Ιμπροωινγ Ωατερ Θυαλιτψ φορ ξιλλαγεσ ιν Ημαχηαλ Πραδεση

θανυαρψ 22, 2018

ΝΕΩΕΑ Χονφερενχε

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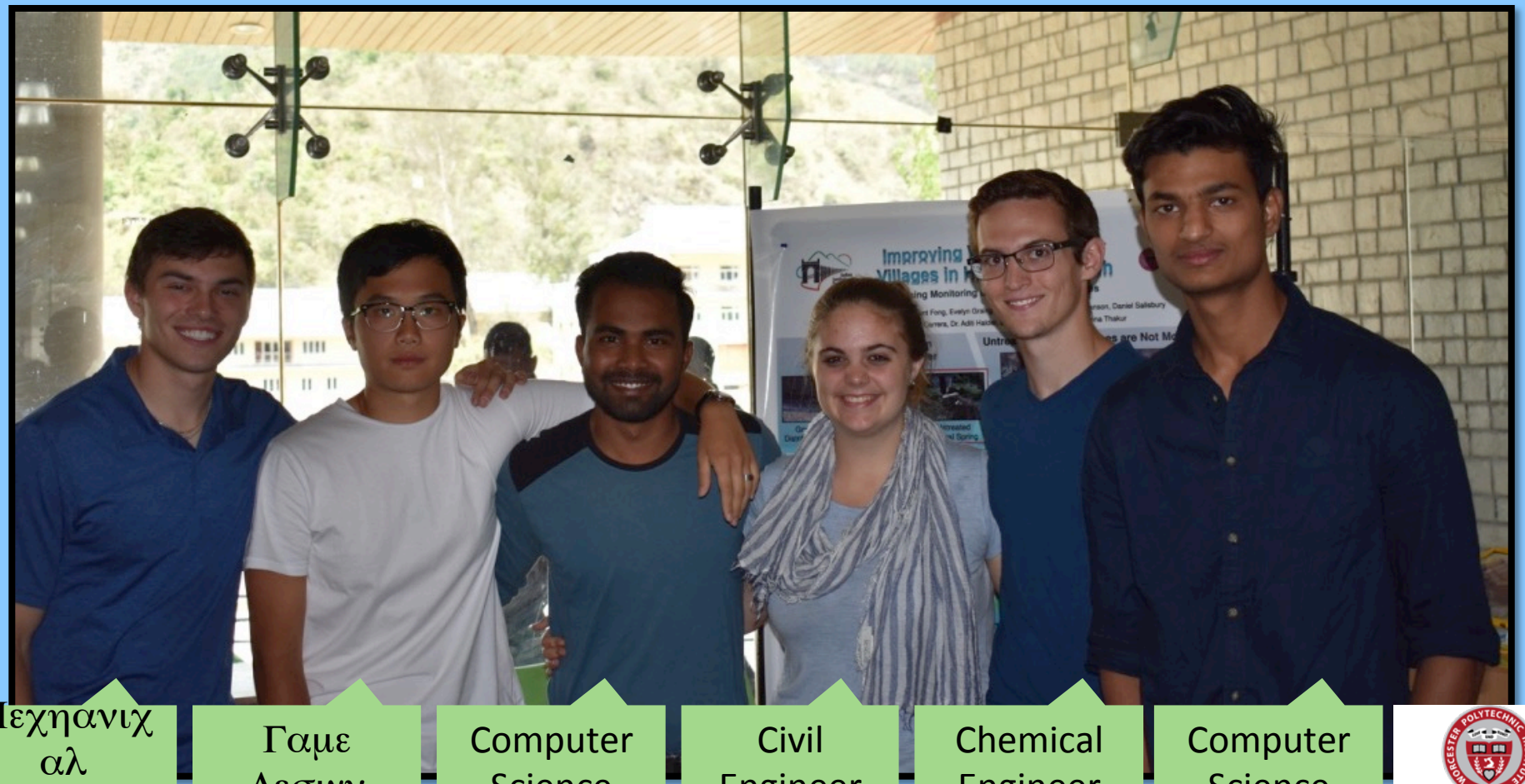
India Water Facts

- 500,000 children under the age of 5 die annually due to water contamination
- Rural areas of India often lack the ability to effectively monitor and maintain good quality drinking water
- Groundwater and surface pollution are significant in rural and urban areas
- Agricultural and industrial runoff causes chemical contamination of drinking water sources

Project Background

- ΙΘΠ: Ιντεραχτιωε Θυαλιφψινγ Προφεχτ
- Μανδι, Ινδια ΩΠΙ Προφεχτ Χεντερ
- Ινδιαν Ινστιτυτε οφ Τεχηνολογψ– Μανδι
- 7 ωεεκσ πρεπαρατιον χουρσε
- 7 ωεεκσ ον σιτε ωορκ

Interdisciplinary Student Team



Μεχηανιχαλ Ενγινεερ

Γαμε Δεσιγν

Computer Science

Civil Engineer

Chemical Engineer

Computer Science

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Project Goal

Το ασσεσσ τηε θυαλιτψ, μονιτορινγ, ανδ τρεατμεντ μετηοδσ οφ δρινκινγ ωατερ ιν ρυραλ ωιλλαγεσ ιν Ηιμαχηαλ Πραδεση

Communities of Study

- Νερι
  - Ποπυλατιον ~ 100
  - 2 νατυραλ σπρινγσ
  - 1 γρουνδωατερ ηανδ πυμπ
  - 1 στρεαμ (συρφαχε ωατερ)
  - 1 γοωερνμεντ διστριβυτιον σψστεμ
- Σαλγι
  - Ποπυλατιον ~ 160
  - 1 γοωερνμεντ διστριβυτιον σψστεμ φρομ νατυραλ σπρινγ
  - 3 γρουνδωατερ ηανδ πυμπσ
  - 3 υνοφφιχιαλ νατυραλ σουρχεσ

Νερι

Νερι

Νερ
ι

GOVT. MIDDLE SCHOOL
NERI CHAHAL
DISTT. MANDI (H.P.) BLOCK KATAULA
शिक्षा
ज्ञान
कर्म
जिज्ञासु
धैर्य
सहयोग
दया
दान
धर्म

Σαλγ
ι

Σαλ
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3 Types of Water Sources

Υντρεατεδ Νατυραλ Σπρινγ

Γρουνδωατερ Ηανδ Πυμπ

Γοωερνμεντ Διστριβυτιον Σψστεμ

Project Objectives and Methods Overview

1. Assess local perceptions and behaviors regarding water quality

- Interviews with locals
- Focus Groups
- Physical Observations

2. Investigate the relationship between water quality and regional health

- Interviews with private & public doctors
- Interviews with locals
- Physical observations

3. Quantify water contamination

- Physical
  Clarity, smell, color
- Chemical
  Alkalinity, hardness, electrical conductivity, pH, nitrates
- Bacteriological
  Coliforms, e.coli

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1. Local Perceptions and Behaviors

- Interviews
  - House interviews
  - Local government
    - Senior Chemist- Irrigation Public Health
    - Consultant Chemist- Irrigation Public Health
- Focus Groups
  - Men's group
  - Local schools
- Physical Observations
  - Water sources
  - Household interactions with water

2. Water Quality and Regional Health

- Interaction of regional health and measures being taken to prevent these diseases
- Prevalent waterborne diseases
- Cholera
- Interviews with doctors
  - Private Medical Doctor in Salgi
  - IIT-Mandi Medical Unit Doctor
  - Community Health Center in Kataula

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3. Quantify Water Contamination

- Bacteriological
  - Total Bacteria
  - E.coli
- Chemical
  - Chemicals previously tested by the Indian Irrigation and Public Health Department
  - Alkalinity, hardness, pH, electrical conductivity
- Physical
  - Clarity, smell, color

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Conclusions

1. Villages depend on untreated natural water sources

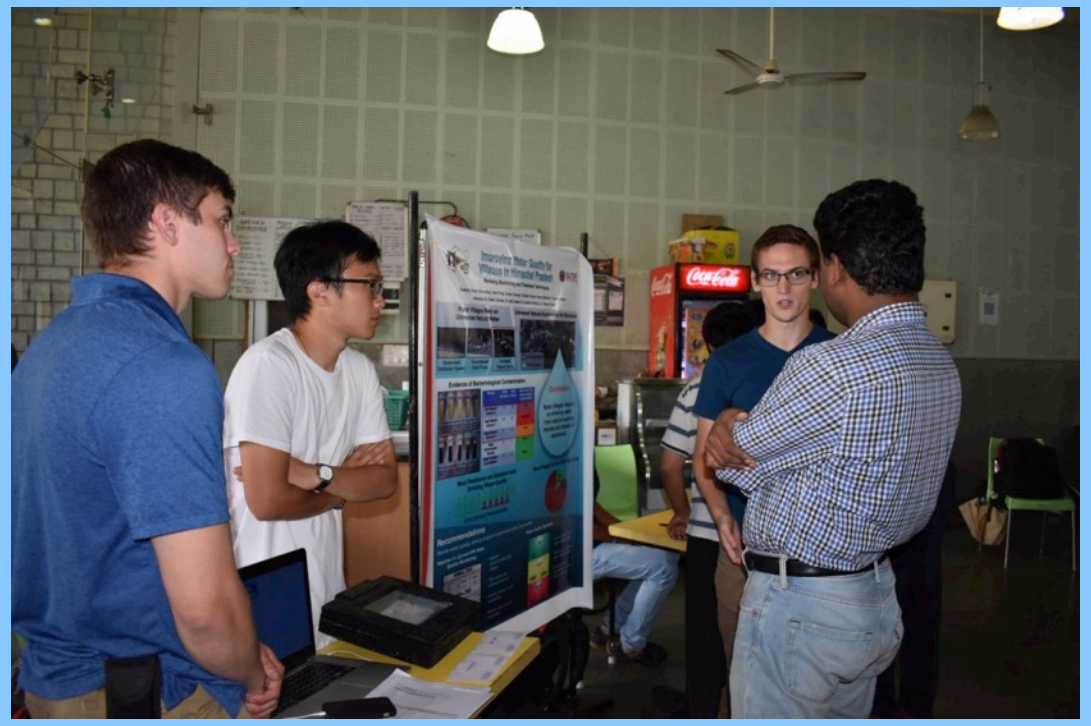
2. The government fails to monitor untreated natural water sources

3. Natural water sources may have significant levels of bacteriological contamination

4. Residents lack regular household water treatment methods

Recommendations

- Revise drinking water testing scheme for the Irrigation and Public Health (IPH) department
- Improve the effectiveness of communication of water quality results to villagers



Project Outcomes

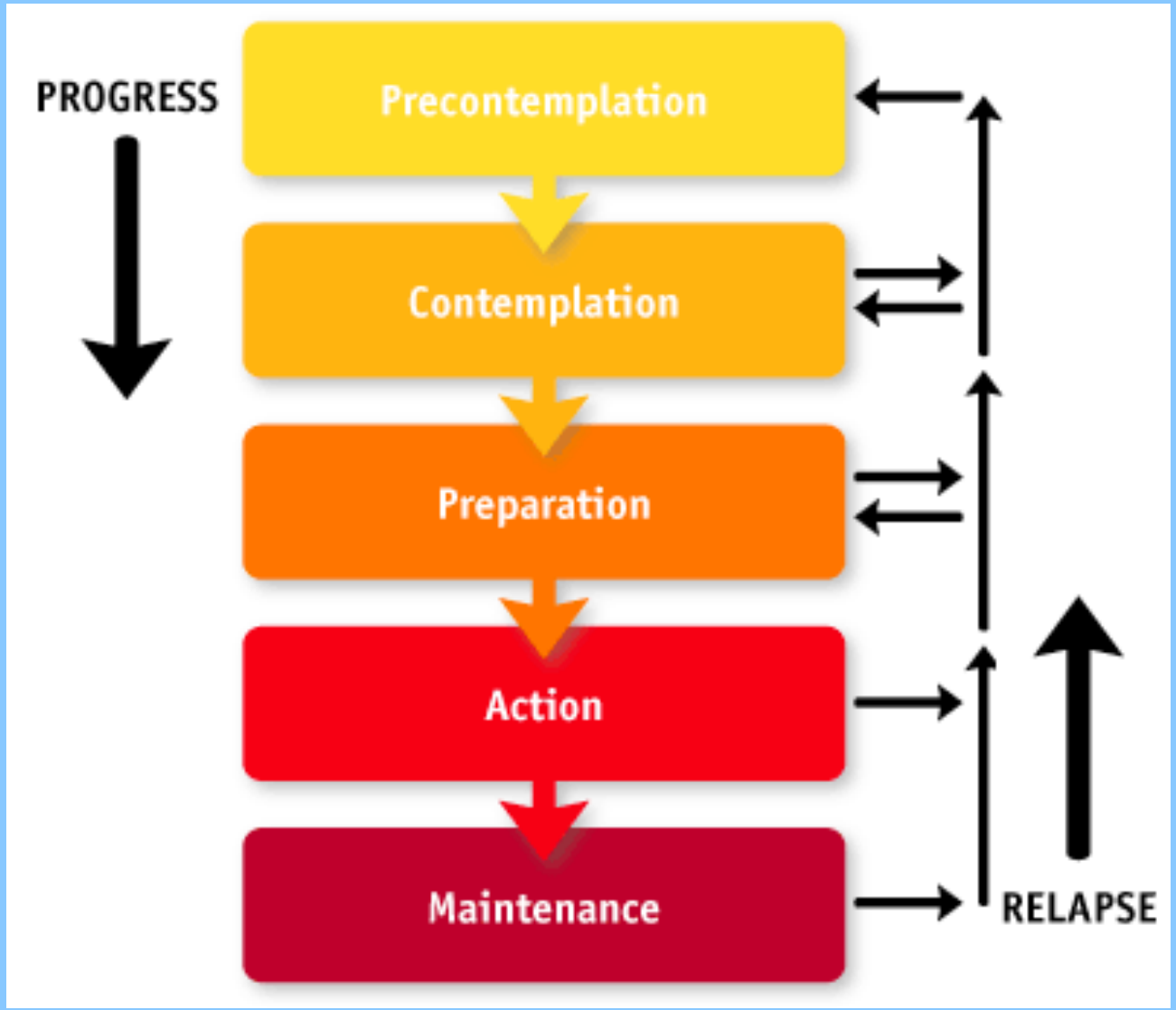
- Letter of Recommendation to the IPH
  - Alternative water quality testing plan
  - Public awareness recommendations
- Water Quality Stoplight
- Water Pasteurization Indicator

Project Limitations

- Time
  - Had to build upon existing data
  - Unable to see long term trends in water quality data
- Trustworthiness/accuracy of existing data
- Access to water quality testing supplies
  - Lab limitations
  - Material limitations
- Language barrier & cultural norms

Project Reflection

- Long term change
- Perceptions of change
- Role of IQP within this change
- Balance between social needs and technical advances



Θυεστιονσ?

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