SENCER SUMMER INSTITUTE 2001
Notes on the Program

FRIDAY, AUGUST 3, 2001

Arrival, Transportation, and Registration

After you check-in at the Fairmont Hotel, the Concierge will have information on options for getting to the Santa Clara University Campus. Chartered buses (Royal Coach Tours) will depart from the front of the Fairmont Hotel to the Santa Clara University Campus at 11:00 a.m.-1:40 p.m. on Friday, and from 7:00 a.m.-9:00 a.m. Saturday-Tuesday.

Registration for SSI-2001 will be offered Friday from 11:00 a.m.—2 p.m., and Saturday from 9:00 a.m.-12:00 p.m. at the Arts and Sciences building at Santa Clara University.

12 NOON **LUNCH**

Kenna Lawn

Participants are invited to an opening buffet luncheon.

2:00—2:45 **HOMEROOMS**

O'Connor

All participants have been assigned to a "homeroom" and a "homeroom teacher"—a member of the SSI-2001 core faculty. There are 12 homerooms: ten consist of three institutional teams each. Another contains all advance team representatives, including the AWSE delegation. Graduate students who aren't affiliated with particular teams have their own "room."

Homerooms are the basic organizing structure of SSI-2001. We'll use them for communicating schedule and other changes, arranging for team consultations, providing direct feedback to SSI-2001 organizers ("real-time formative evaluation"), checking on team progress and working on team projects, pursuing issues raised in the plenary sessions and other sessions, and generally for "taking stock."

Homerooms are where we will begin each day. There will be a brief SSI-2001 agenda for each day. Homerooms will provide a space for all participants to set their own agendas, as well. From this first homeroom, we'll proceed to the opening plenary.

Your homeroom assignment is on the back of your registration binder. The locations for the homerooms are on page 2 of the Day-by-Day Schedule.

Suggested Attendance: All participants are expected to attend their homeroom sessions.

2:45—4:00 **OPENING PLENARY**

Recital Hall

This opening general session will feature official welcomes from the president of AAC&U, Carol Geary Schneider, and the Dean of our host institution, Peter Facione. The aims of, and aspirations for SSI-2001 will be reviewed and discussed by SENCER's national directors David Burns and Karen Oates. SENCER's place in the recent history and immediate future of national efforts to improve undergraduate science education will be described by Elaine Seymour. Elaine is Director of Ethnography and Evaluation Research at the Bureau of Sociological Research, University of Colorado—Boulder. Elaine also serves as SENCER's evaluation consultant.

Key "contact" and logistics support people will also be introduced. *Suggested Attendance: All participants are expected to attend plenary sessions.*

4:15—6:00 **INTRODUCTION TO THE SENCER MODELS AND THE PEOPLE WHO CREATED THEM**

O'Connor

Science, Society, and Global Catastrophes
Theo Koupelis
University of Wisconsin

Chemistry and the Environment
Amy Schachter
Santa Clara University

Mysteries of Migration
Thomas C. Wood
Elizabeth Gunn
George Mason University

Biomedical Issues of HIV/AIDS
Monica Devanas
Rutgers University

Working copies of the models will be distributed at registration. Model developers will host individual sessions to describe their work. There will be two "formal" model development presentation times (this session and the sessions on Saturday from 11 to 12:30). Also scheduled are sessions with the model developers for in-depth follow-up, problem-solving, technical assistance, and consultation on Sunday at 9:10 and 11:00 a.m., and again on Monday at 9:10 and 11:00 a.m.. (Model developers may also be scheduled for individual or team consultations, as needed.)

At the Friday and Saturday sessions, model developers will make formal presentations, describing how their thinking and their teaching have changed and evolved and how their experiences have influenced the direction and content of the courses they have created. Ample time will be provided for questions and for SSI-2001 members to contribute insights gained in their own experiences with these challenges.
Suggested Attendance: To the extent possible, we have booked room sizes to accommodate your first choices, so you should plan to attend today's (Friday's) session dedicated to the formal presentation of the topic/model that was your first choice. For tomorrow's (Saturday's) sessions, teams might profit from having, if they haven't already, team representatives at all four model sessions.

6:00—8:30 **WELCOME DINNER: A CALIFORNIA BARBEQUE**
Kenna Lawn
This event will feature—as will all dining at SSI-2001—vegetarian as well as non-vegetarian selections.

SATURDAY, AUGUST 4, 2001

7:00—8:00 **CONTINENTAL BREAKFAST**
O'Connor

8:00—9:00 **HOMEROOMS**
O'Connor
Same room assignments as on Friday.

9:10—10:30 **CONCURRENT SESSIONS: ORGANIZING FOR SUCCESS**
O'Connor
During SSI-2001, we are devoting four daily concurrent sessions to "organizing for success."

As a national dissemination project, SENCER faces the challenge of supporting and sustaining reforms. Initially, at least, we are adopting two specific strategies to meet this challenge. One strategy, the SENCER Cluster Program, has been featured prominently in our work. The second has been quieter and less "public." It is a collaboration with ACAD, the American Conference of Academic Deans.

Our planning grant consultations with faculty made it abundantly clear that we needed to include academic administrators, especially deans responsible for the curriculum, on SENCER teams and in SENCER programs, generally. Deans, as well, were most interested in SENCER, since they face important challenges in improving science education and supporting civic engagement.

Each day, during the "Organizing for Success" concurrent sessions, we will offer a sesson for academic administrators, convened and facilitated by ACAD leaders. These sessions will be dedicated to pursuing matters of policy and implementation.

Equally, each day, during the "Organizing for Success" concurrent sessions, we will offer cluster meetings.

Clusters are the second of four basic elements in the SENCER "system" for national dissemination (the other three are: the SENCER Summer Institutes, the SENCER virtual community, and SENCER's efforts aimed at creating a national climate supporting science education reform).

At the most fundamental level, Clusters are intended to serve as vehicles of affiliation. They were designed to invite participation in SENCER and to stimulate and help sustain durable networks that can continue SENCER's work. At present, two kinds of Clusters exist: "Disciplinary Clusters" and "Interest Clusters."

SENCER's work is, however, by its very nature, multidisciplinary. Complex, capacious, civic questions have a hard time respecting disciplinary boundaries. Indeed, we have argued that to understand such problems from a singular disciplinary perspective might be equivalent to systematically mis-understanding the phenomenon. We have also pointed out that to fail to grasp what the SMET disciplines have to teach us about these problems would lead to still another form of misunderstanding.

Why do we have Disciplinary Clusters? Three reasons are worth noting:

- People identify with their disciplines and there are discipline-specific considerations that need to be respected,
- The organization of learning is largely accomplished within departments and disciplines, and any reform that is to succeed, will need to have the understanding, assent, and the support of disciplinary colleagues, and
- We hope that, through participation in clusters, SENCER-affiliates may be able to join together in efforts to take SENCER reforms to disciplinary societies and associations.

Four Cluster Meetings are scheduled during SSI-2001. We have some specific expectations for the clusters including the development of a rudimentary work-plan for the coming year, accomplishing a needs and assets assessment and inventory, establishing a communication strategy, and assessing interest in engagements with disciplinary societies and associations.

The Cluster meetings are intended to be informal, "birds of a feather" sessions, with ample time for participation by all.

- ***Organizing for Success:*** **SENCER and Administrative Challenges and Opportunities**
  ACAD leaders will convene and facilitate a discussion among academic administrators centering on how SENCER can help deal with the challenges and improve the opportunities for making significant gains in science and civic education. The group will set its own agenda.
  Convenors: Susan Gotsch, Laura Skandera-Trombley, Eliza Reilly
  Suggested attendance: Academic administrators who are not already committed to a Cluster are invited to attend.

- ***Organizing for Success:*** **The SENCER Clusters**

  Here are the Cluster options:

Disciplinary Clusters	Cluster Coordinator
Mathematics and Computer Science	David Ferguson
Physics	Theo Koupelis
Chemistry	Amy Schacter
Biology and Life Sciences	Carl Huether
Environmental Sciences	Trace Jordan
Interest Clusters	**Cluster Coordinator**
Integrated/Interdisciplinary Sciences	Brian Hagenbuch
Learning Communities	Tom Wood
Health	Marion Fass
Pre-Service Teacher Education	Donald Shillady

  Suggested Attendance: We have already given your name to the Cluster Coordinator responsible for the Cluster you indicated as your primary interest (if you've forgotten, we can help you!). It would be helpful to us if you would at least initially attend the Cluster session of your original preference. Teams are advised to divide Cluster activities up among members, to the extent feasible, so as to gain maximum coverage. We see Cluster participation as an essential element in the SENCER program. We think participation is our best hope for having a leveraged, sustained

effect where lonely local efforts have failed previously. We hope that you will make Cluster attendance and participation a high priority.

11:10—12:30 **CONCURRENT SESSIONS: PROMISING PEDAGOGIES AND CRITICAL CONCERNS**

Larry Cuban offers two challenges to the case statement for "quantitative literacy" offered in Lynn Steen's important book, *Mathematics and Democracy.* Cuban's challenges emerge from what he calls "historical lessons." The first historical lesson is:

Curriculum and pedagogy are inseparable. If anything has been established in the history of teaching, it is the simple fact that a teacher's knowledge of content seldom guarantees that he or she can structure and communicate knowledge in ways that enable a diversity of learners (particularly those who are compelled to attend classes) to understand and apply the knowledge that as been learned. How teachers teach matters….Pedagogy, the art and science of teaching, is as essential to learning as fuel is to moving a car. (p.89)

Cuban summarizes his second historical lesson by writing: "The quest for numeracy is a plea for progressive pedagogy." He later list progressive methods, as including, for example: "connecting content to real-life situations, lighter coverage of topics, an emphasis on understanding concepts rather than facts, integrating content across disciplinary boundaries." (p. 89).

We think this is instructive as far as SENCER goes. You could try to do SENCER work with some traditional pedagogies and it could surely succeed, especially in the hands of a dazzling instructor. But we think there is a much greater chance for success if we employ pedagogies consonant with SENCER ideals—ideals which are, after all, based on the very radical notion that we need the knowledge that students actually produce to accomplish our own intellectual objectives. So, in addition to making opportunities available for intense and continual contact with our model developers, we have arranged to offer a selection of learning opportunities that emphasize promising pedagogies that we think will make SENCER courses and programs more effective.

We've also commissioned workshops and discussion sections on important topics ('critical concerns') related to SENCER, civic engagement, and improving science learning for all students. One function of SSI-2001 is to use the collective wisdom of participants in an effort to continuously improve what SENCER can do. We hope these discussion sections will help us in our thinking and planning.

All these sessions are scheduled for 80 minutes; some have a two-part sequence. Some are repeated so as to permit expanded access and encourage sections of optimal size.
Suggested Attendance: We recommend that teams divide participation among these sessions so as to achieve maximum coverage. You should note that the sessions with model developers are also occurring during this time slot, so you should plan your team's schedule to accommodate interest in models as well.

Here are your options along with brief descriptions of the sessions:
(Note: All concurrent sessions except the Case Studies Workshop are in O'Connor)

- ***Promising Pedagogy:*** **SENCER and Problem Based Learning I**
(This is the first of a two-part workshop; the workshop will be repeated.)
This two-session workshop will introduce participants to problem-based learning (PBL), a curricular approach and instructional method in which complex, messy, real world problems initiate learning in a collaborative, inquiry-driven, student-directed environment. Through PBL, students are encouraged to develop an integrated knowledge base in which subject-based concepts and theory become relevant to what occurs in life.

  During session one, a group of college students presented with a real-life situation will work collaboratively, guided by a faculty facilitator, to identify what they need to learn in order to better understand and explain the situation. Following a period of self-directed study, the group members will reconvene to continue their work with the problem. After the demonstration, the facilitator and students will respond to questions from the audience about the PBL process.

  Kristi L. Arndt
  Samford University

- ***Promising Pedagogy*****: SENCER and Case Studies I**
(Note: This workshop will be held in Arts and Sciences 128—This is the first of a two-part workshop; the workshop will not be repeated.)
The "real world" meets the classroom through the use of case studies. In this workshop, we will do a variety of activities that help tell the stories of why one might choose a case study approach, how case studies might be utilized in a large introductory course such as chemistry, and what the learning outcomes might be, both expected and unexpected. More specifically, in this workshop we will use the topics such as radioactive waste, fuel cells, plastics, and refrigerants to show how one might:

- Find a "hook" that engages students in the science
- Teach science through the use of complex (and sometimes messy) public issues
- Help students sharpen their thinking by using decision-making activities
- Show how media and the Internet can be smoothly integrated into the teaching processes
- Use writing and speaking activities to connect chemistry with matters open to public deliberation
- Assess learning outcomes (for example, using the SALG)

The material for this workshop is drawn from **ChemCases.com**, developed at Kennesaw State University under a grant from the National Science Foundation Office of Undergraduate Education, and **Chemistry in Context**, a project of the American Chemical Society. Each presenter is currently a member of the authoring team for one of these projects.

Larry Peterson
Kennesaw State University

Cathi Middlecamp
University of Wisconsin--Madison

- ***Promising Pedagogy*: SENCER Model Developers Presentations II**
  This is the second in the model developers series; it is a shorter session than the introductory session on the first day. The content will be substantially similar to the first day; these sessions are good opportunities for individuals to get a look at a second model.

- ***Promising Pedagogy:* SENCER and Peer-Led Learning - Overview**
  The Peer-Led Team Learning (PLTL) session will introduce participants to the PLTL model through an overview followed by a student led demonstration of a peer-led workshop, with an undergraduate conducting a small group of participants in a sample workshop. The students will also present their experiences and views and discuss the aspects of student leader training that they have found useful in assisting them to conduct workshops. Critical components of implementing PLTL will be outlined, including recruiting and training peer-leaders, preparing materials for workshops, evaluation, and institutionalization of PLTL. Finally, the presenters will describe the resources that the PLTL project has to offer to assist new implementers of PLTL.

  In PLTL, students gain improved mastery of the subject. However, the benefits of PLTL also include increased ability to communicate

scientific ideas and to work as part of a team. The workshop materials are designed involve students in modes of thinking that are characteristic of the specific disciplines in science and mathematics, so that the problem solving ability they develop transcends an algorithmic approach. These characteristics of PLTL connect this project to the goals of the SENCER project.

PLTL is a national dissemination project supported with funds from the National Science Foundation.

Tomorrow, following-up on this introduction to the PLTL model and its connection to SENCER ideals, there will be a two-part workshop covering the basics of peer-led teaching. The workshop will be repeated on Monday.

David K. Gosser
The City College of New York

Jack A. Kampmeir
University of Rochester

- ***Critical Concern:*** **SENCER and the Challenge of Reaching Minority Students—"Pipeline Issues"**
  This session will explore successful strategies for increasing the participation of minority students, especially African-Americans, in SMET fields, as a civic challenge and educational imperative.

  David Ferguson
  SUNY-Stony Brook

- ***Critical Concern:*** **SENCER and National Issues in Undergraduate Education in Science, Mathematics, Engineering and Technology: A View from the National Research Council**
  Undergraduate education in science, mathematics, engineering, and technology (SME&T) has received increasing attention from state and national policymakers, legislators, and those who are responsible for overseeing programs in higher education. Institutions of higher education are expected to become more accountable for implementing programs that improve learning and academic opportunities for *all* undergraduates, regardless of their career aspirations. Colleges and universities are also being asked to play a greater role in improving K-12 education through teacher education and partnerships with local schools.

  This presentation will summarize and highlight emerging issues in undergraduate education and highlight the recommendations for policy that have appeared in recent reports from the National

Research Council and other policy organizations. Topics to be emphasized will include:

- The roles of introductory courses in science, mathematics, and engineering
- The impending impact of K-12 standards in science and mathematics on undergraduate education
- The changing nature of teacher education and professional development
- Assessment and accountability for teaching and learning

Jay B. Labov
National Research Council
Suggested Attendance: We suggest that at least one member of each team, particularly a person responsible for K-12 teacher Preparation, attend this session.

12:30—2:00 **LUNCH**
O'Connor Lawn
On this and subsequent days box lunches will be served to allow participants to choose their own lunch spot on the campus and gather in informal groups.

2:00—4:00 **PLENARY: ASSESSING SENCER**
Elaine Seymour
University of Colorado

Eileen Lewis
University of California—Berkeley

Sue Daffinrud
University of Wisconsin—Madison

Introduced by
David Ferguson, SUNY-Stony Brook

4:00—8:00 **TEAM TIME**
Consultations may be arranged during this time
Dinner is on your own

8:00—11:00 **GALA DESSERT RECEPTION AT THE TECH MUSEUM OF INNOVATION**
The Tech Museum is quite spectacular. Its "Life-Tech" Gallery is ours for the evening. The Tech is located just across the street from the Fairmont.

SUNDAY, AUGUST 5, 2001
(Note: All sessions except Case Studies Workshop will be held in Bannan today only.)

7:00—8:00 **BREAKFAST**
Arts and Sciences Building

8:00—9:00 **HOMEROOMS**
Bannan

9:10—10:30 **PROMISING PEDAGOGIES AND CRITICAL CONCERNS**

- ***Promising Pedagogy:*** **SENCER and Problem Based Learning I**
(This is the first of a two-part workshop; this is a repeat of Session I held yesterday at 11:00 a.m.)
This two-session workshop will introduce participants to problem-based learning (PBL), a curricular approach and instructional method in which complex, messy, real world problems initiate learning in a collaborative, inquiry-driven, student-directed environment. Through PBL, students are encouraged to develop an integrated knowledge base in which subject-based concepts and theory become relevant to what occurs in life.

  During session one, a group of college students presented with a real-life situation will work collaboratively, guided by a faculty facilitator, to identify what they need to learn in order to better understand and explain the situation. Following a period of self-directed study, the group members will reconvene to continue their work with the problem. After the demonstration, the facilitator and students will respond to questions from the audience about the PBL process.

  Kristi L. Arndt
  Samford University

- ***Promising Pedagogy*****: SENCER and Case Studies II**
(*Note: This session will be held in Arts and Sciences 128*—This is the second session of a two-part workshop; the workshop will not be repeated)
This workshop will build on the content of Case Studies I, allowing participants hands-on experience with Internet resources for **ChemCases.com** and **Chemistry in Context**.

  Larry Peterson
  Kennesaw State University

Cathi Middlecamp
University of Wisconsin--Madison

- ***Promising Pedagogy*: SENCER Model Developers Consultations I**
  This is the first of four scheduled opportunities for participants to have intensive discussions with model developers on issues concerning the models SENCER has published and for consultative help on models the teams and advance representatives are developing. Issues to be covered go beyond individual course development to matters of securing approval for SENCER courses, evaluation, use of technology, negotiating team teaching, engaging student interest, etc. Model developers may also be scheduled for individual and team consultations.

- ***Promising Pedagogy:* SENCER and Peer-Led Learning I**
  Following up on yesterday's introduction to Peer-Led Learning, this session is the first in a two-part workshop. The second part will be held at 11:00 a.m. and both will be repeated tomorrow. This session will cover the recruitment and training of peer leaders, institutional issues connected with organizing and operating a peer education program in the sciences, suggestions for next steps interested campuses can undertake, and a review of available resources.

  David K. Gosser
  The City College of New York

  Jack A. Kampmeir
  University of Rochester

- ***Promising Pedagogy:* Critical Thinking, General Education, and SENCER I**
  (This is the first session of a two-part workshop; the workshop will be repeated.)
  Faculty across the spectrum of academic disciplines strive to develop students' critical thinking. Throughout the country, colleges and universities assert that critical thinking is one of the outcomes of their core curriculum or campus general education requirements. Research from Penn State finds that policymakers, educators, and employers identify critical thinking as one centrally important deliverable for higher education. How are we, in higher education doing at this? What do we know about how to engender CT in students through general education course work in the sciences and the humanities? More importantly, how can we measure the development of students' CT skills and CT habits of mind?

By analyzing videotape, through small and large group classroom simulation exercises, by interactive Q&A, and by using actual professors' assignments and students' work products as case examples, this workshop engages participants in CT pedagogical strategies and CT assessment exercises.

The definition of "critical thinking" presented is research-based, robust, and useful in the full range of academic disciplines. The sessions emphasize both the skills dimension and the dispositional dimension of critical thinking. Research findings on college students' CT skills and dispositions, based on data gathered from across the nation, provides interesting material for faculty interpretation.

Peter Facione
Santa Clara University

- ***Critical Concern:*** **SENCER and Gender**
  This discussion session will provide an opportunity to consider how a SENCER approach or course might be applied to issues of "gender," with specific emphasis on science and women.

  David Burns
  AAC&U

- ***Critical Concern:*** **SENCER and SALG**
  (This session will be repeated at 11:00 a.m.)
  A follow-up to yesterday's plenary on assessment, this session will review the SALG and provide details on how to use it, how to modify it for local concerns, and what teams need to do in the coming year.

  Sue Daffinrud
  University of Wisconsin—Madison
  Attendance Recommendation: One representative from every team should be designated as the SALG representative and should attend this sessionor the repeat session to be held at 11:00 a.m.

- ***Critical Concern:*** **SENCER and Assessment**
  (This session will be repeated at 11 o'clock this morning.)
  A follow-up to yesterday's plenary on assessment, this session will review the evaluation template and focus on assessing learning gains in SENCER courses.

  Eileen Lewis
  University of California—Berkeley
  Attendance Recommendation: One representative from every team should be designated to coordinate the template project and should attend this session or the repeat session to be held at 11:00 a.m.

10:30—11:00 **COFFEE/REFRESHMENT BREAK**
Bannan

11:00—12:30 **PROMISING PEDAGOGIES AND CRITICAL CONCERNS**
(All sessions held in Bannan)

- ***Promising Pedagogy*: SENCER and Problem Based Learning II**
  (This is the second of a two-part workshop that began yesterday; participants who attended the PBL I this morning should attend PBL II tomorrow morning.)
  In this second session, participants will hear from students who have been engaged in the PBL activity. A range of issues related to PBL will be discussed, including the challenges of PBL implementation, assessment of students in a PBL course or curriculum, faculty development, PBL and small group dynamics, and related issues.

  Kristi L. Arndt
  Samford University

- ***Promising Pedagogy*: SENCER Model Developers Consultations II**
  This is the second of four scheduled opportunities for participants to have intensive discussions with model developers on issues concerning the models SENCER has published and for consultative help on models the teams are developing. Issues to be covered go beyond individual course development to matters of securing approval for SENCER courses, evaluation, use of technology, negotiating team teaching, engaging student interest, etc. Model developers may also be scheduled for individual and team consultations.

- ***Promising Pedagogy:* SENCER and Community Based Research** (This one-session workshop will be repeated.)
  This session will explore the basic tenets and practices of Undergraduate Community Based Research for both science and non-science and majors alike. Together we will discuss the practice as it relates to the National Research Council's guidelines for best practices in science teaching as well as the missions of many of our colleges and universities. We will review the aims and objectives of this experiential learning practice and provide time to work on connecting curriculum to authentic discovery based research practices and assessment.

  Karen Oates
  George Mason University

- ***Promising Pedagogy:*** **Critical Thinking, General Education, and SENCER II**
  (This is the second session of a two-part workshop begun at 9:10. See above for complete workshop description.)

  Peter Facione
  Santa Clara University

- ***Promising Pedagogy:*** **SENCER and Peer-Led Learning II**
  (This is the second part of a two-part workshop begun at 9:10, see above for workshop description.)

  David K. Gosser
  The City College of New York

  Jack A. Kampmeir
  University of Rochester

- ***Critical Concern:*** **SENCER and SALG**
  (This is a repeat of the session held at 9:10 a.m.)

  Sue Daffinrud
  University of Wisconsin—Madison

- ***Critical Concern:*** **SENCER and Assessment**
  (This is a repeat of the session held at 9:10 a.m.)

  Eileen Lewis
  University of California—Berkeley

12:30—2:00 **LUNCH**
Kenna Lawn

2:00—3:00 **PLENARY**
Brass Rail Room in Benson Center

"Science Education, Itself, As A Complex Civic Question"

Eugenie C. Scott
National Center for Science Education

Introduced by
Jay Labov
National Research Council

3:10—4:15 **CONCURRENT SESSIONS: ORGANIZING FOR SUCCESS**

- ***Organizing for Success:*** **SENCER and Administrative Challenges and Opportunities II**
  This is the second session, convened by ACAD leaders, to facilitate a discussion among academic administrators centering on how SENCER can help deal with the challenges and improve the opportunities for making significant gains in science and civic education. The group will set its own agenda.

  Convenors: Susan Gotsch, Laura Skandera-Trombley, Eliza Reilly

- ***Organizing for Success:*** **The SENCER Clusters II**
  This is the second of four scheduled sessions for SENCER Clusters. Today's meetings will focus on identifying what would be most useful and feasible for Clusters to do to plan to support campus-based change.

  Convenors: All Cluster Coodinators

4:15— **FORMAL DAILY PROGRAM ENDS: TEAM TIME, DINNER ON YOUR OWN**
Consultants available for scheduling between 4 and 6 p.m.

8:00—11:00 **SENCER CAFÉ**
Coffee, dessert and conversation
California Room Fairmont Hotel

We've reserved the California Room at the Fairmont as a gathering place for SSI-2001 members. There will be coffee and other beverages, as well as a selection of fruits and desserts. Please use the Café as a place to meet, relax, and enjoy the company of old and new friends.

MONDAY, AUGUST 6, 2001

7:00—8:00 **BREAKFAST**

8:00—9:00 **HOMEROOMS**
O'Connor

9:10—10:30 **PROMISING PEDAGOGIES AND CRITICAL CONCERNS**
Note: All sessions will be held in O'Connor

- ***Promising Pedagogy:*** **SENCER and Problem-Based Learning II**
  This is the second in a two-part workshop for participants who attended Part I yesterday at 9:10 a.m..

  In this second session, participants will hear from students who have been engaged in the PBL activity. A range of issues related to PBL will be discussed, including the challenges of PBL implementation, assessment of students in a PBL course or curriculum, faculty development, PBL and small group dynamics, and related issues.

  Kristi L. Arndt
  Samford University

- ***Promising Pedagogy*****: SENCER Model Developers Consultations III**
  This is the third of four scheduled opportunities for participants to have intensive discussions with model developers on issues concerning the models SENCER has published and for consultative help on models the teams are developing. Issues to be covered go beyond individual course development to matters of securing approval for SENCER courses, evaluation, use of technology, negotiating team teaching, engaging student interest, etc. Model developers may also be scheduled for individual and team consultations.

- ***Promising Pedagogy:*** **SENCER and Peer-Led Learning I**
  (This is a repeat of the first part of a two-part workshop held yesterday.)

- ***Promising Pedagogy:*** **Critical Thinking and SENCER I**
  (This is the first part of a two-part workshop. It is a repeat of one held yesterday at 9:10)

  Peter Facione
  Santa Clara University

- ***Critical Concern:*** **SENCER and Race**
  This discussion session will provide an opportunity to consider how a SENCER approach or course might be applied to the ideas of "race" as they have been constructed along biological lines. How could we teach "through" the complex issue of racial identity "to" science and mathematics.

  David Burns
  AAC&U

- ***Critical Concern:*** **Assessment: How do students learn science and how do we know when they do?**
  (This session will be repeated at 11 o'clock.)
  A follow-up to Saturday's plenary on assessment, this session will review what we know about cognition and scientific learning, with an emphasis on how we can measure learning and related goals in SENCER courses and programs.

  Eileen Lewis
  University of California—Berkeley
  Attendance Recommendation: One representative from every team should be designated to coordinate the assessment and should attend one of these sessions.

- ***Critical Concern:*** **Financing SENCER and Other Science Reforms**
  (This session will be repeated at 11:00 a.m.)
  The session will provide an overview of NSF programs and funding opportunities, including the new programs on assessment. Particular emphasis will be paid to how NSF programs can be accessed to support SENCER campus innovations. SENCER has a goal of increasing assistance in adaptation and innovation at the campus level, with the view to disseminating local innovations as part of the continuing national program of SENCER.

  Jane C. Prey
  National Science Foundation
  Attendance Recommendation: We recommend that one member of each team attend this session.

10:30—11:00 **COFFEE/REFRESHMENT BREAK**
O'Connor

11:00—12:30 **PROMISING PEDAGOGIES AND CRITICAL CONCERNS**
All sessions held in O'Connor

- ***Promising Pedagogy:*** **Critical Thinking and SENCER II**
  (This is the second session of a two-part workshop that began at 9:10).

  Peter Facione
  Santa Clara University

- ***Promising Pedagogy*****: SENCER Model Developers Consultations III**
  This is the third of four scheduled opportunities for participants to have intensive discussions with model developers on issues concerning the models SENCER has published and for consultative help on models the teams are developing. Issues to be

covered go beyond individual course development to matters of securing approval for SENCER courses, evaluation, use of technology, negotiating team teaching, engaging student interest, etc. Model developers may also be scheduled for individual and team consultations; ask your homeroom teacher to help with this.

- ***Promising Pedagogy:*** **SENCER and Community Based Research**
  (This is a repeat of the workshop held at 11:00 a.m. yesterday.)

  Karen Oates
  George Mason University

- ***Promising Pedagogy:*** **SENCER and Peer-Led Learning II**
  (This is the second part of a two-part workshop begun at 9:10. See above for description.)

  David K. Gosser
  The City College of New York

  Jack A. Kampmeir
  University of Rochester

- ***Critical Concern:*** **SENCER and Policy Issues in K-12 Science Education**
  This is a follow-up discussion opportunity from Sunday's plenary on science education as a complex civic issue. A particular focus of this session will be the policy issues involved in K-12 education. SENCER offers a robust approach adaptable to primary and secondary education. This session will explore the risks and benefits of this approach.

  Eugenie C. Scott
  National Center for Science Education

- ***Critical Concern:*** **SENCER and HIV Disease: Pre-viewing a "SENCER Backgrounder**"
  Over the next few years, SENCER will be commissioning and producing "SENCER Backgrounders"—papers designed to highlight the civic issues and their relationship to the products and process of science. Two "SENCER Backgrounder"s have been drafted.

  In this session, participants will have an opportunity to discuss and review the backgrounder on HIV disease, prepared by Richard Keeling, editor of the Journal of American College Health.

Comments received at this session and from other reviewers will be used by the authors to revise the papers for eventual distribution and use by people working on SENCER courses and programs.

Other topics for "SENCER Backgrounders" are being considered. In each of these pre-view sessions, suggestions for future topics will be solicited.

Richard Keeling, MD
AAC&U

- ***Critical Concern:*** **SENCER and the Human Genome: Pre-viewing a "SENCER Backgrounder"**
  Over the next few years, SENCER will be commissioning and producing "SENCER Backgrounders"—papers designed to highlight the civic issues and their relationship to the products and process of science. Two "SENCER Backgrounder"s have been drafted.

  In this session, participants will have an opportunity to discuss and review the backgrounder on the Human Genome, prepared by Troy Duster, professor of sociology at New York University.

  Comments received at this session and from other reviewers will be used by the authors to revise the papers for eventual distribution and use by people working on SENCER courses and programs.

  Other topics for "SENCER Backgrounders" are being considered. In each of these pre-view sessions, suggestions for future topics will be solicited.

  Troy Duster
  New York University

- ***Critical Concern:*** **Assessment: How do students learn science and how do we know if they do?**
  (This is a repeat of the session held at 9:10 this morning.)
  A follow-up to Saturday's plenary on assessment, this session will review what we know about cognition and scientific learning, with an emphasis on how we can measure learning and related goals in SENCER courses and programs.

  Eileen Lewis
  University of California—Berkeley

- ***Critical Concern:*** **SENCER, Science Education, and Africa**
  The AWSE delegation will make presentations at a special session on the state of undergraduate science education in Africa, current initiatives in curricular reform [with special attention to integrating HIV/AIDS science, issues, and concerns], the status of women in science and technology in Africa, and initiatives to link campuses and communities in response to HIV/AIDS. The delegation's presence will facilitate professional networking and provide it with information and insights they will in turn disseminate to their membership.

  Ebby Chagala
  Kenya Forestry Research Institute

  Mabel Imbuga
  Jomo Kenyatta University

  Caroline Lang'at-Thoruwa
  Jomo Kenyatta University

  Debra Meyer
  Rand Afrikaans University

- ***Critical Concern:*** **Financing SENCER and Other Science Reforms**
  (This session is a repeat of the one at 9:10 a.m.)

  Jane C. Prey
  National Science Foundation

12:30—2:00 **LUNCH**
Kenna Lawn Area

Reception For African Women in Science and Engineering
Parlor A, Benson Center

2:00—3:00 **PLENARY**
Daly Science 207

"Science and New Civic Engagements and Responsibilities: A Dialogue"

Troy Duster
New York University

Richard Keeling
AAC&U

Introduced by

Betsy Gunn
George Mason University

3:10—4:15 **CONCURRENT SESSIONS: ORGANIZING FOR SUCCESS**

- ***Organizing for Success:*** **SENCER and Administrative Challenges and Opportunities III**
  This is the third session, convened by ACAD leaders, to facilitate a discussion among academic administrators centering on how SENCER can help deal with the challenges and improve the opportunities for making significant gains in science and civic education. The group will set its own agenda.

  Convenors: Peter Facione, Laura Skandera-Trombley, Eliza Reilly

- ***Organizing for Success:*** **The SENCER Clusters III**
  This is the third of four scheduled sessions for SENCER Clusters. Today's meetings will include a focus on identifying strategies for keeping Cluster activities current and connected to campus activities, and to identifying venues for cluster members to meet and to influence the work of disciplinary societies and organizations.

  Convenors: All Cluster Coordinators

4:15—6:00 **TEAM TIME**
Consultants available

6:00—8:30 **DINNER**
Kenner Lawn Area

8:00—11:00 **SENCER CAFÉ**
Coffee, dessert and conversation
Fairmont Hotel, California Room

TUESDAY, AUGUST 7, 2001

7:00—8:00 **BREAKFAST**
O'Connor

8:00—9:00 **HOMEROOMS**
O'Connor
Teams should be finishing up assessment templates and turning them in to Homeroom teachers. Teams should be preparing the

one page plan for poster presentation. Time should be taken to review plans developed during team time.

9:10—10:10 **CONCURRENT SESSIONS: ORGANIZING FOR SUCCESS**
O'Connor

- ***Organizing for Success:*** **SENCER and Administrative Challenges and Opportunities IV**
  This is the fourth session, convened by ACAD leaders, to facilitate a discussion among academic administrators centering on how SENCER can help deal with the challenges and improve the opportunities for making significant gains in science and civic education. The group will set its own agenda.

  Convenors: Peter Facione, Laura Skandera-Trombley, Eliza Reilly

- ***Organizing for Success:*** **The SENCER Clusters IV**
  This is the last of four scheduled sessions for SENCER Clusters. Today's meetings should include the development of a "poster" summarizing the Cluster's plan for the coming year.

  Convenors: All Cluster Coordinators

10:10—10:30 **COFFEE AND REFRESHMENTS**
O'Connor

10:30—12:30 **CLOSING PLENARY**
Teams and Clusters should display posters by 10:30 for general viewing. An open-microphone session for member comments, suggestions and summary remarks will commence at 11:00 a.m. Closing comments by SENCER organizers will follow the open microphone session.

The session and the Institute will adjourn by 12:30 p.m.