Teaching Earthquake-Resistant Building Practices in Guatemala:
Disseminating Existing Knowledge to the People Who Need it Most

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The Problem

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Knowledge improves but earthquake fatalities keep increasing.

Most geoscience professors have spent years teaching about the geology of earthquakes, but geologic knowledge alone does not prevent fatalities.

Collapse of poorly constructed buildings in response to shaking still accounts for most casualties.

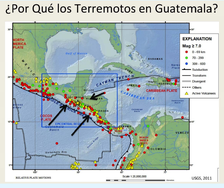
A Solution: Improving Building Practices at the Local Level

Earthquake-resistant building techniques have been developed using the concrete and masonry block construction typical in the developing world.

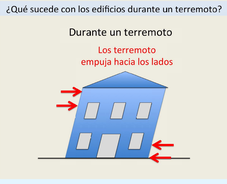
The principal technique - **Confined Masonry** - is highly effective for these non-engineered buildings, and requires only modest changes in customary design and building practices.

A major challenge remains in disseminating these techniques to the local builders who are responsible for most construction in rural areas.

Slides from the presentation



Defining the Problem for the Audience



Edificios de concreto marco a menudo colapso en los terremotos debido a empujar hacia los lados

Teaching Earthquake-Resistant Construction

I developed a teaching presentation using a laptop computer and small portable projector that I could bring to rural villages.

I used photographs of local buildings and simple graphics with minimal captions to illustrate best practices with yes/no labels, and breakable models to demonstrate basic design principals.

Printed manuals with additional information and examples were provided to each attendee, for later reference and the possibility of propagating this information forward.

Even remote villages have sufficient electricity to run a small projector.

There was little difficulty in finding partners who could provide running translation into local and indigenous languages.

The most challenging aspect of this project was developing a working relationship with a local organization willing and able to assist with scheduling, publicity, and generally connecting me with appropriate audiences.

I am neither a builder nor an engineer, and made no pretence to expert knowledge. However, the basic concepts are easily understood, and the new ideas were welcomed by builders.

Suggesting a Solution:
Earthquake-Resistant Construction Using Confined Masonry

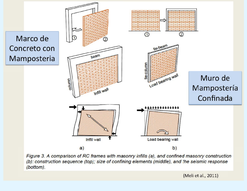
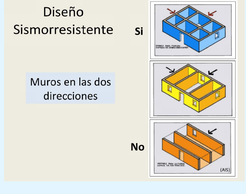
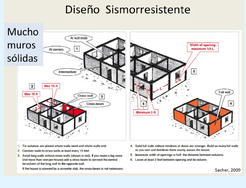
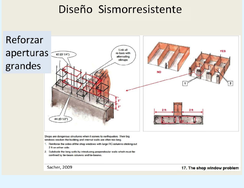
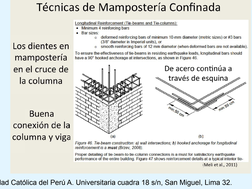


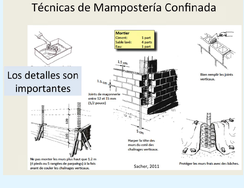
Figure 3. A comparison of RC frames with masonry infills (a); and confined masonry construction (b): construction sequence (top); size of confining elements (middle); and the seismic response (bottom)











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Initial Concerns and Lessons Learned

What will I teach?
* that will be useful
* that I can learn well

Answer: Expert subject knowledge not necessary

How will I teach?
* Can I learn enough Spanish to teach?
  Answer: No, but unnecessary.
* Should I use a computer for presentations?
  Answer: Yes! Simple graphics are universal.

Will anyone listen?
Answer: Yes.
Opportunity to learn new techniques is much appreciated.

How will I contact my audience?
Answer: Need good local partners.
Takes time and effort to develop these.

Will what I can do make a difference?
Answer: Yes!
Aim to train teachers and local leaders who can propagate the knowledge.

Major Conclusion: Any Experienced Teacher Can Do This!*

***with any issue you care about.**

My experience suggests that *effective teaching* is the most critical tool for providing meaningful assistance with many geoscience-related issues.

Expert knowledge, fluency in local languages, years of experience and cultural insight are all useful but can be provided or developed through relationships with local partners.