Global Collaboration in Education

Michele McCurdy
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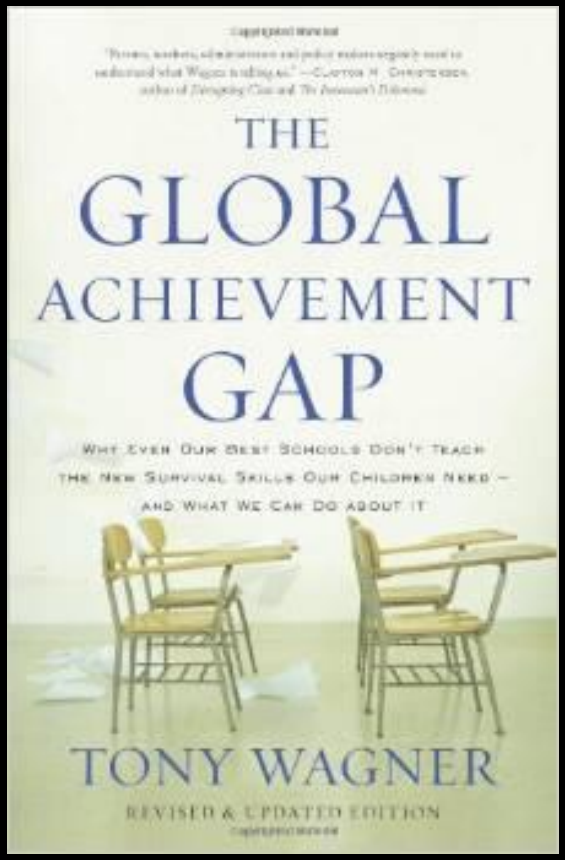
The Global Achievement Gap
Tony Wagner

In today's highly competitive global "knowledge economy," *all students need new skills for* college, careers, and citizenship. The failure to give all students these new skills leaves today's youth – and our country – at an alarming competitive disadvantage. Schools haven't changed; the world has.



In the twenty-first century, mastery of the basic skills of reading, writing, and math is no longer enough. Almost any job that pays more than minimum wage – both blue and white collar – now calls for employees who know how to solve a range of intellectual and technical problems.

Work, learning, and citizenship in the twenty-first century demand that we all know how to think – to reason, analyze, weigh evidence, problem-solve – and to communicate effectively.

ENGLISH	MATH	SCIENCE	SOCIAL STUDIES
Analyze	Analyze	Analyze	Analyze
Compare	Compare	Compare	Compare
Describe	Describe	Describe	Describe
Develop	Develop	Develop	Develop
Infer	Infer	Infer	Infer
Make	Make	Make	Make
Understand	Understand	Understand	Understand
Use	Use	Use	Use

Work, learning, and citizenship in the twenty-first century demand that we all know how to think – to reason, analyze, weigh evidence, problem-solve – and to communicate effectively.

Clay Parker, President Chemical Management Division of BOC Edwards

When interviewing new employees –

- "First and foremost, I look for someone who asks good questions. Our business is changing, and so the skills our engineers need change rapidly, as well. We can teach them the technical stuff. But for employees to solve problems or to learn new things, they have to know what questions to ask. And we can't teach them how to ask good questions – how to think. The ability to ask the right questions is the single most important skill." (Wagner, p.2)

Clay Parker, President Chemical Management Division of BOC Edwards

- "I want people who can engage in good discussion – who can look me in the eye and have a give and take. All of our work is done in teams. You have to know how to work well with others. But you also have to know how to engage the customer – to find out what his needs are. If you can't engage others, then you won't learn what you need to know." (Wagner, p.2)

Christy Pedra, CEO Siemens Hearing Instruments 470,000 employees globally

- “I ask questions for a living. The best way to understand people is to ask questions. I ask questions all day long. If I ask the right questions, I get information that allows me to be more successful in a variety of ways. “ (Wagner, p.5)

Christy Pedra, CEO Siemens Hearing Instruments 470,000 employees globally

- “Schools spend too much time getting kids ready for tests and they are not measuring the right things. If you want to encourage young people to be scientists, it’s not how much they can retain but how much they can explore. It’s how you ask the next question. I can look up anything, but I can’t take it to the next level without pushing and exploring. “ (Wagner, p. 6)

Jonathan King, Molecular Biologist MIT

- "I worry about the future of science in this country. For kids to get passionate about science, they have to get their hands dirty – literally. They have to have labs where they study things in depth and learn to observe, instead of just memorizing facts from a textbook. The kids who take my intro lab courses today have gotten top scores on all the Advanced Placement science courses in their high schools, but they don't know how to observe. I ask them to describe what they see in the microscopes, and they want to know what they should be looking for – what the right answer is." (Wagner, p. 7)

Two Achievement Gaps

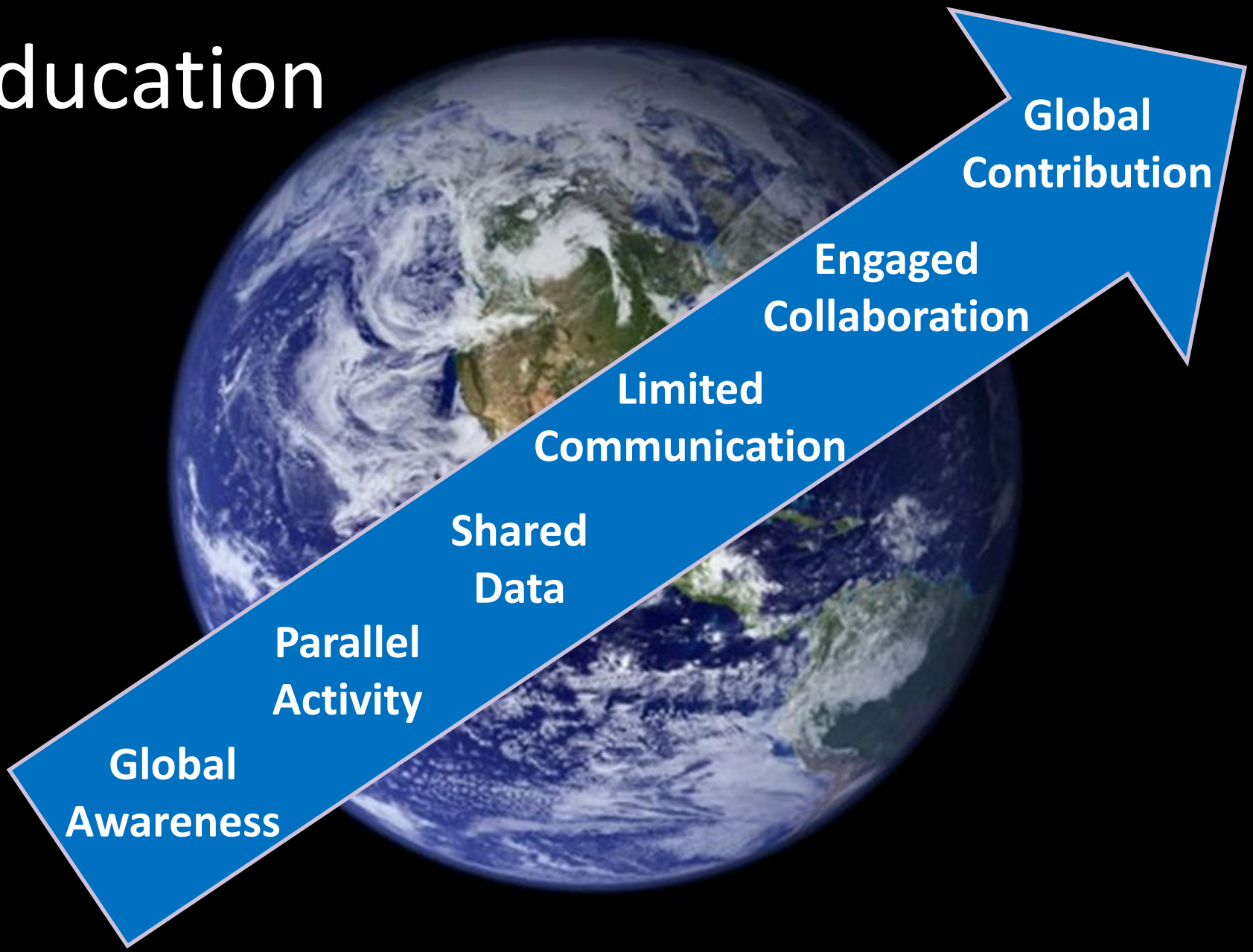
- Knowledge Achievement Gap – resulting in increased standards, accountability and testing.

- Global Achievement Gap – the gap between what even our best suburban, urban, and rural public schools are *teaching and testing* versus what all students will *need to succeed* as learners, workers, and citizens in today's global knowledge economy. (Wagner, p.8)

Global PRiSE

Pragmatic Researchers in STEM Education

Continuum of Global Education



Teacher Considerations

- What standards align with this project?
- Can I fit the project deadlines into my calendar?
- How can I adapt the project to best suit the needs of my students?
- How can I make sure my students focus on the global connection?

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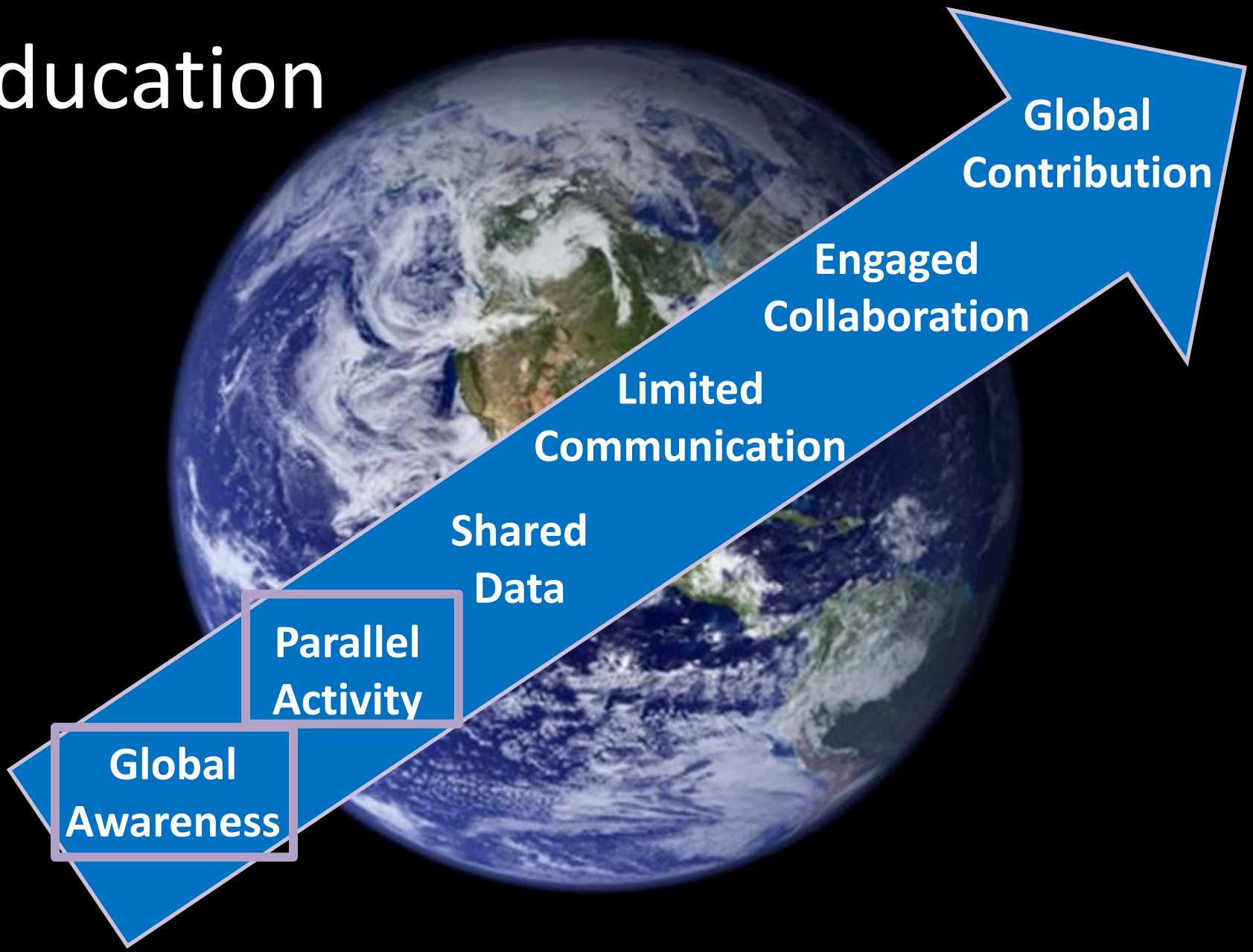

Global Awareness and Parallel Activity

Global Awareness

Parallel Activity

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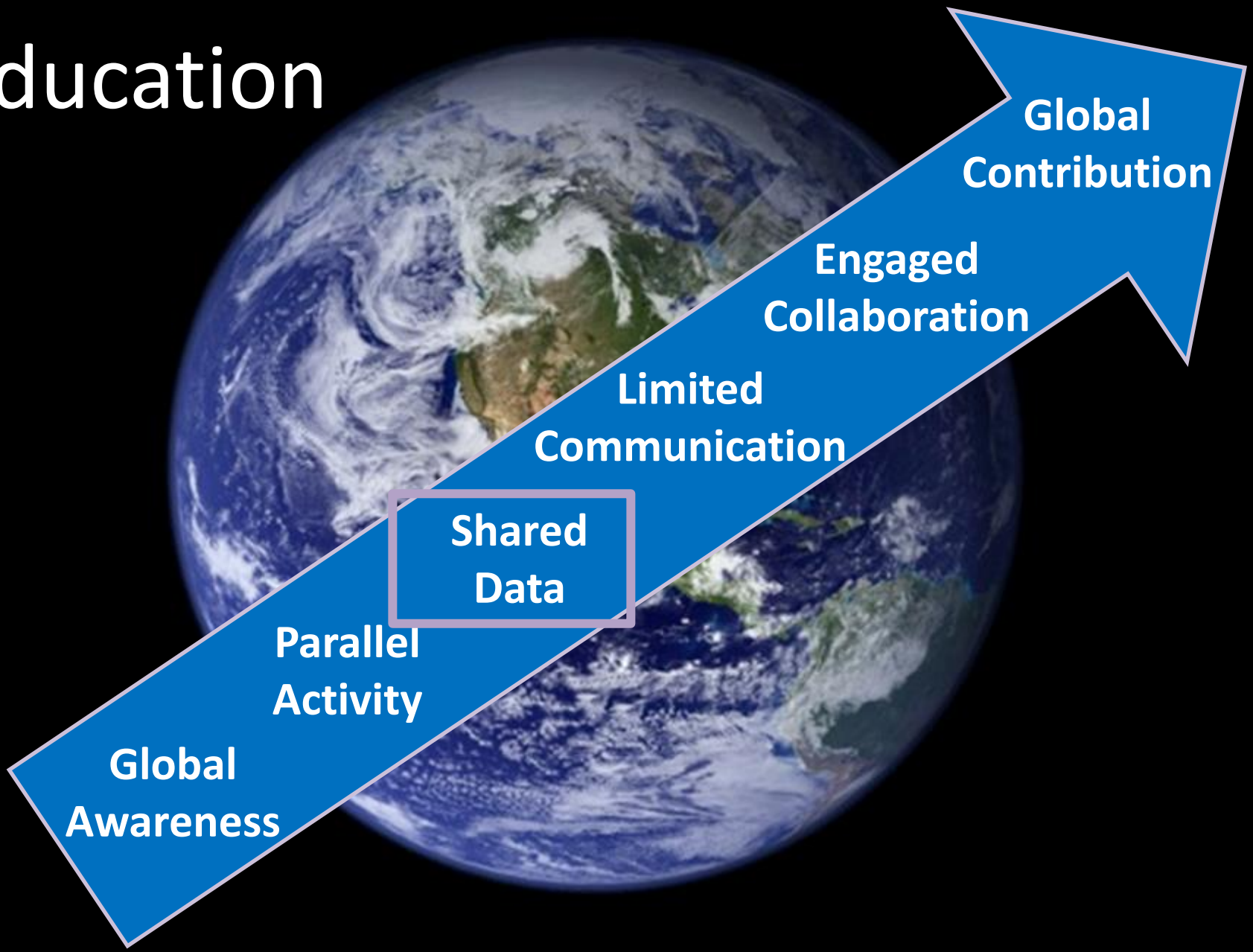


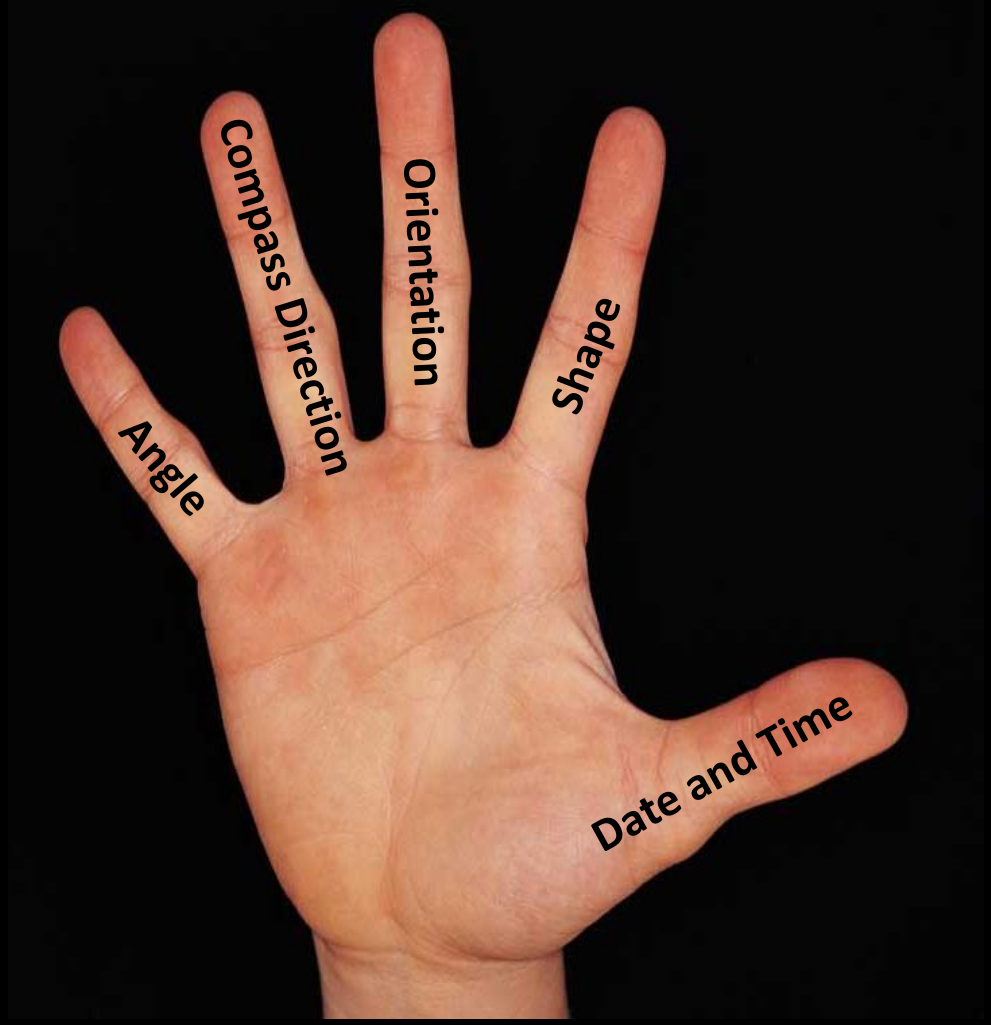
"Omigosh! This morning's activity was so cool!

The matrix that you provided and the activity where students compare their data was incredible! My kids were so excited and learned a lot about so many things that are important in science . . . looking at real data, the importance of reporting accurately, different perspectives, comparing data and looking for patterns, figuring out which data might be wrong, and of course, how the Moon looks around the world. Just wanted to say thanks."

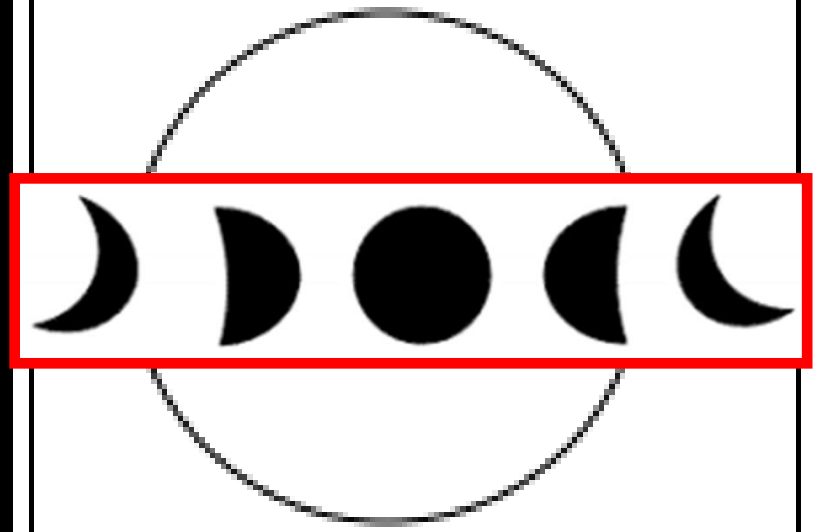
Cathy Box, 7th Grade Science Teacher, Tahoka, Texas

Week of	Lunar Phases	World MOON Project Activities	
January 21 – Week 1	Waxing Moon best seen at dusk	Administer the CMPA-R (pretest) Start Observation ASAP	Local Phase
January 26 – Week 2			
February 2 – Week 3	Waning Moon best seen at dawn		
February 9 – Week 4			
February 16 – Week 5	Waxing Moon – again, best seen at dusk	**Key Observation Weeks**	
February 23 – Week 6			
March 2 – Week 7	Observations Not Required but Encouraged	Internet Chunk 1 Essay 1 Submission and Analysis	Global Phase
March 9 – Week 8			
March 16 – Week 9			
March 23 – Week 10		Internet Chunk 2 Essay 2 Submission and Analysis	
March 30 – Week 11			
April 6 – Week 12			
April 13 – Week 13		Internet Chunk 3 Essay 3 submission Administer the CMPA-R (post-test)	
April 20 – Week 14			
April 27 – Week 15			

world moon project



Monday, February 2

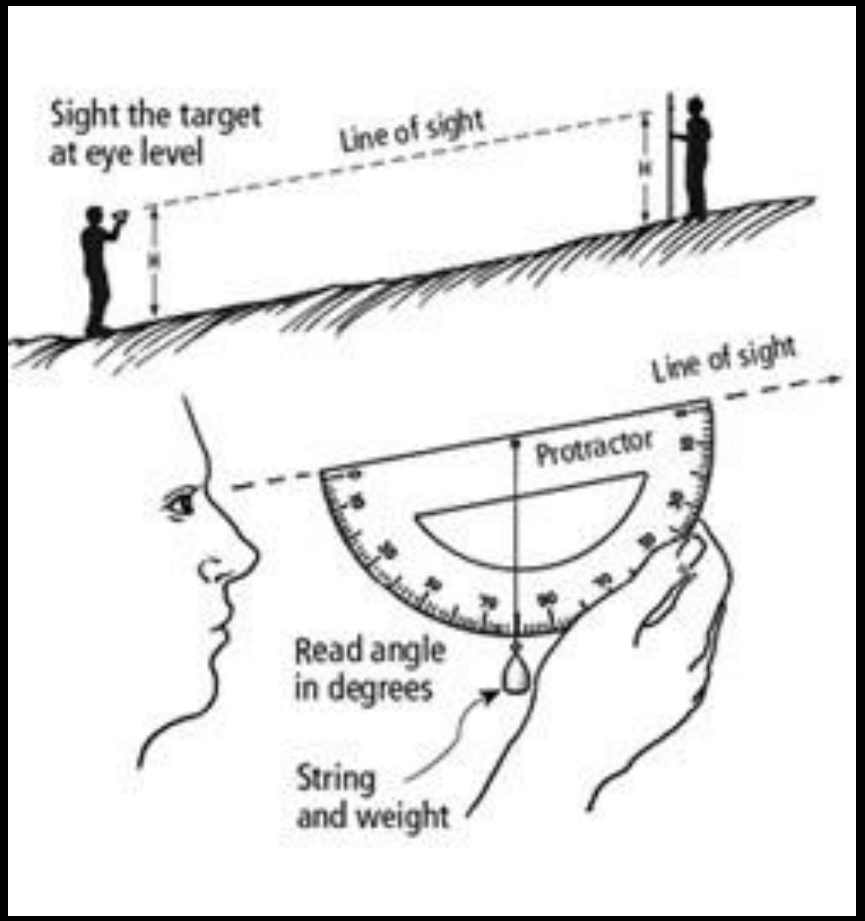


Time _____

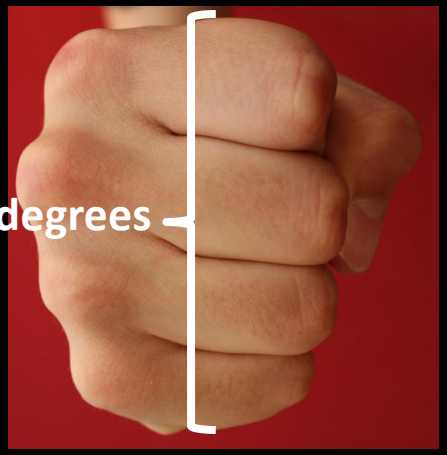
Direction _____

Angle _____

Appendix C



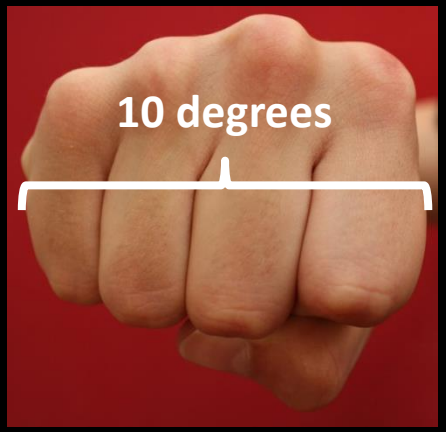
Appendix H



Angle or Altitude

Measure altitude with fist:

3 fists = 30 degrees above horizon



Direction or Azimuth

Degrees from North in a clockwise direction.

Observations First → Then Find Patterns → Finally, Causal Explanations of Patterns

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April 20 – Week 14			
April 27 – Week 15			

Essay #1
Moon Writing Checklist
for Essay about Observations

Submit your essay on the Internet between March 2 and March 16.

In your writing, did you describe the Moon on three different days? Specifically, did you describe the Moon:

- between February 19-21 with February 20 being the target day,
- between February 24-25, with February 24 being the target day, and
- between February 26-28, with February 27 being the target day.

For each date, did you:

- state the date and time you observed the Moon that day?
- describe the Moon's shape that day?
- describe the Moon's orientation? For example, was the illuminated part of the Moon straight up and down on the right side of the Moon, or on the lower right, or lower left or what?
- describe the Moon's location in terms of its angle or number of degrees above the horizon?
- describe the Moon's location in terms of its direction? (Your teacher may ask you to use compass terms like east or west or southwest, or your teacher may ask you to write in terms of number of degrees from north. Each approach to describing direction is OK.)

Did you check your spelling, grammar and punctuation?

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Location	Week 1	Week 2	Week 3
Michigan, USA 42 degrees N 83 degrees W	*In each cell, include date and time of observation, Moon's shape (phase), orientation and location (direction and angle above the horizon).*		
Tennessee, USA 35 degrees N 85 degrees W	*Group the rows by country.*		
California, USA 34 degrees N 118 degrees W	*Arrange the rows in sequence with the most northerly latitude at the top.*		
Bequia, St. Vincent and the Grenadines 13 degrees N 60 degrees W			
Queensland, Australia 27.5 degrees S 153 degrees E			
Each of your students will receive approximately 10 essays – nine others plus their own. Each of your students will receive a different set of essays.			

Essay #2
Moon Writing Checklist for Essay about Patterns

Submit your essay about global lunar patterns on the Internet between March 23 and April 3.

In your writing, did you:

- describe one pattern you found in how the Moon appeared to students worldwide between February 19-28?
- provide evidence that the Moon displays that pattern?
- check your spelling, grammar and punctuation?

Week of	Lunar Phases	World MOON Project Activities	
January 21 – Week 1	Waxing Moon best seen at dusk	Administer the CMPA-R (pretest) Start Observation ASAP	Local Phase
January 26 – Week 2			
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April 27 – Week 15			

Essay #3
Moon Writing Checklist for Essay on Explanations

Submit your essay on the Internet between April 13 and April 24.

In your writing, did you:

- provide an explanation for what caused one pattern students found for how the Moon behaved between February 19-28? For example, if you said that one pattern in the Moon's behavior was that it changed shape, did you explain what caused it to change shape?

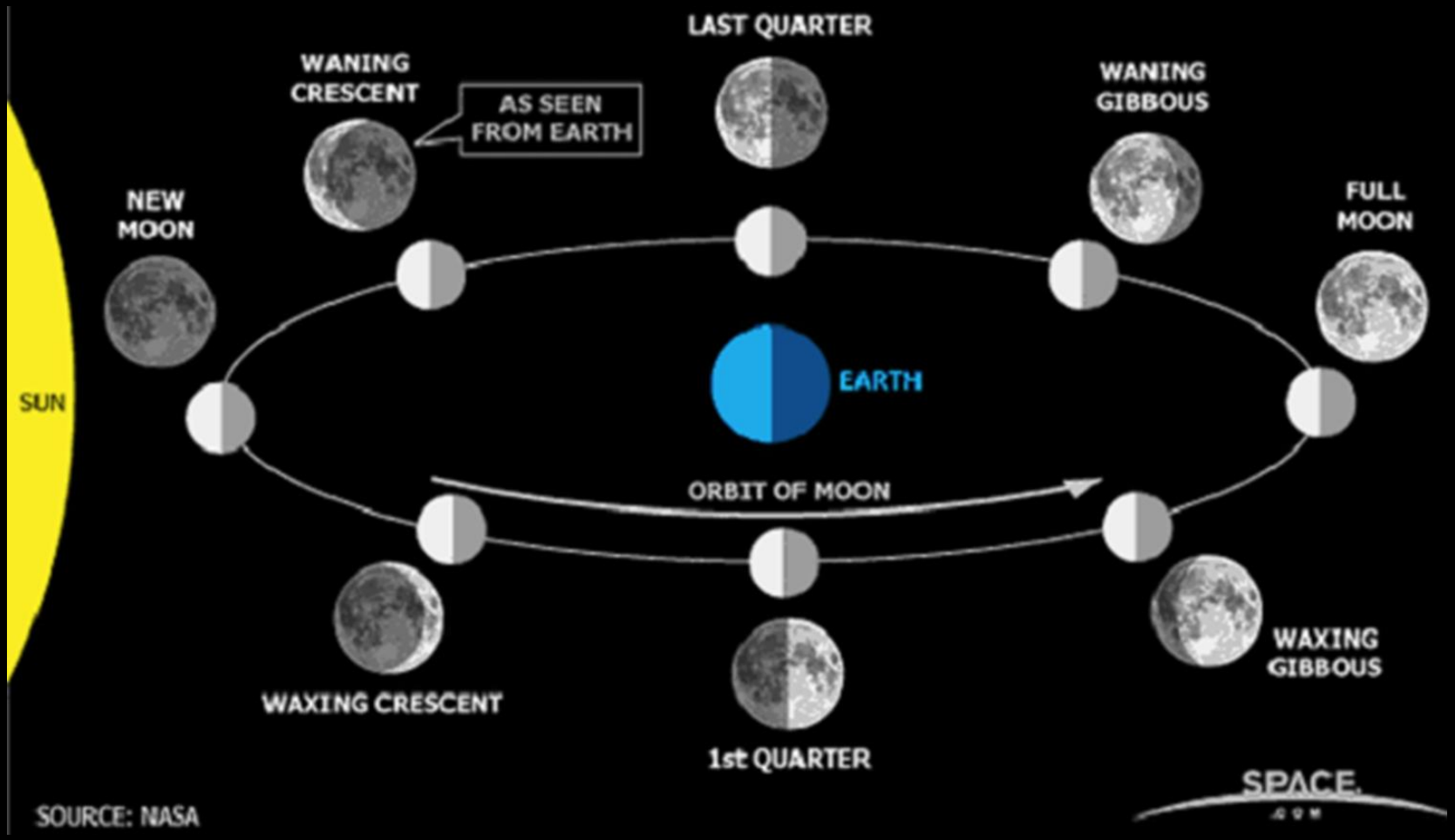
- include your rationale for the explanation you found?

- check your spelling, grammar and punctuation?

Additional Ideas

Table One

Shape of the Moon	Date 1	Date 2	Days Between


LAST QUARTER
WANING CRESCENT
AS SEEN FROM EARTH
WANING GIBBOUS
NEW MOON
FULL MOON
SUN
EARTH
ORBIT OF MOON
WAXING CRESCENT
WAXING GIBBOUS
1st QUARTER
SOURCE: NASA
SPACE

Waxing

http://www.worldmoonproject.org

Benefits

- Nature of Science
  - Conducting real observations
  - Identifying global patterns and trends
  - Predicting causation
- Writing Skills
- Confronting Misconceptions
- Exposure to perspectives from around the world

Shared Data, No Communication

GLOBE

https://www.globe.gov/

Down the Drain

http://ciese.org/curriculum/drainproj/overview

World Water Monitoring Challenge

http://www.worldwatermonitoringday.org/

Journey North

http://www.learner.org/jnorth

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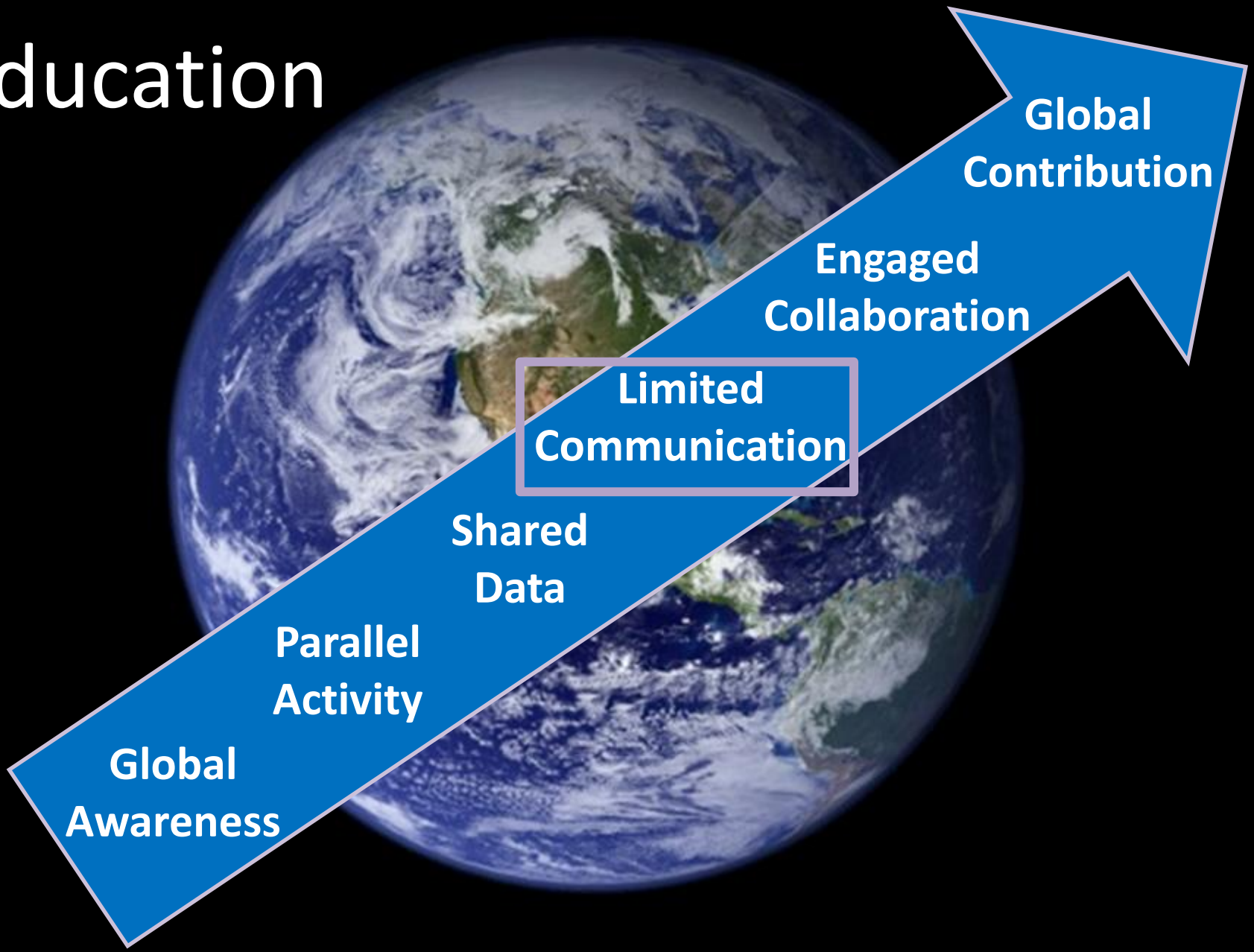


Limited Communication

- Students from a variety of locations report their data
- Students or teachers often can access/view the data reported by other students
- There is limited communication among project teachers/students
- Communication may be asynchronous or synchronous
- Communication is often limited – such as one time communication, short in duration; in other words it is often not sustained in nature over long periods of time.

Limited (Increasing) Communication

ePals

https://www.epals.com

Flat Connections

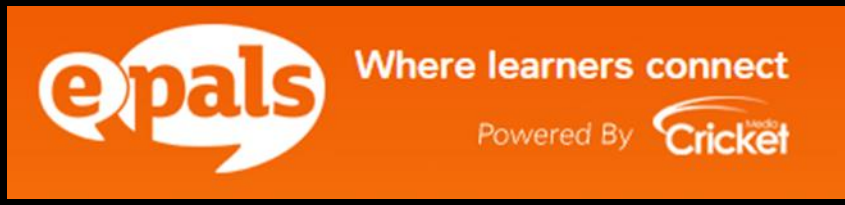
http://www.flatconnections.com/

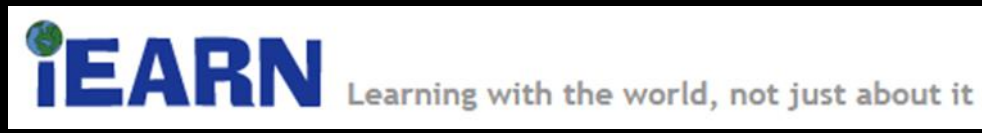
iEARN

http://www.iearn.org

Skype in the Classroom

https://education.skype.com





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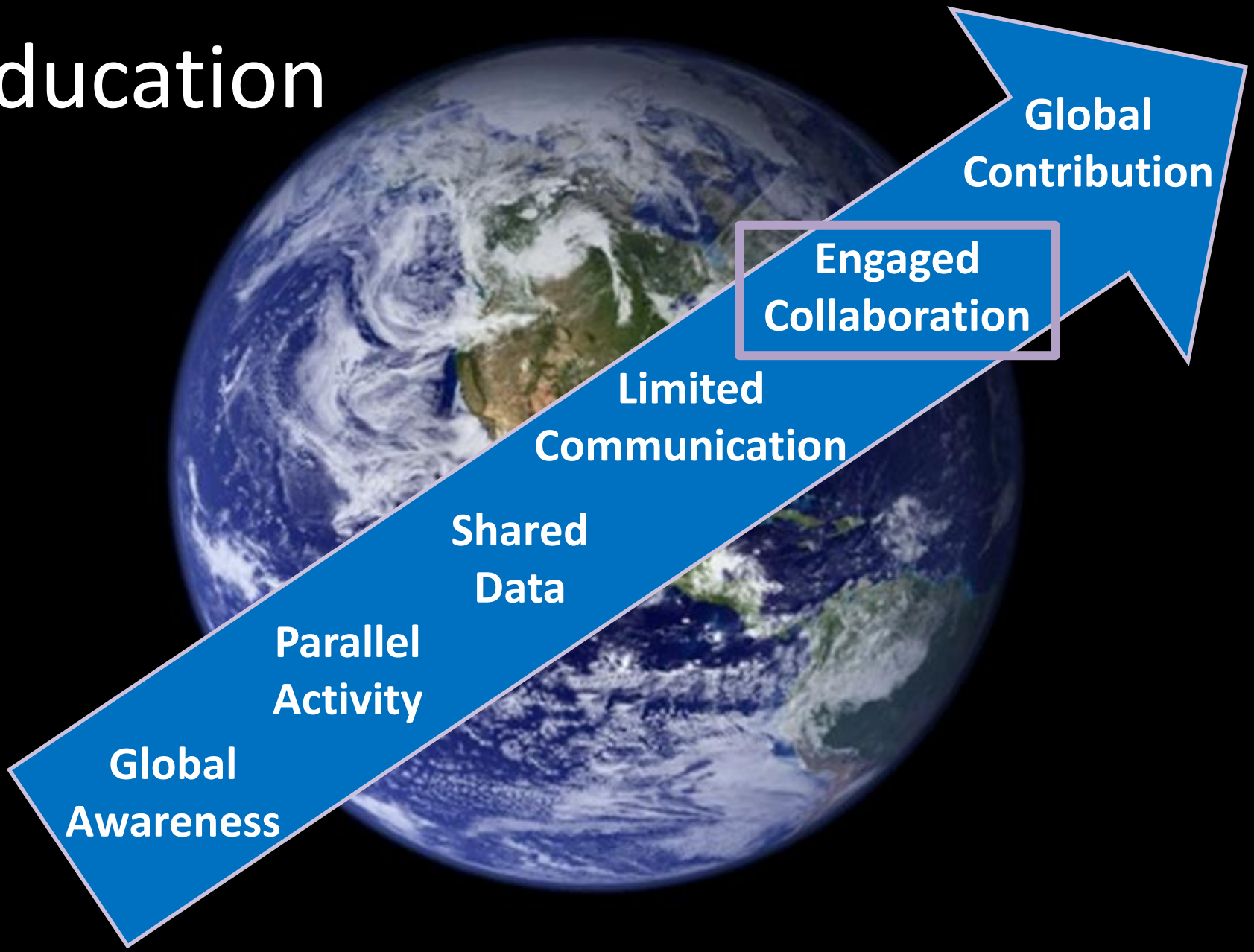

Engaged Collaboration

- Communication is asynchronous and synchronous
- Teachers work with other teachers in a different location
- Students from a different location will be working together on the project
- Students and teachers can access/view the progress of the project
- There is a lot of communication for the project between teachers/students

Car Name: Breadapple
Company Name: Texil (Texas + Brazil) Incorporation

	Brazil	Michele McCurdy	Staci Thomas	Zane Laws
Front				
Back				
Top				
Bottom				
Right				
Left				
Final Run				

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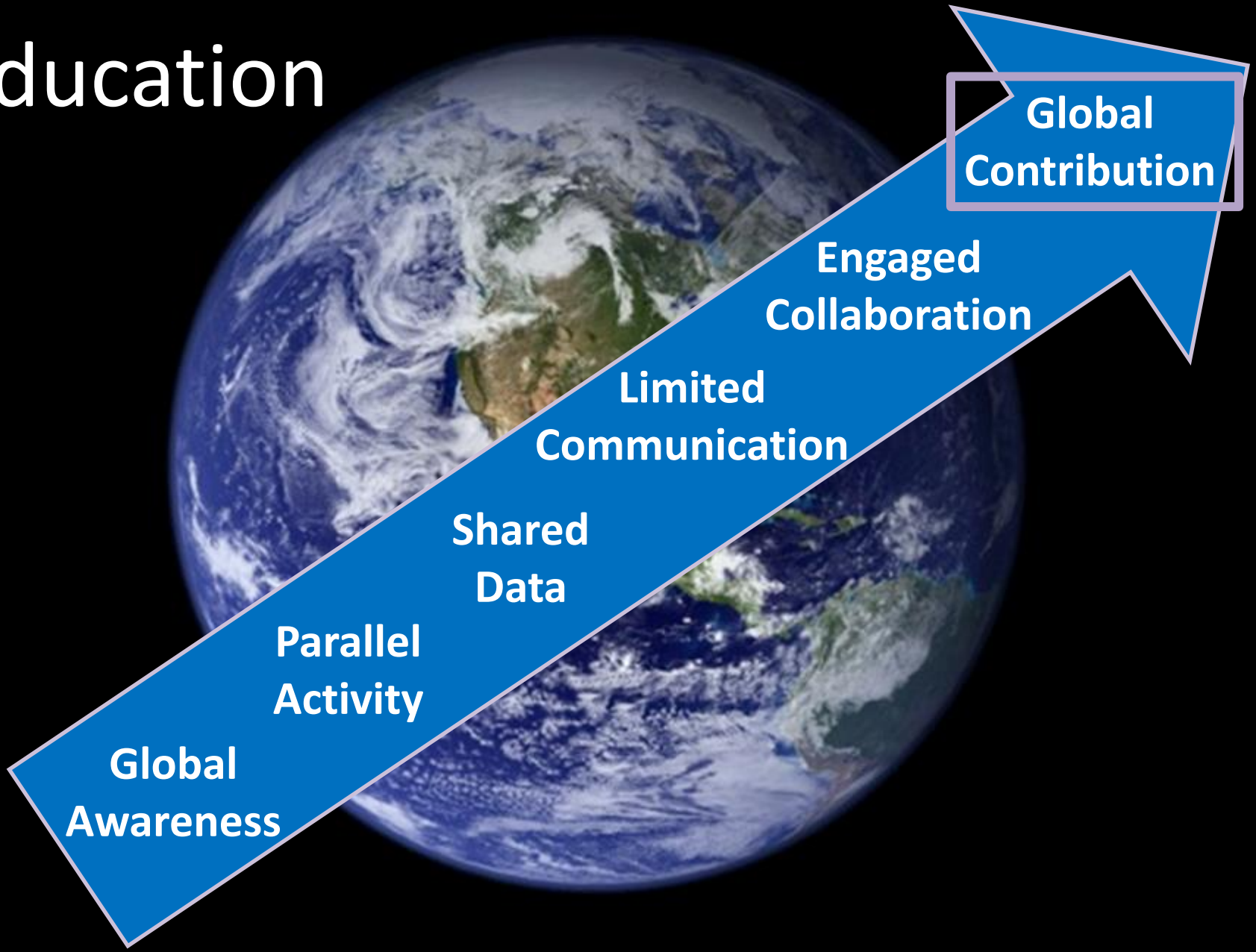


Contributing Curriculum Globally

"How can we take what we are learning and doing in class and impact society?"

~Jodie Deinhammer

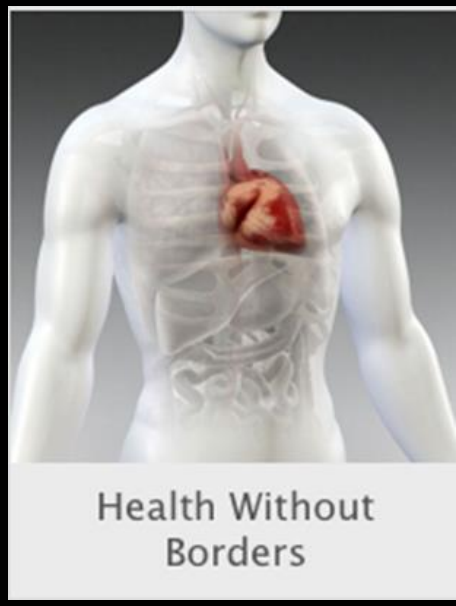
Coppell HS, Coppell, TX

- iTunes University Courses
  - Anatomy and Physiology (top 10)
  - Simon the Science Cat
  - The Cardiovascular System

Contributing Curriculum Globally

Health without Borders (30,000 subscribers)

In this course, you will develop an understanding of why a healthy lifestyle is necessary. Learn from students enrolled in Anatomy and Physiology, a senior level course at Coppell High School in Coppell, Texas. Complete the online activities and lessons and learn how to maintain a healthy lifestyle. We will also offer the option to schedule a time to Skype with us. In the Skype session, we will do a basic Q&A and talk about what you learned. We will also accept feedback on how to improve our lessons.



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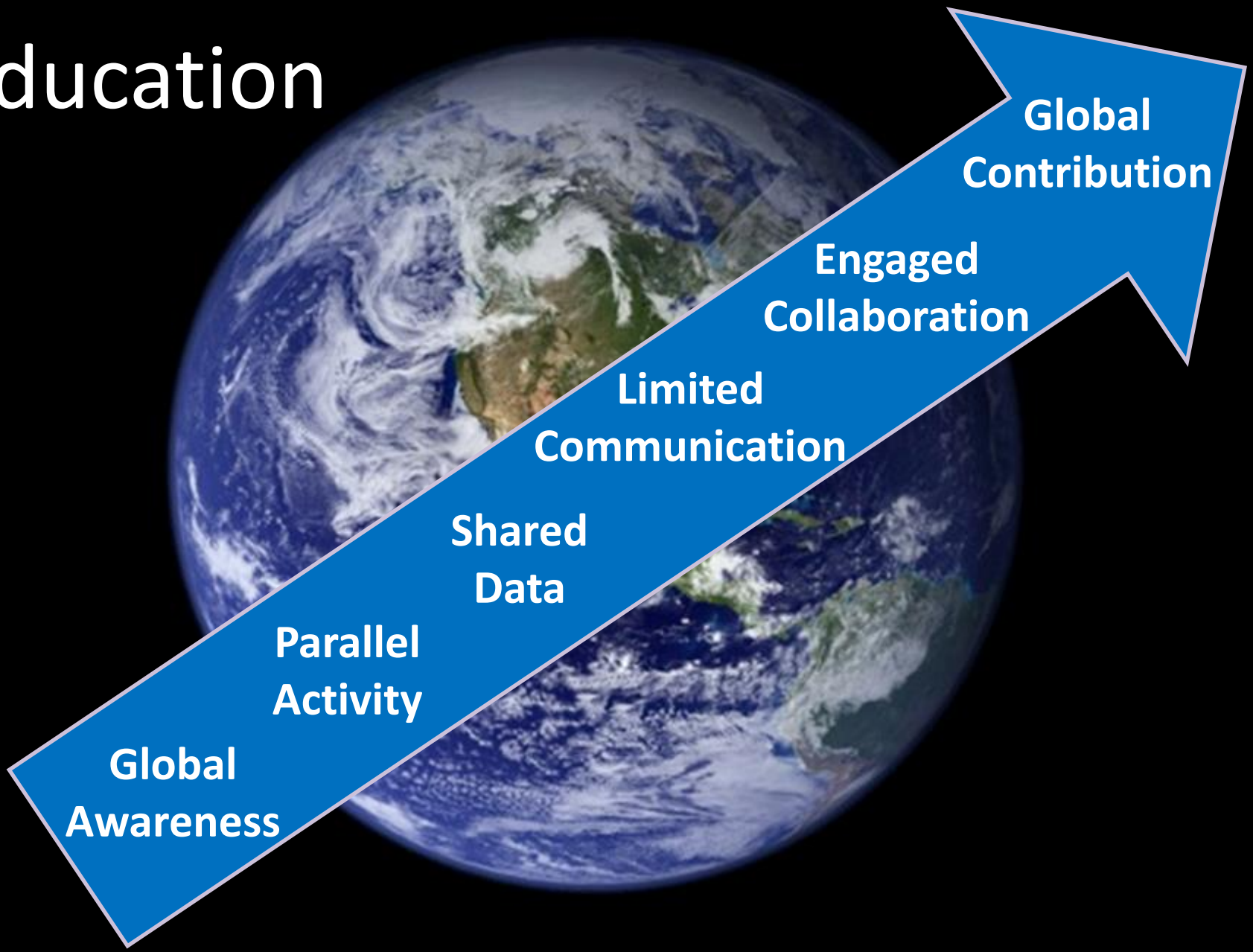

DAILY I will find **OPPORTUNITIES**

to **INVEST** in **PEOPLE** through:

creating **collaborative partnerships**,

designing **dynamic programs** and,

developing **future leaders**!

~Michele McCurdy

http://michelemccurdy.weebly.com/

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