Goals

Framework for teaching.
Goals

Framework for teaching.
Become a more effective communicator.
Goals

Framework for teaching.
Become a more effective communicator.
Support, guidance, advice for GSIs.
Expectations.

Attendance, participation in most of the classes. (8/10).
Expectations.

Attendance, participation in most of the classes. (8/10).
– If you miss, arrange alternative work with instructor.
Expectations.

Attendance, participation in most of the classes. (8/10).
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5 self reflections.
Expectations.

Attendance, participation in most of the classes. (8/10).
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Partner with another GSI.
Expectations.

Attendance, participation in most of the classes. (8/10).
– If you miss, arrange alternative work with instructor.

5 self reflections.
Partner with another GSI.
– observe partner, give feedback. (2nd/3rd week)
Expectations.

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- observe partner, give feedback. (2nd/3rd week)
- video partner, take a look, discuss. (4th/5th week)
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– video partner, take a look, discuss. (4th/5th week)
– repeat later in semester. (7/8th week)

Give Survey.
– 4th week. (away from midterm)
– 9th week. (away from midterm)

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More about Me

Prof. Satish Rao
More about Me

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Theoretical Computer Science

Fifteenth year at Berkeley.
Soccer Coach (rec) for years and years.
– fun to watch kids "get it".
Tutor neighbor kids.
Have 3 kids (two in college)
On School Site Council at Berkeley High.
– read lots of student learning literature.
– will include some over the course of the semester.
– super frustrating by the way.

Story about data.
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Story about data.
What do students like?

Teacher immediacy helps ratings a lot.
What do students like?

Teacher immediacy helps ratings a lot.

“Studies on the teacher immediacy included behaviors such as talking about experiences that have occurred outside class, communicating with learners before and after classes, using humor to attract attention, encouraging learners to actively participate and ask questions, addressing learners by name, praising learners’ work or comments, and providing feedback on learners’ work.”

http://www.tojet.net/articles/v6i4/647.pdf

Others that say similar things: Will post citations on webpage.
"He only altered his vocal pitch variability and the extent of his hand gestures between the two versions of the course. These small stylistic changes dramatically improved his score from overall 3.08/5.0 to 3.92/5.0 and dramatically improved his score on EVERY aspect of the evaluation form, including items such as instructor knowledge, organization, accessibility, textbook quality, fairness in grading, and other qualities unrelated to vocal pitch or gestures. For example his average rating in the category regarding instructor knowledge improved from 3.61 to 4.05, level of organization from 3.18 to 4.09, accessibility from 2.99 to 4.06, textbook quality from 2.06 to 2.98 and fairness from 3.03 to 3.72."

Ceci, Stephen and Williams, Wendy, “How’m I doing.”

http://eric.ed.gov/?id=EJ552354
"He only altered his vocal pitch variability and the extent of his hand gestures between the two versions of the course. These small stylistic changes dramatically improved his score from overall 3.08/5.0 to 3.92/5.0 and dramatically improved his score on EVERY aspect of the evaluation form, including items such as instructor knowledge, organization, accessibility, textbook quality, fairness in grading, and other qualities unrelated to vocal pitch or gestures. For example his average rating in the category regarding instructor knowledge improved from 3.61 to 4.05, level of organization from 3.18 to 4.09, accessibility from 2.99 to 4.06, textbook quality from 2.06 to 2.98 and fairness from 3.03 to 3.72."


Final exam performance was unchanged.
Give mid-semester survey.

“1/3 of a standard deviation in rating by giving mid-semester survey.”
Give mid-semester survey.

“1/3 of a standard deviation in rating by giving mid-semester survey.”
“2% if you give survey, 5% if discussed, 9% if you make changes.”
Give mid-semester survey.

“1/3 of a standard deviation in rating by giving mid-semester survey.”

“2% if you give survey, 5% if discussed, 9% if you make changes.”

http://link.springer.com/article/10.1007/BF00976252

http://www.duq.edu/about/centers-and-institutes/center-for-teaching-excellence/teaching-and-learning/benefits-of-early-course-evaluations
Tools for Teaching.
TT: Leading a discussion.

Clear Expectations: expect participation?
TT: Leading a discussion.

Clear Expectations: expect participation?
Plan how you will conduct discussion: 2/3 ways to begin.
TT: Leading a discussion.

Clear Expectations: expect participation?
Plan how you will conduct discussion: 2/3 ways to begin.
Sharpen students skills: roles:
– detective, umpire, etc. Maybe not relevant.
TT: Leading a discussion.

Clear Expectations: expect participation?
Plan how you will conduct discussion: 2/3 ways to begin.
Sharpen students skills: roles:
– detective, umpire, etc. Maybe not relevant.
Cultural Norms: taught to be quiet or loud?
TT: Leading a discussion.

Clear Expectations: expect participation?
Plan how you will conduct discussion: 2/3 ways to begin.
Sharpen students skills: roles:
– detective, umpire, etc. Maybe not relevant.
Cultural Norms: taught to be quiet or loud?
Set Tone Early!
Leading: Context

Ground Rules: raise hands.
Leading: Context

Ground Rules: raise hands.
Ask students what makes excellent discussion: develop guidelines.
Leading: Context

Ground Rules: raise hands.
Ask students what makes excellent discussion: develop guidelines.
Give pointers: about how to participate.
Leading: Context

Ground Rules: raise hands.
Ask students what makes excellent discussion: develop guidelines.
Give pointers: about how to participate.
— find best answer not popular; open mind; put prev. answers in own words.
Leading: Context

Ground Rules: raise hands.

Ask students what makes excellent discussion: develop guidelines.

Give pointers: about how to participate.
— find best answer not popular; open mind; put prev. answers in own words.
—- avoid tangents!; stick to subject; be brief; don’t be a jerk.
Leading: Context

Ground Rules: raise hands.

Ask students what makes excellent discussion: develop guidelines.

Give pointers: about how to participate.
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Leading: Context

Ground Rules: raise hands.

Ask students what makes excellent discussion: develop guidelines.

Give pointers: about how to participate.
— find best answer not popular; open mind; put prev. answers in own words.
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Assign preparation activities: discussion worksheet?
Discussion: Begin

Refer to study questions.
Refer to study questions.

Phrase questions to encourage:
What is entropy?
Discussion: Begin

Refer to study questions.

Phrase questions to encourage:
  What is entropy?
  What about entropy stands out in your mind.
Discussion: Begin

Refer to study questions.
Phrase questions to encourage:
  What is entropy?
  What about entropy stands out in your mind.
Pose an opening question.
Evaluating a Discussion.
Student Participation: General

Get to know your students.
Student Participation: General

Get to know your students.

Arrange seating to promote discussion.
Student Participation: General

Get to know your students.

Arrange seating to promote discussion.

Encourage students to meet each other.
Student Participation: General

Get to know your students.
Arrange seating to promote discussion.
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...
Increasing Student Participation.

Create Opportunities for all students to speak in first two weeks.
Create Opportunities for all students to speak in first two weeks.
Warm them up: arrive early, converse a bit about other things at beginning.
Increasing Student Participation.

Create Opportunities for all students to speak in first two weeks. Warm them up: arrive early, converse a bit about other things at beginning.

Divide into small groups.
Keep it going.

Build rapport.
Keep it going.

Build rapport.

Outside comments into class.
Keep it going.

Build rapport.

Outside comments into class.
  After class questions into next class.
Keep it going.

Build rapport.

Outside comments into class.
  After class questions into next class.
  Piazza questions.
Keep it going.

Build rapport.

Outside comments into class.
   After class questions into next class.
   Piazza questions.
Keep it going.

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Tactfully correct wrong answers.
Asking Questions.

Prepare in advance.
Asking Questions.

Prepare in advance.

In order: general to specific. Simple to complex.
Asking Questions.

Prepare in advance.

In order: general to specific. Simple to complex.

Spirited Inquiry: seeking knowledge not interrogation.
Asking Questions.

Prepare in advance.
In order: general to specific. Simple to complex.
Spirited Inquiry: seeking knowledge not interrogation.
Take note of successful questions!
Bloom’s taxonomy: more later in the course.
Question level

Bloom’s taxonomy: more later in the course.
For now: mechanical to setup to conceptual.
Effective Questioning

One question at a time: rephrasing is dangerous.

“Any questions” Not good.

Instead...
– “At this point, I am sure there are questions”
– “That example was complicated, what did I leave out?”

Try multiple answer questions.
Focused questions.
“How is the effect of the fall of the Berlin Wall on Economic Conditions in Germany.”

Find common ground:
– E.g. quick answer from one student, bring others in.

Use probing strategies.
– How far has the ball fallen after three seconds?
– I have no idea.
– Well, what is happening to the speed of the ball?
Effective Questioning

One question at a time: rephrasing is dangerous.

“Any questions”
Effective Questioning

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Use probing strategies.
– How far has the ball fallen after three seconds?
– I have no idea.
– Well, what is happening to the speed of the ball?
Responding to Student Responses.

Listen to the student.
Responding to Student Responses.

Listen to the student.
— don’t interrupt!
Responding to Student Responses.

Listen to the student.
— don’t interrupt!

Nonverbal: eye contact, nod your head.
Responding to Student Responses.

Listen to the student.
— don’t interrupt!

Nonverbal: eye contact, nod your head.
   Use stance to signal time to move on.
Responding to Student Responses.

Listen to the student.
— don’t interrupt!

Nonverbal: eye contact, nod your head.
  Use stance to signal time to move on.

Vary reactions.
Responding to Student Responses.

Listen to the student.
— don’t interrupt!

Nonverbal: eye contact, nod your head.
    Use stance to signal time to move on.

Vary reactions.
– reinforce point, paraphrase, ask for clarification/elaboration, expand on point.
Responding to Student Responses.

Listen to the student.
— don’t interrupt!

Nonverbal: eye contact, nod your head.
   Use stance to signal time to move on.

Vary reactions.
– reinforce point, paraphrase, ask for clarification/elaboration, expand on point.

Praise correct answers judiciously.
Responding to Student Responses.

Listen to the student.  
— don’t interrupt!

Nonverbal: eye contact, nod your head.  
    Use stance to signal time to move on.

Vary reactions.  
– reinforce point, paraphrase, ask for clarification/elaboration, expand on point.

Praise correct answers judiciously.  
– Awkward when wrong answer.
Responding to Student Responses.

Listen to the student.
— don’t interrupt!

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   Use stance to signal time to move on.

Vary reactions.
— reinforce point, paraphase, ask for clarification/elaboration, expand on point.

Praise correct answers judiciously.
— Awkward when wrong answer.

Tactfully correct wrong answers.
Fielding Student Questions

Answer most directly: shows respect for questioner.
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
   Should the kitchen be on the north side?
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
  Should the kitchen be on the north side?
  Why might you want the kitchen on the north side?
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
   Should the kitchen be on the north side?
   Why might you want the kitchen on the north side?

Avoid discouraging:
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
  Should the kitchen be on the north side?
  Why might you want the kitchen on the north side?

Avoid discouraging:
“As I said before..”
Eye contact.
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
   Should the kitchen be on the north side?
   Why might you want the kitchen on the north side?

Avoid discouraging:
   “As I said before..”
Eye contact. Interrupting.
Hurrying.
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
  Should the kitchen be on the north side?
  Why might you want the kitchen on the north side?

Avoid discouraging:
  “As I said before..”

Eye contact. Interrupting.

Hurrying.

Admit when you don’t know the answer.
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
  Should the kitchen be on the north side?
  Why might you want the kitchen on the north side?

Avoid discouraging:
“As I said before..”
Eye contact. Interrupting.
Hurrying.

Admit when you don’t know the answer.
  Ask the class if anyone knows?
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
- Should the kitchen be on the north side?
- Why might you want the kitchen on the north side?

Avoid discouraging:
- “As I said before..”

Eye contact. Interrupting.
Hurrying.

Admit when you don’t know the answer.
- Ask the class if anyone knows?
- Next class?
Fielding Student Questions

Answer most directly: shows respect for questioner.

Point students toward an answer.
  Should the kitchen be on the north side?
  Why might you want the kitchen on the north side?

Avoid discouraging:
“As I said before..”
Eye contact. Interrupting.
Hurrying.

Admit when you don’t know the answer.
  Ask the class if anyone knows?
  Next class?
  Suggest sources.
Routine questions.

Call in order: its your classroom.
Routine questions.

Call in order: its your classroom.
Thank you for asking!
Routine questions.

Call in order: its your classroom.
Thank you for asking! “Excellent question.”
Routine questions.

Call in order: its your classroom.
Thank you for asking! “Excellent question.”
Repeat and paraphrase some questions.
Routine questions.

Call in order: its your classroom.

Thank you for asking! “Excellent question.”

Repeat and paraphrase some questions.
Not all!
Routine questions.

Call in order: its your classroom.

Thank you for asking! “Excellent question.”

Repeat and paraphrase some questions.
   Not all! Makes students not listen to each other.
Routine questions.

Call in order: its your classroom.

Thank you for asking! “Excellent question.”

Repeat and paraphrase some questions.
   Not all! Makes students not listen to each other.

Ask for clarification.
Routine questions.

Call in order: its your classroom.
Thank you for asking! “Excellent question.”
Repeat and paraphrase some questions.
   Not all! Makes students not listen to each other.
Ask for clarification. –Give me an example.
Routine questions.

Call in order: its your classroom.

Thank you for asking! “Excellent question.”

Repeat and paraphrase some questions.
   Not all! Makes students not listen to each other.

Ask for clarification. –Give me an example. Do you mean?
Routine questions.

Call in order: its your classroom.

Thank you for asking! “Excellent question.”

Repeat and paraphrase some questions.

  Not all! Makes students not listen to each other.

Ask for clarification. –Give me an example. Do you mean?

Give answer to whole class.
Routine questions.

Call in order: its your classroom.
Thank you for asking! “Excellent question.”
Repeat and paraphrase some questions.
Not all! Makes students not listen to each other.
Ask for clarification. –Give me an example. Do you mean?
Give answer to whole class.
Check back.
More complicated.

Avoid dismissing naive questions.
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different..”
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different..”

Try twice, then let a student try.
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different.”

Try twice, then let a student try. Then offer after class.
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different.”

Try twice, then let a student try. Then offer after class.
Complex, tangential.
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different..”

Try twice, then let a student try. Then offer after class.
Complex, tangential. After class.
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different..”

Try twice, then let a student try. Then offer after class.
Complex, tangential. After class.
Be patient with repeated question.
More complicated.

Avoid dismissing naive questions.
“You are confusing fission and fusion”
“Many of these problems relate to fission. The fusion reaction is quite different.”

Try twice, then let a student try. Then offer after class.

Complex, tangential. After class.

Be patient with repeated question.
–Paraphrase (to not bore others.)
More complicated.

Avoid dismissing naive questions.
“**You are confusing fission and fusion**”
“**Many of these problems relate to fission. The fusion reaction is quite different.**”

Try twice, then let a student try. Then offer after class.

Complex, tangential. After class.

Be patient with repeated question.
– Paraphrase (to not bore others.)
– Ask other students
More complicated.

Avoid dismissing naive questions.
“*You are confusing fission and fusion*”
“*Many of these problems relate to fission. The fusion reaction is quite different.*”

Try twice, then let a student try. Then offer after class.

Complex, tangential. After class.

Be patient with repeated question.
—Paraphrase (to not bore others.)
—Ask other students ??
More complicated.

Avoid dismissing naive questions.
“*You are confusing fission and fusion*”
“*Many of these problems relate to fission. The fusion reaction is quite different.*”

Try twice, then let a student try. Then offer after class.

Complex, tangential. After class.

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Manage long-winded students.
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   E.g. “I would like to hear from someone I haven’t heard from today.”
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–Paraphrase (to not bore others.)
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Manage long-winded students.
E.g. “I would like to hear from someone I haven’t heard from today.”
After class: Thank them for their input and ask them to wait 30 seconds before raising hand.