



Skill Acquisition for Ethnobotany Research

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Abstract:

Ethnobotany refers to practical knowledge related to uses of biological resources within indigenous culture groups based on their intimate experience accumulated over many generations. There is now growing recognition for the relevance of ethnobotanical knowledge and its potential role in the design of sustainable development and alternative economic options. Classical ethnobotany simply makes list of plants by local names, scientific names and their uses. However, the applied ethnobotany emphasizes many other aspects. Ethnobotanical specialties, such as medical ethnobotany, require knowledge and skills in additional areas, such as chemistry, medical anthropology and pharmacology, in order to be sufficiently competent to define and undertake the more specialized ethnobotanical research. However, some skills transcend discipline. Basic computer competence is needed in virtually all studies to organize and analyze research data.

This presentation is aimed to explore basic skill acquisition model proposed by Hubert Dreyfus and Stuart Dreyfus essential to become ethnobotanist. Five levels of skill acquisition such as novice, advance beginner, competent, proficient, and expert are described citing suitable examples.

Keywords: Ethnobotany, advance study, skills required to study, skill acquisition model.

Introduction:

Ethnobotany is an interdisciplinary field which utilizes methods from a wide array of science traditions particularly botany and anthropology. Ethnobotany undertakes a research on the relationship between people and plants in the areas of: linguistics, education, healing, nutrition, archaeology, paleology, resource management, livelihood, etc. Ethnobotany can therefore serve as a gateway for many disciplines (McClatchey, 2006). The potential number of skills and methodologies required to carry out ethnobotany work. Ethnobotanists are expected to be highly trained in each activity. However, it is impractical to expect high proficiency in all activities.

Dreyfus and Dreyfus (1986) proposed a five-stage skill acquisition model to illustrate the general skill acquisition process that people undergo when they begin to learn and then master a new skill. This article explores their skill acquisition model in the perspective of ethnobotanical research requiring proficient skills for successful endeavour. Attempt is made to explain different steps in ethnobotanical research and concern skills in view point of skill acquisition model.

Material and Method:

Published literatures on ethnobotany and skill acquisition model were reviewed thoroughly for tracing fine skills indispensable to conduct ethnobotany research work. Referred literatures were collected from different libraries or downloaded from internet and are cited accordingly. General steps involved in ethnobotanical research were worked out and

fitted into different levels of skill-acquisition model given by Dreyfus and Dreyfus (1986).

Results and Discussion:

The skill acquisition model proposed by Dreyfus and Dreyfus (1986) is based on regular learning patterns observed during skill-acquisition research involving aeroplane pilots, chess players, automobile drivers, and adult learners of second language. Their five stages are termed as 1) novice, 2) advance beginner, 3) competent, 4) proficient, and 5) expert. The general explanation of these different stages postulated by Dreyfus and Dreyfus in their skill acquisition model is as follows (Dreyfus, 2004);

Novice: Follows the rules, requires specific rules for specific circumstances, and takes no responsibility other than following the rules.

Advanced Beginner: Expanded view of situations in which the skill is applied, begins to transfer rules to related situations, still makes decisions based on rules, and does not experience personal responsibility.

Competent: Senses that the number of rules is becoming excessive, begins to organize rules by developing principles, starts developing information on the relative importance of particular rules, and begins to experience responsibility relative to decision-making resulting from the application rule.

Proficient: Problems are solved intuitively based on extensive previous experience, sees the "whole picture", and applies conscious decision-making by formulating a plan of action.

Expert: Doesn't go through the normal processes but instinctively senses what should be done, often without the need for analysis.

Dreyfus (2004) observed that at each stage, an individual becomes familiar with a skill by repetitively performing a series of activities.

The Dreyfus & Dreyfus (1986) model of skill-acquisition provides a substantial organizational framework that can be used to describe specific types of skills needed for each ethnobotanical method. The model also helps in determination of the order in which skills should be acquired.

When we tried to apply skill acquisition model to ethnobotanical research work, we were stuck with the similarity of the skill levels to the types of activities undertaken in a normal scientific research program. Just as in the Dreyfus & Dreyfus (1986) model, there are five types of skills, each with an increasing level of involvement and responsibility; we note in the following list the corresponding step and concern skill required for ethnobotanical research activities.

1. **Data:** Use a tool or methodology to collect data values (**Novice activity**).
2. **Analysis:** use the data values in an application (such as a software program) to determine the aggregate properties of the data which have been collected (**Advanced Beginner activity**).
3. **Problem:** Develop an appropriate sample scheme and apply the analysis results to the solution of specific problems (**Competent activity**).
4. **Hypothesis:** Generate a series of hypotheses that define specific problems that need to be investigated within a fairly specific context (**Proficient activity**).
5. **Theory:** Develop theories that best describe the operation of the system under study, comparing and contrasting this to other situations and systems (**Expert activity**).

Hypothetical examples of ethnobotanical research projects divided into research activities and the associated skill levels:

Example A. Medicinal plant use in a community.

Sr. No.	Research activity	Research methodology and concern skills	Activity skill levels
1	Data	Conducts surveys in a community by asking which plants are used and the diseases that they treat; compiles tables of the results.	Novice activity
2	Analysis	Aggregates the data species and use data with higher-order classifications and enumerates the reporting frequencies.	Advance Beginner activity
3	Problems	Locates study communities in appropriate areas and obtains permission to conduct surveys, collect voucher specimens to document the survey.	Competent activity
4	Hypothesis	Poses questions that relate to changes or differences in the traditional medicinal system and proposes places where there are contrasting situations within the same culture.	Proficient activity
5	Theory	Evaluates the community perceptions of disease and its treatment, analyzes the skills and knowledge of different members of the community, dissects the knowledge acquisition process, and predicts the potential impacts of introducing alternative systems and the consequences of land use changes.	Expert activity

Example B. Sustainability of a harvested forest species.

Sr. No.	Research activities	Research methodology and concern skills	Activity skill levels
1	Data	Observes, collect and enters data for analysis on the quantity of the species harvested.	Novice activity
2	Analysis	Performs basic statistical analyses on the harvested data.	Advance Beginner activity
3	Problems	Establishes the areas in which samples should be taken, the frequency of sampling, the sampling methodology, verifies the general reliability of the data, and examines the data analyses for trends.	Competent activity
4	Hypothesis	Poses questions that relate to the distribution, phenology, growth and reproductive rates of the plant relatives to the distribution, population growth, and harvesting practises of the people.	Proficient activity
5	Theory	Evaluates the cultural conditions surrounding the use of the plant species relative to alternative species, traditional cultural values, and outside influences.	Expert activity

We believe that there are implications of the level of skill attained for a particular ethnobotanical method in how a researcher carries out a scientific study. For example, learning to use a particular method to collect data is just a starting point of a larger endeavour. Researcher is at the “novice” level of the skill acquisition if he/she is only able to collect data. Basic data collection is a vital process, but the additional skill levels are also equally important. Additional skills at higher levels of scientific investigation includes; the formation of testable hypotheses and the development of theory. These activities can be done by those who are competent and expert in the field. The various skill levels depend on each other. This does not mean that the activities are necessarily done by separate people. Research investigators who work at the higher cognitive levels should also be proficient at all the lower levels.

An expert is able to start at the theory end and work toward the application of the tool or methodology. The expert picks right tool to be used to collect data, knows how to use this tool, is aware of tool's limitations, and can spot invalid data values. Novice investigators are “tool” focused and are simply data collectors. A novice doesn't look forward to how the data will be

analyzed and doesn't make the connection between the data and ethnobotanical theory.

Conclusion:

Skill acquisition model suggests that the progression from novice to expert is dependent on the individual's scope of perception and experience with the task in hand. Dreyfus and Dreyfus (1986) model provides a substantial organizational framework that can be used to describe specific types of skills needed for each ethnobotanical method. Application of this model to hypothetical ethnobotany research studies demonstrate that a person who works at a higher level is expected to be able to work at the lower level, too.

References:

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