

Appendix 2 Stakeholder Interview Instrument

Date: _____ Interviewer: _____

Interviewee: _____

Affiliation: _____

Introduction

As you know (or I hope you know), I'm working with Janice McDonnell on an assessment of K-12 teachers' needs/interests/abilities related to the use of data streams, in particular SWMP & IOOS data. We're starting this assessment with interviews of decision makers, like yourself, who play a major role in directing or funding the development of educational products based on SWMP/IOOS data.

I am calling to schedule an interview time with you. The interview should take about a half hour or so. When could you be available for such an interview?

Note for interview: Date: _____ Time: _____

And should I call you at this number, or a different one? Note number: _____

If you need to reach me for some reason, my name is [your name] and you can reach me at [phone].

Thank you. I look forward to talking with you on [Repeat date and time].

End call.

Day of Interview

I am calling to interview you about the development of SWMP/IOOS education products. Is this a good time?

Do you have any questions about the purpose of this interview or the assessment we're doing before I get started with my questions?

May I audiotape this interview (that way I don't have to try to write everything you say and the results will be more accurate)?

Great. Thanks.

Interview Questions

- Let's start with a description of your vision/thoughts about the integration of SWMP & IOOS data (*or, if not familiar with SWMP/IOOS, then real-time data*) and their use by K-12 classroom teachers.

- Who do you think is the primary K-12 audience for SWMP/IOOS data (RTD) & ed products?

- Ideally, what do you think SWMP/IOOS data (RTD) and resulting ed products could offer K-12 classroom teachers? How could they impact/enhance classroom practice?

- What do you see as the ultimate long-term goal/end point for teachers & students using RTD data in the classroom?

- What might those ed products look like/feature/offer?

- Are you aware of any current (or in the works) education products (by NOAA or others) that fit your vision for the SWMP/IOOS (RTD) ed product(s)?

- What do you think will be the barriers to developing SWMP/IOOS data (RTD) & ed products? And, to K-12 use of these data & ed products?

- What are your thoughts about how to disseminate these ed products, that is, how do you get them to teachers and in what format(s)?

- Based on what you know about this assessment, what decisions do you hope to/want to be able to make using the results from this assessment project? Any particular questions/issues that you'd like answered?

- Before we end this interview, do you have any other thoughts/comments about SWMP/IOOS data (RTD), ed products or this assessment that you'd like to mention that we haven't addressed yet?

Those are all the questions that I have. I appreciate your time and thoughtful responses.

Appendix 3 Stakeholder Online Survey

To see this survey online visit <http://www.surveymonkey.com/s.asp?u=51541789289>

Welcome

We're asking for your guidance.

NOAA's (National Oceanic & Atmospheric Administration) Office of Education is investigating the possibilities of developing educational materials for K-12 classrooms that make use of real-time data* from SWMP and IOOS.**

You have been identified as a stakeholder — someone with fiscal or decision-making interests in this project. We'd like your thoughts on the ideal use of SWMP/IOOS data in K-12 classrooms and the kinds of ed products NOAA could offer teachers that would enable them to use such data in their teaching.

Please take a few minutes to complete this short survey. Your responses will be kept anonymous and confidential. *Just click on "Next" to continue.*

At the end of this survey you'll find a few real-time data education websites if you want to explore. If you have any questions about this survey or needs assessment project, feel free to contact:

Janice McDonnell
Jacques Cousteau National Estuarine Research Reserve
Rutgers University
732-932-6555 x521
mcdonnel@marine.rutgers.edu

We value your input. Thanks.

**Note: For this project we're defining real-time/near-real-time data (RTD) as environmental data that you can access as the data are being collected (or shortly thereafter) to study current conditions or events.*

***SWMP is the System Wide Monitoring Program (of the National Estuarine Research Reserves) and IOOS is Integrated Ocean Observing System.*

Note: Depending on your response to some questions this survey is set up to skip you over irrelevant questions, so don't be concerned about the numbering sequence as you proceed.

1. What is your current job position? (check all that apply)

- director / administrator / manager
- coordinator
- program manager
- educator
- researcher / scientist
- data manager / technician
- technology manager / technician
- other (please specify)

2. For which agency/group do you currently work? (*check one*)

- NOAA Coastal Services Center
- NOAA National Estuarine Research Reserves
- NOAA National Marine Fisheries Service
- NOAA National Marine Sanctuaries
- NOAA National Ocean Service
- NOAA National Sea Grant
- NOAA National Weather Service
- NOAA Office of Education
- COSEE
- IOOS
- Other (*please specify*)

3. Are you familiar with SWMP (System Wide Monitoring Program) and/or IOOS (Integrated Ocean Observing System)? (*check one*)

- yes, familiar with both SWMP & IOOS
- yes, familiar with SWMP
- yes, familiar with IOOS
- no, not familiar with either
- other (*please explain*)

Note: If checked "yes, familiar with both" above, then asked this question....

4. Because you stated that you're familiar with SWMP and/or IOOS, please tell us your thoughts regarding their integration and use in K-12 classrooms.

5. Are you an educator at a NERRS (National Estuarine Research Reserve) site or in the NERRS program?

- yes
- no

Note: If checked "yes" above, then asked the next three questions....

6. Do you use SWMP or other real-time data (RTD) in any of the education programs your current NERRS' education programs?

- yes
- no
- not sure

7. Do you foresee using SWMP or other real-time data (RTD) as part of your NERRS' education programs in the future?

- yes
- no
- not sure

8. Do you think RTD should play a key role in NERRS education/outreach efforts?

- yes, definitely
- probably
- not sure
- probably not
- no, definitely not

9. Who do you think should be the primary K-12 audiences for NOAA education products based on real-time data (RTD)? *(check all that should be included)*

K

1

2

3

4

5

6

7

8

9

10

11

12

other *(please specify)*

10. What do you think should be the goals of NOAA K-12 education products based on RTD?

(check all that apply)

improving inquiry skills

better math education

better stewards of the environment

greater understanding of the ocean/ atmosphere interface

better science education

improving ocean literacy

better knowledge of the environment

connecting students to real-world science

better understanding of estuarine/ coastal ocean research

greater awareness of science career paths/ choices

preparing students to be scientists

other *(please specify)*

12. What do you think should be the primary goal of NOAA K-12 education products based on RTD?

(check one)

improving inquiry skills

better math education

better stewards of the environment

greater understanding of the ocean/ atmosphere interface

better science education

improving ocean literacy

better knowledge of the environment

connecting students to real-world science

better understanding of estuarine/ coastal ocean research

greater awareness of science career paths/ choices

preparing students to be scientists

other *(please specify)*

12. Do you think K-12 students collecting data in the field is an important part of understanding RTD?

yes, definitely

probably

not sure

probably not

no, definitely not

13. Do you think K-12 students sharing their field data with other students is an important part of understanding RTD?
yes, definitely
probably
not sure
probably not
no, definitely not
14. Do you think K-12 students contributing their field data to scientists' data is an important part of understanding RTD?
yes, definitely
probably
not sure
probably not
no, definitely not
15. Which data formats would be most useful to K-12 teachers? (*check all that apply*)
comparable data (different sites)
quality assured/ controlled (QAQC) data streams
data visualizations (maps, graphs, etc.)
raw data streams
packaged lessons/lesson plans with RTD
comparable data (different parameters)
other (*please specify*)
16. Which real-time data streams do you think teachers are most likely to use?
(*check all that apply*)
algal blooms
animal tagging/tracking
bathymetry/topography
currents
directional wave spectra
dissolved oxygen (DO)
fish species & abundance
ice concentration
nutrients
ocean color
optical properties
pH
river discharge
salinity
seafood contaminants
temperature: air
temperature: water
turbidity (clarity/cloudiness)
vector currents
video/live camera
water contaminants
water depth
water level
water quality
waves
wind vector
zooplankton species
other (*please specify*)

17. What do you think should be the essential features of NOAA K-12 education products based on RTD?
(check all that apply)
raw data streams
quality assured/ controlled (QAQC) data streams
packaged lessons/ lesson plans
information on the technology, that is, how data are collected
info on scientists who use RTD in their research
lesson plans for teaching science concepts with RTD
lesson plans for teaching math skills with RTD
lesson plans for teaching the science process with RTD
maps to show where RTD is being collected
assessments for use with lessons
assessments tied to state tests
alignment to state/ national standards
other *(please specify)*
18. What do you think would be the best format(s) for NOAA K-12 education products based on RTD?
(check all that apply)
mobile devices, such as PDAs, cell phones, etc.
web-based/ websites
supplemental materials associated with textbooks
hands-on kits
print materials
media, such as CDs or DVDs
other *(please specify)*
19. What do you think are the best ways to reach K-12 teachers with education products based on RTD?
(check all that apply)
aligned with state standards
pre-service training
shown to improve student test scores
tied to current events
tied to local issues/ events
integrated with state curriculum
in-service training
packaged for easy use
shown to make learning interesting/ engaging for students
other *(please specify)*
20. What are the greatest barriers to getting RTD into K-12 classrooms?
(check all that apply)
format/ presentation of data
student abilities
funding
time
state standards
access to computers/ Internet
student interest
teacher abilities
availability of data
awareness that the data exist
teacher interest
state/ national testing
other *(please specify)*

21. What are the best ways to overcome the barriers you checked above? (*check all that apply*)
- greater accessibility to computers/Internet in schools
 - in-service teacher training/professional development
 - national ocean literacy standards
 - greater data availability
 - better promotion & awareness that RTD is available
 - systemwide science education reform
 - pre-service teacher training
 - better data visualization/formatting for education use
 - easy-to-use RTD lesson plans
 - other (*please specify*)
22. What are the best K-12 education products based on RTD that you know are currently available?
23. What would you like to know about how K-12 teachers use RTD in their classrooms?
24. Do you have any other comments/feedback about the use of RTD in K-12 classrooms?

Below you'll find more information about the agencies involved in this RTD education project and a small selection of web sites offering RTD to educators and the public.
Just click on the name to visit the site.

NOAA Education
National Estuarine Research Reserves (NERRS)
Integrated Ocean Observing System (IOOS)
COOLClassroom
Eyes on the Bay
Monterey Bay Aquarium Research Institute (MBARI) EARTH
NERRS Centralized Data Management Office (SWMP data)
Tagging of Pacific Pelagics
Water on the Web

Or, click "Done" to finish.
Thanks for your time.
Done >>

To see this survey online visit <http://www.surveymonkey.com/s.asp?u=51541789289>

Appendix 4 Focus Group Checklist

Several weeks to one month before the focus group(s):

1. Identify the group(s) of people to be interviewed (sample). _____
2. Identify the moderator(s) and assistant to the moderator (if needed). _____
3. Draft an interview guide. _____
4. Test and revise the interview guide. _____
5. Choose location(s) and times, and confirm. _____
6. Determine incentive(s) to offer, and how to acquire and deliver them. _____
7. Recruit the participants. _____
8. Send written confirmation(s). _____

One week before the focus group(s):

1. Email each participant to confirm that s/he is coming and has directions. _____
2. Include URL to pre-meeting survey in email and ask to complete by the Wednesday before the meeting. _____

One day before the focus group(s):

1. Make sure you're ready. _____
2. Draw up a seating chart and/or prepare nameplates/nametags. _____
3. Practice using the recording equipment to make sure it's working. _____
4. Have incentives organized and ready (if handing out on the spot). _____
5. Get snacks/refreshments. _____
6. Prepare sign-in sheets. _____

The day of the focus group(s):

1. Arrive early to set up room, equipment and refreshments. _____
2. Arrange tables and chairs so everyone can face one another. _____
3. Welcome participants and ask them to sign in, complete pre-meeting survey if they didn't online, and sign videotaping permission forms. _____
Orient them to their surroundings (if needed).
4. Introduce yourself and have participants introduce themselves (if they don't know one another). _____
5. Let participants know that the discussion will be recorded, but assure them that their names will not be used in any written report. _____
6. Remind participants to relax and for everyone to engage in the process. _____
7. Start with an introductory question and move to meatier ones. _____
8. Allow the discussion to follow tangents, as long as they're relevant to the evaluation. _____
9. If someone isn't talking, encourage him/her by asking him/her a direct question or conducting a round robin whereby everyone takes a turn responding to a question. _____
10. Thank the group for their participation and ask if there are any final questions. _____
11. Distribute the incentives (if appropriate). _____
12. Label the tapes and forms immediately. _____

Appendix 5
Focus Group
Pre-Meeting Teacher Survey

Thank you for agreeing to participate in this teacher focus group on your use of real-time data* in your teaching. We'd like to know a little more about you and your teaching situation. Please take a few minutes to complete this short survey. Thank you.

*Note: We're defining real-time (or near-real-time) data as data that you can access as the data are being collected, or shortly thereafter, to study current conditions or events.

1&2. Your name (first & last): _____

3&4. Contact information: _____
phone number email address

5. Your school: _____ 6. School district: _____

7. City: _____ 8. State: _____

9. School setting (check one): rural suburban urban

10. What is the racial/ethnic mix of students at your school? (approximations okay)

- ____ % Asian
- ____ % Black / African American
- ____ % Hispanic / Latino
- ____ % Native American
- ____ % Pacific Islander
- ____ % White / Caucasian
- ____ % Other
- ____ % Don't know

11. Which grade/grades are you teaching this year (2005-2006)? (check all that apply)

- ____ K
- ____ 1
- ____ 2
- ____ 3
- ____ 4
- ____ 5
- ____ 6
- ____ 7
- ____ 8
- ____ 9
- ____ 10
- ____ 11
- ____ 12
- ____ other (specify) _____

12. Which subject/subjects are you teaching this year (2005-2006)?

13. How many years have you been teaching? _____

14. What is your training/schooling in the sciences? (*check all that apply*)

- None
- Inservice/professional development workshops
- Teaching credential with science emphasis
- BA/BS in a science field
- MA/MS in a science field
- PhD in a science field
- Other (*please specify*) _____

15. What is your training/schooling in computer & technology use? (*check all that apply*)

- None
- Self-taught
- Inservice/professional development workshops
- College course(s)
- Teaching credential with computer/technology emphasis
- BA/BS in a computer/technology-related field
- MA/MS in a computer/technology-related field
- PhD in a computer/technology-related field
- Other (*please specify*) _____

16&17. What's the computer set up at school? and How many computers in each?

- Computer(s) in my classroom #: _____
- Computer(s) in a computer lab #: _____
- Computer(s) in the library/media center #: _____
- Other (*please specify*) _____ #: _____

18. How regularly do you have your students use computers at school as part of their lessons?
(*check one*)

never	rarely	sometimes	often (monthly)	regularly (weekly)
-------	--------	-----------	--------------------	-----------------------

19. How regularly do you have your students use the Internet/websites at school as part of their lessons? (*check one*)

never	rarely	sometimes	often (monthly)	regularly (weekly)
-------	--------	-----------	--------------------	-----------------------

20. How regularly do you have your students use the Internet/websites at home as part of their lessons? (*check one*)

never	rarely	sometimes	often (monthly)	regularly (weekly)
-------	--------	-----------	--------------------	-----------------------

21. How regularly do you have your students use real-time (or near-real-time) data** as part of their lessons? (*check one*)

**Note: We're defining real-time (or near-real-time) data as data that you can access as the data are being collected, or shortly thereafter, to study current conditions or events.

never	rarely	sometimes	often (monthly)	regularly (weekly)
-------	--------	-----------	--------------------	-----------------------

22. If you have used real-time/near-real-time data in your teaching, please tell us what kind of data and from which sources?

23. With which of these real-time/near-real-time data streams are you familiar?

(check all that apply)

- algal blooms
- bathymetry/topography
- currents
- directional wave spectra
- dissolved oxygen (DO)
- fish species & abundance
- ice concentration
- nutrients
- ocean color
- optical properties
- pH
- river discharge
- salinity
- sea level
- seafood contaminants
- temperature: air
- temperature: water
- turbidity (clarity/cloudiness)
- vector currents
- water depth
- water contaminants
- water quality
- waves
- wind vector
- zooplankton species
- other *(please specify)* _____

24. Which of these real-time / near-real-time data streams have you used in your teaching? (*check all that apply*)
- algal blooms
 - bathymetry / topography
 - currents
 - directional wave spectra
 - dissolved oxygen (DO)
 - fish species & abundance
 - ice concentration
 - nutrients
 - ocean color
 - optical properties
 - pH
 - river discharge
 - salinity
 - sea level
 - seafood contaminants
 - temperature: air
 - temperature: water
 - turbidity (clarity / cloudiness)
 - vector currents
 - water depth
 - water contaminants
 - water quality
 - waves
 - wind vector
 - zooplankton species
 - other (*please specify*) _____

Thank you.

Appendix 6 Focus Group Session Script

Introduction

Good [morning/afternoon].

Welcome and thank you for participating in this focus group session.

My name is Chris Parsons. I'm an independent evaluator from Monterey, CA, who has been hired to facilitate this meeting today. I'd like to have a few more people introduce themselves.

Janice

Madeline

Site Host

We appreciate your time, but more importantly your expertise as educators working in K-12 classrooms. We've invited you here today because of your interest and experiences using RTD and computers in your teaching. I'd like you to introduce yourselves. Please share your name, school and the grades and subjects you teach.

[Teacher Introductions]

This session is funded by NOAA's Office of Education to learn more about the use and usability of RTD in K-12 classrooms. For this project we're defining real-time data (RTD) as data that you can access as the data are being collected (or shortly thereafter) to study current conditions or events, such as weather or tsunamis or hurricanes or currents. We're conducting six focus groups around the country and what we learn will help NOAA with the development of educational products for classroom use.

Our agenda is as follows:

9 – 9:30	Introductions
9:30 – 10	Discussion: Teachers' Current RTD Use
10 – 10:10	Where Do RTD Fit? Exercises 1
10:10 - 10:25	RTD Overview PowerPoint
10:25 – 10:30	Where Do RTD Fit? Exercises 2
10:30 - 11:15	RTD Websites Review
11:15 – 12:00	The Ideal RTD Ed Product
noon	Closure & Thanks

This session is fairly informal. If you need refreshments, feel free to get up and get something to drink or a snack. As you can see, we don't have a formal break scheduled. You're welcome to use the restroom at any time or during the website review time. The restrooms are [give location].

I may take notes from time to time, usually to remind me of a follow-up question. I won't be writing what you say. For that we have the [video/audio] tape recorder. We're taping this session to help us with the analysis of your comments. In our final report all comments will be anonymous—your names won't be used and comments won't be attributed directly to any one person.

I have general questions and activities to guide our discussion, but that's what I want to have, a discussion. All of your points of view are valuable and I encourage each of you to participate. So please say what you think and don't worry if your point of view differs from others in the group. I also ask that you respect each other and let someone finish what they have to say before you jump in to add your thoughts.

Are there any questions at this point?

Teachers' Current Use of RTD

Let's start with how you're currently using real-time data in your classrooms. What data do you use, where do they fit in your teaching, why do you use RTD, what's your students' responses to using RTD?

Where Do RTD Fit? Essay

*I want you to use the blank sheet of paper in front of you to answer a question. You can answer in an essay form or bullets, but write enough so that I understand your answer. The question:
At what stage or stages of your lesson planning/teaching process do you use RTD? Where do RTD fit?*

Where Do RTD Fit? Map 1 (see Appendix 5)

Using this map/graphic organizer and a colored pen near you, write RTD in bubbles to show me where RTD fit in your teaching.

Collect the essay and map

PowerPoint Intro (see Appendix 7??)

NOAA has specific RTD data streams in mind as they think about the development of education products. Janice has a short presentation to introduce you to those data streams and some of the exciting things happening with RTD.

Where Do RTD Fit? Map 2 (see Appendix 6)

Again, using another map/graphic organizer and a colored pen near you, write RTD in bubbles to show me where the SWMP/IOOS RTD would fit in your teaching.

Collect the map

Website Review Feedback (see Appendix 8)

We have two education products (websites) that we'd like you to spend some time reviewing. They represent two different ways of presenting RTD for public access. The CDMO site offers the SWMP data that Janice talked about in her presentation. The Eyes on the Bay site presents Chesapeake Bay data. We'd like you to take a look at these sites, then use the form I'm about to give you to provide us with feedback on each of these sites. We'd like you to review both of them, so I'm going to ask everyone on my right to review the Eyes on the Bay site first, and those on my left to review the CDMO site first. Then about halfway through the review time, I'll ask you to switch to the other site. You'll have 30 to 40 minutes for this review session.

Collect the feedback forms

Ideal Ed Product

For the last part of our session, I'd like you to talk about what would be ideal for you in terms of an education product(s) that focused on RTD. You can use examples from the two websites you just reviewed or other sites/products you've used.

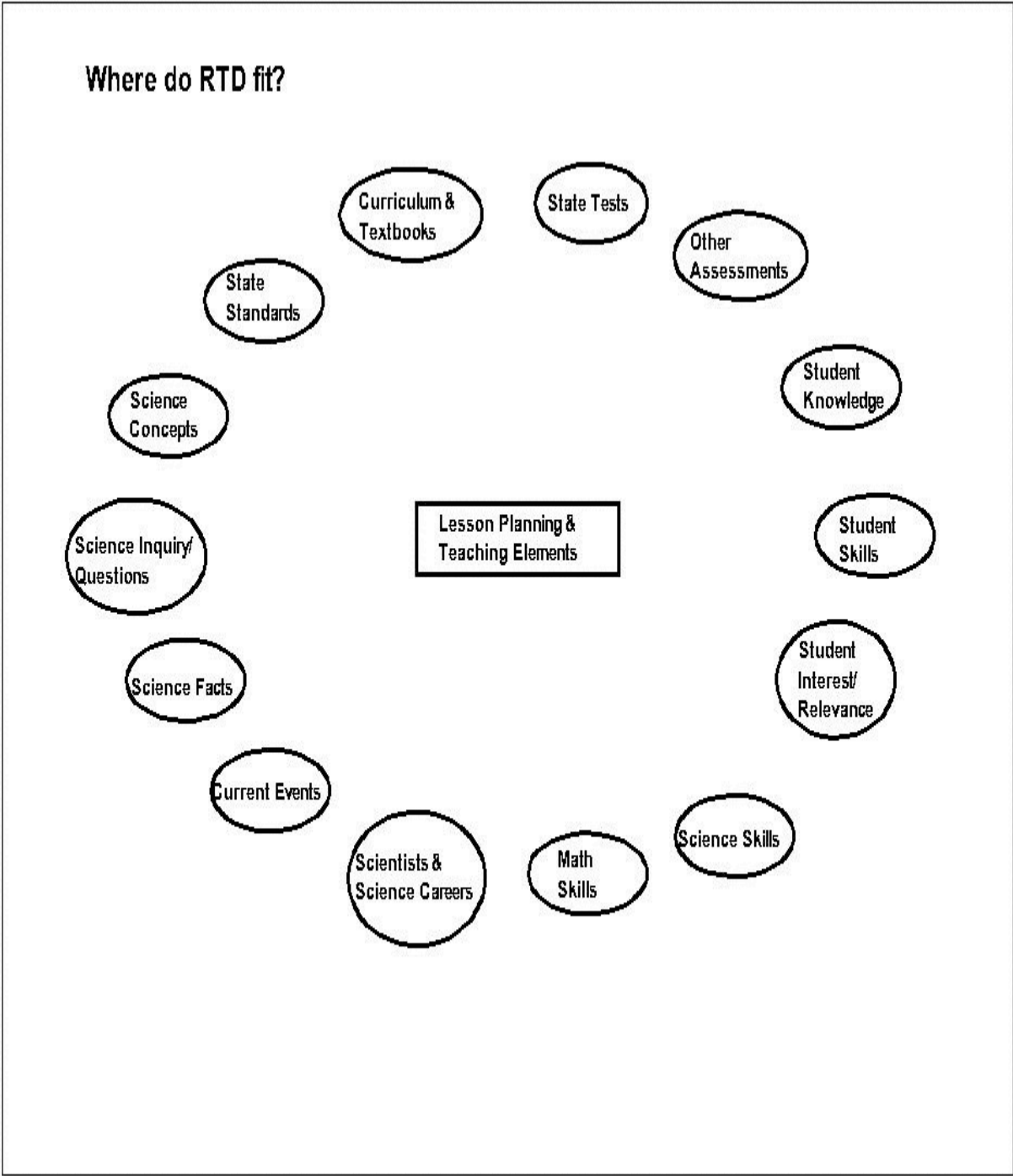
End

Those are all the questions I have.

I want to thank you for your time and your thoughtful feedback.

We have a few thank you gifts in the back; please pick them up as you leave

Appendix 7



Appendix 9 Website Review Feedback Form

Which website did you review? Website name: _____

1. Have you ever visited this website before or used it in your teaching? (*check one*)
 yes, have visited yes, have used it no, neither not sure

2. How easy was it for you to find the real-time (near-real-time) data on this site?
(*circle a number from 1 to 7*)

<i>not easy</i>	<i>very easy</i>					
1	2	3	4	5	6	7

3. Rate each of these usability issues for this website. (*circle one choice for each issue*)

Issue	Always	Most of the time	Sometimes	Never/ Not at all	Doesn't apply
From the beginning, I knew where to go to find what I was looking for.	3	2	1	0	na
I knew where I was as I moved through the site.	3	2	1	0	na
I found what I was looking for.	3	2	1	0	na
The information was clear, easy to read.	3	2	1	0	na
I understood what kind of real data was available on this site.	3	2	1	0	na
The data were presented in ways that I understood.	3	2	1	0	na
The data were presented in ways that I could use.	3	2	1	0	na
The site presented the information I needed to understand the data.	3	2	1	0	na
I felt frustrated using the site.	3	2	1	0	na
I was overwhelmed by the data on this site.	3	2	1	0	na

4. Thinking about how you use real-time data in your teaching, how useful would this website be to you? (*circle a number from 1 to 7*)

<i>not useful</i>	<i>extremely useful</i>					
1	2	3	4	5	6	7

5. How does this website compare to other real-time (near-real-time) data sites that you've used? (*circle a number from 1 to 7*)

<i>not nearly as good</i>	<i>much better than others</i>					
1	2	3	4	5	6	7

6. Was the website's real-time (near-real-time) data presented in a way that you could use with your students? (*check one*)
 definitely probably not sure no

Please explain your response above.

7. What parts/aspects of this website would be most useful to you and why?

8. If you were confused or frustrated at any time using the website, please tell us what happened.

9. Would you use this website in your teaching? (*check one*)
 definitely probably not sure no

10. Would you have your students use this website? (*check one*)
 definitely probably not sure no

11. Would you recommend this website to another teacher to use? (*check one*)
 definitely probably not sure no

12. Do you have suggestions on how to improve the presentation of this website's data to make it more useful to you and your students?

Grade(s) you teach: _____

Your initials: _____

Thank you!