

Research Questions

- Does GIS make learning feel more hands-on and applicable to the real-world?
- To what extent do students view GIS as hands-on, real-world learning?
- How do GIS assignments impact patterns of work completion?
- How does incorporating GIS into the curriculum impact me as teachers?

Methodology

- Qualitative analysis of student attitudes and behaviors through:
- Observed student behavior
 - Surveyed student attitudes
 - Monitored patterns of work completion
 - Notetaking in teacher journal

Treatment Plan

Each unit of study will contain 3 categories of Assignment:
1) traditional lab, 2) a computer based simulation, and 3) a GIS Project

Unit / Course	Learning Activity
Plate Tectonics / Earth and Space Systems	<ol style="list-style-type: none"> Density Lab Layers of the Earth EarthZone Simulation Mapping Tectonic Boundaries with Google Earth Pro
Wildland Fires / Physical Geography	<ol style="list-style-type: none"> The Fire Triangle Lab Stop Disasters! Video Game Creating a Wildfire Dashboard App with ESRI ArcGIS
Glaciers / Physical Geography	<ol style="list-style-type: none"> Glacier Lab Land Glacier Online Text Mapping Sea Level Rise with Google Earth Pro

Conclusions

GIS assignments can be used to create a more Hands-on Real-World curriculum. GIS assignments should include instruction specific to the software.

Implications for my Teaching

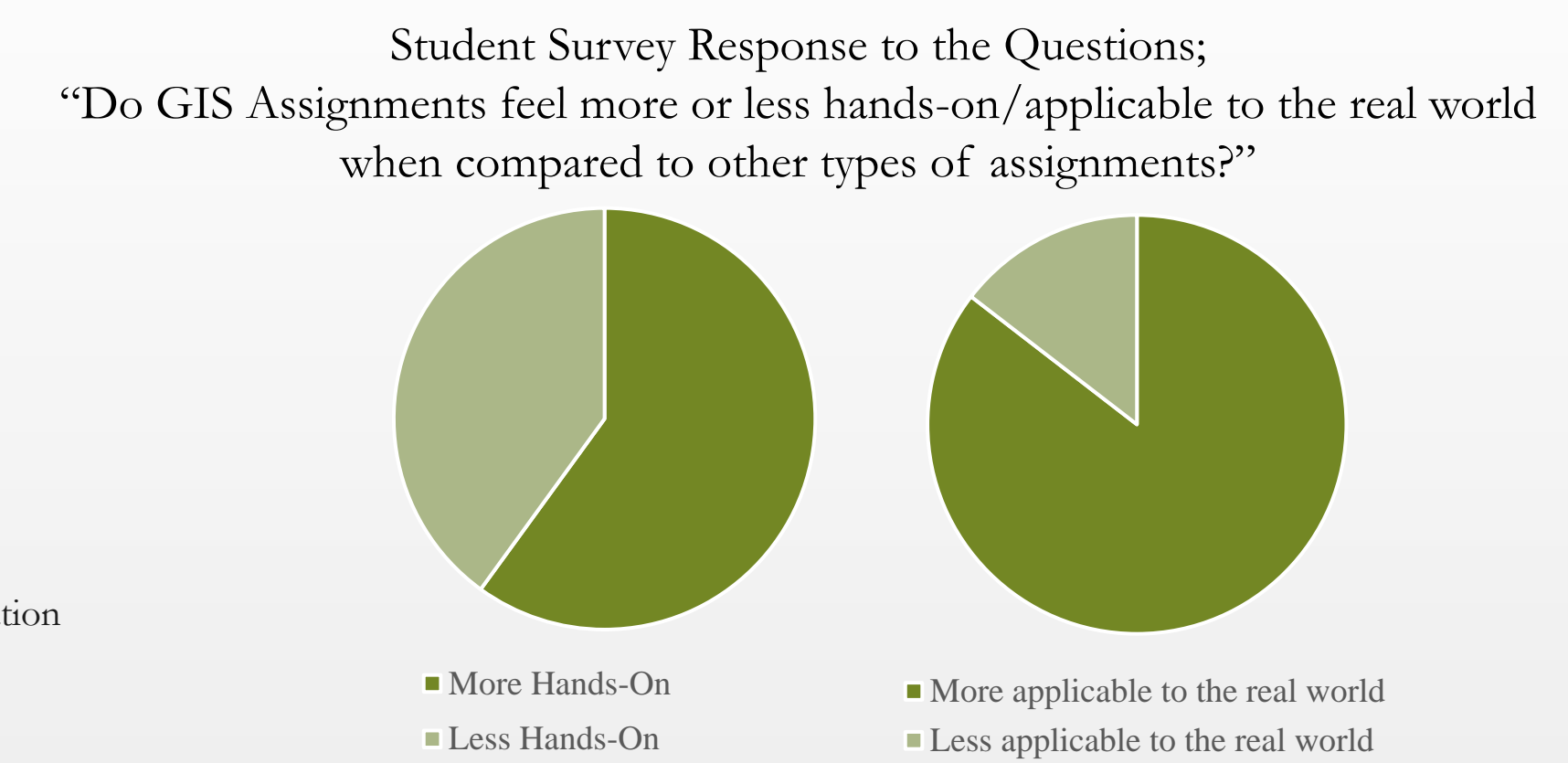
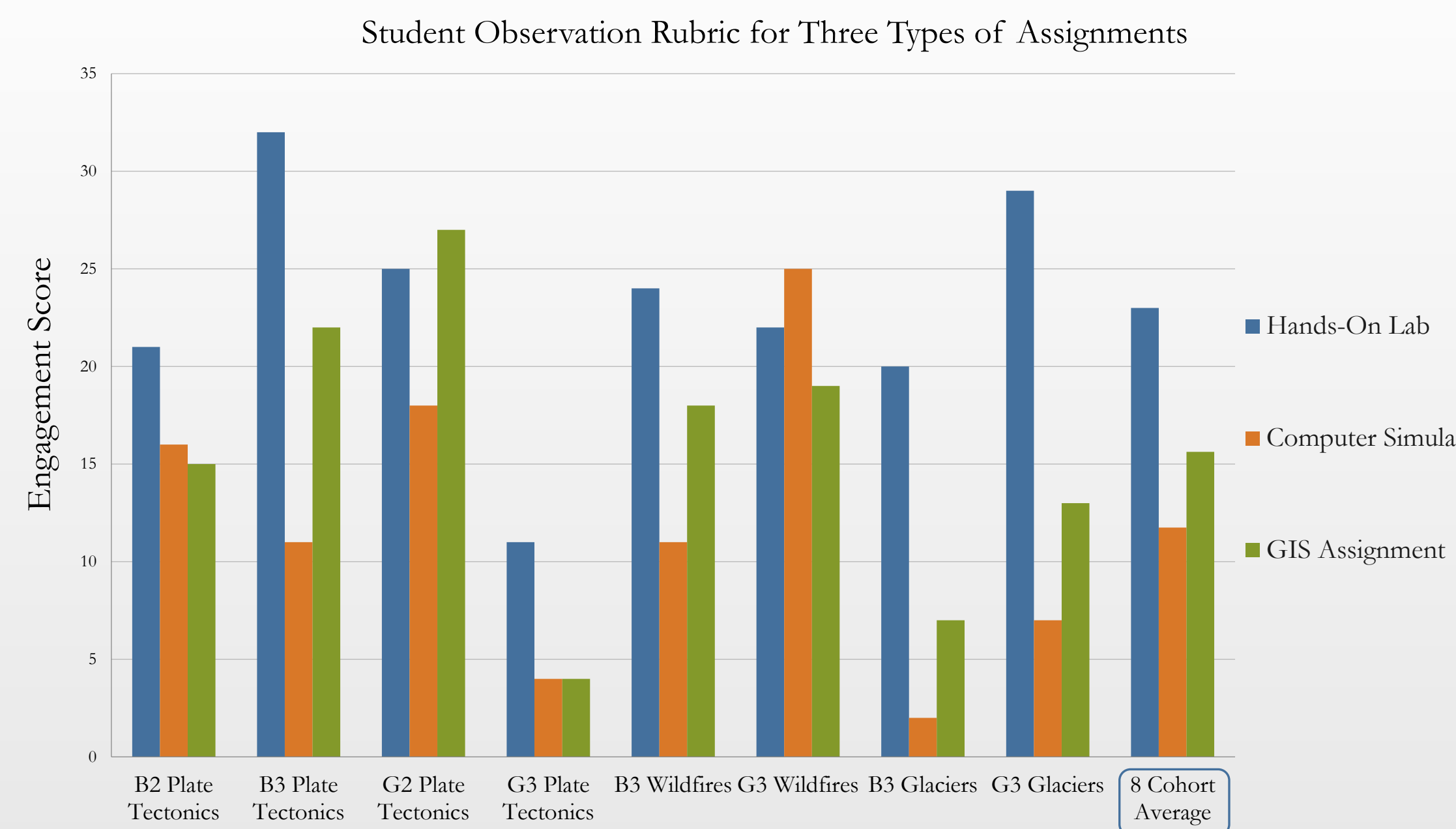
I prefer teaching hands-on lessons to students.
I will take more care in the selection of GIS assignments based on student skills.

Research Matrix

Research Questions	Data Collection Instruments				
	Student Observation	Work Completion	Student Survey	Student Interview	Teacher Journal
To what extent do students view GIS hands-on, real-world learning?	X		X	X	
How do GIS assignments impact patterns of work completion?	X	X			X
How does implementing GIS impact me as a teacher?	X				X

Results

Hands-on labs are consistently most engaging. GIS assignments are more engaging than other computer simulations (n=32). GIS assignments have lower rates of completion likely due to increased complexity (n=15). Students consider GIS assignments fairly hands-on and most relevant to the real-world (N=55).



Assignment Completion Data Comparing GIS Assignments to other Computer Based Simulations

		3 Computer Based Assignments			
		Annenberg	NPR Podcast	Quizizz.com	average
Time of submission	on time	10	9	8	9
	late	2	3	4	3
	incomplete	3	3	3	3
		3 GIS Assignments			
		GoogleEarth	ArcGIS	GoogleEarth	average
Time of submission	on time	10	6	9	8.3
	late	3	2	2	2.3
	incomplete	2	7	4	4.3

