COMMUNITY SCIENCE PROJECT FOR FLIPPED CLASSROOM

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Community Science project

- Real-life and community/family connections
- the opportunities to explore their physical, cultural and social worlds
- meaningful learning experiences to learners. (NAEYC, 2000)
- a meaningful context and motivation to make the leaning experience authentic (NCTM, 2001).





PROBLEM

• Lack of building connections with communities

Technology

- Research information about the community in depth
- Promote communications
- Increase motivation
- Support social interaction (Clements & Nastasi, 1993)
- More interest in community (Andes & Claggett, 2012)



COMMUNITY PROJECT

Place	Math (M) /Science Contents (S)	Technology
Whole-Food Coop	(S) Organic Food & Instant Food	Online Discussion Board Wiki Blogging
Chocolate Factory	(M) Measurement(M) Graphing(M) Algebraic Reasoning(S) Chemical Reaction(S) Process of Making Ice Cream	Online Discussion Board Wiki Blogging
Ice Cream Store	(M) Measurement (M) Graphing (M) Algebraic Reasoning (S) Chemical Reaction (S) Process of making ice cream	Online Discussion Board Wiki Blogging Ice Cream Machine
Nature Center	(M) Measurement (M) Functions and Relationship (S) Living eco-system and life cycles	Online Discussion Board Wiki Blogging Website of the center Virtual Reality of the center
Hawk Ridge	(M) Measurement (M) Functions and Relationship (S) Hawk Life Cycle and living environment	Online Discussion Board Wiki Blogging Website of the center Virtual Reality of the center Binocular
Brew House	(M) Measurement (M) Algebraic Reasoning (S) Chemical Reaction (S) Process of Brewing	Online Discussion Board Wiki Blogging Website of the center
Planetarium	(M) Number and Operations (M) Geometric Reasoning (S) Constellation (S) Earth Movement	Online Discussion Board Wiki Blogging Website of the center
Rock Climbing	(M) Algebraic Reasoning (S) Balancing and Motion Human Body	Online Discussion Board Wiki Blogging Website of the center
Page Mill	(M) Measurement(M) Algebraic Reasoning(S) Chemical reaction(S) Process of how to recycle paper	Online Discussion Board Wiki Blogging Website of the center
Hospital	(M) Functions and Relationship (M) Math in Human Life (S) Technology and science used in hospital	Remote measuring system Automotive operating system
Fire Station	(M) Measurement	Fire Engine

Participants: 60 future elementary teachers for 2 semesters



Instruments: CSS (Customer Satisfaction Survey) & Reflective Survey



Schedule



- ❖ Divide into 12 groups
- * Research community resources
- ❖ Visit the place in advance
- ❖ Sign up for the day
- Visit the place with the class
- * Reflect the visit with surveys

Technology used during the project

Research community Resources

•Websites, blogs, Wikis, Social Medias

Contact and Visit in advance

•Phone, Websites, Social Medias

Sign up for the Project

•Google Doc

Review after the project

 Web-based Interactive social Media Sharing Tool

Evaluation

•Web-based Survey Tool

CSS results

Community Places	Q1.	Q2.	Q3.	Q4.	Q5.	Q6.	Q7.	Q8.	Total	M
Chocolate Factory	4.3	4.5	4.7	4.2	4.8	4.5	4.7	5	36.7	4.59
BrewHouse	4	4.5	4.8	4.2	4.5	4.5	4.6	4.5	35.6	4.45
Whole Food Co-op	4.6	4.7	4.8	4.5	4.8	4.7	4.8	5	37.9	4.74
Planetarium	4.7	4.5	4.9	4.7	5	4.8	4.9	4.9	38.4	4.8
Rock Climbing	4.5	4.7	4.8	4.3	4.8	4.5	4.7	4.9	37.2	4.65
Pagemil	4.3	4.6	4.7	4.5	4.7	4.5	4.8	4.7	36.8	4.6
Hospital	4.4	4.6	4.8	4.5	4.9	4.6	4.9	4.6	37.3	4.66
Nature Center	4.8	4.8	4.9	4.8	5	4.8	5	4.8	38.9	4.86
Hawk Ridge	4.7	4.8	4.9	4.9	5	4.9	5	4.8	39	4.88
Ice Cream Store	4.5	4.5	4.7	4.5	4.7	4.5	4.8	4.9	37.1	4.64
Fire Station	4.7	4.7	4.7	4.6	4.6	4.5	5	4.9	37.7	4.71
Aquarium	4.8	4.8	4.9	4.8	5	4.9	5	4.8	39	4.88
M	4.53	4.25	4.8	4.54	4.82	4.64	4.85	4.82		

Reflective Survey I

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Reflective Survey II

Theme	Responses
Needs of	"Offering more hands-on experiences:"
More	"Possibly letting the students participate more with the hands-on activity"
Hands-on	"Maybe having more hands on learning experiences would make it better"
Experiences	"Doing some more hands-on activities."
Needs of	"Being provided more background information physically and virtually before
Information	hand"
&	"Being better prepared and providing more information verbally instead of having
Guideline	us simply read off the PowerPoint"
	"improved by provided information about different animals while we were
	walking along the trail."
	"Having a sheet or posting guideline Google Docs to follow along with."
Needs of	"More time outside. We didn't get to see much of the Nature Center"
Time	"I just wish we had more time! We go on these fun field trips and just don't have
	enough time to get to see all that is offered. I wouldn't change anything, I thought it
	was very informational."
	"Planning in advance would have been so much better. I didn't know what was
	going on or what we were doing, it seemed like it was thrown together last minute."

Reflective Survey III

Theme	Student Responses	
Fun	"interesting to research community places using social media and blogs and to visit	
	the places"	
	"It was a fun project!"	
Useful	"Thanks! It's a great resource."	
Resource	"Great people! Great service!"	
	"It was a very fun and unique place to visit for science class!"	
	"I had a great time being outside and enjoying nature! It's also good to know about the	
	resources that are out there for us as future educators onsite and online."	
	"This is a fantastic online and offline resource for any teacher or even interested	
	community member to know about. People can benefit from the nature center and its	
	services."	
	"Great way to share and to review each group's Community Projects" using a web-	
	based interactive social sharing tool."	
Future	"Very fun community science and definitely something I'd love to do with students in	
Use	the classroom!"	
	"I think that taking a class to the Nature Center in any season would be great fun. I	
	hope this is something I am able to do in my future."	
	"Really great planning and preparation!"	

Conclusions

- ❖ The flipped classroom, Community Science Project, made the learning environment where the students understood and developed scientific and mathematical concepts in the context of their own community
- The Flipped Classroom, Community Science Project, helped and used resources from the community
- * Technology enabled the rich learning environment of the flipped classroom by providing profound learning and organizing opportunities for the participants.

