

Here We Go Again: Why Is It Difficult for
Developers To Learn Another
Programming Language?

But First, Another Paper

- This paper references "Six Learning Barriers in End-User Programming Systems" (Ko, Myers, Aung)
- Identified six barriers: design, selection, coordination, use, understanding, and information
 - Your job: break into groups, read one subsection of the Ko et al. paper, and present that barrier to the class (max length about 4 paragraphs)
 - Also: Norman's gulfs of execution and evaluation

Now, the Present Paper

- Methodology critique
 - Limitations?
 - Cost/benefit for each phase of the study?

Purposive Sampling

Box 1. Steps in purposive sampling.

1. Decide on the research problem.
2. Determine the type of information needed.
 - Information from every individual in the community is potentially valuable > use random sampling
 - o Time and resources are too limited for random sampling > use purposive sampling with caution
 - Information is held by only certain members of the community > use purposive sampling
 - o Information needs a high degree of interpretation regarding cultural significance > use key informants
3. Define the qualities the informant(s) should or should not have.
4. Find your informants based on defined qualities.
 - Research about the area and community.
 - Ask for help before going to the site and upon arrival at the site.
 - Realize finding informants may be a trial and error process. Be patient and persistent!
5. Keep in mind the importance of reliability and competency in assessing potential informants.
6. Use appropriate data gathering techniques.
7. In analyzing data and interpreting results, remember that purposive sampling is an inherently biased method.
 - Document the bias.
 - Do not apply interpretations beyond the sampled population.

Purposive Sampling: Examples of Use

Table 1. Purposive Sampling Used in Ethnobotanical Studies. Three categories: Studies of specific skills, knowledge, or practices; Comparisons between practices; and Case studies.

Studies of specific skills, knowledge, or practices					
Research Problem	Methods	Population Sampled	Sample	Analyses	Citation
Cultural significance of plants	Unstructured interviews	Informants chosen based on traditional ecological knowledge, residency, professional activity, age	54 people	Index of cultural significance	Silva & Andrade 2006
Collect information on almost-forgotten plant uses	Interviews	Elders with empirical knowledge	132 people in 60 outlying villages	none specified	Tardio <i>et al.</i> 2005
Use and availability of craft vines	Semi-structured interviews, direct observations	Persons involved in basket-weaving activities	66 people	Percentages	Martinez-Romero <i>et al.</i> 2004
Sustainability and use of gara dyeing	Field interviews	Gara dyers	none specified	none specified	McFoy 2004
Use of hemiepiphytes in craftmaking	Interviews, participant observation	Male craftmaking and hemiepiphyte collector specialists	none specified	none specified	Vargas & van Andel 2005
Construction of a clapperstick	Unstructured interviews, participant observation	Female clapperstick-makers	2 people	none specified	Walker <i>et al.</i> 2004

Conclusions

- It's hard when old habits don't work (3.3.1)
- It's hard when paradigms change (3.3.2)
- It's hard if the language is very different (3.3.3)
- It's hard if the terminology is different (3.3.4)
- So, now what?
 - Let's break up into groups and make a plan.
 - Also, fill out the course evaluation.

Possible Approaches

- Slow change
- Use LLMs to translate
- Use LLMs to teach
- Build an extensible *one true language*?