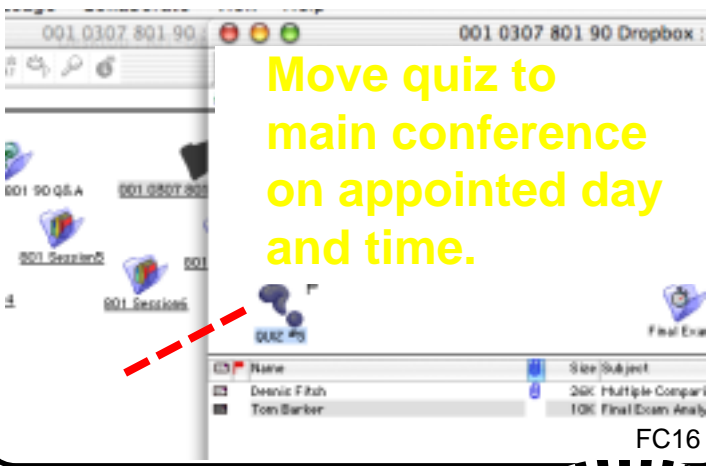
Mailbox: 36 Files

Move quiz from your mailbox to the course conference dropbox.

FC15

Insight Infrastructure Tool

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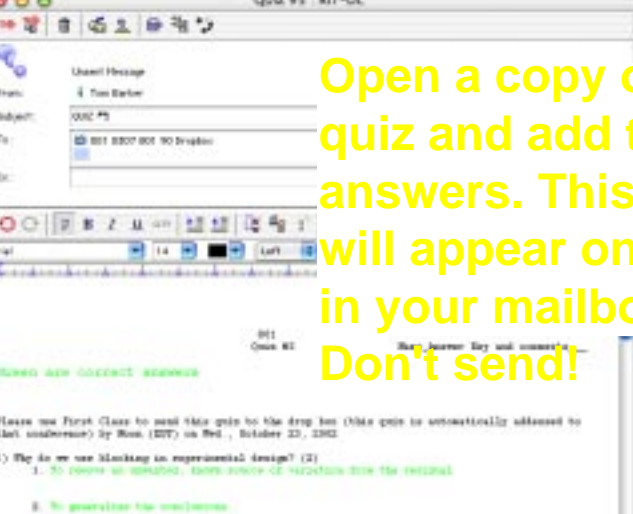
001 0307 801 90 : 001 0307 801 90 Dropbox

Move quiz to main conference on appointed day and time.

FC16

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Quiz #5 : RIT-DL

Open a copy of quiz and add the answers. This will appear only in your mailbox. Don't send!

FC17

Insight Infrastructure Tool

Grading Exams and Quizzes Online in FirstClass

801
Quiz #3

Name Answer Key and comments____

Green are correct answers

Please use First Class to send this quiz to the drop box (this quiz is automatically addressed to that conference) by Noon (EDT) on Wed., October 23, 2002

1) Why do we use blocking in experimental design? {2}

1. To remove an unwanted, known source of variation from the residual
2. To generalize the conclusions.

2) If we did not remove the blocked effect from the residual sum of squares, then the sensitivity of the experiment would be **Decreased**. {.5}

3) If we have no replicates in an experiment with two or more factors, where does the residual come from? Be specific about a two factor experiment with no replicates. {.5}

The residual is made up of the variation due to unknown effects (pure error) and the interaction. With 2 factors, the AB interaction would be part of the residual.

4) Why is the correlation coefficient a better measure of the relationship between variables than the covariance? {1}

The correlation coefficient is anchored (referenced) between -1 and +1 and its magnitude depends only on the relationship between the and the x. The covariance's magnitude depends on the relationship as well as the size of the numerical values.

5) Compute the covariance of the following 3 pairs of data: {2}

	x	y	xy
	2	8	16
	4	4	16
	8	2	16
Sum	14	14	48

$$C^{xy} = (n(\sum xy) - (\sum x)(\sum y))/(n(n-1))$$

$$C^{xy} = (3(48) - (14)(14))/(3(3-1)) = -52/6 = -8.667$$

6) Compute the correlation coefficient for the data in question #5. {1}

$$r = C^{xy}/((s^x)(s^y))$$

$$r = -8.667/((3.055)(3.055)) = -0.928$$

Grading Exams and Quizzes Online in FirstClass

7) The following measurements were made by 5 different operators using the same micrometer and on the same standards that were supplied by NIST. Is there a statistically significant difference between the two standards? Use a 5% alpha risk level. {1}

	Standard A	Standard B	difference
Operator #1	1.5	1.6	-0.1
Operator #2	1.8	1.7	0.1
Operator #3	1.3	1.5	-0.2
Operator #4	1.9	2.1	-0.2
Operator #5	1.1	0.9	0.2
Xbar(A)=	1.52	Xbar(B)= 1.56	dbar= -0.04
s(A) =	0.335	s(B)=	0.434
s sub d= 0.182			

State hypotheses: $H^0: \delta = \delta^0 = 0$
 $H^A: \delta \neq \delta^0$

$$\alpha = .05 \quad t_{.05/2, 4} = +/- 2.7764$$

$$t_{.05/2, 4} = +/- 2.7764$$

$$t = (d(\text{bar}) - 0) / (s^d / \text{Sqrt}(n))$$

$$t = (-0.04 - 0) / (0.182 / \text{Sqrt}(5)) = -0.04 / 0.081 = -0.49$$

Do not reject the null hypothesis.

There is no evidence to indicate a difference between standards.

8) State the probabilities of the type I and type II errors when you have made your decision in the above experiment (#7). {2} assume $d=s$ then $D=1$. By going to Table 3 in the QED book, the beta risk is >50%

Type I: _____ Zero _____ Type II: _____ >50% _____

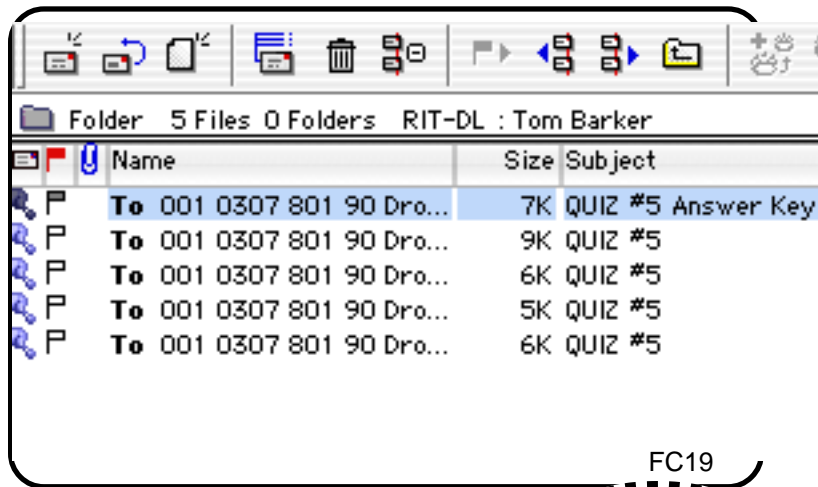
To calculate this error, assume $d=s$ and then $D=1$. Go to Table 3 in the QED book and locate the $D=1$ row. Go to the alpha double sided risk of .05 column. You will find that a sample size of 5 (there were 5 differences) is not in the table, but if you were to continue to the left, 5 would be there and the last entry was $\beta=0.5$, so with 5 observations, β must be greater than 0.5.

**Students will submit
their completed
Quizzes.
The Quizzes will
automatically be sent to
the dropbox.**

FC18



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Name	Size	Subject
To 001 0307 801 90 Dro...	7K	QUIZ #5 Answer Key
To 001 0307 801 90 Dro...	9K	QUIZ #5
To 001 0307 801 90 Dro...	6K	QUIZ #5
To 001 0307 801 90 Dro...	5K	QUIZ #5
To 001 0307 801 90 Dro...	6K	QUIZ #5

FC19



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**Open up to 5 of the
completed Quizzes at a
time and begin the
grading process.**

FC20



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Grading Exams and Quizzes Online in FirstClass

QUIZ #5 Answer Key : RIT-DL

QUIZ #5 : RIT-DL

Unsent Message

From: Tom Barker

Subject: QUIZ #5 Answer Key

To: 001 0307 801 90 Dropbox

Co:

Unsent Message

From: Tom Barker

Subject: QUIZ #5

To: 001 0307 801 90 Dropbox

Co:

Grade=7.75

881 Quiz #3 Name__Student 4__

Please use First Class to send this quiz to the drop box (this quiz is automatically addressed to that conference) by Noon (EDT) on Wed., October 23, 2002

1) Why do we use blocking in experimental design? (2)

1. To reduce or eliminate unwanted sources of variation. **Not completely Correct**
you left out "from the residual" and implied that blocking can reduce variation - as in make something better. The variation is still there, but it has been put into a different category in the ANOVA. -.5
To remove an unwanted, known source of variation from the residual

2. To generalize our results **Correct**

2) If we did not remove the blocked effect from the residual sum of squares, then the sensitivity of the experiment would be reduced (5) **Correct**

3) If we have no replicates in an experiment with two or more factors, where does the residual come from? (2)

The residual comes from the difference between the total SS and the effects SS. There is no residual estimate comes from previously run experiments or long term historical records since

Grade one question at a time.
This prevents bias and makes the process easier.

FC21



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Copy the correct answers(in Red) into the student's quiz.
Copy the incorrect (in blue)answer into the Answer key.

FC22



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Advantages:

- Rapid replies to students.
- Complete feedback.
- Reinforces learning
- Allows for planned teaching reinforcement.

FC23



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What you have learned:

You have seen how to set up an on-line quiz using the "stationery" form in FirstClass. This form can be completed by the students and the quiz can be graded on line with correct answers inserted into the student's quiz. The answer key then becomes a form of feedback to the entire class with both the correct answers as well as the misconceptions by the students. This builds a reinforcing effort (based on "we learn from our mistakes") for the class and thus furthers the learning process.