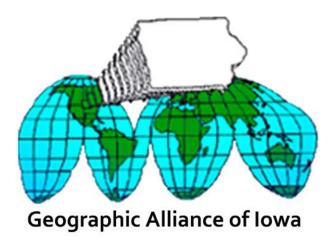
Maximizing Geographic Inquiry: Question Formulation, Connecting to Standards, and Civic Engagement

Alex Oberle, PhD Professor, Department of Geography, University of Northern Iowa







Social Studies Standards



Source: Iowa Social Studies Standards 2017



University of Northern Iowa







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LAS HUELLAS DE LA SEQUÍA

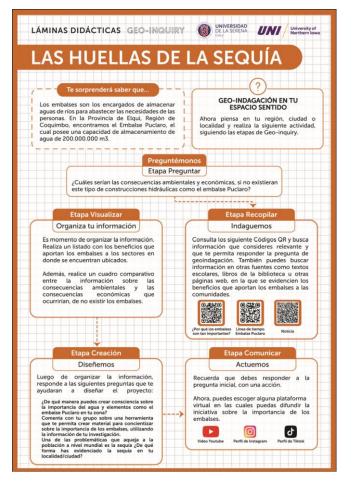


UNIVERSIDAD DE LA SERENA

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"I WANT MY STUDENTS TO WALK AWAY FROM CLASS WITH THE KNOWLEDGE TO HAVE A **POSITIVE IMPACT**."

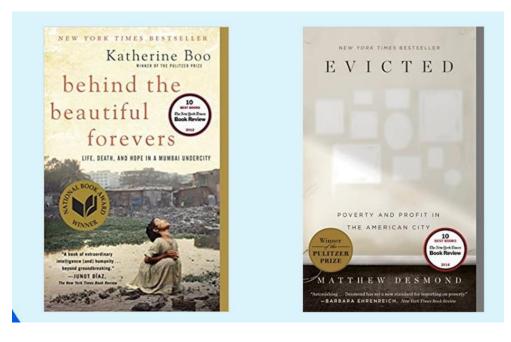


@INSIDENATGEO





Source: National Geographic @Insidenatgeo Instagram handle, 2018





Source: Desmond 2017, Boo 2012



Global Development

Maximize the impact of your global development programs with location intelligence





UNI /

University of Northern Iowa

Shrinking the Distance to Food Aid USAU used predicted analysis scale to sports tood dust button stress minimizing the distances women and children taxed to receive aid.





Source: ESRI 2024

GEOG 4170 Climate Action Planning

(Regional Analysis & Planning)

PROF. ALEX OBERLE TH 12:30 - 1:45 PM

UN

Want to <u>DO</u> something about climate change?

Learn the importance of public involvement and political engagement in addressing climate change locally; industry software for analyzing and forecasting local green house gas emissions; and best practices from around the globe applied to lowa communities.

> University of Northern Iowa. Geography

Clearpath Inventory Tabs

Linn County Govt 2021 (UNI) Edit Parameters

ildings & Facilities	Street Lights & Traffic Signals	Vehicle Reet	Transit Field	Employee Commute	Electric Power Production	Solid Waste Facilities	Water & Wastewater Treatment Facilities	Process & Fugiti Emissions
Availab	le Calculators				Inventor	y Records Foi	r Buildings &	
Pick a calc	ulator to enter a new	record.			Facilities			
Emissions from Grid Electricity			CommunityServi	cesBuilding_NaturalGas	Ed	t Delete		
				cesBuilding_Electric	Ed	t Delete		
o Emissio	Emissions from Stationary Fuel Combustion The stationary Fuel Combustion Steam and District Heating Purchases			CorrectionalCent	CorrectionalCenterAndCourtHouse_Electric			
- BLAILERIN				CorrectionalCen	CorrectionalCenterAndCourtHouse_NaturalGas Edit Delet			
 Steam a 				SheriffsOffice_N	aturalGas	Ed	I Delete	
					JuvenileJusticeCo	urt_NaturalGas	Ed	t Delete
 Emissio 	ns from Electric Pow	er Transmission a	and Distribution Lo	sses (1)	JuvenileDetentio	nCenter_NaturalGas	Ed	t Delete
					FillmoreBuilding	Electric	Ed	s Delete
 Emissions and Removals from Trees Outside of Forests on Local Government Land 			PublicServiceCer	nter_NaturalGas	Ed	t Delete		
• Emissions from Stationary Fuel Combustion (User Supplied Emissions Factors) ①			SheriffsOffice_El	ectric	Ed	t Delete		
			JuvenileDetentio	nCenter_Electric	Ed	I Delete		
o Durch as	a house has a			FillmoreBuilding		Ed	t Delete	
 Purchased District Cooling ① 					PublicServiceCer	nter_Electric	Ed	t Delete
						ourt Electric		



Reference Cities

Edina, Minnesota Pop. 53,494	Goal: 45% reduction by 2030; net zero by 2050 Plan focuses on reducing greenhouse gas emissions while maintaining economic growth and fostering social equity. High-impact and immediate actions include targeting 1) transportation and land use and 2)	Emissions by Sector: Edina
\$72,296 per capita 21.3 min. commute	Adopted in December 2021	25%
lssaquah, Washington	Goal: 50% emissions reduction by 2030 Plan focuses on aggressive climate action through collaboration with neighboring communities and engagement with residents. High-impact and immediate actions include 1)	Emissions by Sector: Issaquah
Pop. 40,051 \$68,492 per capita 30.5 min. commute	Adopted in December 2021	30%
St. Louis Park, Minnesota	Goal: 55% reduction by 2030; net zero by 2040 Plan focuses on three initial kick-start projects and subsequent long-term innovations to achieve decarbonization.	Emissions by Sector: St. Louis Park
Pop. 50,010 \$52,782 per capita 21.7 min. commute	High-impact and immediate actions include 1) improving building energy efficiency and 2) achieving 100% renewable energy. Adopted in 2018	20%
Wheat Ridge, Colorado	Goal: 45% reduction by 2030; net zero by 2050 Plan focuses on improving environmental sustainability to improve the economy, public health, community cohesion, and livability.	Emissions by Sector: Wheat Ridge
Pop.32,398 \$40,375 per capita <u>25.8 min.</u> commute	High-impact and immediate actions include 1) incentivizing green building and 2) promoting assistance programs for low-income residents. Adopted in 2018	21%



Tier 1: Priority Recommendations

According to the 2022 baseline inventory of 2020 greenhouse gas emissions in the city of Urbandale, transportation and building energy account for almost 95% of community-wide emissions. As a result, Urbandale should prioritize short-term initiatives that target transportation and building energy efficiency to dramatically reduce emissions.

Priority 1: Transportation

Transportation accounts for over a third of Urbandale's emissions, most of which come from gasoline-fueled passenger vehicles. To reduce Urbandale's transportation emissions, it should adopt the following initiatives and actions.

- 1) Reduce emissions from travel by reducing vehicle miles traveled
- 2) Expand electric vehicle (EV) charging infrastructure and incentives for EVs
- 3) Expand ride-sharing programs coordinated by local businesses
- 4) Adopt dense mixed-used, transit-oriented development, and roundabouts
- 5) Increase access to and use of public transit
- 6) Investigate fuel-switching for heavy-duty vehicles (e85, biodiesel)

Priority 2: Building Energy Efficiency

Commercial, industrial, and residential buildings account for nearly two-thirds of all emissions in Urbandale, most of which come from electricity use. Urbandale should prioritize the following initiatives.

- 1) Improve building energy efficiency through retrofits
- 2) Incentivize upgrades for high-efficiency appliances and fixtures
- 3) Require green building certification for new construction and renovations
- 4) Provide utility bill clinics and weatherization programs for low-income residents
- 5) Promote use of smart home devices
- 6) Transition to local renewable energy sources, like wind and solar



Maximizing Geographic Inquiry:

Question Formulation, Connecting to Standards, and Civic Engagement



- Inquiry-based state standards
- NGS Geo-Inquiry Process
- Question Formulation
 Technique
- Taking Informed Action
- Additional inquiry resources
- Question and answer



When you see a purple slide today, like this one, it is a cue that I'm hoping for some audience participation





Inquiry Arc

- **Dimension 1**: Developing Questions and Planning Inquiries
- **Dimension 2**: Applying Disciplinary Tools and Concepts (Civics, Economics, Geography, and History)
- **Dimension 3**: Evaluating Sources and Using Evidence
- Dimension 4: Communicating Conclusion: and Taking Informed Action



Social Studies Standards



Source: Iowa Social Studies Standards 2017

K-12 Iowa Core in Social Studies

Kindergarten: Spaces and Places In kindergarten, students will engage in learning about themselves, their school, city and state. They will have opportunities to compare how life in the past is different from life today with respect to their own experiences.

Inquiry Anchor Standard	Inquiry Standard		
Constructing Compelling Questions	SS.K.1. Recognize a compelling question.		
Constructing Supporting Questions	SS.K.2. Identify the relationship between compelling and supporting questions.		
Gathering and Evaluating Sources	N/A		
Developing Claims and Using Evidence	N/A		
Communicating and Critiquing Conclusions	SS.K.3. Construct responses to compelling questions using examples.		
Taking Informed Action	SS.K.4. Take group or individual action to help address local, regional, and/or global problems.		
	SS.K.5. Use deliberative and democratic procedures to make decisions about and act on civic problems in their classrooms.		



Source: Iowa Social Studies Standards 2017: 7

K-12 Iowa Core in Social Studies

7th Grade: Contemporary Global Studies

In seventh grade, students will explore global perspectives on contemporary issues and worldwide interdependence. The interconnected world we live in today requires that lowa students be well-educated about worldwide issues to cultivate diplomacy, effective citizenship, and global competitiveness. Students could examine challenges facing the world community such as hunger, population, conflict, global environmental challenges, human rights, poverty, energy scarcity, global health, education, immigration, globalization, and other political, economic, social, and ecological concerns.

Inquiry Anchor Standard	Inquiry Standard		
Constructing Compelling Questions	SS.7.1. Compare disciplinary concepts and ideas associated with a compelling question.		
Constructing Supporting Questions	SS.7.2 . Create supporting questions to help answer the compelling question in an inquiry.		
Gathering and Evaluating Sources	SS.7.3. Gather relevant information from primary and secondary sources using the origin, authority, structure, and context of the sources to guide the selection.		
	SS.7.4. With guided practice, evaluate the credibility of primary and secondary sources by determining their relevance and intended use.		
Developing Claims and Using Evidence	SS.7.5. With guided practice, identify evidence that draws information from multiple perspectives and sources to support claims, noting evidentiary limitations.		
	SS.7.6. With guided practice, develop claims and counterclaims while pointing out the strengths and limitations of both.		
Communicating and	SS.7.7. With guided practice, construct arguments using claims and evidence from multiple sources.		
Critiquing Conclusions	SS.7.8. Independently construct responses to compelling questions supported by reasoning and evidence.		
	SS.7.9. Present original arguments based on credible sources using a variety of media to authentic audiences.		
	SS.7.10. With guided practice, analyze disciplinary arguments of peers for credibility.		
Taking Informed Action	SS.7.11. Explain the challenges people face and opportunities they create in addressing local, regional, and global problems at various times and places.		
	SS.7.12. Apply a range of deliberative and democratic procedures to make decisions and take action in classrooms, schools, and communities.		

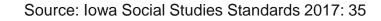


K-12 Iowa Core in Social Studies

9-12 Social Studies Standards

University of Northern Iowa.

Inquiry Anchor Standard	Inquiry Standard		
Constructing Compelling Questions	SS.9-12.1. Create compelling questions representing key ideas within the disciplines.		
Constructing Supporting Questions	SS.9-12.2. Develop supporting questions that contribute to an inquiry and demonstrate how, through engaging source work, new compelling and supporting questions emerge.		
Gathering and Evaluating Sources	SS.9-12.3. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.		
	SS.9-12.4. Evaluate the credibility of a source by examining how experts value the source.		
Developing Claims and Using Evidence	SS.9-12.5. Identify evidence that draws information directly and substantively from multiple sources to detect inconsistencies in evidence in order to revise or strengthen claims.		
	SS.9-12.6. Refine claims and counterclaims attending to precision, significance, and knowledge conveyed through the claim while pointing out the strengths and limitations of both.		
Communicating and Critiquing Conclusions	SS.9-12.7. Construct arguments using precise and knowledgeable claims, with evidence from multiple sources, while acknowledging counterclaims and evidentiary weaknesses.		
	SS.9-12.8. Construct explanations using reasoning, correct sequence, examples, and details with significant and pertinent information and data, while acknowledging the strengths and weaknesses of the explanations given its purpose.		
	SS.9-12.9. Present adaptations of arguments and explanations that feature evocative ideas and perspectives on issues and topics to reach a range of audiences and venues outside the classroom using print and oral technologies and digital technologies.		
	SS.9-12.10. Critique the use of claims and evidence in arguments for credibility.		
Taking Informed Action	SS.9-12.11. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.		
	SS.9-12.12. Apply a range of deliberative and democratic strategies and procedures to make decisions and take action in their classrooms, schools, and out-of-school contexts.		



Nevada Academic Content Standards for Social Studies



Revised September 2018





Source: Nevada Academic Content Standards for Social Studies 2018

World Geography & Global Studies

This content area provides a global perspective on contemporary issues, and is designed to create young, educated civic leaders prepared to face 21st century global issues. Students will examine challenges facing the world community, including but not limited to: hunger, population, conflict, racism, global environmental challenges, human rights, poverty, energy scarcity, global health, education, immigration, globalization, and other political, economic, social, and ecological concerns.

This content area builds students' skills in geographic reasoning, including an understanding of Earth's human and physical features, locations of places and regions, and the distribution of landform. This builds a foundational understanding of modern societies, cultures, and inspires curiosity in cultural and environmental diversity to help students participate in the complex world we live in today.

Teachers are encouraged to facilitate instruction from a chronological as well as thematic approach, avoiding the tendency to teach the content as a checklist of facts to be covered. Effective social studies instruction incorporates both the disciplinary skills and the content themes and requires historical thinking, robust academic discussions, and engaging writing instruction. This content area should offer opportunities for students to engage in civic dialogue and taking informed action.

Disciplinary Skills	Disciplinary Skills Standards			
Constructing compelling	SS.6-8.WGGS.1. Construct compelling questions based upon disciplinary concepts.			
questions	SS.6-8.WGGS.2. Evaluate various interpretations to answer compelling questions within and across disciplines.			
Creating supporting	SS.6-8.WGGS.3. Generate supporting questions that lead to inquiry and research on compelling issues within the discipline.			
questions				
Gathering and	SS.6-8.WGGS.4. Gather relevant information from multiple texts and evaluate the sourcing, context, and corroboration of the			
evaluating sources	texts with close reading and discipline specific skills.			
	SS.6-8.WGGS.5. Seek multiple media sources when investigating current issues and evaluate the credibility and reliability of			
	each.			
Developing claims and	SS.6-8.WGGS.6. Using varied source material, develop an argument based on substantive claims, with strong evidence and clear			
using evidence	reasoning.			
	SS.6-8.WGGS.7. Examine different arguments while pointing out the strengths and limitations of each.			
Communicating and	SS.6-8.WGGS.8. Construct organized explanations for various audiences and purposes using evidence and reasoning.			
critiquing conclusions	SS.6-8.WGGS.9. Participate in rigorous academic discussions, emphasizing multiple viewpoints in which claims and evidence a			
	acknowledged and critiqued.			
Taking informed action	SS.6-8.WGGS.10. Draw on disciplinary concepts to explain the challenges people have faced, are facing, and opportunities they			
	have created in addressing local, regional, and global problems.			
	SS.6-8.WGGS.11. Apply a range of deliberative and democratic procedures to make decisions and take action regarding			
	important contemporary issues.			

University of Northern Iowa. Source: Nevada Academic Content Standards for Social Studies 2018: 26

Content Themes	Grades 6-8: World Geography & Global Studies
Civic dispositions and	SS.6-8.WGGS.25. Investigate a current global issue and propose a course of action to solve it.
democratic principles (C)	
Processes, rules, and	SS.6-8.WGGS.26. Examine the origins, purposes, and impacts of laws, treaties, and international agreements.
laws (C)	
Geographic	SS.6-8.WGGS.27. Utilize and construct maps, charts, and other geographic representations to explain and analyze regional,
representations (G)	environmental, and cultural characteristics of various places around the world.
Human environment	SS.6-8.WGGS.28. Analyze and explain the cultural, physical, and environmental characteristics of places and regions and how
interaction (G)	these affect the lives of the people who live there.
Human population,	SS.6-8.WGGS.29. Explain how changes in transportation, communication, and technology influence the movement of people,
movement, and patterns	goods, and ideas.
(G)	SS.6-8.WGGS.30. Explain how global changes in population distribution patterns affect changes in land use in particular areas.
Global interconnections	SS.6-8.WGGS.31. Explain how the relationship between the environmental characteristics of place and the production of goods
(G)	influence the spatial patterns of world trade.
Exchange and markets	SS.6-8.WGGS.32. Explain how supply and demand, costs and competition influence market prices, wages, social, and
(E)	environmental outcomes.
	SS.6-8.WGGS.33. Explain and evaluate how economic policies impact individuals, businesses, government structures, and
	international organizations.
National economy (E)	SS.6-8.WGGS.34. Assess the economies of various nations based on trade, resources, labor, monetary system, and other factors.
Global economy (E)	SS.6-8.WGGS.35. Investigate the impact of global trade policies on nations and their citizens.



Source: Nevada Academic Content Standards for Social Studies 2018: 28

What is an example of a specific inquirybased geography standard in your state?

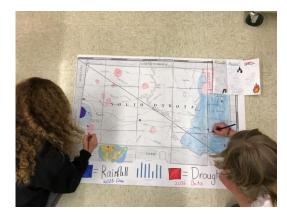








Source: National Geographic Society 2017







As you can see, the most tardies take place before 1st period. So we know that something has to be done to reduce morning tardies.

Sep-9. Oct-11		
Periods	Number of tardies	
1st	203	
2	20	
3rd	38	
4th	34	
5th	60	
6th	20	
7th	32	
8th	24	
TOTAL	431	





What geographic question do you think would be well suited to Geo-Inquiry at your grade level and in one of your courses?



Example Geo-Inquiry Questions

- How can local ranchers best keep discarded baling twine away from osprey?
- What are the optimal locations in my community for food bank distribution sites?
- How can we promote tree planting as a means to better protect lowincome neighborhoods from heat-related illness and heat mortality?
- How can we document and preserve sites in our community that contributed to the Civil Rights Movement and equality for all?
- How can we alleviate traffic in front of the school at the start and end of the school day?







MAKE JUST ONE CHANGE

Teach Students to Ask Their Own Questions

DAN ROTHSTEIN and LUZ SANTANA Foreword by WENDY D. PURIEFOY



Source: Right Question Institute 2018; Rothstein and Santana 2017

The Question Formulation Technique (QFT)

- Produce your questions
 - Ask as many questions as you can
 - Do not stop to discuss, judge, or answer the questions
 - Write down every question exactly as it is stated
 - Change any statement into a question
- Improve your questions
 - Mark each question as 'open ended' or 'close ended'
 - Name the value of each type of question
 - Change questions from one type to another
- Prioritize the questions
 - Pick your three most important questions
- Determine how you are going to use your questions

Source: Right Question Institute; Rothstein and Santana 2017: 25-26

The Question Focus (QFocus)

- Opposite of using the teacher's question as a prompt
- QFocus criteria
 - It has a clear focus
 - It is <u>not</u> a question
 - It provokes and stimulates new lines of thinking
 - It does not reveal teacher preference or bias



Source: Right Question Institute; Rothstein and Santana 2017: 28-30

Designing a QFocus

- Why do you want your students to formulate questions?
- Step 1: Define the purpose
 - Generate interest
 - Stimulate new thinking
 - Deepen comprehension
 - Gather information about student understanding
- Step 2: Generate possible ideas
- Step 3: Identify pros and cons for each idea
- Step 4: Chose one QFocus idea and assess it against the four criteria
- Step 5: Imagine questions students may develop

Source: Right Question Institute; Rothstein and Santana 2017: 34-35

Have you asked your students to formulate their own questions? If so, how has it gone?



Taking Informed Action



Raising Awareness

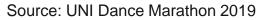
















Source: Miracle Network Dance Marathon 2020





Source: UNI Dance Marathon 2020



University of Northern Iowa.

Source: UNI Dance Marathon 2020



UNI Dance Marathon



Source: UNI Dance Marathon 2020

Charitable Care	18%
Medical Research	12%
Life-Saving Equipment	15%
Education, Patient Services, Advancement Services	55%



\$10 Purchases an oral care kit

\$10

1 meal at the hospital

\$20 A cookie cake for a kiddos birthday

\$35 Buys a Courage Cape for a kiddo going into surgery

\$55 Peace Plant for a grieving family

> \$150 iPod for music therapy

\$300 Buys a wig for a cancer patient

\$1,000 Pays for one year's worth of prescription medicine





Source: UNI Dance Marathon 2020; Miracle Network Dance Marathon 2020



What topics have worked well for your students for integrating geography + civic engagement?





INQUIRY DESIGN MODEL

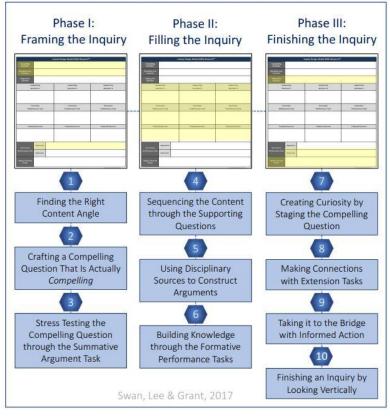
The Inquiry Design Model[™] (IDM) is a distinctive approach to creating instructional materials that honors teachers' knowledge and expertise. avoids over-prescription, and focuses on the key elements of envisioned in the C3 Inquiry Arc. Unique to the IDM is the *blueprint*™, a one-page presentation of the questions, tasks, and sources that define a curricular inquiry. The blueprint offers a visual snapshot of an entire inquiry such that the individual components and the relationship among the components can all be seen at once. We offer a 10 step design path for developing IDM inquiries for your classroom!

> Find downloadable IDM inquiries and other resources at c3teachers.org:

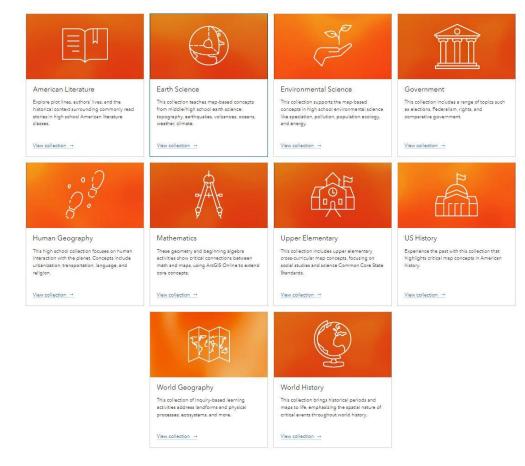


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The Design Path for IDM



Source: Swan, Lee, and Grant 2017





Source: ESRI 2023

Thank You!

Email: Alex.Oberle@uni.edu

