

# Teaching About Publicly Controversial Science

## 1. Survey Overview

Welcome to our online survey of Colorado public school teachers. This is a landmark study because no other statewide effort has evaluated how public school teachers approach the publicly controversial topics of evolution and climate change in depth.

As of Feb. 15, 2008, we are no longer collecting data from K-5 teachers. This is because we received strong response from K-5 teachers and have received enough data! Thank you for your interest if this change affects you.

If you teach science in grades 6-12 and have not already taken this survey, please read on.

The survey will take you approximately 20 minutes to complete. You will receive a \$5 gift card as a thank you for your participation. In some sections, you will be asked to estimate how much time you spend across the school year teaching specific units or topics. You will find it helpful to have your syllabus and/or lesson-planning calendar by your side during those sections.

Thanks in advance for taking this extra step to help ensure the accuracy of your data.

Please spread the word about this survey to other public school science teachers in Colorado. We hope to collect up to 800 responses, representing all perspectives, so we are extremely grateful for any recruitment help you can give.

Due to limitations of the survey program, if the webpage closes before you complete the survey, your partial data will be saved but you will not be able to pick up where you left off. In the case of this event, you may retake the survey starting from this website, but please contact Sarah Wise at 303 735 5514 or [sarah.wise@colorado.edu](mailto:sarah.wise@colorado.edu) to inform her to delete your partial data.

To begin the survey process, scroll this page down and click on "next". You will begin the survey process by reading and digitally signing a consent form. Then you will proceed through the survey questions. You will need to click "next" to get each new page of questions. If you click "prev" you can review and change any answer you have given on previous pages.

# Teaching About Publicly Controversial Science

## 2. Survey Consent

### 1. PARTICIPANT INFORMED CONSENT FORM

last modified 10/18/07

The following material should help you decide whether or not you want to participate in the study. Signing this form indicates that you are informed about the study and you want to participate. This research is conducted by Sarah Wise, Ph.D., a staff member in the Outreach Department of CIRES at the University of Colorado at Boulder, 449 UCB, Boulder, CO 80309-0449. Sarah Wise can be reached at (303) 735 5514.

#### Project Description:

This research study is about how teachers approach two publicly controversial topics, evolution and global warming, in their classes. This study will benefit society by providing information that can be used to help improve teacher professional development around these science topics. Funding for this study is being provided by CIRES Outreach through their Visiting Fellows program.

#### Procedures:

If you agree to take part in this study, you will be asked to answer survey questions. The questions you receive will be tailored to your teaching experience. You will be asked questions about teaching in general and about your own teaching practices. You will be asked questions about your personal views about evolution and global warming, such as "Which of the following factors influence your teaching about evolution?" You will also be asked questions about yourself, such as "How many years have you been a teacher?" and "Is your choice to teach about global warming or evolution affected by your religious beliefs?"

#### Risks, Discomforts, and Benefits:

If you take part in this study, potential risks include discomfort in thinking about or responding to questions about controversial topics, such as global warming, or questions about what influences your teaching around these topics.

## Teaching About Publicly Controversial Science

Benefits of participating in this study may include the satisfaction of supporting research for science education. Results of the study will improve our knowledge of factors affecting the teaching of publicly controversial science topics.

### Subject Payment:

You will be paid \$5 if you complete this survey, in the form of a gift card.

### Ending Your Participation:

You have the right to withdraw your consent or stop participating at any time. Refusing to participate in this study will not result in any penalty. If you wish to withdraw your consent or feel that you may have been harmed while participating in this study, inform Sarah Wise at (303) 735 5514 immediately.

### Confidentiality:

We will make every effort to maintain the privacy of your data. The data will be handled by secure servers. All identifying data, including school and school district names, will be coded. All identifying data will be erased at the conclusion of the study, by June 2009. Other than the researchers, only regulatory agencies such as the Office of Human Research Protections and the University of Colorado Human Research Committee may see your individual data as part of routine audits. Reports of the data will not include the names of individual teachers, schools, or districts.

### Questions?

If you have any questions regarding your participation in this research, contact Sarah Wise at (303) 735 5514 or [sarah.wise@colorado.edu](mailto:sarah.wise@colorado.edu), before continuing. If you have questions or concerns regarding this project or any dissatisfaction with any aspect of this study, you may report them -- confidentially, if you wish -- to the Executive Secretary, Human Research Committee, 26 UCB, Regent Administrative Center 308, University of Colorado at Boulder, Boulder, CO 80309-0026, (303) 735-3702.

## Teaching About Publicly Controversial Science

Authorization:

I have read this information about the study. I know the possible risks and benefits. I choose to be in this study. I know that I can withdraw at any time. I acknowledge that by selecting "yes" on this page, I create an electronic signature equal to my physical signature.

yes, I consent to participate in this study

no, I do not consent to participate

# Teaching About Publicly Controversial Science

## 3. About You and Your School

Please note: All information collected for this research is kept confidential. Data will be reported in aggregated form only; reports will not include data identifying individual teachers, schools, or districts.

1. How did you learn about this survey opportunity?

at the NSTA - Denver conference

an email from Sarah Wise

through a colleague

other (please specify)

2. Do you teach in the state of Colorado?

yes

no

3. Please provide some information about the school you currently teach in.

School Name:

School District:

4. School Type. Please select from the drop-down list by clicking on the down arrow.

5. School Style

other (please specify)

6. Number of students per grade

7. Your Gender

male

female

other (please specify)

8. For how many years have you been a teacher?

# Teaching About Publicly Controversial Science

## 4. What You Teach

Thank you for the data about yourself and your school. Each time you move to a new page, your data is saved. Please continue!

1. Grade level(s) you are teaching this year (check all that apply)

K

5

10

1

6

11

2

7

12

3

8

4

9

# Teaching About Publicly Controversial Science

## 5. Your Views on Education and Global Warming

Please answer all of these questions from the perspective of teaching in general.

Please note, we use the language "global warming" here because it is the most commonly used phrase by educators, historically and currently. For the purposes of this survey, the term "global warming" is used to convey all aspects of the warming phenomenon, including the many facets of climate change.

1. In general, do you think that Colorado students should learn about global warming in school?

yes

no

Please explain why, or why not

2. Do your students express opinions about learning about global warming?

3. About 20% of the U.S. population does not think that recent global warming is caused primarily by human activity, according to a recent poll by TIME.

In general, do you think Colorado teachers should discuss "both sides" of this public controversy with students?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

# Teaching About Publicly Controversial Science

## 6. Your Views on Education and Global Warming I I

Please answer these questions from the perspective of teaching in general, except the last question, which pertains to your classroom specifically.

1. At what grade level should Colorado students be first introduced to the idea of global warming?

2. In which school subject(s) should Colorado students learn about global warming? (check all that apply)

environmental science

economics

language arts

physical science

earth science

life science/biology

geography

social studies

chemistry

physics

other (please specify)

3. In general, do you think Colorado students should learn about individual and/or societal solutions to global warming in school?

yes

no

4. Do you teach about or discuss global warming in any of your classes?

Please explain why AND how; or why not.

# Teaching About Publicly Controversial Science

## 7. Your Views on Education and Evolution

Please answer all of these questions from the perspective of teaching in general -- except the last two questions, which pertain to your classroom specifically.

1. In general, do you think Colorado students should learn about evolution in school?

yes

no

2. In general, do you think Colorado students should learn about creationism in school?

yes

no

3. About 65% of the U.S. population thinks that creationism and evolution should both be taught in schools, according to a recent CBS poll.

Do you think Colorado teachers should discuss "both sides" of this public controversy in class?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

5. Do your students express opinions about learning about evolution?

6. Is evolution included in any of your classes?

Please explain why AND how; or why not.

# Teaching About Publicly Controversial Science

## 8. Your Views About Global Warming

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Do you ever discuss global warming with people other than your students? If so, who? (check all that apply)

- school administrators
- other non-science teachers
- spouse / significant other
- acquaintances
- other (please specify)
- members of my religious community
- friends
- family members
- other science teachers

2. Has anyone suggested to you, that you should NOT teach about global warming (or some aspect of it)? (check all that apply)

- no one has suggested this
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

3. If you replied yes, please describe the experience in some detail:

How did the person suggest this to you?

What was their relationship to you?

How did this experience affect you and/or your teaching?

4. Have you ever experienced indirect pressure against teaching about global warming?

If so, from who?

- no, I have never felt pressure against teaching global warming
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

# Teaching About Publicly Controversial Science

## 9. Your Views About Global Warming 2

1. Has anyone suggested to you, that you SHOULD teach about (or teach more about) global warming? (check all that apply)

- no one has suggested this
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

2. If you replied yes, please describe one experience in some detail:

How did the person suggest this to you?

What was their relationship to you?

How did the experience affect you and/or your teaching?

3. Have you ever experienced indirect pressure in favor of teaching about global warming?

If so, from who?

- no, I have never felt pressure in favor of teaching global warming
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

# Teaching About Publicly Controversial Science

## 10. Your Views About Global Warming 3

1. From the perspective of your personal views, please indicate your level of agreement with the following statements related to global warming:

	disagree	somewhat disagree	somewhat agree	agree
the Earth's temperature has been rising over the past 100 years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the Earth is too big for human activities to influence its temperature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
recent global warming is caused mostly by things people do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the hole in the ozone layer is contributing to recent global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there is substantial disagreement between scientists about the cause of recent global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
global warming is already a serious problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not much can be done to reduce global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
science that goes against global warming theory is being suppressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Have you engaged in any learning experiences specifically about global warming? (check all that apply)

- none
- school inservice(s)
- global warming-specific website
- college class(es)
- professional development workshop (s)
- reading a book
- graduate-level class(es)
- conference session(s)
- reading a magazine article

please list relevant book and magazine titles

# Teaching About Publicly Controversial Science

## 11. Your Science Classes

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Please select all science classes you are teaching this year, excluding level labels such as AP. If you are not teaching this year, choose the science class(es) you most recently taught.

general science

chemistry

integrated science

physics

life science/biology

anatomy and physiology

physical science

environmental science

earth science

other (please specify)

2. Please select a science class you are teaching (or have taught) to focus upon, for the purposes of this survey.

Note: We are currently short on responses for Earth science, if you are debating about what to choose.

# Teaching About Publicly Controversial Science

## 12. Teaching About Life Science

Please refer to the syllabus or lesson-planning calendar for a life science class you teach (introductory level, if possible), in order to answer the next questions as accurately as possible.

1. How much time do you spend on the following concepts related to organ systems, across one year?

If you only teach part(s) of a particular concept, indicate how much time you spend on the part(s).

If you do not teach about organ systems, please move to the next question.

	none	touch upon	~1-2 hours	~3-5 hours	6 or more hours
the human digestive system breaks down food using enzymes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
different types of cells and tissues make up organ systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
organ systems have specific functions and are interrelated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. In total, how much time do you spend on an entire unit about organ systems?

3. Please mark which teaching strategies you use in your life science class more than once a month (check all that apply).

- inquiry oriented activities
- laboratory experiments
- collaborative group work
- lecturing
- students sketching/drawing/diagramming
- students answering questions from worksheet or book
- outdoor experiences/field trips
- hands-on activities

# Teaching About Publicly Controversial Science

## 13. Teaching About Life Science and Global Warming I

Please answer all of these questions from the perspective of teaching in general.

Please note, we use the language "global warming" here because it is the most commonly used phrase by educators, historically and currently. For the purposes of this survey, the term "global warming" is used to convey all aspects of the warming phenomenon, including the many facets of climate change.

1. In general, do you think that Colorado students should learn about global warming in school?

yes

no

2. If you replied yes, in which school subject(s) should Colorado students learn about global warming? (check all that apply)

If you replied no above, move to the next question.

social studies

economics

language arts

environmental science

physical science

geography

physics

life science/biology

earth science

chemistry

other (please specify)

3. About 20% of the U.S. population does not think that recent global warming is caused primarily by human activity, according to a recent poll by TIME.

Do you think Colorado teachers should discuss "both sides" of this public controversy with students?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

# Teaching About Publicly Controversial Science

## 14. Teaching about Life Science and Global Warming I I

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. In general, do you think Colorado students should learn about individual and/or societal solutions to global warming in school?

yes

no

2. Do you teach about or discuss global warming in any of your life science classes?

3. Do your students express opinions about learning about global warming?

# Teaching About Publicly Controversial Science

## 15. Teaching About Life Science and Global Warming 2

1. Please indicate which of the following factors impact your choice to not teach about global warming in a formal way (check all that apply):

- it doesn't fit into my curriculum and/or standards
- I don't know enough about this topic to teach it
- it isn't an important topic
- it isn't based on solid science
- I am unsure whether or how to present "both sides"
- the topic is too controversial
- it conflicts with my religion/faith
- I am concerned about objections from students/parents/administrators

Please elaborate or specify other:

# Teaching About Publicly Controversial Science

## 16. Teaching About Life Science and Global Warming III

1. Please indicate which of the following factors impact your choice to teach about global warming (check all that apply)

- my students bring up the topic
- it is important for students to understand this topic
- it fits within my curriculum/standards
- I know enough about this topic to teach it
- I have been encouraged to teach this topic
- other (please specify)

2. Do you use any specific strategies around teaching global warming, due to the fact that it is publicly controversial?

- I don't do anything differently
- I offer to meet with students outside of class
- I send a letter home to parents
- I offer to meet with parents outside of class
- I follow my district's policy about controversial topics
- I bring in guest speaker(s)
- I allow students to opt out of portions of class
- I emphasize the nature of science
- I acknowledge and/or allow discussion about the ideas of global warming skeptics

Please elaborate or specify other:

# Teaching About Publicly Controversial Science

## 17. Teaching About Evolution

Please answer all of these questions from the perspective of teaching in general -- except the last question, which pertains to your classroom specifically.

1. In general, do you think Colorado students should learn about evolution in school?

yes

no

2. In general, do you think Colorado students should learn about creationism in school?

yes

no

3. About 65% of the U.S. population thinks that creationism and evolution should both be taught in schools, according to a recent CBS poll.

Do you think teachers should discuss "both sides" of this public controversy in class?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

5. Is evolution included in the life science class you teach?

# Teaching About Publicly Controversial Science

## 18. Teaching About Evolution I I

Please refer to the syllabus or lesson-planning calendar for a life science class you teach (introductory level, if possible), in order to answer the next questions as accurately as possible.

1. How much time do you spend in life science class on these concepts related to evolution, across one year?

If you only teach part(s) of a particular concept, indicate how much time you spend on the part(s).

	none	touch upon	~1-2 hours	~3-5 hours	6+ hours
fossils are formed and indicate that life has changed through time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
life has been evolving on Earth for approximately 4.5 billion years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the history of life has been affected by geological events (such as impacts and ice ages)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
individual organisms with certain traits are more likely than others to survive and have offspring (natural selection)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
genes are the source of continuity and diversity upon which natural selection can act	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
mutation, natural selection, and reproductive isolation lead to new species, producing biodiversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
fossil and genetic evidence indicates that humans and apes share a common ancestor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
evolution can be observed in real time (for example, in microbes and Darwin's finches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. In total, how much time do you spend on an entire unit about evolution?

# Teaching About Publicly Controversial Science

## 19. Teaching About Evolution 2

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Please indicate which of the following factors impact your choice to not formally teach about evolution (check all that apply)

- it doesn't fit into my curriculum and/or standards
- I don't know enough about this topic to teach it
- it isn't an important topic
- it isn't based on solid science
- other (please specify)
- I am unsure whether or how to present "both sides"
- the topic is too controversial
- it conflicts with my religion/faith
- I am concerned about objections from students/parents/administrators

2. Do your students express opinions about learning about evolution?

3. Do you discuss creationism with your students, and/or include it in your life science class?

# Teaching About Publicly Controversial Science

## 20. Teaching About Evolution III

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Please indicate which of the following factors impact your choice to teach about evolution (check all that apply)

- my students bring up the topic
- it is important for students to understand this topic
- it fits within my curriculum/standards
- I know enough about this topic to teach about it
- I have been encouraged to teach this topic
- other (please specify)

2. Do you use any specific strategies around teaching evolution, due to the fact that it is publicly controversial? (check all that apply)

- I don't do anything differently
- I follow my school/district policy about controversial topics
- I offer to meet with students outside of class
- I offer to meet with parents outside of class
- I send a letter home to parents
- I avoid using the word "evolution"
- I allow parents to remove their students from portions of class
- I acknowledge and/or allow discussion of ideas that conflict with evolution
- I bring in guest speaker(s)
- I emphasize the nature of science
- Please elaborate or specify other:

3. Do your students express opinions about learning about evolution?

4. Do you discuss creationism with your students, and/or include it in your life science class?

## 21. Teaching About Creationism

1. Across one year, how much class time do you spend on concepts related to creationism?

Please list the ideas you discuss about creationism.

# Teaching About Publicly Controversial Science

## 22. Teaching About Earth Science

Please refer to the syllabus or lesson-planning calendar for an earth science class you teach (introductory level, if possible), in order to answer the next questions as accurately as possible.

1. Across the year, in one of your earth science classes, how much time do you spend on the following concepts related to geology?

If you only teach part(s) of a particular concept, indicate how much time you spend on the part(s).

If you do not teach about geology, please move to the next question.

	none	touch upon	~1-2 hours	~3-5 hours	6 or more hours
natural processes shape the Earth's surface	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
geological events such as earthquakes and volcanic eruptions are associated with plate tectonic movement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
rocks and minerals have characteristic properties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. In total, how much time do you spend on an entire unit about geology?

3. Please mark which teaching strategies you use in earth science class more than once a month (check all that apply).

- hands-on activities
- lecturing
- outdoor experiences/field trips
- inquiry oriented activities
- students sketching/drawing/diagramming
- students answering questions from worksheet or book
- collaborative group work
- laboratory experiments

# Teaching About Publicly Controversial Science

## 23. Teaching About Earth Science and Evolution

Please answer all of these questions from the perspective of teaching in general -- except the last question, which pertains to your classroom specifically.

1. In general, do you think Colorado students should learn about evolution in school?

yes

no

2. In general, do you think Colorado students should learn about creationism in school?

yes

no

3. About 65% of the U.S. population thinks that creationism and evolution should both be taught in schools, according to a recent CBS poll.

Do you think Colorado teachers should discuss "both sides" of this public controversy in class?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

5. Is evolution (and/or fossils) included in the earth science class you teach?

# Teaching About Publicly Controversial Science

## 24. Teaching About Earth Science and Evolution 2

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Please indicate which of the following factors impact your choice to not teach about evolution in a formal way (check all that apply):

- it doesn't fit into my curriculum and/or standards
  - I don't know enough about the topic to teach about it
  - it isn't an important topic
  - it isn't based on solid science
  - Please elaborate or specify other:
- I am unsure whether or how to present "both sides"
  - the topic is too controversial
  - it conflicts with my religion/faith
  - I am concerned about objections from students/parents/administrators

# Teaching About Publicly Controversial Science

## 25. Teaching About Earth Science and Evolution I I

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Please indicate which of the following factors impact your choice to teach about fossils and evolution (check all that apply)

- my students bring up the topics
- it is important for students to understand these topics
- the topics fit within my curriculum/standards
- I know enough about the topics to teach about them
- I have been encouraged to teach these topics
- other (please specify)

2. Do your students express opinions about learning about evolution?

3. Do you use any specific strategies around teaching evolution, due to the fact that it is publicly controversial? (check all that apply)

- I don't do anything differently
- I follow my school/district policy about controversial topics
- I offer to meet with students outside of class
- I offer to meet with parents outside of class
- I send a letter home to parents
- I avoid using the word "evolution"
- I allow parents to remove their students from portions of class
- I acknowledge and/or allow discussion of ideas that conflict with evolution
- I bring in guest speaker(s)
- I emphasize the nature of science

Please elaborate or specify other:

4. Do you discuss creationism with your students, and/or include it in your earth science class?

# Teaching About Publicly Controversial Science

## 26. Teaching About Global Warming

Please answer all of these questions from the perspective of teaching in general.

Please note, we use the language "global warming" here because it is the most commonly used phrase by educators, historically and currently. For the purposes of this survey, the term "global warming" is used to convey all aspects of the warming phenomenon, including the many facets of climate change.

1. In general, do you think that Colorado students should learn about global warming in school?

yes

no

2. If you replied yes, in which school subject(s) should Colorado students learn about global warming? (check all that apply)

If you replied no above, move to the next question.

language arts

chemistry

physical science

physics

social studies

geography

life science/biology

environmental science

earth science

economics

other (please specify)

3. About 20% of the U.S. population does not think that recent global warming is caused primarily by human activity, according to a recent poll by TIME.

In general, do you think Colorado teachers should discuss "both sides" of this public controversy with students?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

# Teaching About Publicly Controversial Science

## 27. Teaching about Global Warming I I

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. In general, do you think Colorado students should learn about individual and/or societal solutions to global warming in school?

yes

no

2. Do you teach about or discuss global warming in your earth science class?

3. Do your students express opinions about learning about global warming?

# Teaching About Publicly Controversial Science

## 28. Teaching About Global Warming III

1. Please indicate which of the following factors impact your choice to not formally teach about global warming (check all that apply)

- it doesn't fit into my curriculum and/or standards
- I don't know enough about this topic to teach about it
- it isn't an important topic
- it isn't based on solid science
- I am unsure whether or how to present "both sides"
- the topic is too controversial
- it conflicts with my religion/faith
- I am concerned about objections from students/parents/administrators

other (please specify)

# Teaching About Publicly Controversial Science

## 29. Teaching About Global Warming 3

Please refer to the syllabus or lesson-planning calendar for an earth science class you teach (introductory level, if possible), in order to answer the next questions as accurately as possible.

1. How much time do you spend in earth science class on these concepts related to weather, climate, and global warming, across one year?

If you only teach part(s) of a particular concept, indicate how much time you spend on the part(s).

	none	touch upon	~1-2 hours	~3-5 hours	6+ hours
Earth's climate system varies over time and place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there are interrelationships between the circulation of oceans, weather, and climate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the impact of natural events (for example, hurricanes and floods) can be predicted and mitigated to some degree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there are a number of measurable effects of global warming (on ice, sea level, precipitation, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
recent global warming is being caused primarily by human release of greenhouse gases from fossil fuels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
decisions made by individuals and societies will determine the extent to which global warming continues in the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
human emissions (per capita) of greenhouse gases varies greatly over the Earth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
an individual's emissions of greenhouse gases can be reduced in many ways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you teach a set of lessons or unit about global warming, how much time do you spend on it?

# Teaching About Publicly Controversial Science

## 30. Teaching About Global Warming 4

1. Please indicate which of the following factors impact your choice to teach about global warming (check all that apply)

- my students bring up the topic
- it is important for students to understand this topic
- it fits within my curriculum/standards
- I know enough about this topic to teach about it
- I have been encouraged to teach this topic
- other (please specify)

2. Do you use any specific strategies when teaching about global warming, due to the fact that it is publicly controversial?

- I follow the controversial topics policy of my school/district
- I bring in guest speakers
- I send a letter home to parents
- I offer to talk with parents outside of class
- I allow students to opt out of portions of class
- other (please specify)
- I acknowledge and/or allow discussion of ideas expressed by global warming skeptics
- I emphasize the nature of science aspect of the topic
- I do not use any special strategies around global warming
- I offer to talk with students outside of class

# Teaching About Publicly Controversial Science

## 31. Teaching About Science

Please refer to the syllabus or lesson-planning calendar for a science class you teach (introductory level, if possible), in order to answer the next questions as accurately as possible.

1. Across the year, in one of your science classes, how much time do you spend on the following concepts related to energy?

If you only teach part(s) of a particular concept, indicate how much time you spend on the part(s).

If you do not teach about energy, please move to the next question.

	none	touch upon	~1-2 hours	~3-5 hours	6 or more hours
there are different forms of energy and they can be stored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
energy can be transferred through a variety of ways; in each way some energy is lost as heat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
kinetic energy is energy of motion, and can be measured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. In total, how much time do you spend on an entire unit about energy?

3. Please mark which teaching strategies you use in science class more than once a month (check all that apply).

- collaborative group work
- lecturing
- students answering questions from worksheet or book
- students sketching/drawing/diagramming
- outdoor experiences/field trips
- hands-on activities
- inquiry oriented activities
- laboratory experiments

# Teaching About Publicly Controversial Science

## 32. Teaching About Science -- Evolution

Please answer all of these questions from the perspective of teaching in general, not teaching in your own classroom.

1. In general, do you think Colorado students should learn about evolution in school?

yes

no

2. In general, do you think Colorado students should learn about creationism in school?

yes

no

3. About 65% of the U.S. population thinks that creationism and evolution should both be taught in schools, according to a recent CBS poll.

Do you think Colorado teachers should discuss "both sides" of this public controversy in class?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

# Teaching About Publicly Controversial Science

## 33. Teaching about Science -- Global Warming

Please answer all of these questions from the perspective of teaching in general.

Please note, we use the language "global warming" here because it is the most commonly used phrase by educators, historically and currently. For the purposes of this survey, the term "global warming" is used to convey all aspects of the warming phenomenon, including the many facets of climate change.

1. In general, do you think that Colorado students should learn about global warming in school?

yes

no

2. If you replied yes, in which school subject(s) should Colorado students learn about global warming? (check all that apply)

If you replied no above, move to the next question.

social studies

environmental science

geography

chemistry

physics

physical science

earth science

economics

language arts

life science/biology

other (please specify)

3. About 20% of the U.S. population does not think that recent global warming is caused primarily by human activity, according to a recent poll by TIME.

In general, do you think Colorado teachers should discuss "both sides" of this public controversy with students?

yes

no

4. If you replied yes, please explain your reasoning for why. Please also explain how you think teachers should discuss "both sides".

If you replied no, please explain your reasoning for why not.

# Teaching About Publicly Controversial Science

## 34. Teaching about Science -- Global Warming I I

1. In general, do you think Colorado students should learn about individual and/or societal solutions to global warming in school?

yes

no

2. Do you teach about or discuss global warming in any of your science classes?

3. Do your students express opinions about learning about global warming?

# Teaching About Publicly Controversial Science

## 35. Teaching About Science -- Global Warming III

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Please indicate which of the following factors impact your choice to not teach about global warming in a formal way (check all that apply):

- it doesn't fit into my curriculum and/or standards
  - I don't know enough about the topic to teach about it
  - it isn't an important topic
  - it isn't based on solid science
  - please elaborate or specify other:
- I am unsure whether or how to present "both sides"
  - the topic is too controversial
  - it conflicts with my religion/faith
  - I am concerned about objections from students/parents/administrators

# Teaching About Publicly Controversial Science

## 36. Teaching About Science -- Global Warming 3

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Write the name of one science class you are teaching (or have taught recently) below. Then, please refer to the syllabus or lesson-planning calendar for this class in answering question #2.

2. How much time do you spend in this science class on these concepts related to matter, energy, and global warming, across one year?

If you only teach part(s) of a particular concept, indicate how much time you spend on the part(s).

	none	touch upon	~1-2 hours	~3-5 hours	6+ hours
the spatial configuration and type of atoms in a molecule determines the properties of the substance	jn	jn	jn	jn	jn
measurable physical and chemical properties allow one to compare, contrast, and separate substances	jn	jn	jn	jn	jn
humans use non-renewable and renewable forms of energy	jn	jn	jn	jn	jn
there are a number of measurable effects of global warming (on ice, sea level, precipitation, etc)	jn	jn	jn	jn	jn
human release of greenhouse gases from fossil fuels is a cause of recent global warming	jn	jn	jn	jn	jn
decisions made by individuals and societies will determine the extent to which global warming continues in the future	jn	jn	jn	jn	jn
individual emissions (per capita) of greenhouse gases vary greatly over the Earth	jn	jn	jn	jn	jn
an individual's emissions of greenhouse gases can be reduced in many ways	jn	jn	jn	jn	jn

3. If you teach a set of lessons or unit about global warming, how much class time do you spend on it?

# Teaching About Publicly Controversial Science

## 37. Teaching About Science -- Global Warming 4

1. Please indicate which of the following factors impact your choice to teach about global warming (check all that apply)

- my students bring up the topic
- it is important for students to understand this topic
- it fits within my curriculum/standards
- I know enough about this topic to teach about it
- I have been encouraged to teach this topic
- other (please specify)

2. Do you use any specific strategies when teaching about global warming, due to the fact that it is publicly controversial? (check all that apply)

- I send a letter home to parents
- I do not use any special strategies around global warming
- I allow students to opt out of portions of class
- I follow the controversial topics policy of my school/district
- I emphasize the nature of science aspect of the topic
- other (please specify)
- I talk with parents outside of class
- I talk with students outside of class
- I acknowledge and/or allow discussion about alternative ideas besides human caused global warming
- I bring in guest speakers

# Teaching About Publicly Controversial Science

## 38. Your Views About Global Warming

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Do you ever discuss global warming with people other than your students? If so, who? (check all that apply)

- no one
- friends
- family members
- spouse / significant other
- other science teachers
- other (please specify)
- other non-science teachers
- school administrators
- acquaintances
- members of my religious community

2. Has anyone suggested to you, that you should NOT teach about global warming (or some aspect of it)? (check all that apply)

- no one has suggested this
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

3. If you replied yes, please describe one experience in some detail:

How did the person suggest this to you?

What was their relationship to you?

How did the experience affect you and/or your teaching?

4. Have you ever experienced indirect pressure against teaching about global warming?

If so, from who?

- no, I have never felt pressure against teaching global warming
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

# Teaching About Publicly Controversial Science

## 39. Your Views about Global Warming II

1. Has anyone suggested to you, that you SHOULD teach about (or more about) global warming?

- no one has suggested this
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

2. If you replied yes, please describe one experience in some detail:

How did the person suggest this to you?

What was their relationship to you?

How did the experience affect you and/or your teaching?

3. Have you ever experienced indirect pressure in favor of teaching about global warming?

If so, from who?

- no, I have never felt pressure in favor of teaching global warming
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

4. From the perspective of your personal views, please indicate your level of agreement with the following statements related to global warming:

	disagree	somewhat disagree	somewhat agree	agree
the Earth's temperature has been rising over the past 100 years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the Earth is too big for human activities to influence its temperature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
recent global warming is caused mostly by things people do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the hole in the ozone layer is contributing to recent global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there is substantial disagreement amongst scientists about the cause of recent global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
global warming is already a serious problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not much can be done to reduce global warming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
science that goes against global warming theory is being suppressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Teaching About Publicly Controversial Science

5. Have you engaged in any learning experiences specifically about global warming?

- none
- college class(es)
- graduate-level class(es)
- school inservice(s)
- professional development workshop (s)
- conference session(s)
- global warming-specific website
- reading a book
- reading a magazine article

please list relevant book, magazine titles

# Teaching About Publicly Controversial Science

## 40. Your Views About Evolution

1. Do you ever discuss evolution with people other than your students? If so, who? (check all that apply)

- spouse / significant other
- acquaintances
- school administrators
- I don't talk with other people about evolution
- members of my religious community
- other non-science teachers
- other science teachers
- friends
- family members
- other (please specify)

2. Has anyone suggested to you, that you should NOT teach about evolution (or some aspect of it), or you SHOULD teach about creationism? (check all that apply)

- no one has suggested this
- yes, administrator(s)
- yes, parent(s)
- yes, acquaintance(s)
- yes, other teacher(s)
- yes, family member(s)
- other (please specify)

3. If you replied yes, please describe one experience in some detail:

How did the person suggest this to you?

What was their relationship to you?

How did the experience affect you and/or your teaching?

4. Have you ever experienced indirect pressure against teaching evolution? If so, from who?

- no, I have never felt pressure against teaching evolution
- yes, administrator(s)
- yes, parent(s)
- yes, acquaintance(s)
- yes, other teacher(s)
- yes, family member(s)
- other (please specify)

## Teaching About Publicly Controversial Science

5. Have you engaged in any learning experiences specifically about evolution? (check all that apply)

- none
- school inservice(s)
- evolution-specific website
- college class(es)
- professional development workshop (s)
- reading a book
- graduate-level class(es)
- conference session(s)
- reading magazine article(s)

please list relevant book, magazine titles

# Teaching About Publicly Controversial Science

## 41. Your Views About Evolution 2

Thank you for your data. Each time you move to a new page, your data is saved. Please continue!

1. Has anyone suggested to you, that you SHOULD teach about evolution, or you should NOT teach about creationism? (check all that apply)

- no one has suggested this
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

2. If you replied yes, please describe one experience in some detail:

How did the person suggest this to you?

What was their relationship to you?

How did the experience affect you and/or your teaching?

3. Have you ever experienced indirect pressure in favor of teaching evolution?

If so, from who?

- no, I have never felt pressure in favor of teaching evolution
- yes, parent(s)
- yes, other teacher(s)
- other (please specify)
- yes, administrator(s)
- yes, acquaintance(s)
- yes, family member(s)

4. From the perspective of your personal views, please indicate your level of agreement the following statements about evolution and creationism:

	disagree	somewhat disagree	somewhat agree	agree
all life on Earth is related and evolves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
life's complexity is evidence for the existence of an intelligent designer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
apes and humans share a common ancestor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
God could have created the process of evolution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
life on Earth is less than 10,000 years old	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there are many unexplainable "gaps" in the evidence used to support evolutionary theory	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
humans evolved, but God guided the process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 42. Your religious views and political orientation

1. Which best describes your political affiliation?

Independent

Republican

Democrat

2. Do you attend religious services or activities?

no

yes, once or twice a year

yes, every few months

yes, monthly

yes, weekly

yes, more than once a week

3. Which best describes you?

very religious

moderately religious

spiritual, but not religious

neither spiritual nor religious

# Teaching About Publicly Controversial Science

## 43. Thank You

Thank you for completing this survey! Your data will lead to a better understanding of how teachers approach publicly controversial topics in science.

1. We would like to send you a \$5 gift card of your choice as a token of our gratitude.

Which gift card would you prefer?

2. Please provide your name and mailing address, and we will send you the gift card of your choice within a week or two.

Name:

Address:

City, State:

ZIP/Postal Code:

3. If you are interested in receiving a copy of the published results of this study, please enter your email address twice below.

enter your email address

retype your email address

# Teaching About Publicly Controversial Science

## 44. Cannot Complete Survey -- Thank You

Thank you for exploring the possibility of participating in our survey. You have been routed here either for one of several reasons:

- you did not consent to participate
- you indicated you do not teach in Colorado
- you indicated you do not teach in a public school
- you indicated you teach grades K-5
- you indicated you do not teach science

As of Feb. 15, 2008, we are no longer collecting responses from elementary grades teachers. We had strong response from these teachers and now have sufficient data!

If this information is in error, please click "prev" and check your answers. If you teach both elementary and upper grades, please only enter grades 6 and above that you teach. You will then be able to enter data about your middle and/or high school teaching of science.

Another way to support this research is to spread the word to a Colorado public school elementary or science teacher colleague about our survey. As we are trying to "take the pulse" of Colorado teachers with respect to publicly controversial science topics, we need help recruiting participants representing the full diversity of perspectives.

## 45. Goodbye

This page signals the end of the survey process. Your data (including any gift card preference) has been saved at each step, so you may close this browser at any time.

Thank you again for participating! If you have any questions or concerns, please feel free to contact the researcher:

Sarah Wise  
CIRES Outreach  
U. of Colorado at Boulder  
sarah.wise@colorado.edu  
303 735 5514