



Wildfire Matters

Teaching Kids about the Wildland Urban Interface

How do We Change a Culture?

“We are continually faced with great opportunities which are brilliantly disguised as unsolvable problems.”

--Margaret Mead

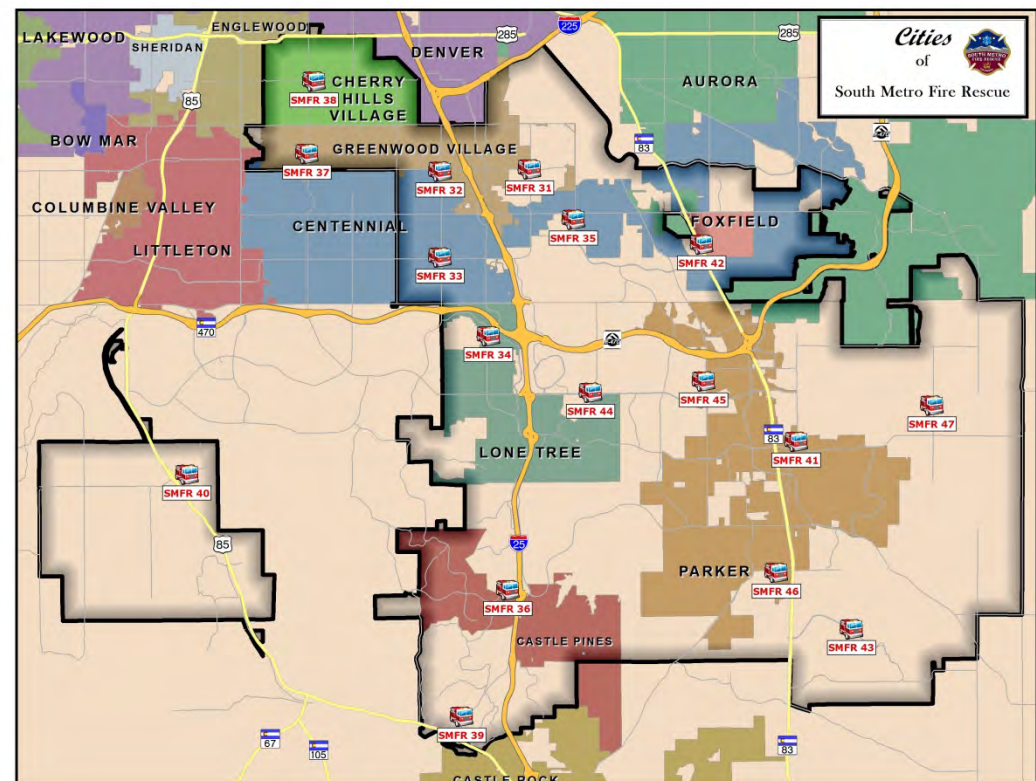
- Teach...
 - Change Attitudes about Risk, Responsibility
 - Change Behavior
 - Change Environment

A Bit about Me



A Bit about South Metro Fire Rescue...

- 373 personnel (27 in CSS)
- 17 stations (+3 facilities)
- 17,378 calls in 2012
- 176 Square Miles
- 198,000 residents
- 6,200 businesses
- 69,200 homes (867 apts)
- Median age of 29.9
- 8% aged 65+



Aim Low

- Teaching old dogs new tricks
 - Ready Set Go, FireWise
 - HOA Meetings
 - Home Ignition Zone Assessments
 - Interface Drills

Aim High

- Teaching new tricks to puppies
- Shape the next generation's culture
- Children bring messaging home to parents
- Prime them to make a difference (teens love to make a difference)
- Empower the next generation of adults

Why 4th Graders?

- 9-10 years old
- Able to distinguish fantasy from reality
- Developing ability to conceptualize
- Developing “self” attitudes
- Learning social rules
- Social, physical and intellectual thrusts



Why 4th Graders?

- Eager to learn
- Ready for personal, community responsibility
- Understand that positive and negative incentives influence behavior

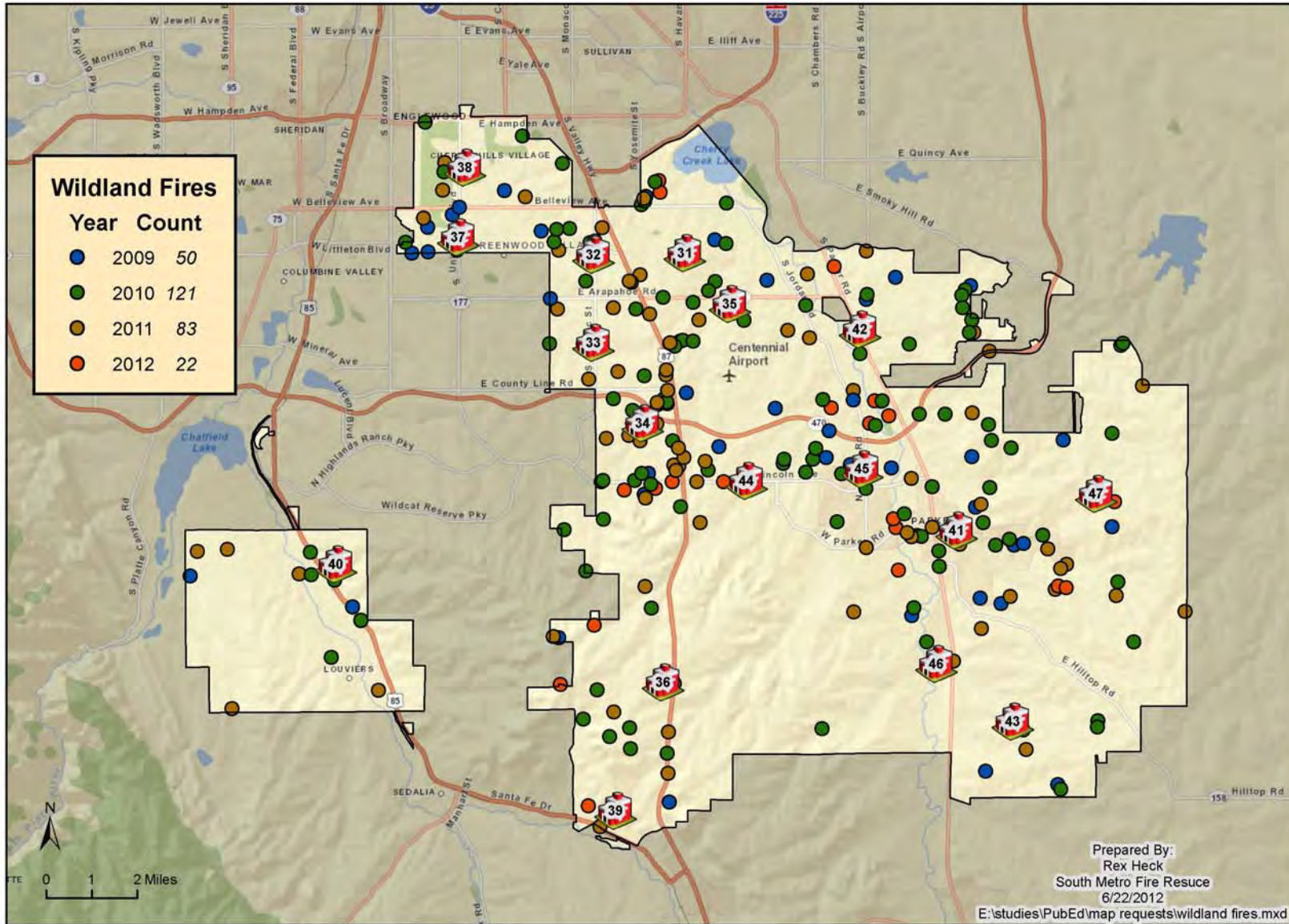


Why Wildfire?

- It's my passion
- South Metro Fire Rescue is all WUI
- Wildland Urban Interface fires are the new norm
- Most damage, injuries, deaths are preventable
- Still an Underdog of the Fire Service
- Avenue for Environmental History, Environmental Literacy



South Metro Fire Rescue Wildland Fires - Jan 2009 - Apr 2012



Building a Program

- (1998 – Master’s degree in Environmental History)
- 2007-ish: Chat with Kim Scott
- 2010 – Project Learning Tree workshop
- 2011 – Read *Last Child in the Woods*
- 2011 – Piloted the Class
- 2012 – Fire Works Master Class
- 2012 – Join Colorado Alliance for Environmental Educators
- 2012 – Adopt Ready Set Go and Fire-Adapted Community themes for SMFRA

Environmental history

- The study of human interactions with our ecological context



Courtesy: AP

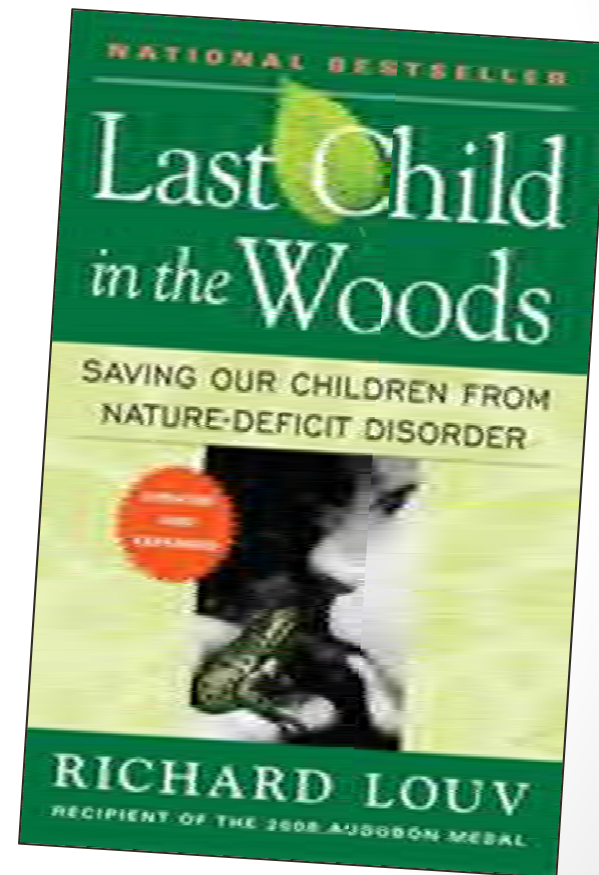
Project Learning Tree

- Evidence-based environmental education curriculum
- Developed by the American Forest Foundation
- How to think, not what to think
- PreK-12 lesson plans
- Differentiated learning
- Only 2 actual fire ecology lessons, but hundreds of ideas



Last Child in the Woods

- Nature-deficit disorder
- Links lack of “Nature” with ADD, ADHD
- Suggested connections to juvenile firesetting, inept WUI living

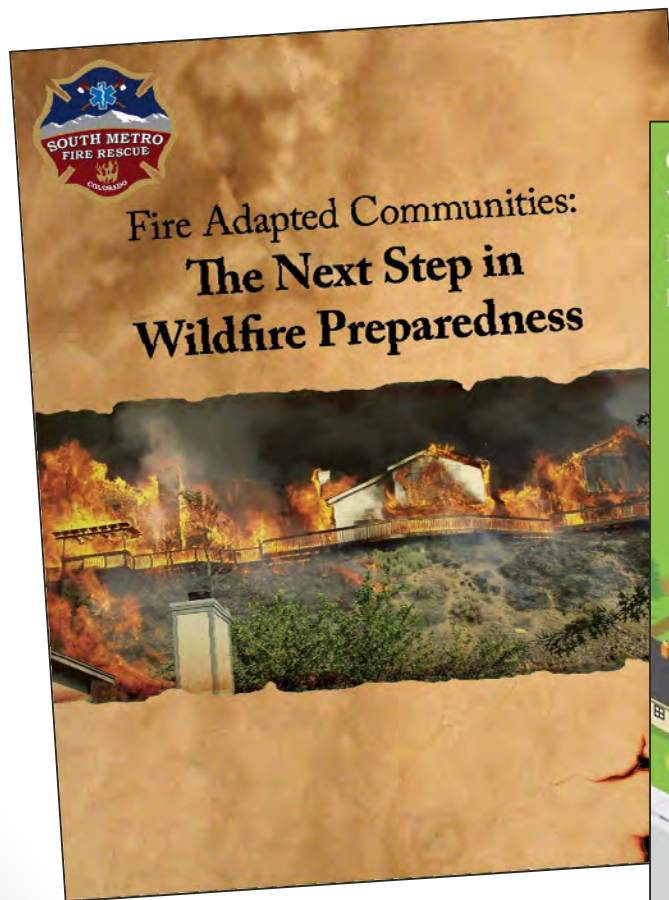


FireWorks

- Interactive, hands-on activities
- Fire ecology, fire behavior, human impacts
- Grades 1-10
- Designed for ponderosa, lodgepole and whitebark pine ecosystems
- Jane Kapler Smith and Nancy McMurray, USFS



SMFRA Campaigns



Guidelines for
Wildfire Resistant
Landscaping
in an Urban Setting



Still Needed a Venue...

- Teachers were interested, but teachers have huge responsibilities and little time for extras
- What if our programs weren't extras?
- Work with classroom teachers
 - Meet with them
 - Learn from them
 - Seek their advice
 - Follow their advice
- State Academic Standards

Make It an Easy Sell

1. **Life Science:** Living things have characteristics that can be described and classified. There is interaction and interdependence between and among living and nonliving components of systems.
2. **Physical Science:** Energy exists in many forms such as light, heat, sound, magnetic, chemical and electrical.
3. **History:** Organize a sequence of events to understand the concepts of chronology and cause/effect in the history of CO. Themes in Colorado history are related to key events in the US.
4. **Geography:** Use geographic tools to develop connections within and across human and physical systems.
5. **Reading, Writing, and Communicating:** Comprehending new information for research is a process undertaken alone and within groups. Identifying implications enriches reasoning skills.
6. **Economics:** Positive and negative incentives influence decisions.
7. **Civics:** Analyze and debate multiple perspectives on an issue.

Addresses CO EE Plan

- Prepare students to understand, analyze and address the major environmental challenges facing Colorado, the United States and the world.
- Connect teachers and students to standards-based, relevant, environmental education experiences in an effort to develop life-long health, wellness and civic-minded behaviors.
- Connect school districts and teachers to professional development opportunities in environmental education.

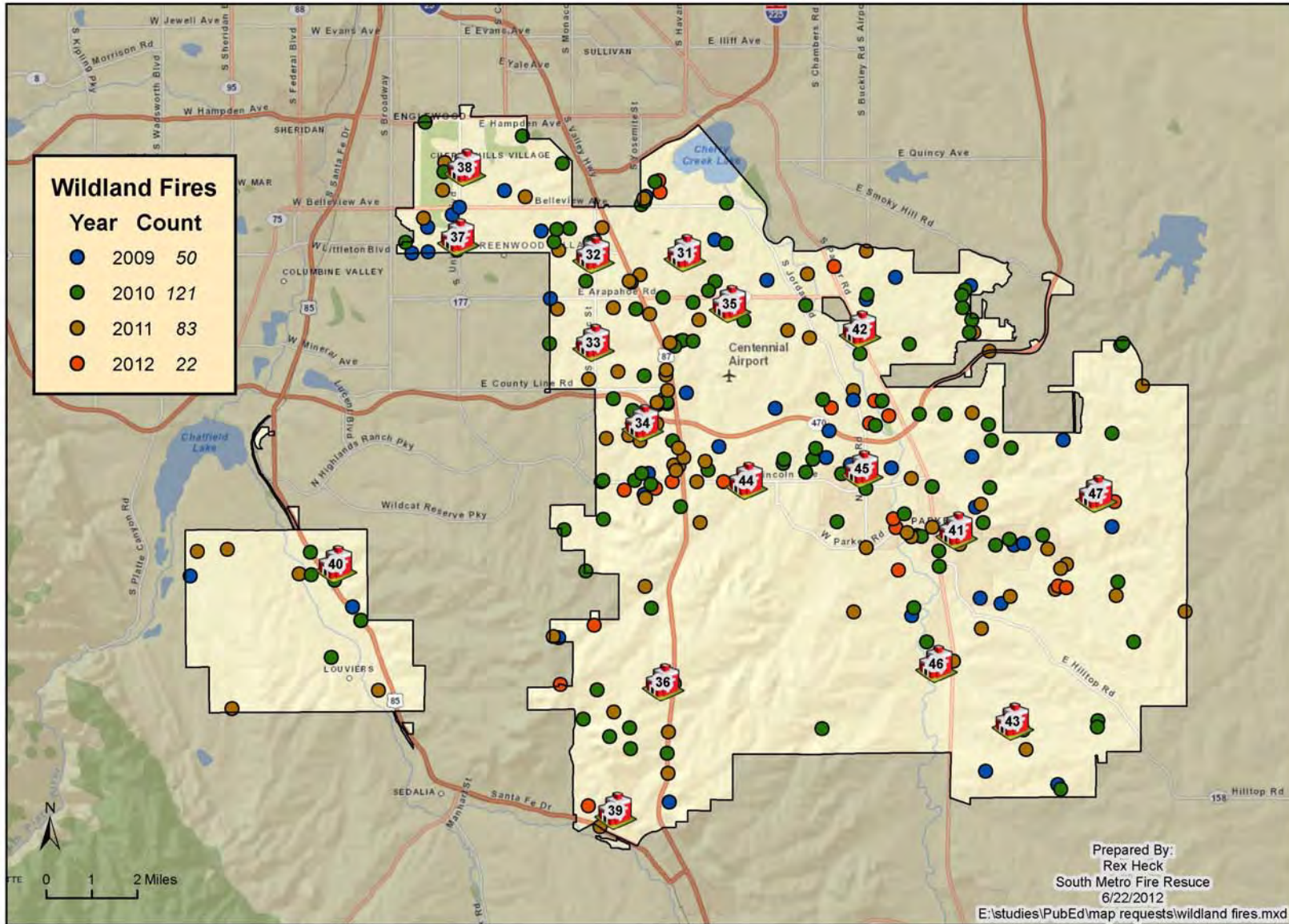
Wildfire Matters is Born

- Four 1-hour Sessions (per Classroom)
- Lecture
- Active, Hands-on Lessons
- Multi-media
- Group Work
- Respect the child
- Include relevant information
- Lesson should build confidence
- Involve affective and cognitive domains
- 20 hours per school = 6 schools per year



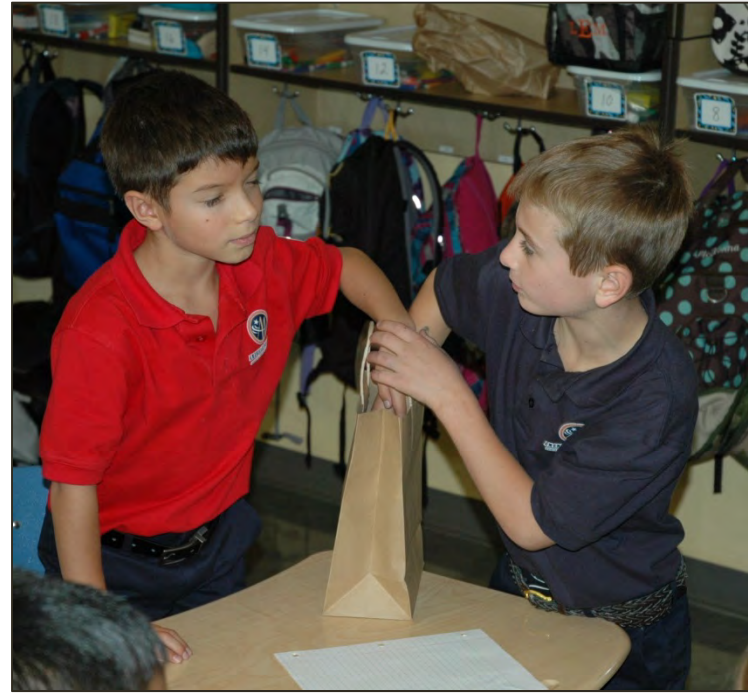


South Metro Fire Rescue Wildland Fires - Jan 2009 - Apr 2012



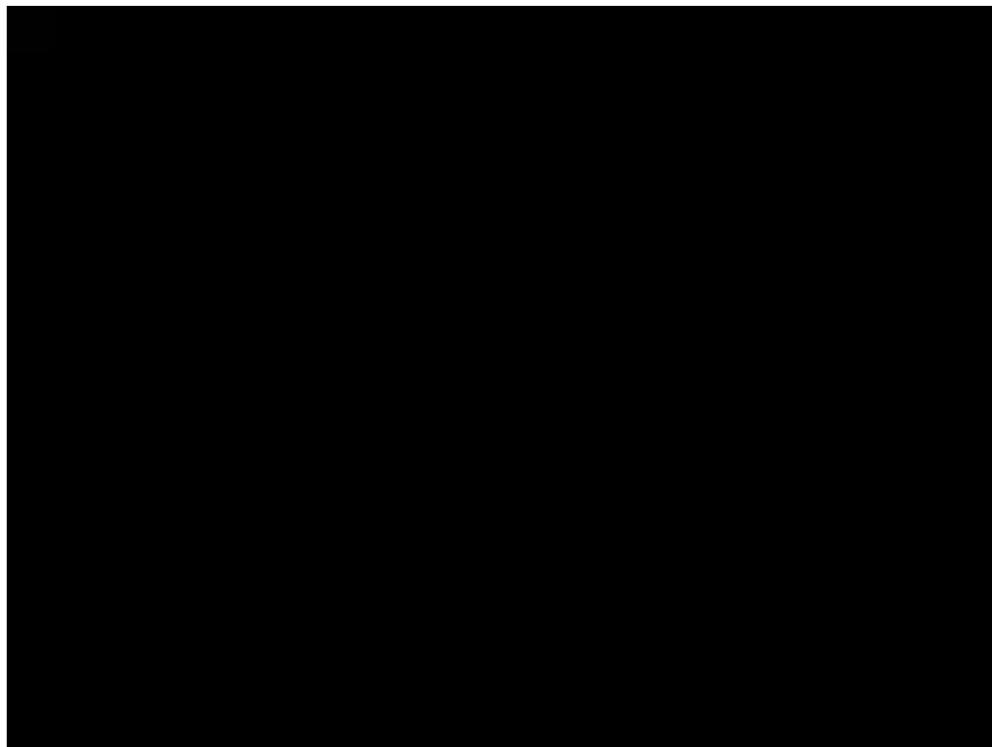
Unit 1: The Local Ecosystem

- Pre-test
- Introduce the class
- Define terms (wildfire, wildland urban interface, ecosystem)
- Discuss recent WUI fires
- Discuss the role fire plays in ecosystems
- Distinguish between built and growing fuels
- Mystery Bag Activity
- Letter for Parents



Unit 2: The Science of Fire

- Juvenile Firesetting
- Fire Triangle
- Forms of Heat Transfer
- Role of Topography
- Role of Weather
- Lesson Quiz





Unit 3: Trees and Fire

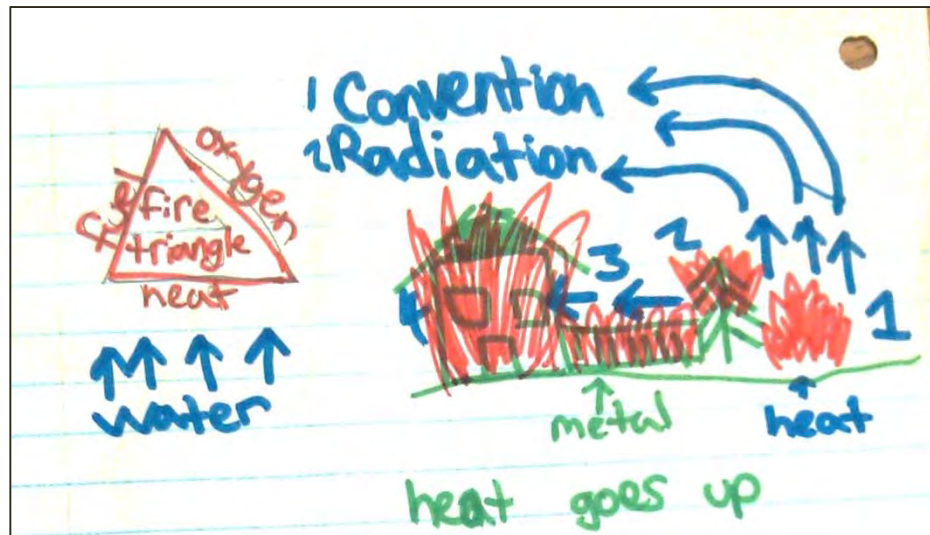
- Tree anatomy
- Living tree model (let's do it)
- Identify resources for trees and how they influence growth
- Identify impact of fire on resources
- Read tree rings
- Worksheet
- Quiz





Unit 4: WUI Fire Mitigation

- Discuss why people live in WUI neighborhoods
- Create a spectrum of flammability (trees, siding, roofing, decking)
- Review heat transfer, embers
- Use the NFPA 1144 form to rate a house

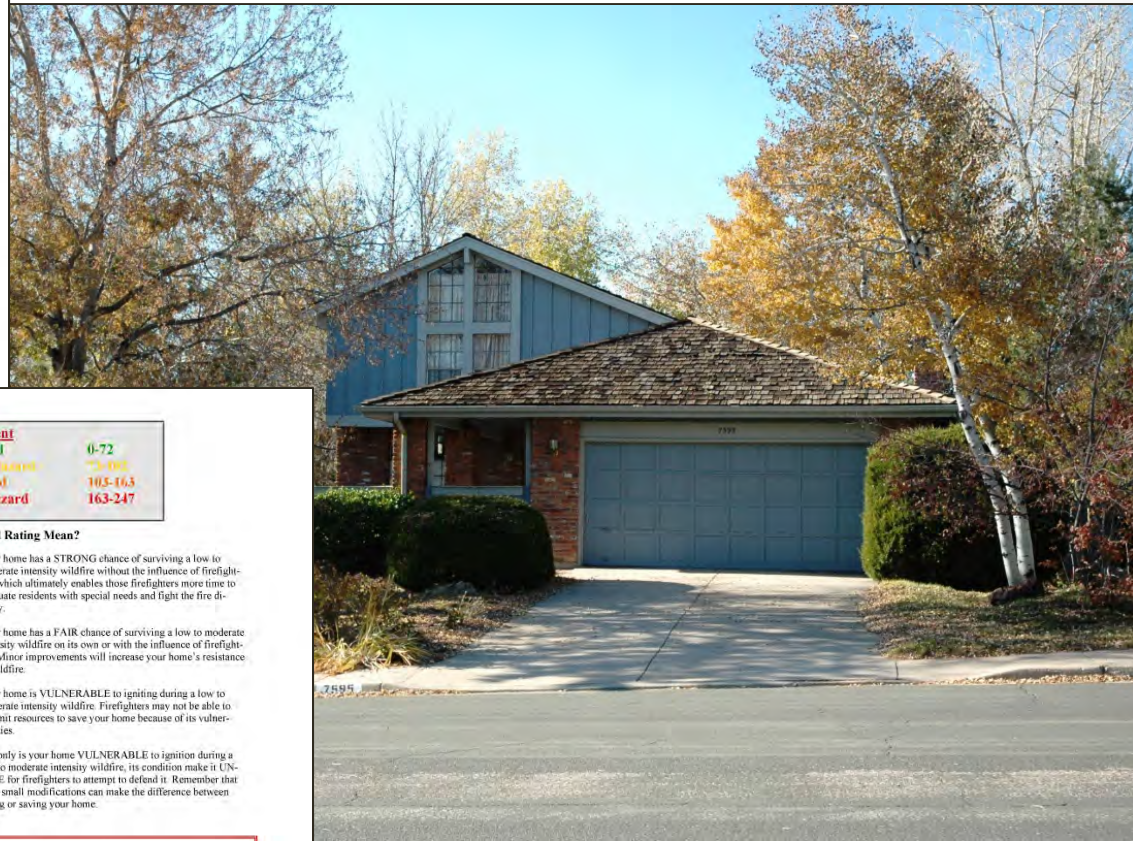




South Metro Fire Rescue
 Wildland Urban Interface Risk Reduction Program
 Home Structure Wildfire Hazard Assessment

Address: _____
 Homeowner Name(s): _____
 Subdivision/Community: _____
 Evaluator: _____ Date Evaluated: _____

SITE HAZARD RATING	RATING
HOME IDENTIFICATION	
Address is clearly marked with 4" reflective numbers	0
Address is difficult to read (small numerals, obstructed view, visible in one direction, not all-weather)	5
Address is not marked	10
DRIVEWAY CHARACTERISTICS	
Is private driveway at least 12' wide with 15' vertical clearance?	
Yes	0
No	10
Is private driveway gated?	
No	0
Yes	10
If private driveway is gated, is it locked?	
Gate is not locked	0
Gate locked but able to be unlocked by responders	5
Gate locked, unable to be unlocked by responders	10
Driveway Length	
<150 feet with turnaround	0
>150 feet with turnaround	2
<150 feet without turnaround	4
>150 feet without turnaround	5
STREET SIGNAGE	
Noncombustible, reflective signage, 4" lettering	0
Combustible, not reflective or not present	5
MEANS OF ACCESS	
Ingress & Egress	
Two or more roads in/out from home	
One road in/out from home	
Road Width	
At least 24 feet wide	
Less than 24 feet wide	
All-Season Road Conditions	
Surfaced Road, Grade <5%	
Surfaced Road, Grade >5%	
Non-surfaced Road, Grade <5%	
Non-surfaced Road, Grade >5%	
Other than All-Season Road	



Hazard Assessment	
Low Hazard	0-72
Subsistent Hazard	73-103
High Hazard	103-163
Extreme Hazard	163-247


What does the Wildfire Hazard Rating Mean?

Low Hazard:	Your home has a STRONG chance of surviving a low to moderate intensity wildfire without the influence of firefighters, which ultimately enables those firefighters more time to evacuate residents with special needs and fight the fire directly.
Subsistent Hazard:	Your home has a FAIR chance of surviving a low to moderate intensity wildfire on its own or with the influence of firefighters. Minor improvements will increase your home's resistance to wildfire.
High Hazard:	Your home is VULNERABLE to ignition during a low to moderate intensity wildfire. Firefighters may not be able to commit resources to save your home because of its vulnerabilities.
Extreme Hazard:	Not only is your home VULNERABLE to ignition during a low to moderate intensity wildfire, its condition make it UNSAFE for firefighters to attempt to defend it. Remember that even small modifications can make the difference between losing or saving your home.

Most structures DON'T ignite from direct flame contact. Most structures ignite from radiant heat (heat that doesn't warm the intervening air but does warm objects) and embers (airborne cinders, sparks, burning pine cones, etc.). Radiant heat will quickly warm a fuel such as fencing, decks, siding or the roof to a temperature in which it automatically ignites. Flames from the actual wildfire may be several dozen or hundreds of feet away, but the house is now burning. Radiant heat also passes through windows and may ignite materials inside a home, bypassing the exterior wall's altogether. Embers (also known as fire brands) also ignite structure fires. As fires burn, they suck in oxygen and push heated air upward. That column of rising air contains embers and tosses them in all directions, often several miles away from the main fire. If an ember lands on a combustible surface such as pine needles in a gutter, dry grass or wood shake shingles, then it could ignite a spot fire away from the main fire capable of growing into a new wildfire or burning a structure. For information on making your home more resistant to wildfires, contact a Life Safety Educator from South Metro Fire Rescue (720-989-2271, LifeSafetyEducator@southmetro.org or www.southmetro.org).

Evaluation

- Students complete a post-test one week after the final session

 **Wildfire Awareness:
Final Knowledge Check**

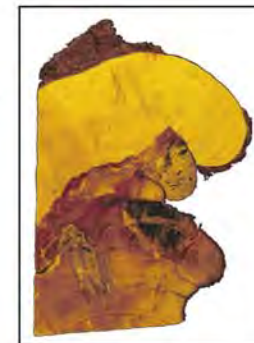
Name: _____
Teacher: _____
Date: _____

1. True or False: Wildfires are natural components of ecosystems.
2. What are the three parts of the Fire Triangle?
 - a. Heat, Water, Oxygen
 - b. Firefighters, Students, Water
 - c. Rock, People, Fire
 - d. Heat, Oxygen, Fuel
3. Give examples of how firefighters remove each leg of the Fire Triangle:
4. Which statement is true?
 - a. Wildfires have never happened in my part of Douglas County.
 - b. Homes don't burn in wildfires.
 - c. People can make their homes safer from wildfires.
 - d. All plants react to wildfires the same way.
5. Circle the three forms of heat transfer:
 - a. Sunlight
 - b. Radiation
 - c. Induction
 - d. Conduction
 - e. Convection
 - f. Combustion



6. Based on this house, describe three ways to reduce the wildfire risk.

7. If this tree was cut down near this school in 2010, what can it tell us about our ecosystem?



But are they learning?

- Anecdotal
- Teacher feedback
- Student art/letters
- Test Scores



metamir

wooden shingles

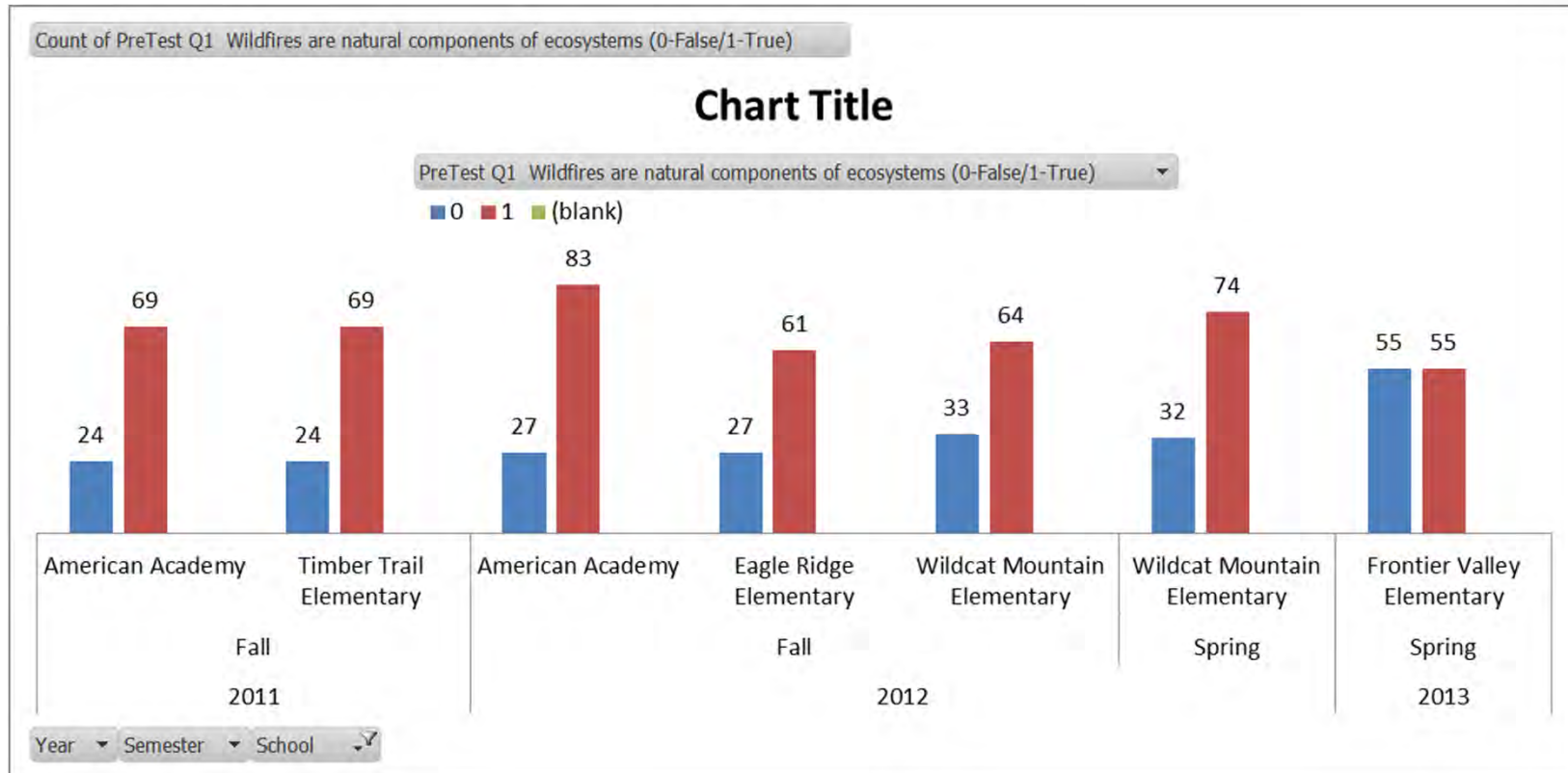
Juni gas

low grass

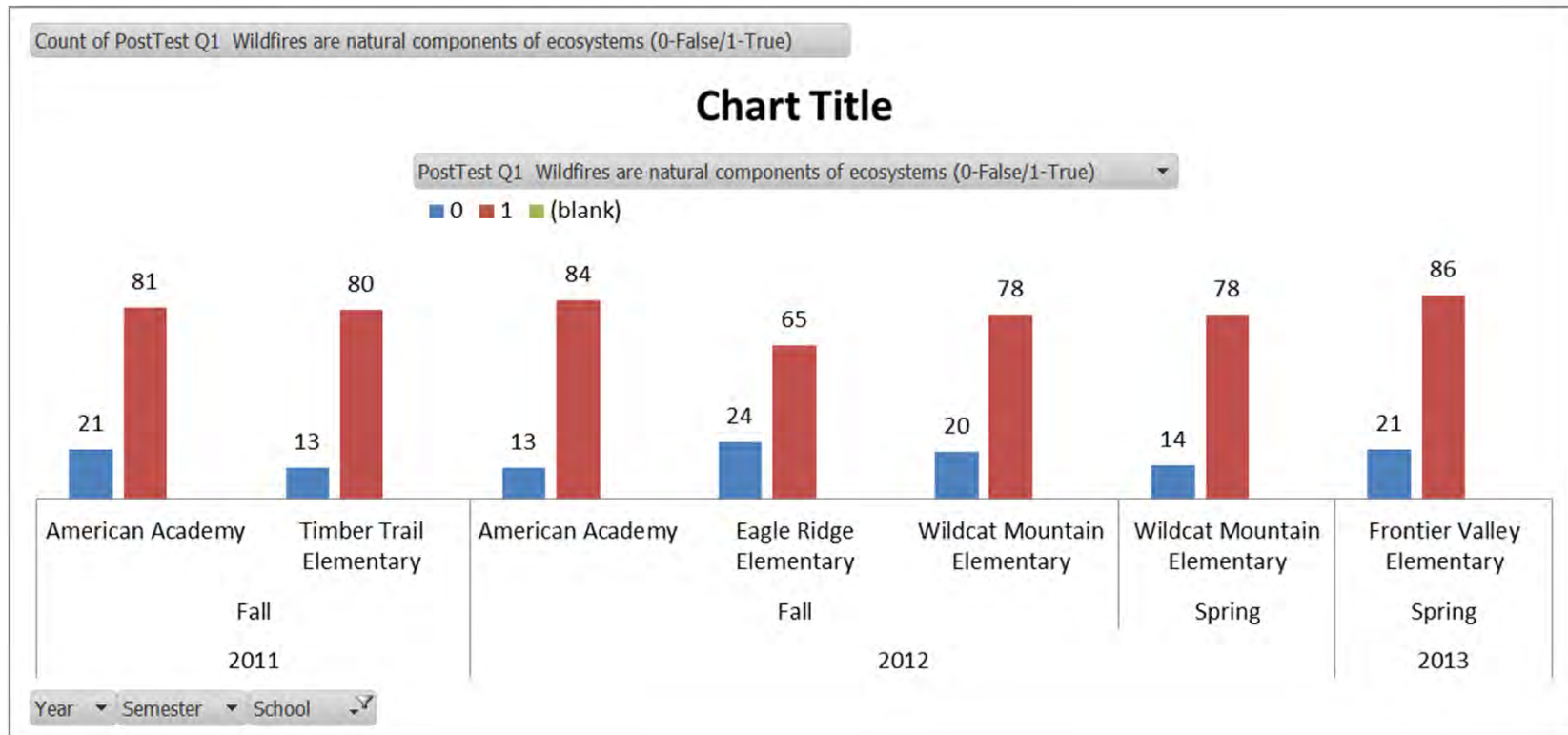
314 99

brick house

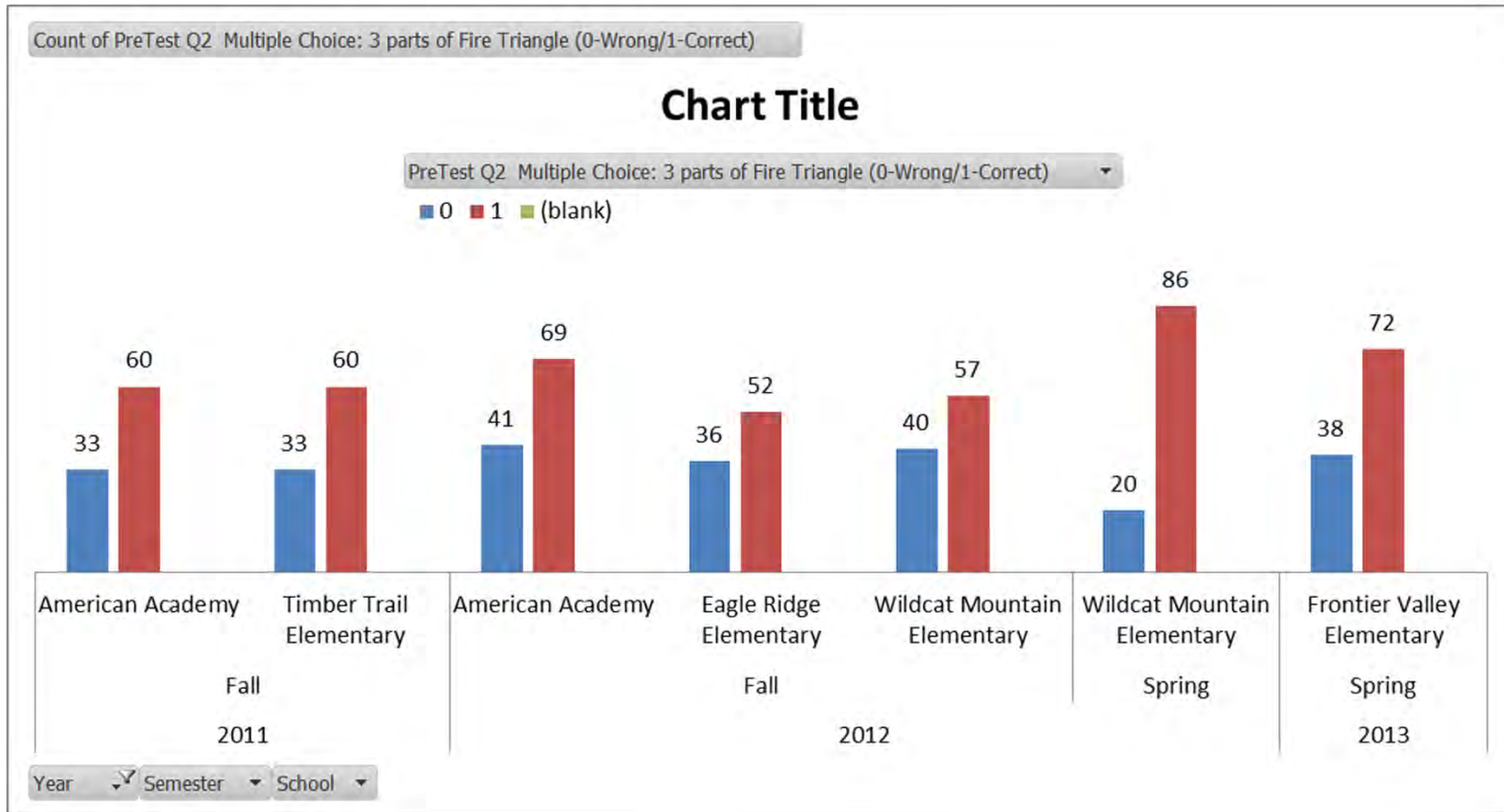
Wildfires are Natural: Pretest



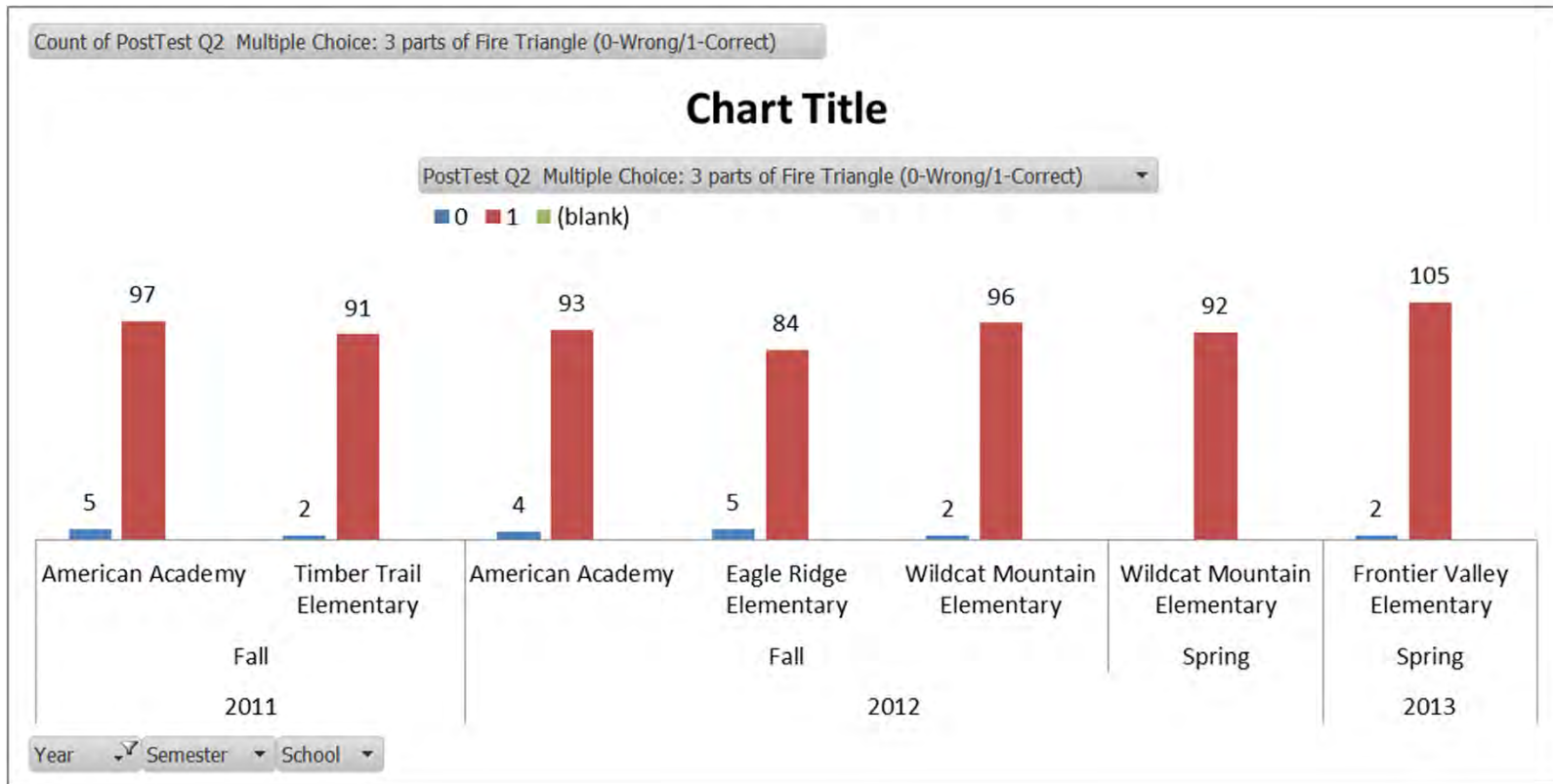
Wildfires are Natural: Post Test



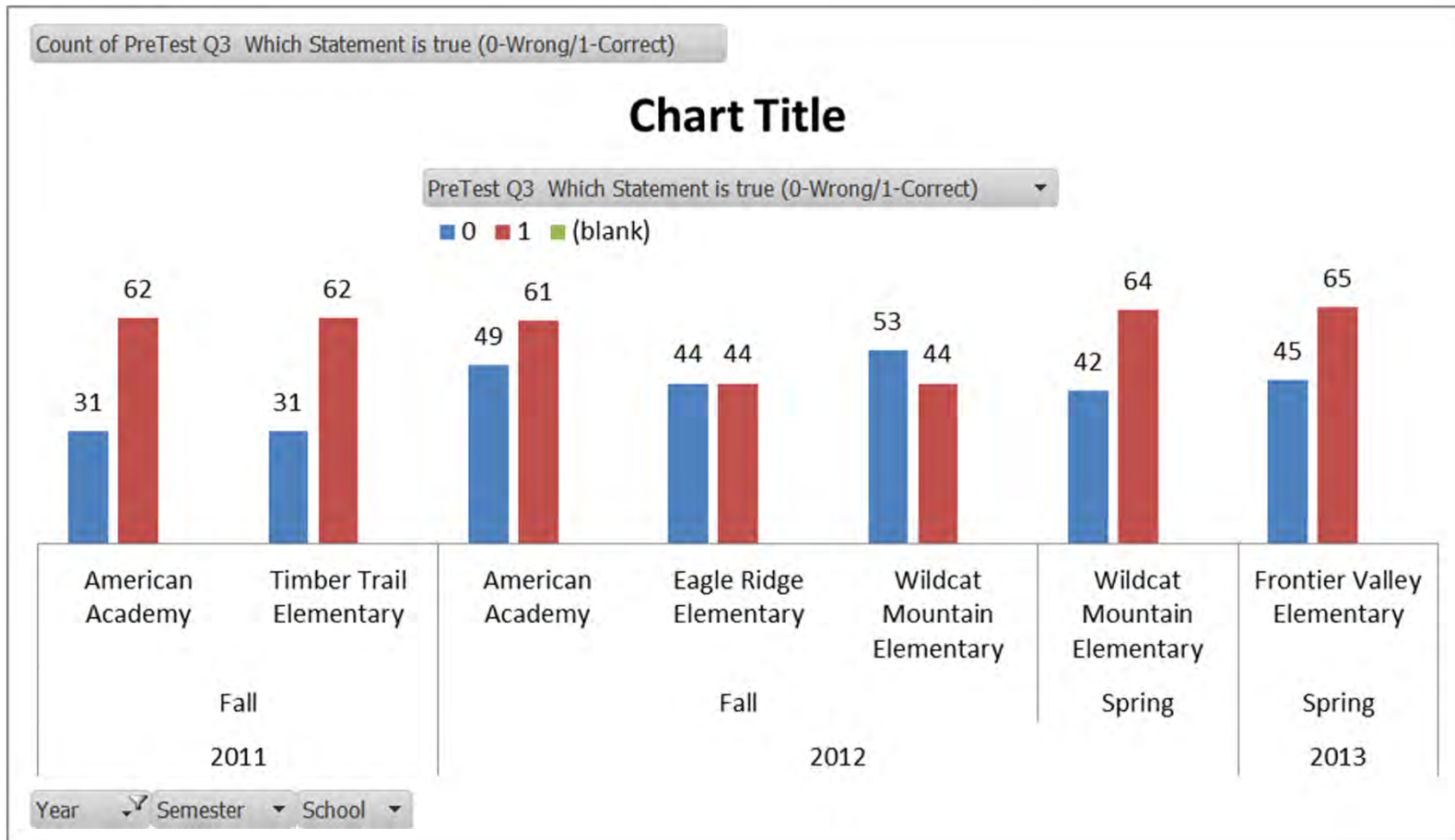
Parts of Fire Triangle: Pre



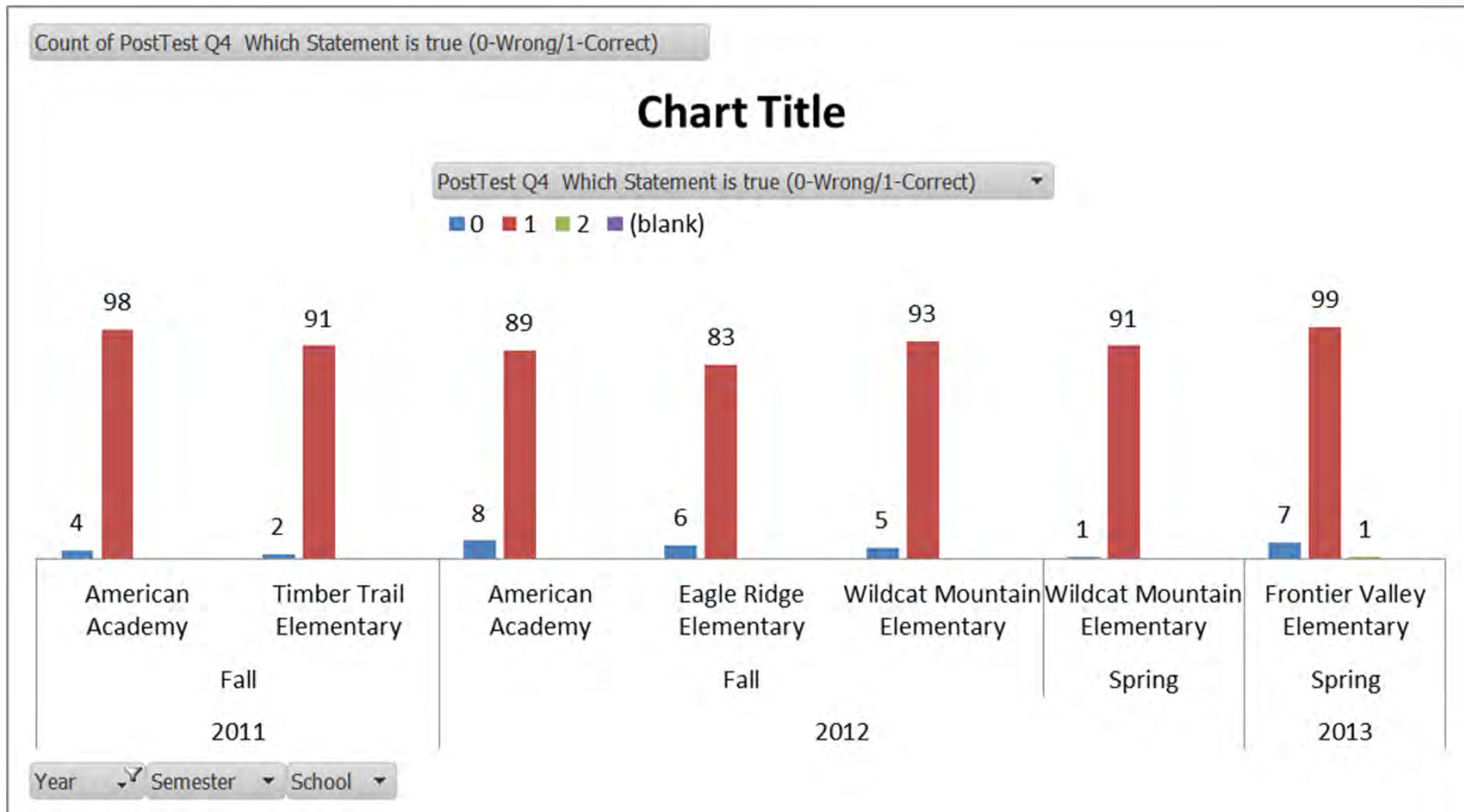
Parts of Fire Triangle: Post



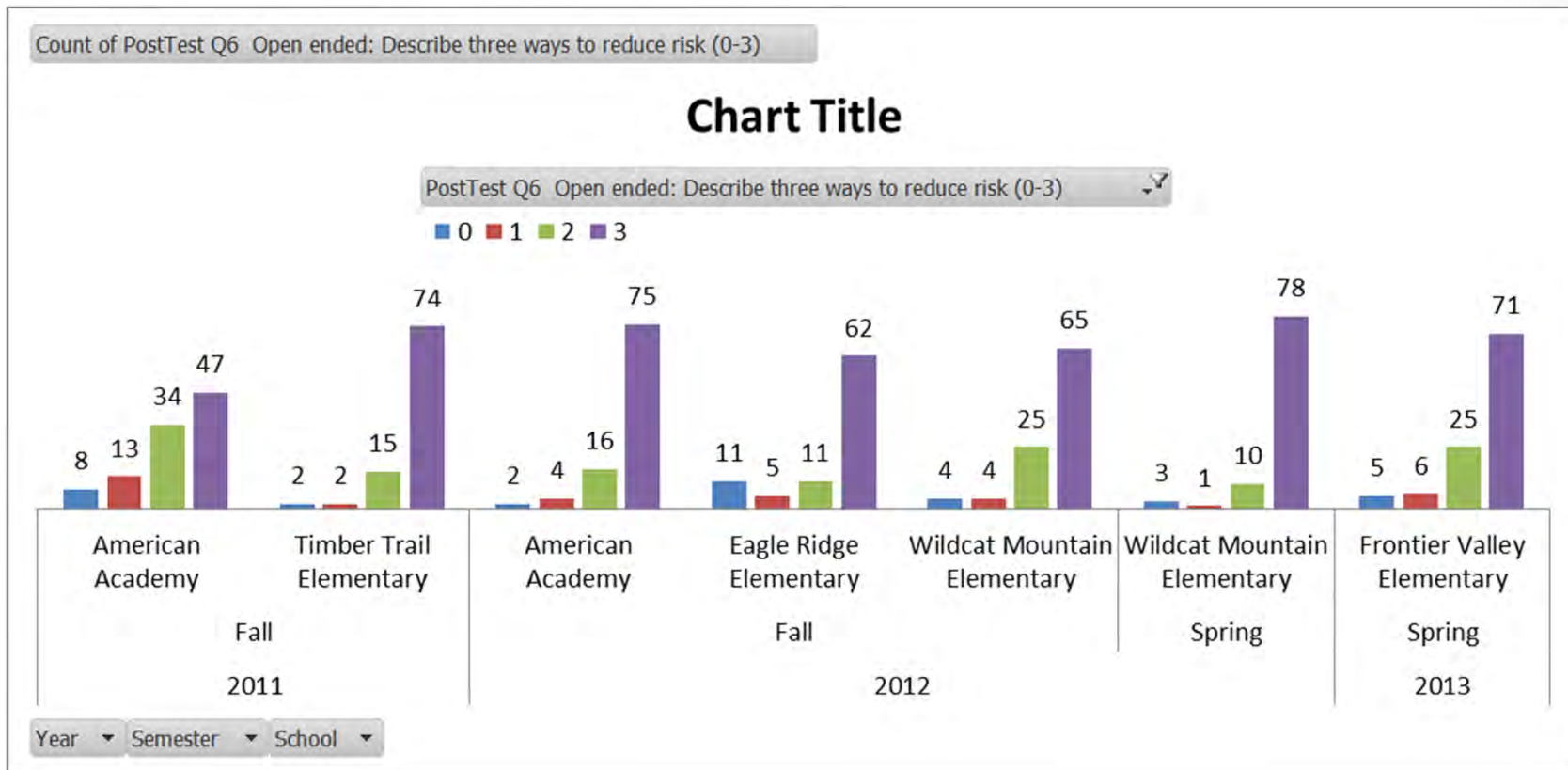
Which Statement is True: Pre



Which Statement is True: Post



3 Ways to Reduce Risk: Post



Behavior Change

- The Promised Land...

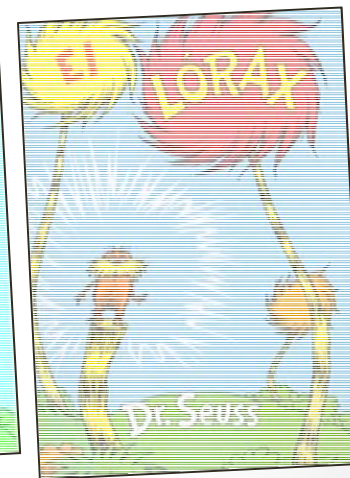
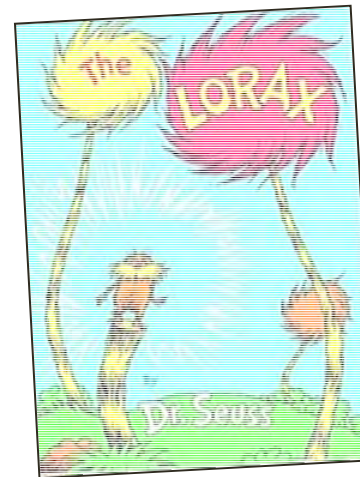
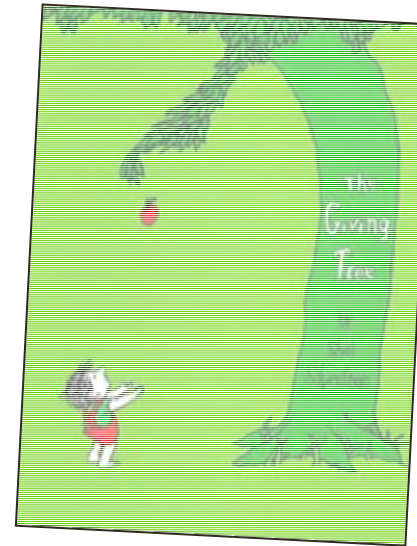
Other Components

- Jeopardy Game
- Debates

Science	History	Property Mitigation	Tree Cookies	Our Ecosystem	Hot Stuff
100	100	100	100	100	100
200	200	200	200	200	200
300	300	300	300	300	300
400	400	400	400	400	400
500	500	500	500	500	500



Other Components



Collaborate with your Teachers

- Review terms, vocabulary
- Review evaluation questions
- Classroom, speaker expectations
- Create and innovate with them

A Raging Success... right?

- Positive knowledge gain
- Positive relationships with teachers
- Positive relationships with students
- Positive relationships with parents
- I love teaching Wildfire Matters!

But...

- Anecdotal behavior change
- 6 out of 41 elementary schools (Time Intense)
- Juvenile firesetting more common than wildfires

So I Shelved It... and Adapted

- Change is OK
 - If a program isn't delivering, don't keep doing it
 - Agency buy-in should increase
 - Community buy-in should increase
-
- Wildfire Matters for Adults
 - Fire Safety Matters 4.0

Lessons Learned

- If you want to go fast, go alone. If you want to go far, go together.
- Change is OK
- Try it, then try something else
- Evaluate your program(s)
 - Attitudes, Knowledge, Behaviors
- Learn more
- Share more

Resources

- Fire & Life Safety Educators of Colorado
- Pikes Peak Wildfire Prevention Partners
- Colorado Alliance for Environmental Education
- Project Learning Tree (Shawna Crocker)
- USFS FireWorks
- NFPA
- Ready-Set-Go
- Fire-Adapted Communities

- All of my lesson plans, tests



WILDFIRE
Matters

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