



Education and Sustainable Food Systems

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Grand Challenge: Nutritional Insecurity

- 828 million people are undernourished (150 million more than when the pandemic began)
- 38.9% of the global population is overweight or obese
- Both under- and over-nutrition → to poverty
- Number of obese people globally :
 - Adults: 650 million
 - Adolescents: 340 million
 - Children: 39 million

Grand Challenge: Climate Change



Sea Level Rise



East African Drought, Gerry Images

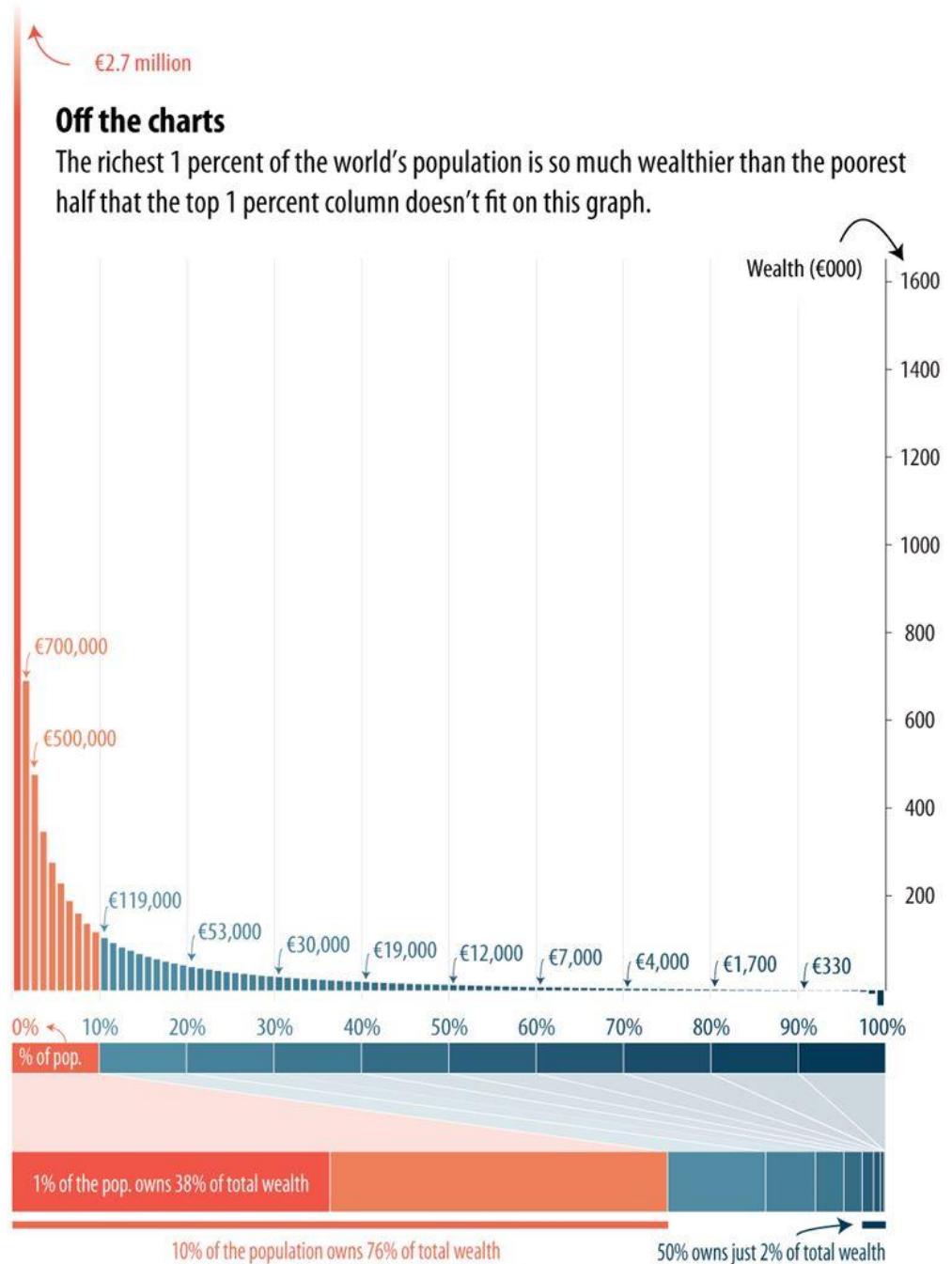


Alejandro Granadillo, AP
Hurricane Fiona. Puerto Rico



Zahid Hussein, AP
Pakistan Floods

Grand Challenge: Poverty & Inequality



Source: World Inequality Report 2022 by the World Inequality Lab.

Problems, Levers & Solutions



Integrative Study of the Food System

- Science, Practice and Movement
 - Practices
 - Substitutions
 - Redesign
 - Producer-Consumer Connections
 - Globalization

Education

EVERYONE eats and participates in the Food System.

But the organizational structure and educational traditions of many universities still resemble those of the Middle Ages

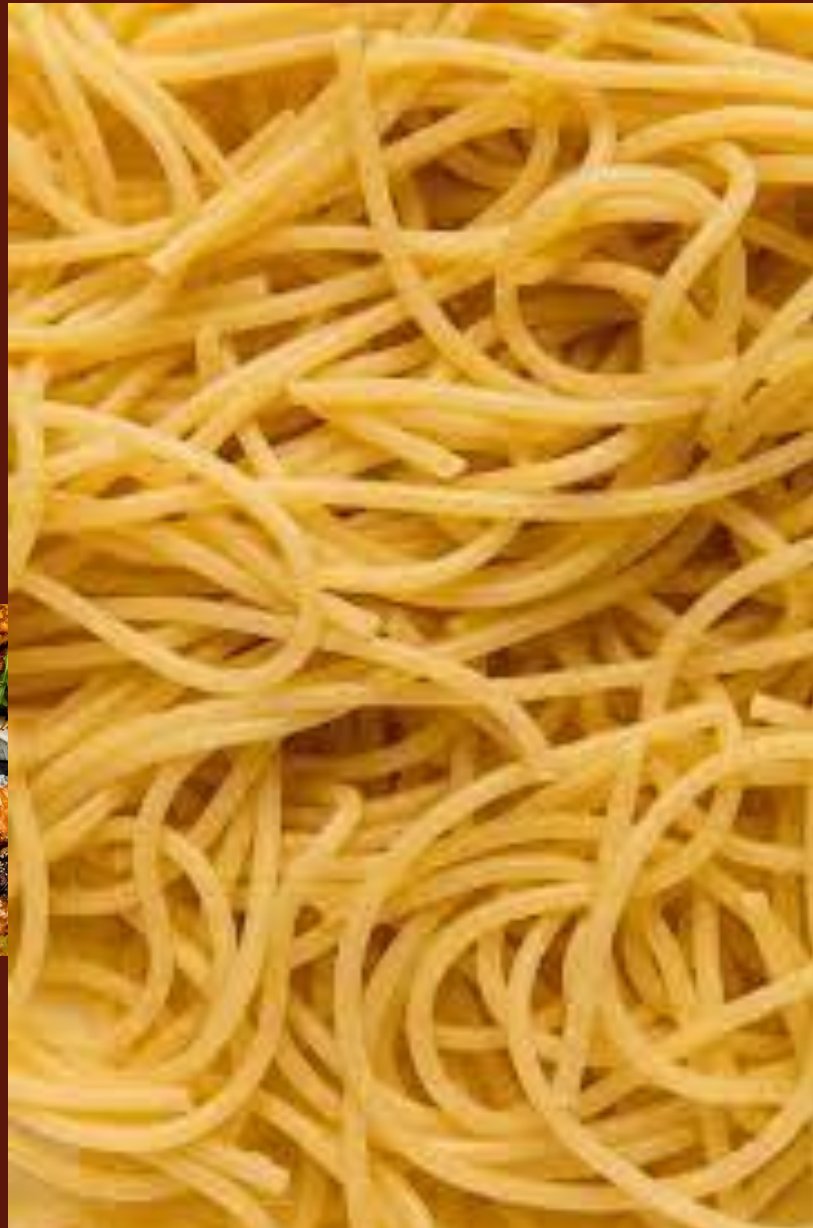


Globally, many community education and extension programs are underfunded so that those who most need Food System education don't receive it.

Integration of the Food System



Grain Production



Delivery



Home Food Preparation



Healthy Diets



Ploughing

Integration of the Education System?



Engineers



Economists



Sociologists



Microbiologists



Nutritionists



Communication

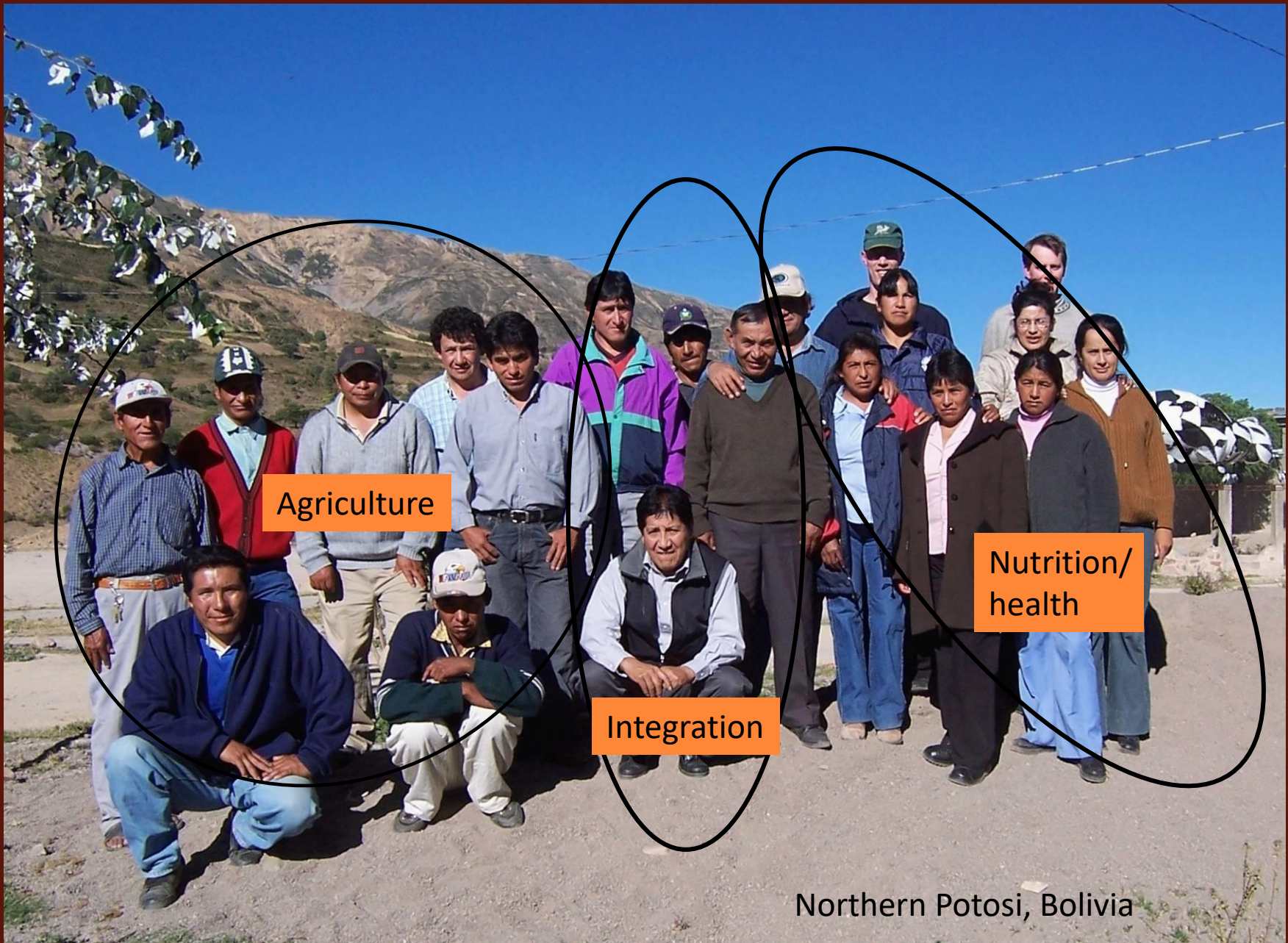
Interdisciplinary Programs

If you think of disciplines as organs, true interdisciplinarity is something like blood. It flows. It is a liquid. It is not contained. There is no inside and outside.

Alice Gottlieb

Outcomes of a Good Education System 1

- Ability to anticipate future (Paul Farmer's clinic trees)
- Ability to work effectively in diverse teams
 - Social skills and cultural knowledge



Agriculture

Integration

Nutrition/
health

Northern Potosi, Bolivia

Outcomes of a Good Education System 2

- Ability of students to direct their learning, deciding what and how they learn
- Ability to solve complex problems
 - Analytical skills AND technical knowledge
- Ability to develop and implement plans
 - Ability to take initiative

Competence-Based Education Objectives & Learning Contracts

Who should determine what
skills students acquire?



Professors



Employers



Parents



Students

Advantages of Competence-Based Education

- Varied learning modalities foster skill acquisition
 - Accommodation of different learning styles
 - Flexibility promotes skill acquisition in interdisciplinary environments
- Student-developed learning contracts promote student-centered learning
 - Student goal-setting
- Assessment provides documentation of students' skills

Competence-Based Education Evaluation

Credit Hours Logged Sitting in Rows?



OR

Skills?



Problem Solving & Active Learning

Active Learning Initiative

Brains Aren't Sponges that Soak Up Knowledge



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They Need Mental Exercise

Active Learning Initiative (2012)

1. Phase 1: Focus on large introductory courses that are not popular with 1st year students
 1. Labs: Pose original questions and solve in groups
 2. Labs: Provide other results and determine how solution was arrived at
2. Sample Lecture Activities
 1. Online Discussions on Open-Ended Questions
 1. Between Classes with Instructor & Student Participation
 2. Break-up Lectures into Informational and Activity Periods every 15-20 minutes
 3. Exams: Part 1 independent and Part 2 same exam in group

Cornell Active Learning Initiative

- ↑ Student Performance
- ↑ Critical Thinking
- ↑ Student Sense of Belonging & Learning Self-Confidence
- ↑ Faculty Discussion About Teaching
- ↑ Student-Faculty Interaction
- ↑ Student Peer Interaction

- Phase 3: 80 courses transformed in 19 departments across Cornell, improving learning environments for 5,000 students in 2021-2 academic year

- Works for adult learners and community education

Grand Challenges Framework


- Community engagement tackling complex real-world business challenges (Dyson)
 - 3 years, 3 courses and several engaged learning opportunities
 - Preparation (skills), Participation and Analysis/Reflection (3 semesters)
- Skills in self-awareness, leadership, team participation and community engagement gained in diverse situations



Patience & Commitment

Real change takes more than 3-5 years





Food System Education
For All (Equality)
Life-long
For the Planet
For the Future

Thank You