4th grade Nevada History Discussion Lesson

Topic: Legislative Impact on Lake Tahoe's Clarity

Lesson Authors: Nancy Franden Kathryn Gailson Kim McElroy Julie Moyle

Related Essential Question: How have conflict and compromise shaped Nevada's history?

What environmental and legislative changes have taken place to affect Lake Tahoe's clarity?

Related Nevada History Chapters: Chapter 10-Governing Nevada

NV Social Studies Standards (Geography, Economics, Civics, History):
H3.4.5 Discuss major news events on the local and state levels.
G7.4.4 Describe historical and current economic issues in Nevada using geographic resources, i.e., illustrate demographic changes due to mining and gaming.
G8.4.1 Describe ways **physical environments** affect human activity in Nevada using historical and contemporary examples.
G8.4.3 Explore the impact of human modification of Nevada's **physical environment** on the people who live there.
C13.4.1 Identify and discuss examples of rules, laws, and authorities that keep people safe and property secure in the state of Nevada.
C15.4.2 Define and give examples of state and local **interest groups.**

Literacy Standards:
4.SL.1 Engage effectively in a range of collaborative discussions, (one-on-one, in groups, teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
4.SL.1b Follow agreed-upon rules for discussions and carry out assigned roles.
4.RF.4c Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
4.RI.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a Grade 4 topic or subject area.
4.W.1b Provide reasons that are supported by facts and details.

Brief Overview of Lesson:
Students will learn about the changes that have taken place over the years that have affected Lake Tahoe's clarity. They will learn about a law that has impacted the lake clarity. After reading, annotating, and discussing various articles, the students will participate in a group discussion regarding continued legislative involvement with Lake Tahoe's clarity.

Brief Historical Background:
The 2000 Lake Tahoe Restoration Act is up for reauthorization which would provide millions of dollars in funding for critical programs to protect Lake Tahoe's environment. Since 2000, the loss of lake clarity has slowed, which may be a sign that restoration is working to slow the influx of pollution to Lake Tahoe. However, the Lake remains threatened by urban storm water runoff from aging urban infrastructure, invasive species and wildfire. Is continued federal support for the Lake Tahoe Environmental Improvement Program (EIP) vital to preserve this inspiring national treasure?

Lesson Sequence:

Approximate Time Frame	What is the teacher doing?	What are students doing?	Notes (additional scaffolds, logistical considerations, room arrangements, grouping, etc.)
Day 1 15 minutes	Teacher will show Videos: UC Davis TERC Studies Lake Tahoe Go to website and click on Virtual Research Vessel Video **Act 1** to learn about Lake Tahoe. **Act 2** will discuss the clarity and how it is measured. http://terc.ucdavis.edu/ed-outreach/tahoe-science-center/virtual-research-boat.html Teacher will circulate the room listening to student conversations Teacher will bring the students back to whole class to summarize what they have learned. A list of "I wonder" questions can be created.	Students will complete Note taker for video while keeping in mind: **Limnologist use a Secchi disk to measure the clarity of Lake Tahoe. Draw a picture and explain how it measures the clarity of the lake. Why were they taking the readings? Why do you think lake clarity is important to people?** Students will discuss the note taker in pairs.	Vocabulary: **Limnologist**: a person who studies lakes **Secchi disk**-instrument used to measure lake clarity **Van Dorn water sampler**-collects water samples from different depths in the lake. **See page 5**
45 minutes	Teacher assigns: *UC Davis Tahoe Environmental Research Center* Teacher can read aloud or have students read independently:	While reading students will annotate text keeping in mind: ***What determines the blue color of Lake Tahoe?*** ***How can it be controlled?*** ***What does the author mean when using the word blueness and clarity?*** Students will work with a partner to find evidence that answers each question. They will highlight in: Blue- answer to question 1 Yellow- the answer to question 2 Pink- the answer to question 3 Students will find another set of partners to share findings with.	Actively learn.com (upload document provides different scaffolds so all can access content) Teacher may end reading time before students are all finished due to varying abilities. Teacher may choose to read text aloud to students **See page 6**
Day 2 45 minutes	Teacher assigns: Close Read *Water Quality Threshold* Teacher will bring the class back whole group after reading to discuss evidence. Observations can be written	Students will read text, annotating as they read, with the following 2 questions in mind: ***According the article, what causes the decline in lake clarity?*** ***How does fine sediment affect the lakes clarity?*** ***What are some of the solutions to keeping Tahoe clear?***	Teacher may end reading time before students are all finished due to varying abilities. Teacher may choose to read text aloud to students. **See pages 7-9**

	on chart for whole class to see or add information to during week of study.		
Day 3 60 minutes	Teacher will show video: *Lake Tahoe Aquatic Invasive Species Boat Inspections Tahoe* http://terc.ucdavis.edu/ed-outreach/tahoe-science-center/virtual-research-lab.html Select act 1 After watching video teacher will assign students to independently read: *Invasive Species Threaten Tahoe's Clarity and Ecosystems*	As students watch the video they will complete Note taker with following 2 questions in mind: ***Why are invasive species dangerous to the lake? Identify the invasive species from the article.*** ***Is there anything we can do to help eradicate the invasive species?*** After reading students can add to their Note Taker any additional information, and then share their note taker with a partner, sharing which new information they added and why.	**See pages 10-11**
Day 4 45 minutes	Teacher will read aloud: Public Law 106-506 106th Congress Teacher will explain that this Act (Public Law 106-506) exists right now and will expire unless it is reauthorized which means there will not be funding to support the efforts to keep Tahoe blue unless it is reauthorized. Teacher will have students who feel the Act should be reauthorized meet on one side of room. Those against will meet on the other side. Should the government spend millions of dollars to Keep Tahoe Blue?	Students will discuss whole group the findings and purposes of the Act. Teacher will chart the information the students share. Students will discuss with the group why they feel the Act should or should not be reinstated. Teacher will chart the ideas presented. After discussing students will write about whether or not they feel the Act should be reauthorized. Citing evidence from the text/chart.	Vocabulary: **Reauthorized-** empower, to authorize again, to give approval to or delegate power to **See pages 12-13**
  45 minutes	Teacher will assign students to read independently: Keep Tahoe Blue Letter – League to Save Lake Tahoe Teacher will have students engage in *Keep the Question Going.* The teacher asks one students a question and then asks another student if that answer seems reasonable or correct. Then he asks a third student for an explanation of why there is an agreement or not.	As students read they will annotate text keeping in mind: ***What is the author's main reason for writing this letter?*** ***According to the letter, how has the Lake Tahoe Restoration Act helped Lake Tahoe?***	Post questions on chart for all students to see. Struggling students can have text read to them. This helps keep all the students engaged because they must be prepared to either agree or disagree with the answers given and provide explanations. **See pages 14-15**
Day 5 45 minutes	Teacher will assign students to read independently: *Bill to Improve Lake Tahoe clears Senate committee in D.C. by Bill Theobald, USA TODAY January 20, 2016*	Students will annotate text while reading. After reading, students will answer: ***What more needs to be done to continue to increase Lake Tahoe's clarity?***	Teacher can read aloud to struggling students. **See pages 16-17**

		Students will answer question independently on a post it note. Students will then share their response to 3 different students and listen to 3 responses. Students will go back to their seats and add to their response if needed.	
Day 6 15 minutes	Teacher will tell students they will use all of the information they have learned to fill out Shared Inquiry Sheet to answer a question: (Select the question that best addresses the student's interest.) ***Has legislation done enough to protect Lake Tahoe's clarity? Should the Lake Tahoe Restoration Act be reinstated? Why or why not?*** ***or*** ***Why is the reauthorization of the Lake Tahoe Restoration Act important to the state Nevada?*** ***or*** ***Why is there legislation to protect Lake Tahoe's clarity? What do you think is the most important part of the Act?***	Students will complete the first 3 boxes of the Shared Inquiry Sheet independently using all of the information that they have learned so far. This will prepare the students for the Fishbowl Discussion. Box 1 on the Shared Inquiry form asks the students to write the question the teacher selected based on the interest of the class. Box 2- students will write their answer to the question. Box 3- students cite evidence from the texts read to support their answer.	Teacher can work with struggling students to fill out sheet. **See page 18**
Assessment 45 minutes	Fishbowl Discussion Teacher will monitor the discussion and ask questions to keep the conversation lively. After discussion teacher will ask students to complete bottom of Shared Inquiry Discussion Sheet.	Students will engage in Fishbowl discussion using the Shared Inquiry Discussion sheet. Students will share their answers which is open to agreement, disagree, or piggy-backing an idea presented with additional information. Inside Circle will be involved in discussion; Outside circle will complete Discussion Partner Feedback form. Form will be shared before switching roles. After the discussion, the students may revise their answer based on what they heard or learned during the discussion. Students will complete Self-Assessment form.	See the Directions for a Fishbowl discussion. **See pages 19-21** **See page 22** **See page 18** **See page 23**

Name _____

As you watch the video keep in mind…

Limnologist use a Secchi disk to measure the clarity of Lake Tahoe. Draw a picture and explain how it measures the clarity of the lake.
Why were they taking the readings? **Why do you think lake clarity is important to people?**

State of the Lake: Keep Tahoe blue?

Less algae, not clarity, key factor for blueness

July 23, 2015

UC Davis Tahoe Environmental Research Center

State of the Lake Report 2015

Lake Tahoe's iconic blueness is most strongly related to algae, not clarity, according to research released today from the UC Davis Tahoe Environmental Research Center, or TERC. In the "Tahoe: State of the Lake Report 2015," researchers found the lower the algal concentration, the bluer the

lake. The report also includes updates related to clarity, climate change, drought and new research at Lake Tahoe.

Clear and blue
The assumption that lake clarity is tied to blueness has driven advocacy and management efforts in the Lake Tahoe Basin for decades. But the report's findings show that at times of the year when clarity increases, blueness decreases, and vice versa. This is due to the seasonal interplay of sediment, nutrients and algal production as the lake mixes.

Clarity is controlled by sediment. Blueness is controlled by algal concentration, which in turn is driven by the level of nutrients available
to the algae.

"This is good news," said Geoffrey Schladow, director of the UC Davis Tahoe Environmental Research Center and a civil engineering professor. "It shows that we better understand how Lake Tahoe works, and it reinforces the importance of controlling nutrient inputs to the lake, whether from the forest, the surrounding lawns or even from the air. It's particularly encouraging that blueness has been increasing over the last three years."

Low precipitation helped keep runoff from both nutrients and sediment low in 2014.

Blueness Index
Shohei Watanabe, a postdoctoral researcher at UC Davis TERC, led the blueness study in collaboration with NASA-Jet Propulsion Laboratory and Laval University. He produced a Blueness Index, quantifying Lake Tahoe's color for the first time by using data from a NASA-JPL research buoy at the lake and hyperspectral radiometers that measure the amount of light leaving the lake at each waveband — in other words, its color.

Watanabe combined the Blueness Index with TERC measurements of Secchi depth — the depth at which a white disk remains visible when lowered into the water. He was surprised to see that blueness and clarity did not correspond. In fact, they varied in opposite directions.

"This does not mean that clarity should be dismissed," said Watanabe. "Rather, it shows that algae concentrations and nutrient input should be managed more closely to truly keep Tahoe blue and clear."

What determines the blue color of Lake Tahoe?

How can it be controlled?

What does the author mean when using the word blueness and clarity?

Water Quality Threshold

". . . the water was not merely transparent, but dazzlingly, brilliantly so."
- a description of Lake Tahoe by Mark Twain, Roughing It (1871)

The focus of the League to Save Lake Tahoe is water quality and clarity in Lake Tahoe. The clarity of Lake Tahoe was first made famous by Mark Twain in the 1880s. Tragically, the pristine clarity of Lake Tahoe as experienced by early visitors is no more. Consistent scientific measurements of water clarity started in 1968. At that point, one could see a white disk submerged to a depth of 100 feet. Today, clarity has dropped to around 70 feet. That means Tahoe is losing about one foot of clarity per year.

Why is Tahoe losing clarity?

Recent water quality research has shed more light on the causes of the decline in lake clarity. Lake Tahoe is experiencing a phenomenon known as cultural eutrophication—excessive algal growth due to excessive nutrient levels. Nitrogen and phosphorus from automobile emissions and urban and forested areas act like fertilizer to accelerate algal growth.

Aside from the negative impacts of nitrogen and phosphorus, scientists have identified fine sediments as the primary source of lake clarity loss. Fine sediments are tiny, ground up particles—much smaller than the width of a human hair. These fine sediments enter the lake from roadways and urban areas. Rather than falling to the bottom of the lake, fine sediments remain suspended in the water column, making the shoreline areas appear murky and brown.

The consensus among scientists is that we need to drastically reduce the amount of pollution entering the lake to stop or reverse Lake Tahoe's clarity loss. *"Charting a Course to Clarity"* is a concise, readable document that addresses which pollutants are causing Lake Tahoe to lose clarity, how much pollution is

entering Lake Tahoe, how much pollution the Lake can absorb and still restore clarity, and the options for reducing pollution.

For 50 years the League has been an advocate for strong measures to protect the lake. We support solutions such as developing an effective public transportation system, restoring natural wetlands and streams, implementing strong erosion control measures, and regulating the rate of development. In addition, we work to educate residents and visitors about opportunities to take action and help restore the environment.

Note taker for *Water Quality Threshold*

According the article, what causes the decline in lake clarity?	***What are some of the solutions to keeping Tahoe clear?***

Invasive Species Threaten Tahoe's Clarity and Ecosystems

One of the biggest threats to Lake Tahoe is the introduction and spread of invasive species. Weeds and non-native snails are changing the lake's ecosystem, concentrating nutrients, causing algae blooms and creating habitat for more invasives like goldfish and bass.

What invasive species are already established in Tahoe?

Asian clams, Eurasian watermilfoil and curly leaf pondweed are already established in Tahoe and are here to stay. They are responsible for considerable shoreline degradation, impacting how recreationists experience Tahoe. Our volunteer program Eyes on the Lake aims to keep the invasive plants from spreading to new locations.

Invasive mussels are not in Tahoe, but are at its doorstep.

An infestation of invasive mussels is an immediate threat to Lake Tahoe. The quagga and zebra mussels reproduce and colonize quickly and if introduced to Lake Tahoe would do irreparable damage to its ecosystem.

Boat inspections became mandatory in 2008, and inspectors frequently find invasive species on boats attempting to launch at Lake Tahoe.

These boats are quarantined and decontaminated. But quagga and zebra mussels are often extremely difficult to see. Please help us to protect Lake Tahoe by taking the following precautions:

- If you are planning to launch a boat from shore and the boat has been in any other body of water, be sure to clean, drain, and dry it completely. Give it a thorough visual inspection. If you notice anything suspicious, take it to a public boat launch where it can be examined by a certified inspector.
- Visit TahoeBoatInspections.com for roadside inspection locations, hours and fee information.
- All public boat launches and marinas are now staffed by a boat inspector who examines boats for evidence of mussels. Boat launches are only open when an inspector is present.
- Paddlers, kayakers and other non-motorized watercraft users should visit Tahoe Keepers org for free training on how to inspect their craft.

Inspection fees for motorized boats range from $20-$120, depending on the size of boat. All funds go directly to the inspection program. There is currently no charge to inspect a nonmotorized watercraft.

Name _____

Lake Tahoe Aquatic Invasive Species Boat Inspections Tahoe

As you watch the video keep in mind…

Why are invasive species dangerous to the lake? Identify the invasive species from the article.
Is there anything we can do to help eradicate the invasive species?

Public Law 106–506
106th Congress

An Act

To promote environmental restoration around the Lake Tahoe basin.

Nov. 13, 2000
[H.R. 3388]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Lake Tahoe Restoration Act.
Forests and forest protection.
California.
Nevada.

SECTION 1. SHORT TITLE.

This Act may be cited as the "Lake Tahoe Restoration Act".

SEC. 2. FINDINGS AND PURPOSES.

(a) FINDINGS.—Congress finds that—

(1) Lake Tahoe, one of the largest, deepest, and clearest lakes in the world, has a cobalt blue color, a unique alpine setting, and remarkable water clarity, and is recognized nationally and worldwide as a natural resource of special significance;

(2) in addition to being a scenic and ecological treasure, Lake Tahoe is one of the outstanding recreational resources of the United States, offering skiing, water sports, biking, camping, and hiking to millions of visitors each year, and contributing significantly to the economies of California, Nevada, and the United States;

(3) the economy in the Lake Tahoe basin is dependent on the protection and restoration of the natural beauty and recreation opportunities in the area;

(4) Lake Tahoe is in the midst of an environmental crisis; the Lake's water clarity has declined from a visibility level of 105 feet in 1967 to only 70 feet in 1999, and scientific estimates indicate that if the water quality at the Lake continues to degrade, Lake Tahoe will lose its famous clarity in only 30 years;

(5) sediment and algae-nourishing phosphorous and nitrogen continue to flow into the Lake from a variety of sources, including land erosion, fertilizers, air pollution, urban runoff, highway drainage, streamside erosion, land disturbance, and ground water flow;

(6) methyl tertiary butyl ether—

(A) has contaminated and closed more than one-third of the wells in South Tahoe; and

(B) is advancing on the Lake at a rate of approximately 9 feet per day;

(7) destruction of wetlands, wet meadows, and stream zone habitat has compromised the Lake's ability to cleanse itself of pollutants;

(8) approximately 40 percent of the trees in the Lake Tahoe basin are either dead or dying, and the increased quantity

of combustible forest fuels has significantly increased the risk of catastrophic forest fire in the Lake Tahoe basin;

(9) as the largest land manager in the Lake Tahoe basin, with 77 percent of the land, the Federal Government has a unique responsibility for restoring environmental health to Lake Tahoe;

(10) the Federal Government has a long history of environmental preservation at Lake Tahoe, including—

(A) congressional consent to the establishment of the Tahoe Regional Planning Agency in 1969 (Public Law 91–148; 83 Stat. 360) and in 1980 (Public Law 96–551; 94 Stat. 3233);

(B) the establishment of the Lake Tahoe Basin Management Unit in 1973; and

(C) the enactment of Public Law 96–586 (94 Stat. 3381) in 1980 to provide for the acquisition of environmentally sensitive land and erosion control grants;

(11) the President renewed the Federal Government's commitment to Lake Tahoe in 1997 at the Lake Tahoe Presidential Forum, when he committed to increased Federal resources for environmental restoration at Lake Tahoe and established the Federal Interagency Partnership and Federal Advisory Committee to consult on natural resources issues concerning the Lake Tahoe basin;

(12) the States of California and Nevada have contributed proportionally to the effort to protect and restore Lake Tahoe, including—

(A) expenditures—

(i) exceeding $200,000,000 by the State of California since 1980 for land acquisition, erosion control, and other environmental projects in the Lake Tahoe basin; and

(ii) exceeding $30,000,000 by the State of Nevada since 1980 for the purposes described in clause (i); and

(B) the approval of a bond issue by voters in the State of Nevada authorizing the expenditure by the State of an additional $20,000,000; and

(13) significant additional investment from Federal, State, local, and private sources is needed to stop the damage to Lake Tahoe and its forests, and restore the Lake Tahoe basin to ecological health.

(b) PURPOSES.—The purposes of this Act are—

(1) to enable the Forest Service to plan and implement significant new environmental restoration activities and forest management activities to address the phenomena described in paragraphs (4) through (8) of subsection (a) in the Lake Tahoe basin;

(2) to ensure that Federal, State, local, regional, tribal, and private entities continue to work together to improve water quality and manage Federal land in the Lake Tahoe Basin Management Unit; and

(3) to provide funding to local governments for erosion and sediment control projects on non-Federal land if the projects benefit the Federal land.

KEEP TAHOE BLUE®

Date: April 8, 2014
To: The Honorable Dianne Feinstein
331 Hart Senate Office Building
Washington, DC 20510
From: The League to Save Lake Tahoe
Re: Lake Tahoe Restoration Act (H.R. 3390 and S. 1451)

Dear Senator Feinstein,

As the oldest and largest environmental group in the Lake Tahoe Basin, we write to express our enthusiastic support for the reauthorization of the Lake Tahoe Restoration Act (H.R. 3390 and S. 1451), which would provide $415 million in funding for critical programs to protect Lake Tahoe's environment. We applaud your long-term dedication to this important issue, as well as the hard work of the California and Nevada congressional delegations.

The LTRA of 2000 proved immensely successful in funding effective restoration projects throughout the Tahoe Basin. Recent science shows the loss of lake clarity has slowed, which may be a sign that restoration is working to slow the influx of pollution to Lake Tahoe. However, the Lake remains threatened by urban stormwater runoff from aging urban infrastructure, invasive species and wildfire. Continued federal support for the Lake Tahoe Environmental Improvement Program (EIP) is vital to preserve this inspiring national treasure.

The League is proud to be a member of the Lake Tahoe Partnership, a group of diverse interests that includes business, government, science and environmental advocates who have come together to support the LTRA and who over the last 15 years have collaborated to implement the EIP, a nationwide model for environmental restoration. The EIP has helped to reduce hazardous fuels on 54,000 acres, restore 1,509 acres of Stream Environment Zones, acquire 3,100 acres of sensitive land, open 2,500 feet of shoreline for public access and build 134 miles of bike trails. Since 2009, the Aquatic Invasive Species Program has inspected approximately 29,000 watercraft and decontaminated 10,000 vessels, as well as treated 24.09 acres of weeds and Asian clam infestations in the lake bed of Lake Tahoe. We have seen encouraging progress on our environmental standards because of the EIP.

The EIP is truly a cooperative effort. The LTRA will supplement environmental funding commitments from the private sector, state, county and local jurisdictions. All of Lake Tahoe's communities are committed to its restoration and preservation.

We must build on this foundation and keep up the momentum of successful restoration. The League supports all the main funding areas of the LTRA: improving stormwater management, restoring watersheds, reducing wildfire threat, boat inspections to prevent aquatic invasive species and projects to remove existing invasives, introducing Lahontan cutthroat trout, and

supporting scientific research. We agree that these are the top priorities for protecting Lake Tahoe. Lake Tahoe is known throughout the world for its stunning clarity and inspiring views. However, it has lost 30 feet of deepwater clarity since the 1950s and areas along the shoreline are experiencing degradation, where pollution and invasive species are changing the ecosystem and clouding its nearshore waters.

Lake Tahoe's boat inspection program has been very successful at preventing new introductions of aquatic invasive species, However, the threat of infestations from some of the most destructive invasive species still exists, including quagga and zebra mussels that have destroyed lakes in the east and in Southern Nevada. Controlling invasive species will improve water clarity, prevent harmful impacts to native species and protect our economy. LTRA funding will be crucial for these programs.

In addition, the act provides vital funding to restore wetlands and stream zones, which serve as natural filtration systems for water entering Lake Tahoe. It will provide crucial funding for urban stormwater management, the largest source of pollution entering Lake Tahoe. It will help reduce the threat of wildfire, which can have devastating impacts to water quality. It will help fund scientific research that will help identify new threats, create cost-effective projects and help to monitor the success of policies and restoration projects.

Finally, by supporting this legislation, you support the restoration of a national treasure beloved by citizens from every state. Millions of visitors from around the country visit Lake Tahoe each year, whether they are snowbirds or love our warm summer beaches and mountain trails.

The League is a private, member-based organization with over 5,000 members known for our iconic bumper sticker proclaiming "Keep Tahoe Blue." These stickers can be spotted all over the country. We have members from all 50 states showing their support each year for the preservation of this inspiring lake. We also have a Facebook following of over 90,000 fans, which includes fans from all 50 states as well as 44 countries, who frequently express their love for Lake Tahoe and their enthusiasm for keeping it blue. The programs the LTRA would fund are critical to protecting not only Lake Tahoe's environment, but also an economy and communities that depend on a healthy lake for their livelihood.

We are deeply appreciative of your sponsorship of the Lake Tahoe Restoration Act, and thank you for your unparalleled continued support of Lake Tahoe.

Sincerely,

Bob Damaschino, Board President

Darcie Goodman Collins, PhD, Executive Director

Bill to improve Lake Tahoe clears Senate committee in D.C.

Bill Theobald, USA TODAY *12:45 p.m. PST January 20, 2016*

(Photo: RGJ file)

WASHINGTON — Democrats and Republicans found a rare subject they could agree on Wednesday: Lake Tahoe and surrounding land is worth improving and protecting.

The Senate Environment and Public Works Committee easily passed the Lake Tahoe Restoration Act of 2015 by voice vote and sent it to the full Senate. The bill authorizes $415 million in federal funds over 10 years to improve the clarity of the lake, reduce the potential for severe forest fires on the surrounding land, and prevent the spread of invasive species.

The legislation, sponsored by Republican Sen. Dean Heller of Nevada, is subject to the approval of the full Senate and House. Joining Heller as co-sponsors of the bill were Sen. Harry Reid, D-Nev., and California Democratic Senators, Dianne Feinstein and Barbara Boxer.

During Wednesday's meeting, Boxer, the ranking committee Democrat, marveled at the lake during brief discussion of the legislation. "It is an incredible lake," Boxer said. "It is so deep and so beautiful."

After the vote, Reid said in a statement: "We have made significant progress in restoring our Jewel of the Sierras, but there is still much more that needs to be done. This bill is vital to ensuring that the work of protecting Lake Tahoe and the Tahoe Basin continues uninterrupted."

Among the major targets for the bill's funding, which would need to be appropriated in separate legislation, are:

--wildfire prevention, $150 million. To remove excess undergrowth that fuels wildfires and to improve water infrastructure to aid firefighting.

--storm water projects, $113 million. To implement storm water management, erosion control and watershed restoration projects.

RENO GAZETTE JOURNAL
Storm pours 4.3 billion gallons into Lake Tahoe

--environmental improvements, $80 million. For projects ranging from new bike trails to creek restoration.

--invasive species management, $45 million. To prevent introduction of the quagga mussel and manage other invasive species like the Asian clam and the increase in algae that is clouding the lake's famously clear water.

The first Lake Tahoe Summit was organized by President Clinton in 1997 and the first Lake Tahoe Restoration Act became law in 2000. Since then, $1.8 billion has been spent by the federal government, the states of Nevada and California, local government and the private sector on environmental improvements.

That work appears to be paying off. Last April, scientists at the University of California, Davis, reported that clarity levels in Lake Tahoe in 2014 showed the biggest improvement in more than a decade.

The average annual clarity level for 2104 was 77.8 feet, which is the depth at which a 10-inch white disk remains visible when lowered into the water. That's almost 14 feet greater than the value of 64.1 feet in 1997, when the lowest average clarity value was recorded.

Shared Inquiry Discussion

Fishbowl

Focus Question:

Rationale

The "fishbowl" is a teaching strategy that helps students practice being contributors and listeners in a discussion. Students ask questions, present opinions, and share information when they sit in the "fishbowl" circle, while students on the outside of the circle listen carefully to the ideas presented and pay attention to process. Then the roles reverse. This strategy is especially useful when you want to make sure all students participate in the discussion, when you want to help students reflect on what a "good discussion" looks like, and when you need a structure for discussing controversial or difficult topics. Fishbowls make excellent pre-writing activities, often unearthing questions or ideas that students can explore more deeply in an independent assignment.

Your Answer before the discussion:

Procedure

Step one: Selecting a topic for the fishbowl

Almost any topic is suitable for a fishbowl discussion. The most effective prompts (question or text) do not have one right answer, but rather allow for multiple perspectives and opinions. The fishbowl is an excellent strategy to use when discussing dilemmas, for example.

Evidence from the story to support your answer (page, paragraph, what it says)

Step two: Setting up the room

A fishbowl requires a circle of chairs ("the fishbowl") and enough room around the circle for the remaining students to observe what is happening in the "fishbowl." Sometimes teachers place enough chairs for half of the students in the class to sit in the fishbowl, while other times teachers limit the chairs in the fishbowl. Typically six to twelve chairs allows for a range of perspectives while still allowing each student an opportunity to speak. The observing students often stand around the fishbowl.

Step three: Preparation

Like many structured conversations, fishbowl discussions are most effective when students have had a few minutes to prepare ideas and questions in advance.

Your answer after discussion (explain how you changed or added to your original thought or answer)

Step four: Discussing norms and rules of the discussion

There are many ways to structure a fishbowl discussion. Sometimes teachers have half the class sit in the fishbowl for 10-15 minutes and then say "switch," at which point the listeners enter the fishbowl and the speakers become the audience. Another common fishbowl format is the "tap" system, where students on the outside of the fishbowl gently tap a student on the inside, indicating that they should switch roles. See the variations section for more ideas about how to structure this activity.

Regardless of the particular rules you establish, you want to make sure these are explained to students beforehand. You also want to provide instructions for the students in the audience. What should they be listening for? Should they be taking notes? Before beginning the fishbowl, you may wish to review guidelines for having a respectful conversation. Sometimes teachers ask audience members to pay attention to how these norms are followed by recording specific aspects of the discussion process such as the number of interruptions, respectful or disrespectful language used, or speaking times (Who is speaking the most? The least?)

Step five: Debriefing the fishbowl discussion

After the discussion, you can ask students to reflect on how they think the discussion went and what they learned from it. Students can also evaluate their participation as listeners and as participants. They could also provide suggestions for how to improve the quality of discussion in the future. These reflections can be in writing, or can be structured as a small or large group conversation.

Variations

1) A fishbowl for opposing positions

This is a type of group discussion that can be utilized when there are two distinct positions or arguments. Each group has an opportunity to discuss the issue while the other group observes. The goal of this technique is for one group to gain insight about the other perspective by having this opportunity to listen and formulate questions. After both sides have shared and listened, students are often given the opportunity to discuss their questions and ideas with students representing the other side of the argument.

2) A fishbowl for multiple perspectives

This format allows students to look at a question or a text from various perspectives. First, assign perspectives to groups of students. These perspectives could represent the viewpoints of different historical figures, characters in a novel, social categories (e.g. young, old, male, female, working-class laborer, industrialist, peasant, noble, soldier, priest, etc.), or political/philosophical points of view. Each group discusses the same question, event or text representing their assigned perspective. The goal of this technique is for students to consider how perspective shapes meaning-making. After all groups have shared, students can be given the opportunity to discuss their ideas and questions with peers from other groups.

Modified Fishbowl Strategy

1. Provide a common reading and background on an unresolved or controversial issue to the class. Utilize a reading strategy to help students to access the text and force them to choose quotes or facts from the text pertaining to the issue. Have students write down their interesting facts and quotes on post-it notes or small pieces of paper.
2. Make two to three circles in your classroom with +/- 5 chairs in each. The chairs will face inwards. Outside of each circle, make another circle of chairs.
    a. The inner circle of chairs is the fishbowl and students in these chairs are very talkative, intelligent and scholarly fish.
    b. The outer circle represents people who love to learn from their fish and provide them "fish food for thought."
    c. The teacher will choose one person from the outside circle to be the "fish trainer." This person interjects only if the conversation gets off track. This person will rephrase the question and ask the fish to go back to their discussion.
3. RULE: Only students in the fishbowl (inner circle) are allowed to speak during this activity.
    a. Students in the fishbowl engage in deliberation of an issue presented, as an open-ended question, by the teacher.
    b. All participants must abide by the rules of civic discussion and common courtesy.
4. The outside circle has a responsibility of providing "food for thought" (strip of paper/post-it) with relevant information that can be used by the fish. For this reason, it can be very positive to pair students on the inside/outside of the circle so that someone with great confidence is on the outside helping the less confident "fish" on the inside.
5. Once a student in the circle has spoken twice, a student from outside the circle may tap that student on the shoulder and switch places with the student. The student on the outside MUST TAP IN after their inside partner has spoken four times. The student in the circle will exit to the outside observation seats. This process can continue throughout the discussion.
6. The teacher does not participate in the discussion except to provide a new question or to terminate an irrelevant, or inappropriate, line of discussion.

Don't inadvertently do this!

7. It is highly effective to have two separate (but related) discussion questions. After you have completed a fishbowl on one question, you can begin the next question by reversing the original groups. Fish become fish feeders and feeders become fish.
8. Including a written reflection piece is a great way to assess student learning.
9. Allowing small groups to bring all of their post-its to a table and co-write a piece demonstrating their understanding is also a great assessment and instructional tool.

Basic Discussion Rubric

Discussion Rubric	3	2	1	0
Substantive				
States and identifies issues.	Accurately states and identifies issues.	Accurately states an issue.	States a relevant factual, ethical, or definitional issue as a question.	Does not state any issues.
Uses foundational knowledge.	Accurately and expresses completely relevant foundational knowledge pertaining to the issues raised during the discussion.	Accurately expresses mostly relevant foundational knowledge pertaining to issues raised during the discussion.	Accurately expresses somewhat relevant foundational knowledge pertaining to an issue raised by someone else.	Does not express any relevant foundational knowledge.
Elaborates statements with explanations, reasons, or evidence.	Pursues an issue with more than one elaborated statements.	Pursues an issue with one elaborated statement.	Elaborates a statement with an explanation, reasons, or evidence.	Does not elaborate any issues.
Procedural				
Invites contributions from, and acknowledges statements of, others.	Engages others in the discussion by inviting their contributions and acknowledging their contributions.	Invites comments from others and does not acknowledge their statements.	Does not invite comments from others but allows others to speak. Does not acknowledge contributions from others.	Does not invite comments from others nor acknowledge their statements.
Challenges the accuracy, logic, relevance, or clarity of statements.	Constructively challenges the accuracy, clarity, relevance, or logic of statements made.	Responds in a civil manner to a statement made by someone else by challenging its accuracy, clarity, relevance, or logic.	Responds in a civil manner but does not challenge the accuracy, clarity, relevance, or logic of statements.	Does not respond in a civil manner in all conversations. Does not challenge the accuracy, clarity, relevance, or logic of statements.

Name:_____ Partner: _____

Story:_____

Discussion-Partner Feedback

During the Discussion

Make a check mark (✓) each time you see your partner doing any of these things during the Shared Inquiry discussion.

My partner:

- Shared an idea or answered a question _____
- Gave evidence from the text to support an idea _____
- Explained how evidence supports an idea _____
- Agreed or disagreed with another person's idea _____
- Asked someone a question _____

After the Discussion

What was the most helpful or interesting thing your partner said?

_____

_____

_____

What is one thing your partner could improve in the next discussion?

_____

_____

_____

Name: _____

Story: _____

My Work in Discussion

Fill in the circle that describes your work in Shared Inquiry discussion.

	A lot	A little	Not really
I shared my own ideas about the story.	○	○	○
I looked back at the story to give evidence for my ideas.	○	○	○
I listened to others and commented on their ideas.	○	○	○
I talked to others in a respectful way about their ideas.	○	○	○
I learned a lot about the story.	○	○	○

Something I did in the discussion that I am proud of: _____

_____

_____

My goal for next time: _____

_____

_____