CITIZEN SCIENCE VS CROWDSOURCING

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ADAM STEVENS

- "But (and you might have guessed there was a 'but' coming), let's not pretend that it is something that it is not. It's not, as far as I'm concerned, "citizen science". **It is data crunching, plain and simple**, and I think it could be so much more. I've had a go at a number of the different projects and they were entertaining for about five minutes, after which I was often left thinking "yes, but what does it mean if that galaxy is elliptical and that one is spiral?" or similar."

CROWDSOURCING

amazonmechanical turk beta
Artificial Artificial Intelligence

Your Account | HITs | Qualifications

Already have an account?
Sign in as a Worker | Requester

Introduction | **Dashboard** | **Status** | **Account Settings**

Mechanical Turk is a marketplace for work.

We give businesses and developers access to an on-demand, scalable workforce.
Workers select from thousands of tasks and work whenever it's convenient.

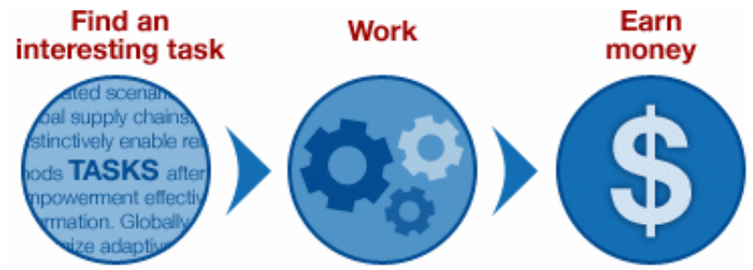
314,917 HITs available. View them now.

Make Money
by working on HITs

HITs - *Human Intelligence Tasks* - are individual tasks that you work on. Find HITs now.

As a Mechanical Turk Worker you:

- Can work from home
- Choose your own work hours
- Get paid for doing good work



Find HITs Now

or learn more about being a **Worker**

Get Results
from Mechanical Turk Workers

Ask workers to complete HITs - *Human Intelligence Tasks* - and get results using Mechanical Turk. Get Started.

As a Mechanical Turk Requester you:

- Have access to a global, on-demand, 24 x 7 workforce
- Get thousands of HITs completed in minutes
- Pay only when you're satisfied with the results

Get Started

An amazon.com company

M. HAKLAY'S LEVELS OF PARTICIPATION

Level 4 'Extreme Citizen Science'

- Collaborative science – problem definition, data collection and analysis

Level 3 'Participatory science'

- Participation in problem definition and data collection

Level 2 'Distributed Intelligence'

- Citizens as basic interpreters
- Volunteered thinking

Level 1 'Crowdsourcing'

- Citizens as sensors
- Volunteered computing

INVOLVEMENT IN SCIENCE TYPOLOGIES

Stage of Inquiry	Cooper et al.	Wilderman	Bonney et al.	*Contributory*	*Collaborative*	*Co-created*
Define question	✓	✓	✓			X
Gather information			✓			X
Develop hypotheses			✓			X
Design study	✓	✓	✓		(X)	X
Data collection	✓	✓	✓	X	X	X
Analyze samples		✓	✓		X	X
Analyze data	✓		✓	(X)	X	X
Interpret data	✓	✓	✓		(X)	X
Draw conclusions	✓		✓		(X)	X
Disseminate results			✓	(X)	(X)	X
Discuss results & ask new questions			✓			X

TABLE I

VOLUNTEER INVOLVEMENT IN ENVIRONMENTAL SCIENCE TYPOLOGIES, WITH DEFINITIONS OF PARTICIPATORY SCIENCE MODELS. ✓= INCLUDED IN MODEL; X = PUBLIC INCLUDED; (X) = PUBLIC SOMETIMES INCLUDED.

STILL FOCUSED ON THE

SCIENCE INSTEAD OF THE

SCIENTIST

CITIZEN SCIENCE
VS
COMMUNITY SCIENCE

TYPES OF CITIZEN SCIENCE

- Action
- Conservation
- Investigation
- Virtual
- Education

ACTION

- Encourages Participant interventions in local concerns
- Not organised by scientist
- Scientist often consultant
- grassroots movements
- long-term engagement in environmental goals

ACTION

- Example: Sherman's Creek Conservation Association
- Issues:
  - Challenges for the aggregation of data
  - Organisation seldom scales
  - Minimal use of technologies

CONSERVATION

- Stewardship
- Natural research management goals
- Focus is in outreach
- Explicit educational goals

CONSERVATION

- Example: Northeast Phenology Monitoring Project
- Issues:
  - Focus on generating data primarily for decision-making
  - Often not in easily accessible format
  - Heavily dependent on state funding

INVESTIGATION

- Focused on scientific research goals
- Data collection from physical environment
- Education not always an explicit goal, but often supports ongoing learning

INVESTIGATION

- Example: The Great Sunflower Project
- Issues:
  - Valid scientific results
  - Almost never utilise volunteer screening
  - Sampling bias

VIRTUAL

- Similiar to Investigation
- Virtual Research Environment
- Does not need physical collection of data
- Participating as a subject is not “citizen science”

VIRTUAL

- Example: Galaxy Zoo
- Issues:
  - Ensuring valid scientific results
  - Critical mass of contributors
  - Top-down organisations by academics
  - Complex custom web-platforms

EDUCATION

- Education and outreach are primary goals
- Informal vs. formal learning
- Tasks for cumulative learning

EDUCATION

- Example: Fossil Finders

- Issues:
  - Citizen science often only because it has a formal research partner
  - Relative costs of acquiring data via formal learning environments are high
  - Valid results matter less than the learning itself

LEARNING IN INFORMAL ENVIRONMENTS

- Sparking Interest and Excitement
- Understanding Scientific Content and Knowledge
- Engaging in Scientific Reasoning
- Reflecting on Science
- Using the Tools and Language of Science
- Identifying with the Scientific Enterprise

CITIZEN SCIENCE

Citizen Science represents a **new type of open movement** welcoming **contributions** to **scientific research** from a **diverse** population of volunteers.

CITIZEN SCIENCE

- project demographics
- organisational features
- participation design
- educational features
- outcomes
- technologies
- processes
- datamangement

HAUSAUFGABE

- Access the list on p.4 in hicss-44.pdf
- Choose 3 projects to review
- Assess the 3 projects according to the criteria learned in today's class

QUESTIONS?

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