WYOMING
DEPARTMENT OF EDUCATION

A resource and partner in the education of Wyoming's students.

2015 Science Standards Review Committee (SSRC) WebEx® Meeting

Presented to the SSRC on May 20, 2015
Facilitated by WDE Staff

Michael A. Cosenza, M.Ed.
Science / STEM Consultant

Laurie Hernandez, M.Ed.
Standards Supervisor

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Agenda

- Welcome and Introductions
- Work Agreement, Payments, & Invoicing
- Committee Selection (map showing diversity)
- Logistics, Map, Meeting Info.
- Regional Community Meeting Locations
- Standards Review Process & Guidelines
- Terminology – Standards
- Grade Level Assignments
- Current WY Science CPS & Homework on Excel Sheet
- PTSB Credit
- Terminology – Science

Welcome and Introductions

Michael A. Cosenza, M.Ed.

Science, STEM, C&V Education Consultant

Mike.Cosenza@wyo.gov

(307) 777-5506

Laurie A. Hernandez, M.Ed.

Supervisor of Standards & Early Childhood Math Consultant

Laurie.Hernandez@wyo.gov

(307) 777-3469

Work Agreement via Survey

I agree to provide services for the State of Wyoming around the Science Standards Review, and I agree to the terms of this work as follows. As a Science Standards Review Committee Member, I understand I will be paid a stipend for this work based on the following:

- full meeting day = $300
- half meeting day = $150
- online meeting with report = $100

All travel costs, including car, mileage, hotel, and food are at your own expense and not reimbursed by the State for this work. Following the committee meetings, I will need to invoice the WDE for my work based on the outlined stipend payment. Invoices will be processed and a check or a direct deposit will be received within 4-6 weeks of approval.

Payments & Invoicing

Please make payment to:
<First Name> <Last Name>
<Street Address>
<City>, <ST> <Zip>

Invoice

DATE	INVOICE #
mm/dd/yyyy	

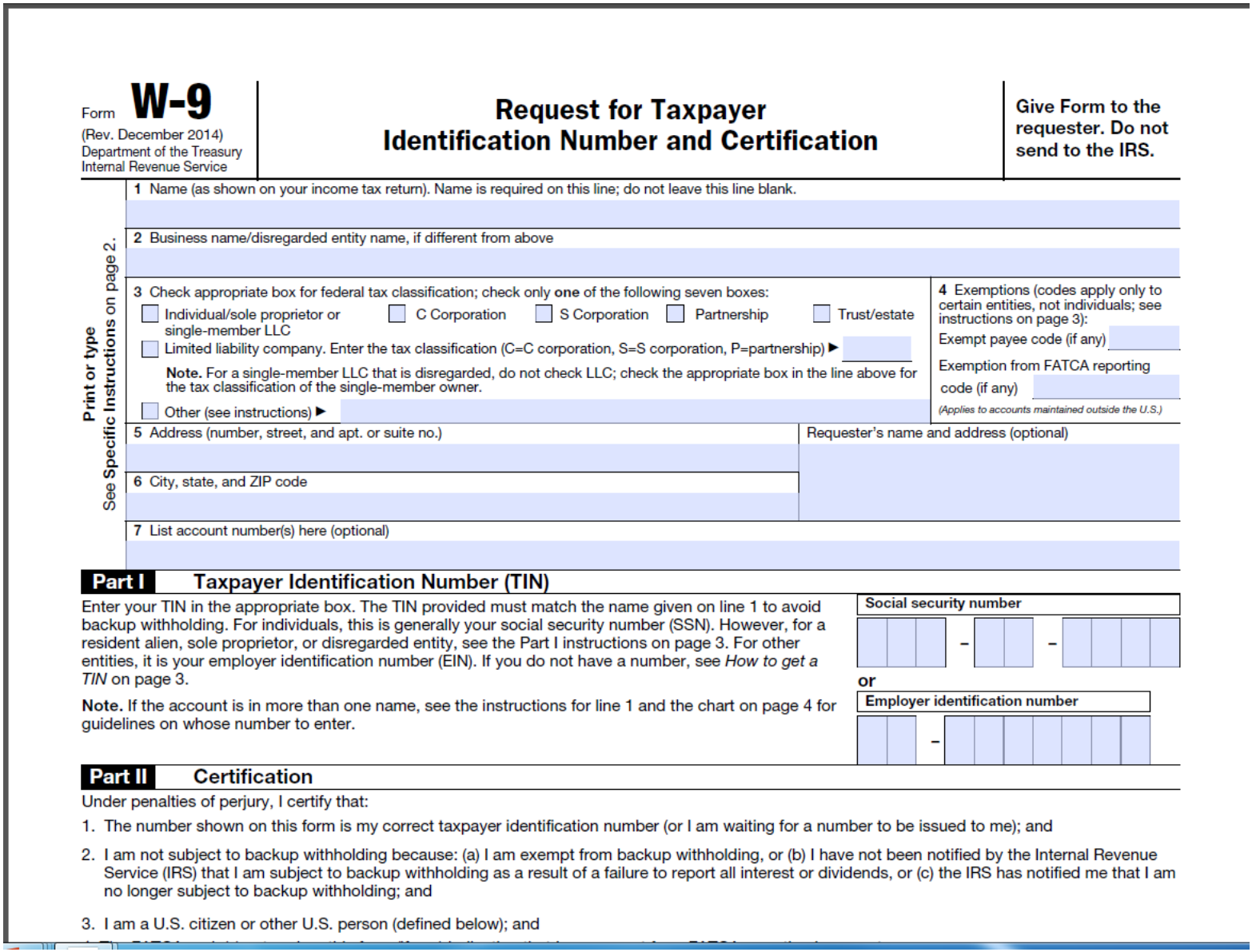
BILL TO
c/o Standards and Accountability Division Wyoming Department of Education 2300 Capitol Avenue 2nd Floor, Hathaway Building Cheyenne, WY 82002 Attention: Nadia Vasquez

DESCRIPTION	QTY	RATE	AMOUNT
June 2015 Professional Services Invoice **Deliverable: Wyoming Content and Performance Standards Review** Type in the Quantity for each of the following that applies and figure the total amount for each line: • Attended Webinar on May 20, 2015 or watched the recording **and** submitted the Homework Excel Sheet with notes of Pros and Cons and gave rating in 4 areas (not to exceed $100) • Attended and worked with Science Standards Review Committee June 15-16, 2015 (1 full day = $300; ½ day = $150) (not to exceed $600)	1 X	$100 $00	$00 $00
	Total:		**$ 00.00**

Please fill out the sections in yellow, sign, and return the original to WDE at the address above by June 30, 2015.

SIGNATURE:_____ DATE:_____

New Members – send to Nadia.Vasquez@wyo.gov



Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:
☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate
☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶
Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.
☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any)
Exemption from FATCA reporting code (if any)
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number
___ – ___ – ____

or

Employer identification number
__ – _____

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and

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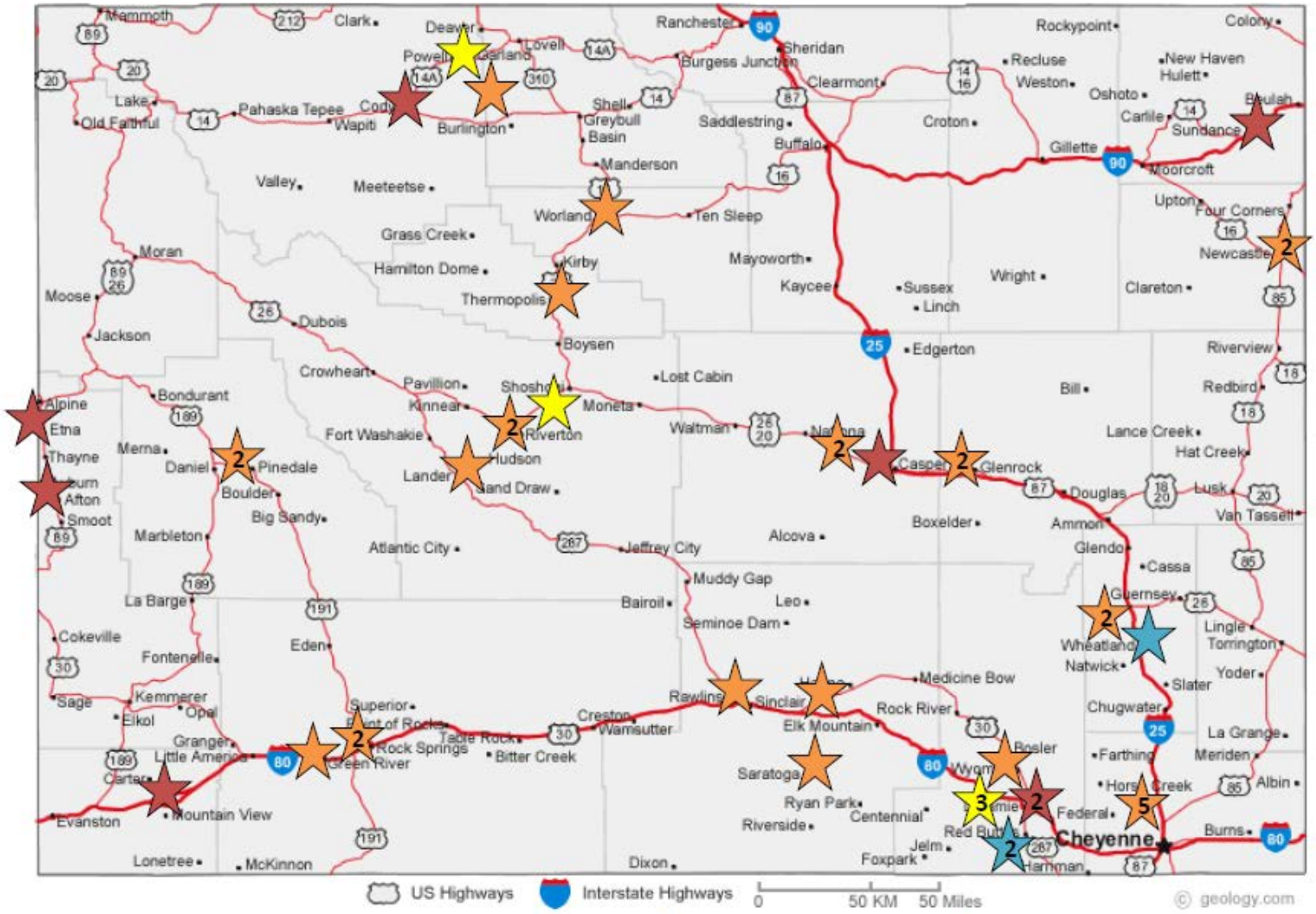
Content Committee Selection

- Number of members (40-44)
- Structure of Committees
  - Content Area Considerations (Science, STEM)
  - Ensure diversity of Content Committees
    - Large school / Small school
    - Veteran / Rookie Educators
    - All corners of the state + central
    - Grade levels – alignment through the years (K-12)
  - Content Experts
    - School District Personnel
    - University and Community College Personnel
  - Wyoming Citizens
    - Parents
    - Business & Industry Members
    - Retired, Grandparents, Community Members

Map of 2015 Science Standards Review Committee



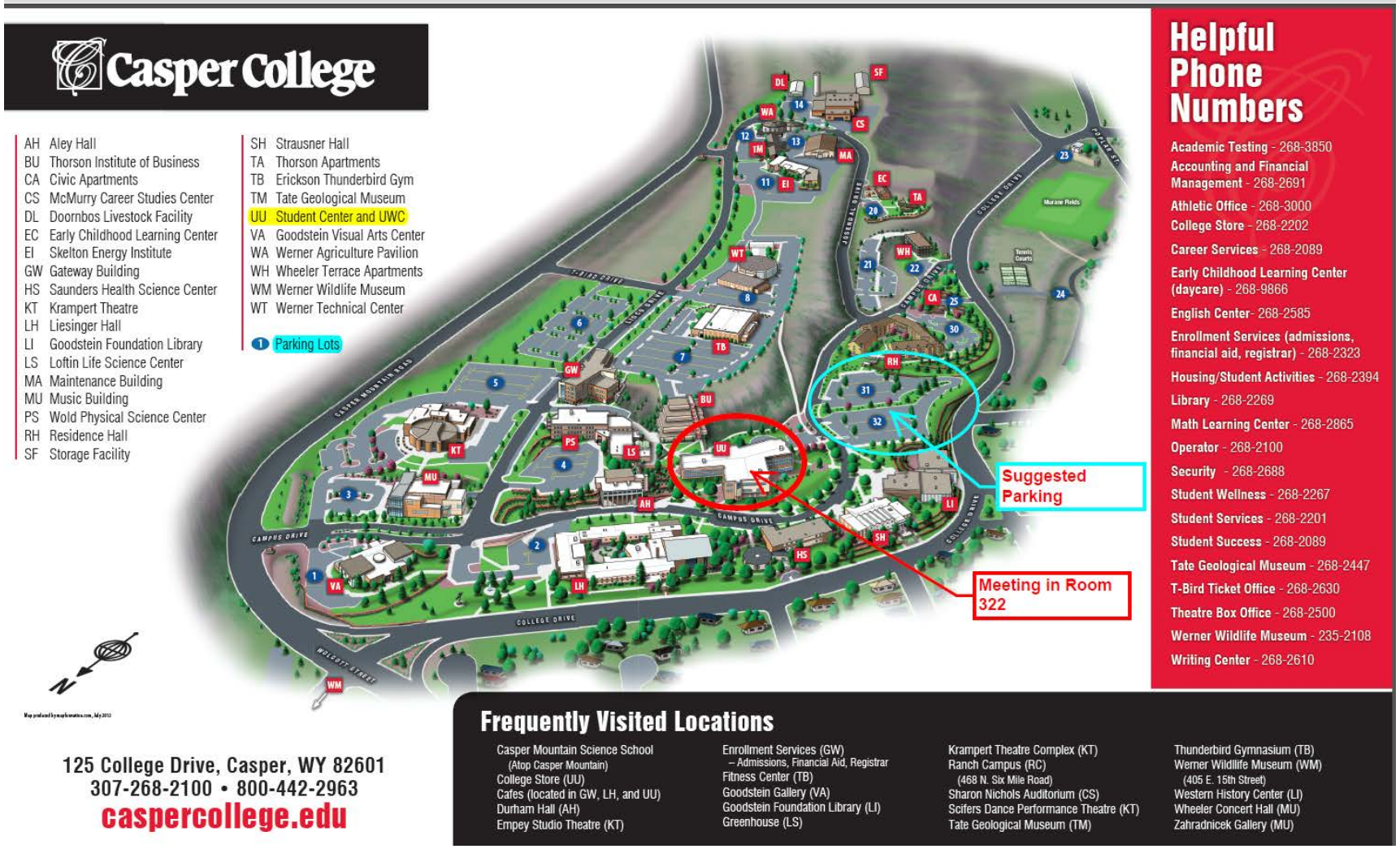
8 **Parent**

5 **Professor**

28 **Educator**

3 **Community Member/ Business Owner**

June 15-16 Meeting Location



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Meeting Agenda June 15th-16th

SSRC Agenda, Day 1—June 15, 2015 (7 contact hours)			
Time (minutes)	**What (content)**	**How (process)**	**Who (leader)**
9:30 AM	Refreshments (coffee, tea, etc.)		
10:00-11:15 AM	Welcome/Introductions Set-up: • Icebreaker: Gumdrop Bridge Challenge 1 • Agenda • Desired Outcomes • Roles • Ground Rules • Decision Making with Consensus	• Teambuilding • Present • Clarify • Check for agreement	Mike Cosenza & Laurie Hernandez
11:15-11:30 AM	Break (light refreshments)		
11:30-1:00 PM	The Direction of WY State Science Standards	• Present • Discuss (Whole Group)	Mike Cosenza
12:30-1:00 PM	Working Lunch		
1:00-1:30	Backward Design in Developing 21st Century Learning Standards	• Present • Clarify • Check for agreement	Mike Cosenza
1:30-2:30 PM	Sub-committee Breakout	• Examination and Direction of science standards	Subgroups with WDE facilitation
2:30-3:00 PM	Regroup and Share	• Discussion • Clarification • Consensus	Whole group with WDE facilitation
3:00-3:15 PM	Break (light refreshments)		

Monday, June 15th

9:30 Refreshments

10:00 – 5:30 Mtg.

Tuesday, June 16th

8:00 Refreshments

8:30 – 5:00 Mtg.

Regional Community Meeting Locations

Information from the Public will be collected and brought to the SSRC for their consideration.

Date & Time	Location & Address	Room
May 26, 2015 6-7:30 pm	Powell High School 1151 E. 7th Street Powell, WY	Commons Area
May 27, 2015 6-7:30 pm	Gillette College 300 W. Sinclair Gillette, WY	Flex Space 136A-C
May 28, 2015 6-7:30 pm	Natrona District Office 970 N. Glen Rd Casper, WY	Jefferson East Room
June 8, 2015 6-7:30 pm	Laramie District Office 2811 House Ave Cheyenne, WY	Storey Gym Board Room
June 9, 2015 6-7:30 pm	Evanston High School 701 W. Cheyenne Evanston, WY	Seminar Room

Questions on Meeting & Logistics

Standards Review Authority

- Pursuant to W.S. §21-2-304(a)(iii), the Wyoming State Board of Education must prescribe uniform student content and performance standards for the common core of knowledge specified by W.S. §21-9-101(b)(i).
- The Wyoming Content and Performance Standards must be reviewed every nine (9) years per W.S. §21-2-304(c).

Standards Review - Roles

- WDE Consultants
  - Facilitate & Communicate
- Content Committees
  - Revise Content Standards
  - Keep Standards Consistent Across the Grade Bands

Standards Review Process – Goals & Objectives

- Review the Current Content Standards (WyCPS)
- Consider any Revisions (Applying up-to-date Research)
- Consider Aligning/Integrating to other Wyoming Content Standards (WyCPS) (e.g. math, ELA, C&VE)
- Consider any National Content Standards
- Consider Other Exemplary States' Standards

Standards Review Process Options

1. Keep the Current (2008) Wyoming Science Content & Performance Standards (WyCPS) as is
2. Revise the Current WyCPS for Science
3. Adopt an already created set of Science Standards (nationally or another state's)
4. Revise/borrow from other created Science Standards
5. Create a set of Science Standards from multiple documents
6. Create a brand new set of Science Standards

Design Criteria

Purpose of the Wyoming Content and Performance Standards

1. The Wyoming Content and Performance Standards will include the knowledge and skills necessary for student success in college and career.

Overall Criteria

2. The Wyoming Content and Performance Standards should be uniform in structure within each content area.
3. Each content area will be prefaced with a content-specific rationale.
4. The Wyoming Content and Performance Standards will be structured at the standard and benchmark levels only, but groups of benchmarks can be organized into several categories.
5. The Wyoming Content and Performance Standards will include performance level descriptors that describe what advanced, proficient, basic, and below basic performance levels look like. (except for the content areas currently assessed under the statewide assessment system [PAWS])
6. The Wyoming Content and Performance Standards and benchmarks will be knowledge and skill expectations rather than activities.
7. The grain size of the benchmarks will be neither too small nor too large. For example the grain size may be too large with one benchmark per standard or too small with twenty-three.
8. The benchmarks in the Wyoming Content and Performance Standards in each content area will reflect the full range of cognitive and psychomotor levels or depth appropriate to the content area and grade level.

Design Criteria (cont.)

Knowledge and Skills

9. The entire common core of knowledge, as specified in W.S.21-9-101(b)(i), will be reflected in the set of standards.
10. The entire common core of skills, as specified in W.S.21-9-101(b)(iii), will be integrated into the Wyoming Content and Performance Standards and benchmarks in each content area.
11. The purposeful integration of technology, to include the International Society for Technology in Education (ISTE) National Educational Technology Standards for Students, will be integrated into standards and benchmarks in each content area.

Grade-level and Graduation

12. The Wyoming Content and Performance Standards will define what students are expected to know and be able to do in each content area by the time they graduate.
13. The Wyoming Content and Performance Standards will represent a progression of knowledge and skills across grade levels.

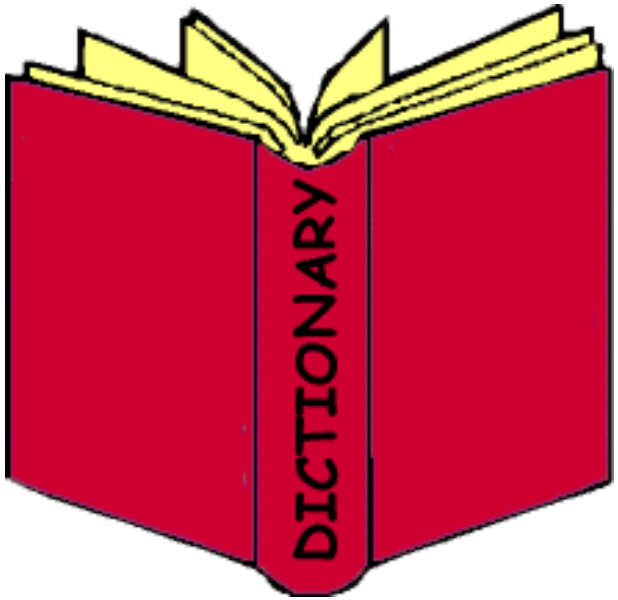
Clarity

14. The Wyoming Content and Performance Standards will be understandable by students, parents, educators, and other Wyoming stakeholders.

Measurability

15. The benchmarks in the Wyoming Content and Performance Standards will serve as the basis for formative, interim, and summative assessment of student learning.

Definitions
for Standards Review Process



Consensus – SSRC Definition

Consensus – a group has arrived at consensus when all points of view have been heard and the will of the group is evident even to those who most oppose it. A consensus decision is one about which each group member can honestly say: “I believe you understand my point of view and I understand yours. Whether or not I prefer this decision, I support it because it was reached fairly and openly, and it is the best solution for us at this time. I will share the positives of the proposal and that I support the proposal and the team. I will NOT share the negatives of the proposal and that I DID NOT support the proposal and the team.”

Standards Review – Definitions

- Content Standards
  - what students are expected to know and be able to do by the time they graduate
  - do not dictate methodology, instructional materials, or delivery
- Benchmarks (expectations)
  - skills and content knowledge students must master along the way in order to reach the content standards by the time they graduate

Benchmarks – Grain Size

- Is the "grain size" of the benchmarks appropriate? Do the benchmarks describe content **not so narrowly** that it could be mastered by a student in an afternoon, but **not so broadly** that it might take several months of instruction?
- **A benchmark should be** specific enough that readers are clear about the instruction and learning it should entail, but neither so narrow as to prescribe the day-to-day curriculum, nor so broad that the knowledge and skills it describes could be open to numerous equally valid interpretations.

Standards Review – Definitions (cont.)

- Performance Level Descriptors (PLDs)
  - how well students must perform the benchmarks to be “proficient” (level required to meet the standards)
  - currently the PLDs are:
    - Advanced
    - Proficient
    - Basic
    - Below Basic

College and Career Readiness

The content knowledge and skills high school graduates must possess in English and mathematics – including, but not limited to, reading, writing, communications, teamwork, critical thinking, and problem solving – to be successful in any and all future endeavors.

Of course, readiness for college and career depends on more than English and mathematics knowledge; **to be successful after high school, all graduates must posses the knowledge, habits and skills that can only come from a rigorous, rich and well-rounded high school curriculum.**

Research Resources

Content Committees identify significant documents in their respective content areas that will help shape the work

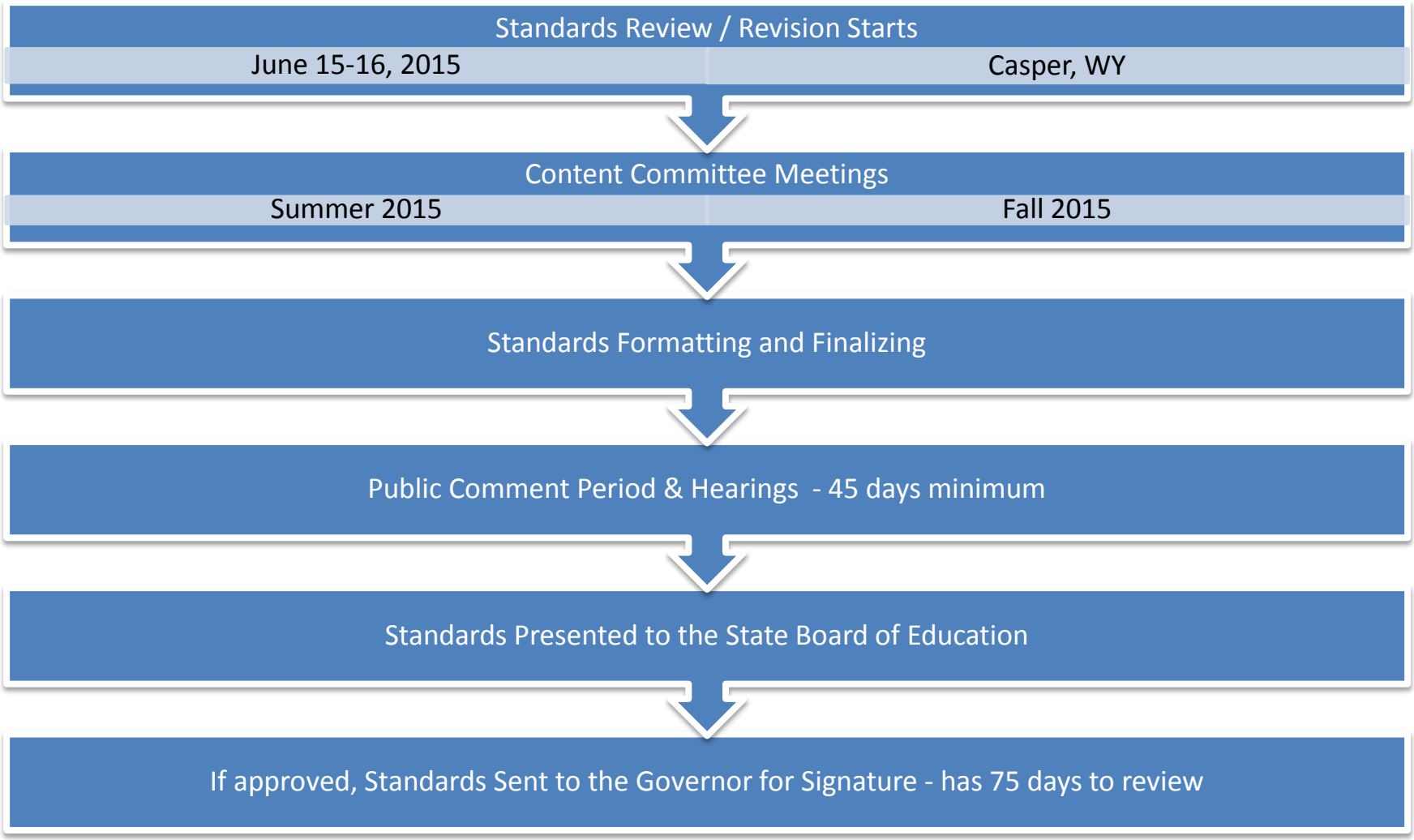
- Exemplary State Documents
- National Standards for Content Areas
- ISTE (Technology) Standards for Students

  http://www.iste.org/standards/iste-standards/standards-for-students
- ACT Standards – American Diploma Project (ADP) – College Board (Science, LA, Math)

  http://www.act.org/standard/
- Partnership for 21st Century Skills

  http://www.p21.org/storage/documents/1._p21_framework_2-pager.pdf
- Feel free to bring other **research-based resources** to the table for discussion on June 15th.

Standards Review - Timeline

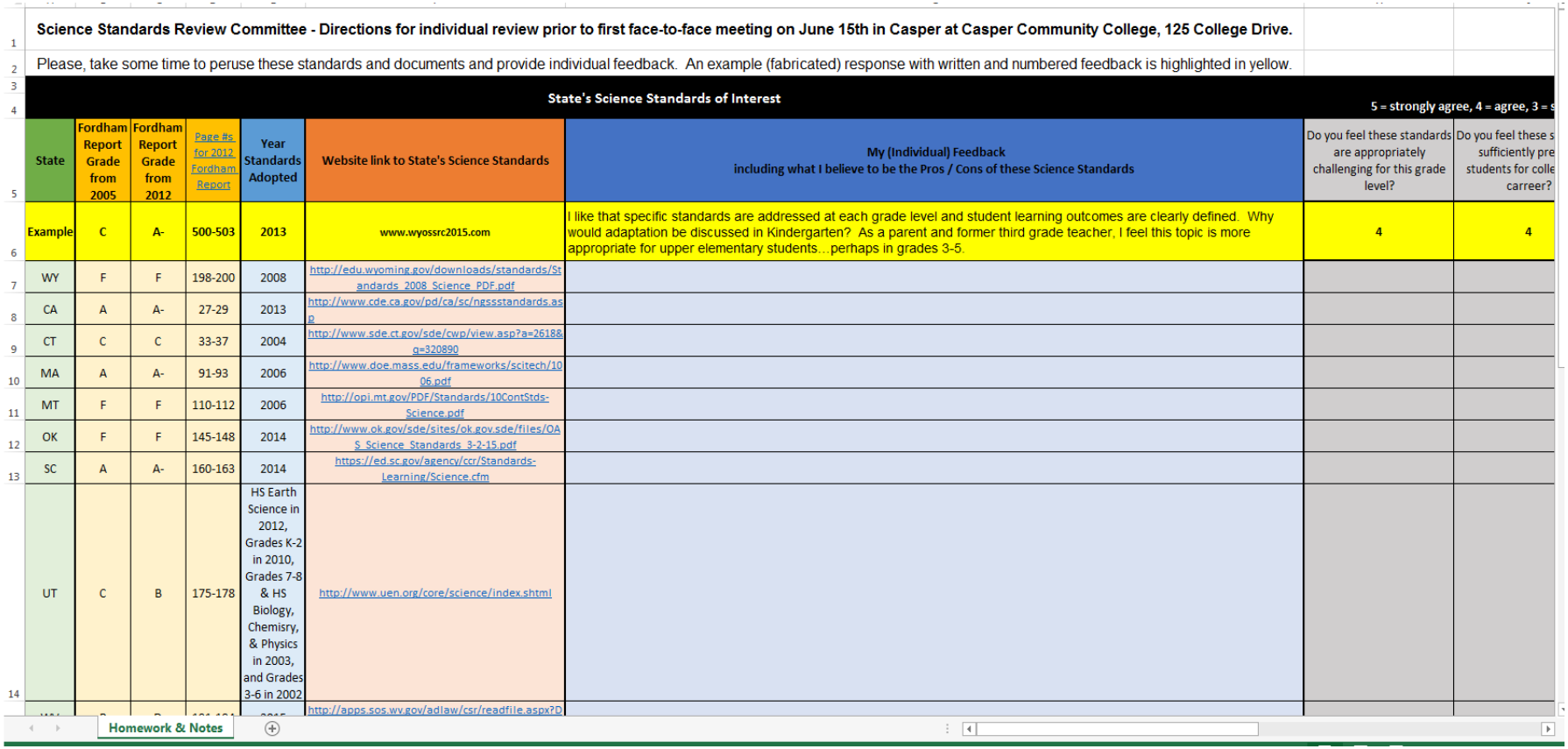


Questions on Standards Review Process

Grade Band Assignments

K – 2	3 – 5	6 – 8 (MS)	9 – 12 (HS)
Joanne Cornelison	Polly Beebout	JoAnn Schubert	Bertha Tracy
Elizabeth David	Jenifer Albrandt	Doug Scribner	Michael Gregory
Jenefer Pasqua	Barbara Marquer	Ray Bieber	Jennifer Hammock
Ryan Bennett	Kathy Stanton	Shannon Cunningham	Lesley Urasky
Michael Selmer	Mauro Diaz	Paul Crips	Jane Frye
Peter Ellsworth	Janel Korhonen-Goff	Miken Harnish	London Jenks
Debra Freitas	Sarah Ramsey-Walters	Josh Sandlian	Sarah Konrad
	Retta Hudlow	Ana Houseal	Nikki Osterland
		Barbara Harvey	Sheila St. Amour
		Jeff Hymas	William Britz
		Sharon Padget	Brett McDonald
		Sue Spencer	Astrid Northrup
		Dave Mullens	Sharla Dowding
		Teresa Strube	

Committee Homework – due 6/7/15



Science Standards Review Committee - Directions for individual review prior to first face-to-face meeting on June 15th in Casper at Casper Community College, 125 College Drive.

Please, take some time to peruse these standards and documents and provide individual feedback. An example (fabricated) response with written and numbered feedback is highlighted in yellow.

State's Science Standards of Interest							5 = strongly agree, 4 = agree, 3 = s	
State	Fordham Report Grade from 2005	Fordham Report Grade from 2012	Page #s for 2012 Fordham Report	Year Standards Adopted	Website link to State's Science Standards	My (Individual) Feedback including what I believe to be the Pros / Cons of these Science Standards	Do you feel these standards are appropriately challenging for this grade level?	Do you feel these s sufficiently pre students for colle carreer?
Example	C	A-	500-503	2013	www.wyossrc2015.com	I like that specific standards are addressed at each grade level and student learning outcomes are clearly defined. Why would adaptation be discussed in Kindergarten? As a parent and former third grade teacher, I feel this topic is more appropriate for upper elementary students…perhaps in grades 3-5.	4	4
WY	F	F	198-200	2008	http://edu.wyoming.gov/downloads/standards/Standards_2008_Science_PDF.pdf			
CA	A	A-	27-29	2013	http://www.cde.ca.gov/pd/ca/sc/ngsssstandards.asp			
CT	C	C	33-37	2004	http://www.sde.ct.gov/sde/cwp/view.asp?a=2618&q=320890			
MA	A	A-	91-93	2006	http://www.doe.mass.edu/frameworks/scitech/1006.pdf			
MT	F	F	110-112	2006	http://opi.mt.gov/PDF/Standards/10ContStds-Science.pdf			
OK	F	F	145-148	2014	http://www.ok.gov/sde/sites/ok.gov.sde/files/OAS_Science_Standards_3-2-15.pdf			
SC	A	A-	160-163	2014	https://ed.sc.gov/agency/ccr/Standards-Learning/Science.cfm			
UT	C	B	175-178	HS Earth Science in 2012, Grades K-2 in 2010, Grades 7-8 & HS Biology, Chemisry, & Physics in 2003, and Grades 3-6 in 2002	http://www.uen.org/core/science/index.shtml			
					http://apps.sos.wy.gov/adlaw/csr/readfile.aspx?D			

Homework & Notes

Please send this document with your comments and ratings to Mike.Cosenza@wyo.gov by June 7th.

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Things to Consider as You Compare Standards

- Organization
- Appropriate level for students
- Useful for Instruction
- Useful for Assessment
- Clarity – clear expectations
- Specificity
- Grain size

PTSB Credit (for Educators)

- Please bring your 5 or 6 digit PTSB # to the meeting on June 15th.
- You will earn 1 credit following 14 contact hours on June 15th & 16th.

Questions

Science

Definitions

Science Language

- With all the coined “science” phrases and terms out there these days, it’s no surprise teachers can feel overwhelmed when selecting the best curriculum or planning a lesson to meet the state standards.
- What do they mean? Why can’t this be easier? Who came up with this stuff? When do we have time for this? Where is the help? How do I make this work in my classroom?

Phenomenon

- This word shows up a lot in recently adopted state science standards.
- A phenomenon is defined as: something (such as an interesting fact or event) that can be observed and studied and that typically is unusual or difficult to understand or explain fully

http://www.merriam-webster.com/dictionary/phenomenon

Phenomenon

- It can range from the supernatural to the simple

aurora borealis 

an apple falling from a tree 

- Phenomenon elicits **inquiry** in us all.

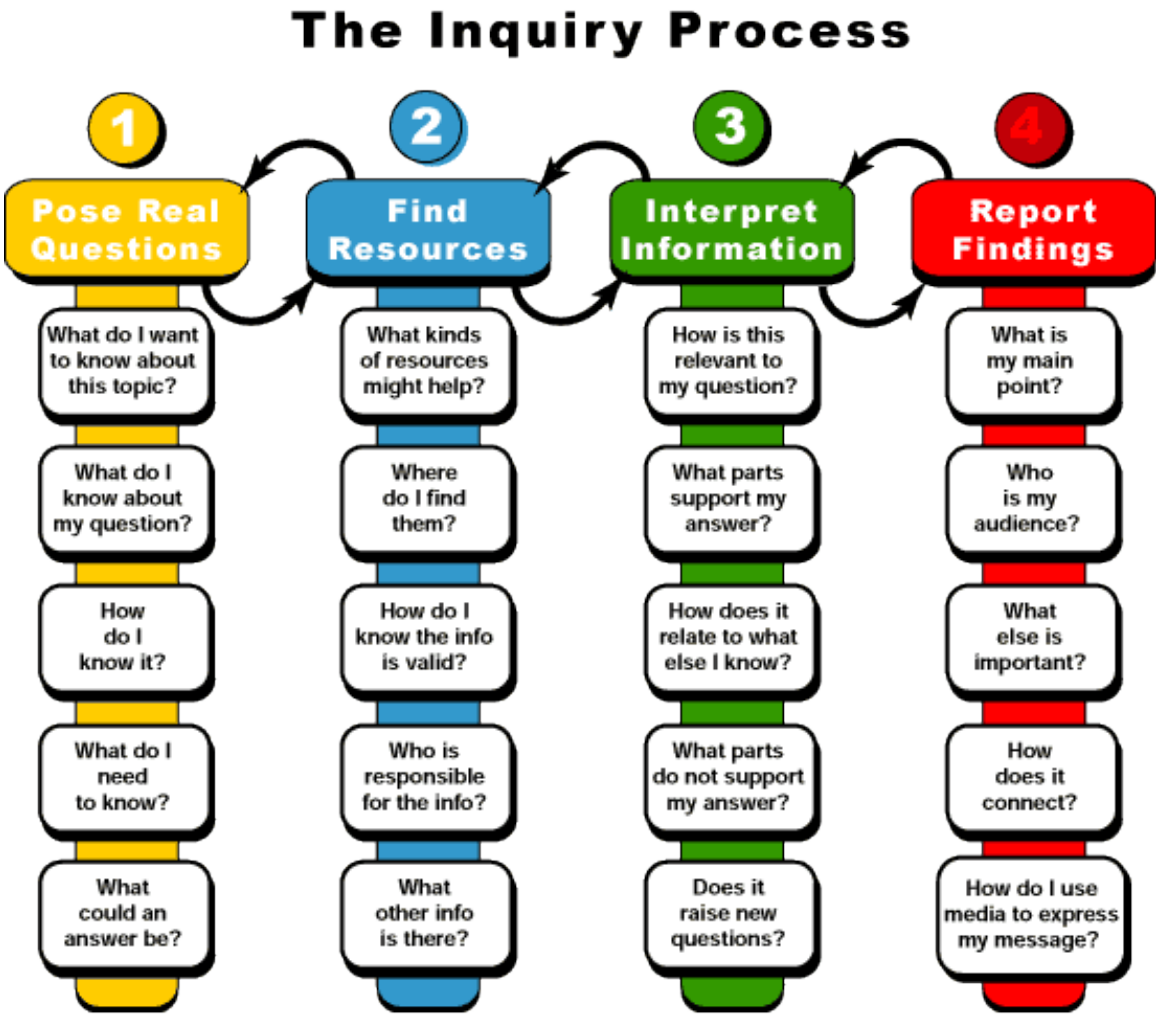
It gets the “hamster wheel” turning

Inquiry

- request for information
- an official effort to collect and examine information about something
- the act of asking questions in order to gather or collect information

http://www.merriam-webster.com/dictionary/inquiry

Inquiry


The Inquiry Process
1
Pose Real Questions
What do I want to know about this topic?
What do I know about my question?
How do I know it?
What do I need to know?
What could an answer be?
2
Find Resources
What kinds of resources might help?
Where do I find them?
How do I know the info is valid?
Who is responsible for the info?
What other info is there?
3
Interpret Information
How is this relevant to my question?
What parts support my answer?
How does it relate to what else I know?
What parts do not support my answer?
Does it raise new questions?
4
Report Findings
What is my main point?
Who is my audience?
What else is important?
How does it connect?
How do I use media to express my message?

Hypothesis

- An idea or theory that is not proven but that leads to further study or discussion

- It's more than just an "If…then…" statement!

http://www.merriam-webster.com/dictionary/hypothesis

Theory

- an idea or set of ideas that is intended to explain facts or events
- an idea that is suggested or presented as possibly true but that is not known or proven to be true
- the general principles or ideas that relate to a particular subject

http://www.merriam-webster.com/dictionary/theory

Theory (cont.)

- In everyday language, theory may mean a hunch or a guess. For scientists, theory refers to a well supported explanation.

- Scientific theories are well-substantiated. They incorporate facts, laws, and tested hypotheses.
- Scientific theories are testable, observable, and repeated.

- Scientific theories and laws are often confused.

Theory vs Law

Theory	Law
Why something happens	What will happen
Explanation of nature	Predictable outcome
Based on evidence	Based on evidence
Example: Theory of General Relativity	Example: Newton's Laws of Motion

Law

- a statement of an order or relation of phenomena that so far, as is known, is invariable under the given conditions
- a general relation proved or assumed to hold between mathematical or logical expressions

http://www.merriam-webster.com/dictionary/law

Proof

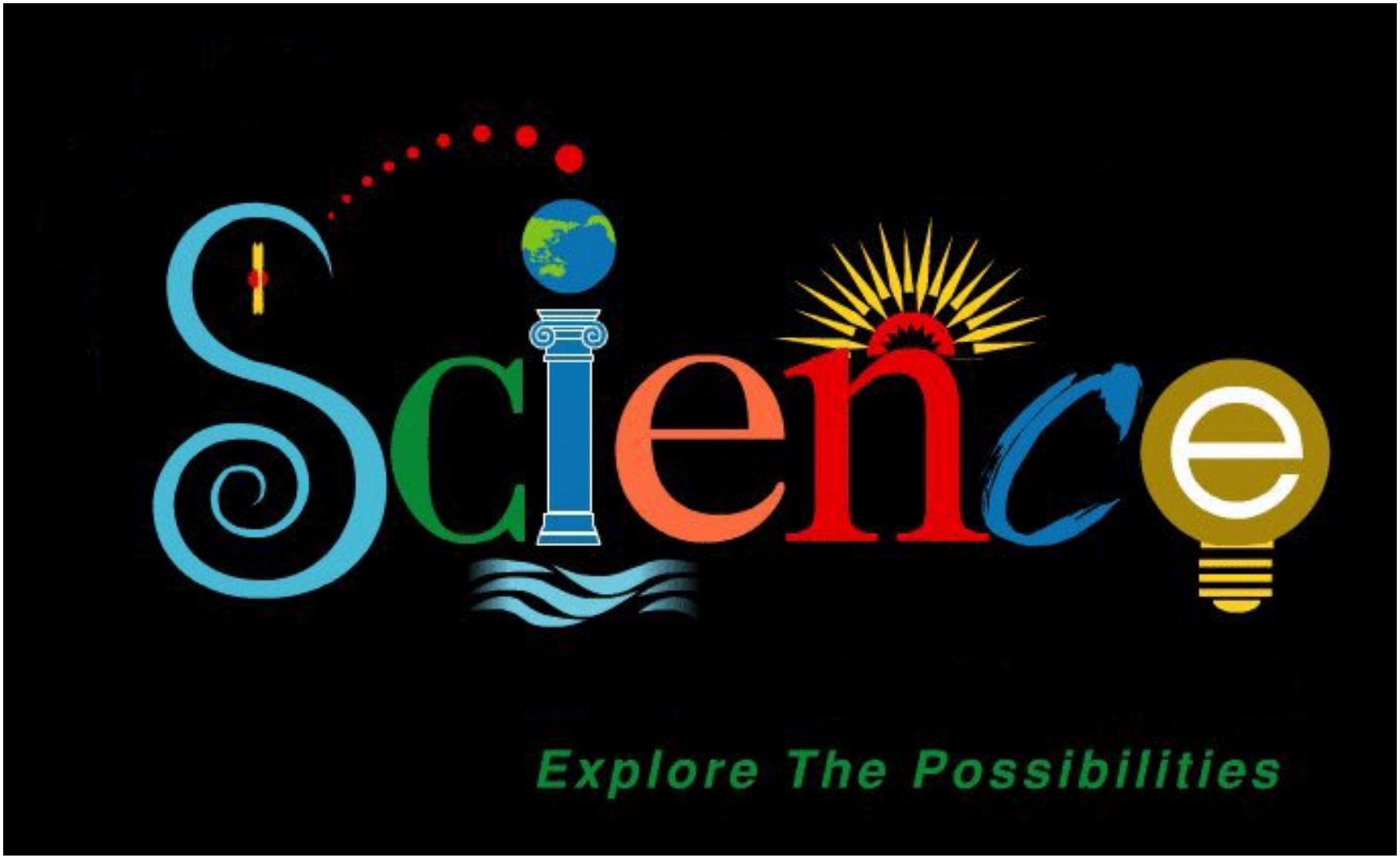
- something which shows that something else is true or correct
- an act or process of showing that something is true
- mathematics: a test which shows that a calculation is correct

http://www.merriam-webster.com/dictionary/proof

Fact

- something that truly exists or happens
- something that has actual existence
- a true piece of information

http://www.merriam-webster.com/dictionary/fact


Science
Explore The Possibilities

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Wyoming

Jillian Balow
Superintendent of Public Instruction

Cheyenne Office
Hathaway Building, 2nd Floor
2300 Capitol Avenue
Cheyenne, WY 82002-0050
Phone: (307) 777-7675
Fax: (307) 777-6234

Casper Office
539 S. Payne
Casper, WY 82609
Phone: (307) 577-4686
Fax: (307) 577-6785

Riverton Office
320 West Main
Riverton, WY 82501
Phone: (307) 857-9253
Fax: (307) 857-9257

On the Web
edu.wyoming.gov
www.wyomingmeasuresup.com

Questions

Mike Cosenza

Mike.Cosenza@wyo.gov

(307) 777-5506