Effectiveness of Learning 8 Languages Using Patterns[1]

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A pattern is a two-way conversation with nature. We learn from existing designs and they guide us. Is it possible to learn a language in just 10 minutes per day? How about 8 in 80 minutes each day? Using 8 languages books, Spanish, Italian, French, Portuguese, Chinese, Japanese, German, and Hebrew, can we identify patterns? This research is important in facilitating learning and increasing productivity. It is time consuming to learn a language. If we could learn languages more expeditiously our communication and comprehension would improve and our ability to express ourselves to more of the population would increase. Most of the ~~work in pedagogical patterns have~~work in pedagogical patterns has been done from the point of view of the teacher. This work could lead to patterns that would guide the student. The purpose of this paper is to give you an immediate speaking ability in these languages.

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Additional Key Words and Phrases: Contour perception, flow visualization, perceptual theory, visual cortex, visualization

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1. INTRODUCTION

1.1 The Approach

I am interested in this topic because of my very unique ~~work situation~~work situation. I have the opportunity to interview people. However, I do not know in advance, most of the time, who they are. The interview is a conversation among myself, as leader, and one or two interviewees. The interviewer asks the questions and the interviewee(s) responds with the participants taking turns talking. The interviewees may be newly naturalized citizens that have a limited knowledge of English. The interviewees may be parents of newborn babies. In either case, the conversational breakdown is a clear and present danger.

Communication breakdown can be eased if the interviewer can improve their language capabilities – speaking multiple languages to an extent appropriate for the interview sessions – hence my interest in learning multiple languages, quickly.

My first experiment was to use the 8 language books and devise common phrases in each language to see if I could really learn them in just 10 minutes per day. There was no particular reason for the languages chosen. The books were chosen in a random manner. In fact, Arabic and Russian books are also available for 10 languages to extend this study. That will be discussed in the future works section.

The interview is a structured interview with the aim of the approach is to ensure that each interview is presented with exactly the same questions in the same order. It is also easy and smooth and can be completed in a matter of minutes.

Patterns Used

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Imagine That Pattern

To kick start the change initiative; engage others in an exercise to imagine future possibilities. I used this pattern to engage others in my organization to be interested in my ideas. I started looking at this almost a year ago and devised the phrases with the help of my colleagues they are subject matter experts in the languages. They verified my translations.

Summary of the Problem

It can be difficult for those you are trying to convince to see how a new idea will fit into the work they will be doing. I created a PowerPoint presentation and a draft to management for the vetting process.

Imagine that you had a machine that could think and provide you with the words for a conversation in a language that you needed like Google Translate only better.

Summary of the Solution

Ask people to imagine a possible outcome with the new idea. Begin with "what if…?" I discussed this idea with my doctoral cohorts and they thought it sounded impressive.

You then give them a potential vision, an "imagination spark."

The Imagine That pattern shares common roots with Linda Rising's and Marylou Mann's Evangelist pattern, found in *Fearless Change*. Both are about the excitement that comes from having a new idea and wanting to share that idea with others.

Explore For Yourself Pattern and Try for Yourself

From Patterns for active learning, PLoP 2002, a person's success is mainly about learning new concepts efficiently. Students have to learn on their own. You often have a difficult time knowing the degree of task competency during the presentation of a topic. Additionally students usually believe they understand the topic, but this is only true in theory. As soon as they have to accomplish a task based on this new topic they realize their lack of understanding. Learning a language is more than just reading about it.

Pattern Garden

Communicating with people who do not speak English has many challenges for natives that only speak English. A "pattern" is used to guide introduction of the properties into an environment. This paper uses the design to find how they can fit and serve the natural forces comfortably.

This pattern is grounded in my study and comparison of English, Asian, and Mediterranean style gardens. I studied different garden styles: French, Italian, Portuguese, German, Japanese and Chinese. My goal was to understand the elements and style, of commonalities and differences among gardens, to see if patterns found in gardens could be generalized, or used metaphorically, to expose language-learning patterns.

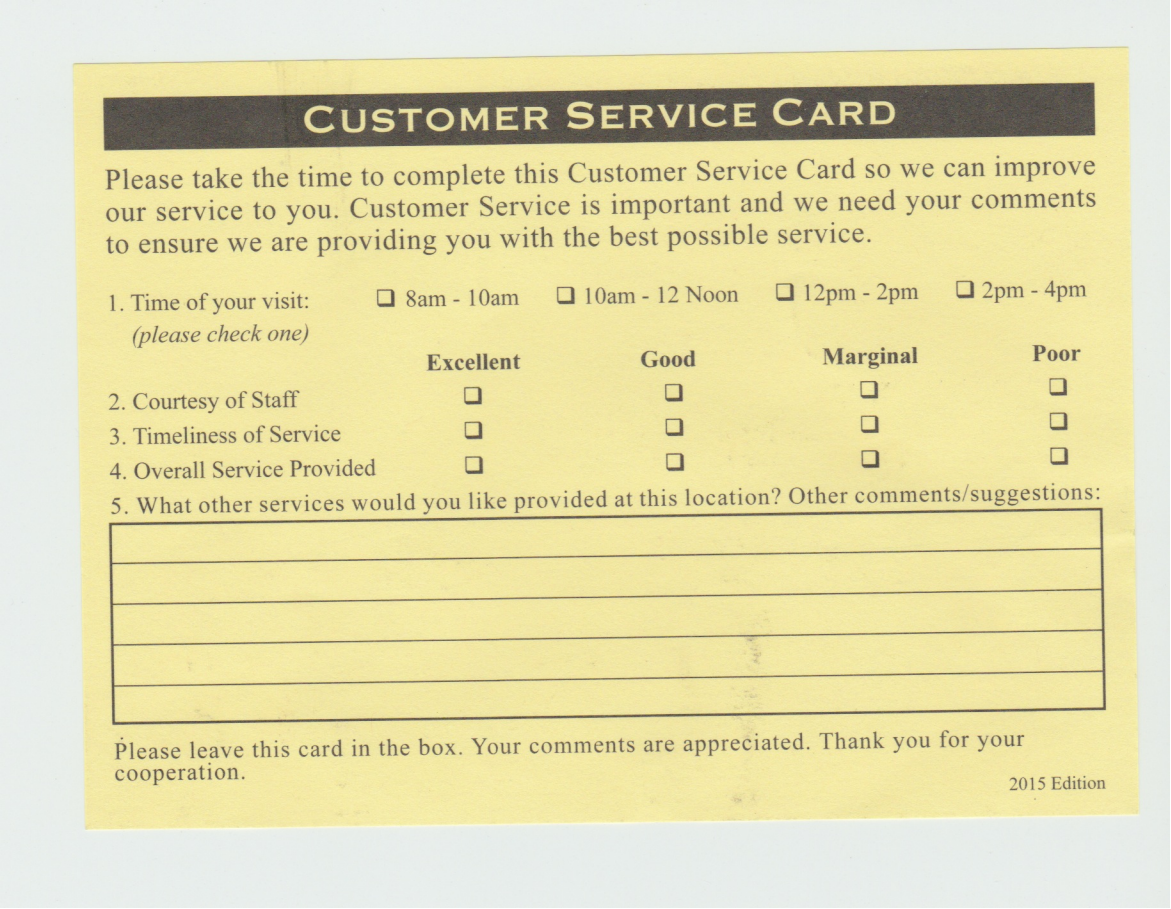
The following properties provide a foundation for finding patterns in garden composition, and might perform the same function for finding patterns of language learning.

Identify. Characteristics of an object.
Locate. Absolute or relative position.
Distinguish. Recognize as the same or different.
Categorize. Classify according to some property (e.g., color, position, or shape).

Cluster. *Group same or related objects together.*
Distribution. *Describe the overall pattern.*
Rank. *Order objects of like types.*
Compare. *Evaluate different objects with each other.*
Associate. *Join in a relationship.*
Correlate. *A direct connection.*

You can apply the above properties/criteria to language: vocabulary and syntax. Our basic rational for doing so is as follows. The 8 language books have many lessons some of which are the same and some are not. I tried to identify the same 8 phrases and find the correct grammar and syntax to distinguish them as the same or different.

Coupling this pattern with the Imagine That pattern suggests a set of ideas grounded in the organization of vocabulary and grammar to create tools – sharing a common pattern of structure and intent – like a customer service card in multiple languages, an on-line tool for translations among languages, and an interview "script" that would assure commonality across interviews instead of idiosyncratic variation based on the interviewer's command of languages.



CUSTOMER SERVICE CARD

Please take the time to complete this Customer Service Card so we can improve our service to you. Customer Service is important and we need your comments to ensure we are providing you with the best possible service.

1. Time of your visit: ❑ 8am - 10am ❑ 10am - 12 Noon ❑ 12pm - 2pm ❑ 2pm - 4pm
(please check one)

	Excellent	Good	Marginal	Poor
2. Courtesy of Staff	❑	❑	❑	❑
3. Timeliness of Service	❑	❑	❑	❑
4. Overall Service Provided	❑	❑	❑	❑

5. What other services would you like provided at this location? Other comments/suggestions:

Please leave this card in the box. Your comments are appreciated. Thank you for your cooperation.

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2. MODEL

English	German
What is that?	Wass ist dass? Pronunciation (Vahs ist dahs?)
How are you?	Wie geht es Ihnen?
I can speak German	Ich kann Deutsch sprechen.
Where were you born?	Wo sind Sie geboren?
Thank you	Danke
Please	Bitte

English	Italian
What is that?	Cos e quello?
How are you?	Come sta?
I can speak Italian	Io posso parlo Italiano Posso parlare Italiano
Where were you born?	Dove sei Nato?
Thank you	grazie
Please	Per favore (pair) (fah-voh-reh)

English	Spanish
What is that?	Que es eso?
How are you?	Como esta usted?
I can speak Spanish	Puedo hablar en Español
Where were you born?	Donde naciste?
Thank you	Gracias (grah-see-ahs)
Please	Por favor (por) (fah-vor)

English	French
What is that?	Qu'est-ce que c'est ça?
How are you?	Comment allez-vous?
I can speak French?	Je peux parler francais
Where were you born?	Où êtes-vous né?
Thank you	Merci
Please	S'il vous plaît

Portuguese	
What is that?	O que e isso? (oh) (kay) (eh) (ees-soo)
How are you?	Como vai? (koh-moo) (vy)
I can speak Portuguese	Eu posso falar Português
Where were you born?	Onde você nasceu?
Thank you	Obrigado/obrigada
Please	Por favor

Chinese (Puttonghua) (poo-tohng-hwah) “common Language”largely from Mandarin Chinese	
(English) What is that? (literally) That is what?	Na shi shenme? (nah) (shr) (shun-muh)
How are you?	Ni hao ma? (nee) (how) (mah)
I can speak Chinese.	wǒ huì shuō zhong wen
Where were you born?	Nǐ zài nǎr chūshēng de?
Thank you	Xiexie (ssee-eh-ssee-eh)

	Xiexie nin
Please	Qing (cheeng)
Be quiet	Qing An Jin

Hebrew (eev-reet)	
What is that?	(zay) (mah)
How are you?	מַה שְׁלוֹמְךָ? (shlohm-Hah) (mah) masculine Shloh-mayH (feminine)
I can speak Hebrew	(meh-dah-bair) (eev-reet) עברית (meh-dah-bair-et) (eev-reet)
Where were you born?	m - (Meayin ata) מאין אתה? f - (Meayin at) מאין את? m - (Mi-eyfo ata) מאיפה אתה? f - (Mi-eyfo at) מאיפה את?
Thank you	(toh-dah)
Please / you're welcome	(beh-vah-kah-shah)

Japanese	
What is that?	Nan desu ka? (nahn dess kah)

How are you?	Ogenki desu ka? Pronunciation (oh-gen-kee) (dess) (kah)
I can speak Japanese.	Watashi hanashimasu Nihongo (wah-tah-shee) (hah-nah-shee-mahss) (nee-hohn-goh) Watashi wa Nihongo o hanashimasu.
Where were you born?	Nan (nahn) dochira no goshusshin deshouka (where are you from) Shusshin wa doko desuka (talking to a friend) in a formal way: "dochira no go-shusshin desuka?"
Thank you	Arigato gozaimasu
Please	kudasai

A Garden is More Than a Collection of Plants

The Kadupal Flower, which is native to Sri Lanka. Is often called the most expensive flower in the world. In reality, it is priceless.

The Kadupal Flower is so frail that it blooms just before midnight and perishes before the morning. Its sweet fragrance is also known for its calming, almost enchanting properties. Yet for all its special almost mystical qualities, Kadupal Flower seeds are relatively inexpensive and quite ordinary looking.

Isn't it odd that to think that a priceless flower can grow from an ordinary seed?

Effective translation requires interpretation and interpretation is grounded in much more than mere words and syntactic arrangement. Visual information, e.g. gestures and facial expressions, cultural context, and even the physical setting in which the interview takes place: all come into play. Just as a garden is far more than a collection of plants.

A Mediterranean garden requires plants that are matched to a specific climate: drought tolerant, cold hardy, tough and independent because in the Mediterranean climate water is a luxury, and conditions are not amenable to inter-

dependence among plants. Sparse austerity – again reflecting the climate – would convey the overall feeling of a Mediterranean garden.

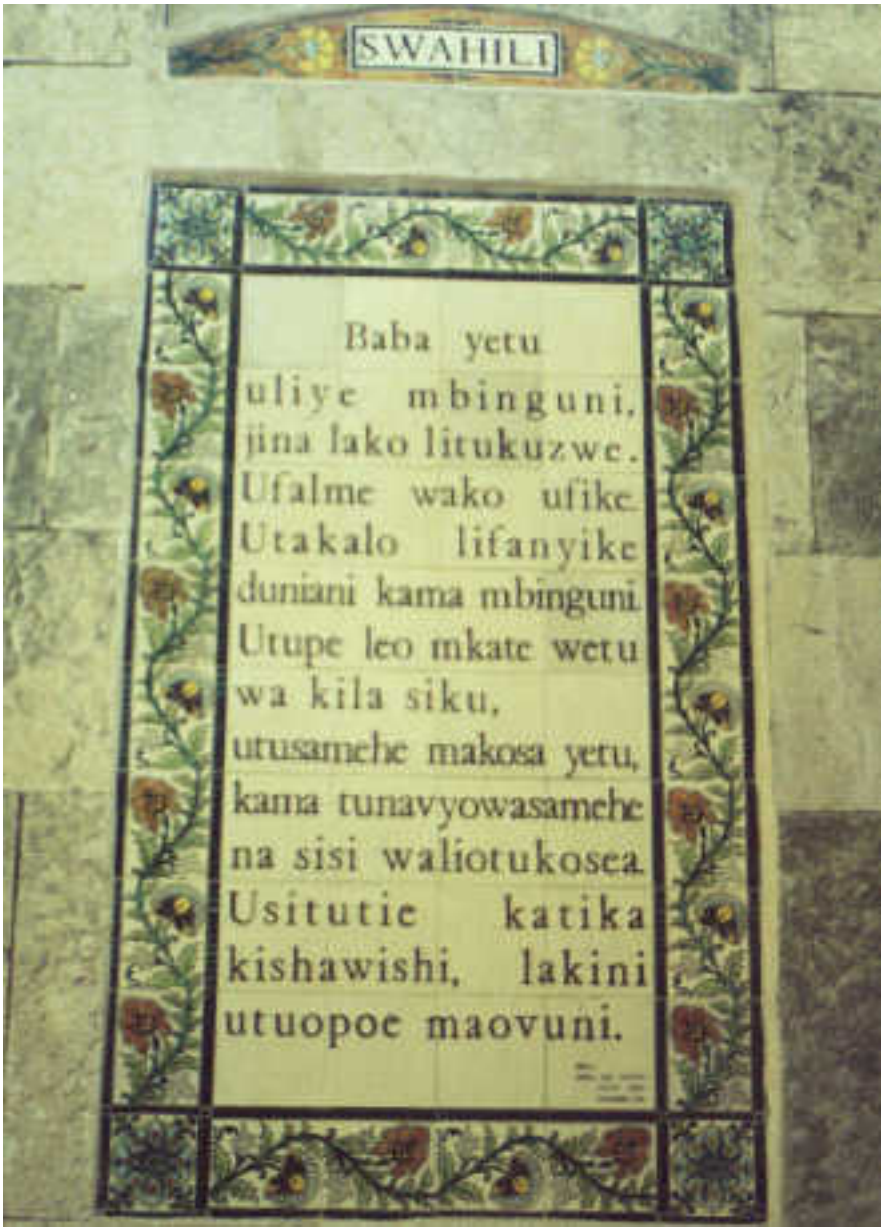
Japanese and Chinese Gardens – especially those inspired by Taoism and Zen – tend to reflect an ideal imposed on context. The overall climate is more benign and so it is possible to select, arrange, and even modify garden elements to suit an ideal, instead of mandating conformance to climate.

14 Essential Garden Patterns

Pattern	Spanish	French	Italian	Chinese	Japanese	Hebrew	German	Portuguese
Scale								
Garden Rooms								
Pathways								
Bridges								
Gates								
Shelters								
Borders								
Patios								
Sheds								
Focal Points								
Water								
Ornamentation								
Containers								
Materials								

In both cases, understanding the garden requires an awareness and use of elements other than the plants. In the case of language this shows the need to take into account gestures, facial expressions, and cultural customs that directly impact how language is used. For example:

This exercise was not sufficient as I had visitors from India and their language was Tamil. I was able to communicate with gestures and facial expression only, although I spoke to them. I am not sure how much they understood. I thought I could learn in advance of the visit. The Tamil written language system proved to be too much. Of the three visitors, one spoke English fluently, one spoke some English and one spoke only Tamil. The English speakers helped the Tamil only speaker. I was very limited. The Google translate tool helped me, when I was speaking to the person who knew some English and Tamil. I had no difficulty with the person who was bilingual. I found it very difficult to communicate with the person that spoke no English in this case.



I also met someone visiting from Africa who was able to speak English but his native language is Swahili. Swahili was originally written with the Arabic script, but is now written in a Latin alphabet introduced by Christian missionaries and colonial administrators. The text shown is the Catholic version of the Lord's Prayer.

This person was able to communicate in English quite well, even though he claimed he could not. I believe he was a modest fellow. He said he only spoke in the church in English six or eight times, He was easily understood.

Evaluation and Analysis

Can we learn a language in 10 minutes per day using patterns? Can we learn 8 in 80 minutes per day? We are assuming English is the first language and they can communicate confidently and effectively . Language aptitude is based on cognitive factors and motivation. I would like to layout the problem using the table below.

Table 1

PROBLEM	Estimating the performance when we have language barriers		
APPROACH	Objective measurements	Subjective measurements	
		approach	approach
GOAL	Objective and computational measures for describing the changes in the images	Definition of subjectively crucial image quality characteristics	The amount of change in either the overall quality or a single attribute
QUESTION	What changes physically?	What matters for the observer?	How big is the perceived change?

The IBQ approach can help to determine the subjectively crucial characteristics of an image and therefore to give weights to objective and computational measures.

What factors influence the achievement of the goal?

2.1 Conditions

In this study, we examine the feasibility of using visual and auditory feedback of the effectiveness of learning 8 languages using patterns.

The reproduction of the gestures was performed in the presence or absence of visual and auditory feedback, resulting in four (2 x 2) conditions

(1) Visual and auditory feedback (V + A).
(2) Visual feedback, no auditory feedback (V).
(3) Auditory feedback, no visual feedback (A).
(4) No visual or auditory feedback (None).

The order of the four conditions was randomized across participants.

- *when* + *where* $\Rightarrow$ *what*: State the properties of an object or objects at a certain time, or set of times, and a certain place, or set of places.
- *when* + *what* $\Rightarrow$ *where*: State the location or set of locations.
- *where* + *what* $\Rightarrow$ *when*: State the time or set of times.

When conducting a user study, the goal for the study is to measure the suitability of the visualization in some sense. What is actually measured is a fundamental question that we believe can be handled by using the concepts of effectiveness, efficiency, and satisfaction. These three concepts are derived from the ISO standard of usability 9241-11.

> Extent to which a product can be used by specified users to achieve specified goals with *effectiveness*, *efficiency*, and *satisfaction* in a specified context of use.

3. ALGORITHM

A ~~self-contained~~self-contained ~~step-by-step~~step-by-step approach to how to learn 8 languages effectively using patterns. This algorithm explains the automated reasoning involved.

Streamline tracing is a combination of top-down and bottom-up processes. Broadly speaking, top-down processes reflect task demands and the bottom-up processes reflect environmental information. In our case, the bottom-up information comes from the different types of visualization, while the top-down information is an attempt to model the cognitive process of streamline pathway tracing. Contour integration was modeled using the following iterative algorithm.

Algorithm 1. Iterative Algorithm

```
current_position ← center
current_direction ← up
current_position is inside circle
while current_position is inside circle, do
    neighborhood ← all grid hexes within two hexes from current_position
    for each hex in neighborhood, do
        for each neuron in hex do
            convert neuron_orientation to vector
            scale vector by neuron_excitation
            vector_sum ← vector_sum + vector
        end
    end
    normalize vector_sum
    current_position ← current_position + vector_sum
    current_direction ← vector_sum
    return current_position
end
```

The algorithm maintains a context that contains a current position and direction. Initially, the position is the center, and the direction set to upward. This context models the higher-order, top-down influence on the algorithm that results from the task requirements (tracing from the center dot) and the directionality which in our experiment was set to be always in an upwardly trending direction.

The algorithm traces the contour by repeatedly estimating the flow direction at the *current_position* and moving the position a small distance (.5 hex radii) in that direction. The flow direction is calculated from the neural responses in the local neighborhood of the *current_position*. The excitation of each neuron is used to generate a vector whose length is proportional to the strength of the response and whose orientation is given by the receptive field orientation. Because receptive field orientations are ambiguous as to direction (for any vector aligned with the receptive field, its negative is similarly aligned). The algorithm chose the vector most closely corresponding to the vector computed on the previous iteration. Vectors are computed for all neurons in hypercolumns within a 2-hexes radius of the current position; they are summed and normalized to generate the next *current_position*.

Some changes were made from the method published by (Pineo and Ware 2008). Previously, the algorithm considered only a single hex cell at each iteration of the algorithm. We found that this would occasionally cause unrealistically large errors in streamline tracing. For example, on visualizations with arrowheads, the neural network might yield a very strong edge orthogonal to the flow field positioned at the back of an arrowhead. If the algorithm considered only the edges at this point, it may make a significant error, despite the edges in nearby positions indicating the correct direction. We felt that creating an average over *neighborhood* was the more correct approach, and we found closer agreement with human performance with this change.

3.1 Qualitative Evaluation

DISCUSSION

The Time for Reflection pattern, from *Fearless Change Patterns* helped me to formulate my ideas to increase productivity in an environment that is multilingual.

I envision a software system that provides the script for the interview in all 8 languages with entry tags to the subsections as needed.

A mixed language is a language that arises through the fusion of two source languages, normally in situations of thorough bilingualism. This is another topic for future work.

The model we applied is a considerable simplification over what actually occurs. Nevertheless, the results are compelling and there are advantages in having a relatively simple model. We have plans to add some of these more complex functions in future versions of the model.

At the Department of State we have leadership tenets and one of them is learn constantly. I am reviewing some the learning patterns for use in this paper and for future work.

Seeing comes before words. A child looks and recognizes before it can speak. But there is also another sense in which seeing comes before words, There is a relationship between what we see and what we know. The way we see things is affected by what we know or what we believe. I believe that a software system could be developed to model the necessary interview script for the dialogue in each of the chosen eight languages.

APPENDIX

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