

**An Exploratory Study on the Concept of Context and Its Relationship to
Information Behavior: A Preliminary Result from A Case Study in the
Dissertation Research Process of Plant Systematics**

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Abstract

This study investigates the concept of context and its relationship to information behavior within the dissertation research process. The study takes the naturalistic inquiry approach. The data is collected from multiple sources, including deep-interview transcriptions, informants' working journals, and informants' personal documents from eight Ph. D. students and graduates, and data is analyzed based on grounded theory approach. Preliminary results show that CHAINING, GATHERING, EVALUATING, UNDERSTANDING, and CONSTRUCTING are some salient types of information behavior. The context of dissertation research process includes at least 5 major factors, which are TASK, PROBLEM, KNOWLEDGE, RESOURCES STATE, and CONDITIONS. Some of the relationships are identified, indicating that context encourages certain types of information behavior, and there are also interactions between context and information behavior.

1. Introduction

Context is influential to information behavior. It has been suggested that context might be a better predictor of needs and uses of information than socioeconomic status (Chatman, 1991; Savolainen, 1993). However, what is meant by context in relations to human information behavior is usually not stated explicitly (Dervin, 1997). The confusion arises in terms of: (1) the label and meaning of context; (2) the dimensions included in the context; (3) the classified scheme of contextual factors; and (4) the role of context or its influence on information behavior.

1.1 The label and meaning of context

The meaning of context is vague. To some, context is the situation in which the person finds himself or herself (Kwasnik, 1989). To others, the "IUE" (Information Use Environment)(Taylor, 1991) and "Small World"(Chatman, 1996; 1999) are used to indicate the context of different groups of people. Sometimes "context" and "situation" are used interchangeably in the literature. However, situation often indicates some specific CONDITIONS in a definite time-space movement(Dervin, 1992), and is characterized as a set of related activities that occur over time (Sonnenwald, in press).

1.2 The dimensions of context

TABLE 1 summaries the notions of context that are represented in different studies. The most frequently mentioned dimensions of context are *setting, resources used, problem & resolution, purpose, situation state, social role, and cognitive state*, but the notion of context held by the scholars

is diverse.

Dimensions of Context	(Taylor, 1991)	(Wilson, 1997)	(Marchionini, 1995)	(Fletcher, 1991)	(Rosenbaum, 1993)	(Kwasnik, 1989)	(Sonnenwald, in press)	(Cool, 1997)
Setting	Settings	Environment	Physical setting, Economics constraints		Room/ Space			
Resource used					Resources	Source Ownership	Information horizon	Information resource environment
Problem & Resolution	Problem & Resolution			Part of the problem	Problem & Resolution			Person with information problem
Purpose		Person with needs				Use purpose, Need Requirement		Goal environment
Situation State ¹				Situation movement state		CONDITIONS Related to me		Interaction Goals
Social		Social roles	Roles	Part of the process				
Cognitive state			Psychological ecology			Cognitive state		Cognitive orientation
Access			Type of access and procedures			Access		
Task				Situation contexts				Task environment
Outcome ²				Part of the outcome				Retrieval outcomes
Rules ³			Organizational structure and procedures		Rules			
Values						Values		
Time						Time.		
Group of people	People							

TABLE 1. The Dimensions of Context / Situations in User Study.

1.3 The classified scheme of contextual factors

There are two common classified schemes of context. The first scheme separates contextual factors from other document-related factors (Park, 1992; Barry & Schamber, 1998). The second scheme groups factors according to their origins and distinguishes the perceived context from the physical context. The second scheme uses the person as the center of all dimensions, and extends to the inter-personal, organizational, and environmental context (Wilson, 1997; Marchionini, 1995). The two schemes are not cross-referenced.

1.4 The role of context or its influence on information behavior

In spite of a long list of contextual factors and two classified schemes, the relationship between context and information behavior lacks systematic research. It has been suggested that context affects the flow and use of information, and determines the criteria by which the value of information are

¹ Situation state is the way that one sees itself as moving through time and space.

² Outcome is how one perceives the arriving at an answer.

³ Rule is the generalizable procedure or technique that can be used to form, sustain, terminate, and recreate information behavior

judged (Taylor, 1991). Rosenbaum (1993) also suggests that bi-directional relationship between the IUE and information behavior. These findings help us understand about the influence of context, but are not specific enough for construction of human information behavior theory.

2. Research Questions

Without a systematic investigation, context is a prevalent but vague term. The present study investigates the dissertation research process of plant systematics through a process-oriented approach as suggested by the literature (Kuhlthau, 1993; Vakkari, 1997). There are two objectives in this study. (1) to construct the concept of context that is meaningful to understand human information behavior, and (2) to demonstrate explicitly the relationships between context and information behavior. The research questions I address are:

1. What are the contextual factors that come into play in the overall dissertation research process?
2. What are the characteristics of these contextual factors, and how can we describe them?
3. What are the relationships between these factors and information needs, seeking, and uses?

3. Methodology

3.1 Naturalistic Inquiry Approach

In order to capture the context from the real-life experience, I take the naturalistic inquiry approach, which emphasizes how and why people think and act as they do. In contrast to estimating the usage of specific information service and resource, this approach takes a holistic view to investigate the phenomenon of interest (Patton, 1990; Mellon, 1990).

This study is based on 2 assumptions: (1) people act as constructors of information, (2) they consciously engage information-related activities (Dervin, 1992; Kuhlthau, 1993). "Information" defined in this study to include: the information resources, the content of information resources, and the constructed meaning.

3.2 Sampling Strategies

Eight cases of the dissertation research process are explored (TABLE 2). The

in different settings and times.

participants are from various graduate schools and are at different stages in their graduate studies. The informants are chosen purposively. The strategy to look for diversity is helpful to identify the whole spectrum of a meaningful context within the same domain and casts various features of possible relationships.

Informants	Schools	Stages of the participants
C	Univ. of Washington (USA)	Ph. D. Candidate
D	National Taiwan Univ. (Taiwan)	Ph. D. Candidate
E	National Taiwan Normal Univ. (Taiwan)	3 rd year of Ph. D. program
G	National Taiwan Univ. (Taiwan)	3 rd year of Ph. D. program
H	National Chung-Hsing Univ. (Taiwan)	Dr. of Ph. D.
I	Reading Univ. (UK)	Dr. of Ph. D.
K	National Chung-Hsing Univ. (Taiwan)	2 nd year of Ph. D program
L	National Sun Yat-sen Univ. (Taiwan)	2 nd year of Ph. D program

TABLE 2. The informants' background

3.3 Data Collection

Three types of empirical data were collected, including interview transcriptions, working journals, and personal documents.

The interview transcription is the major source of data. The deep interview, combined with Dervin's Time-line Interview and the Critical Incident Technique, is used to collect informants' context, action, and resources within their experience. Each participant was interviewed twice, and the second interview was conducted four to five months after the first one. The informant was asked to describe his/her dissertation research step by step from the formulation of the research question to his/her present status. The informant was probed to explain the condition of certain situation or events, and his/her intention in that context. The informant was encouraged to elaborate how he/she got the information, and how he/she used it in the specific context.

Except informants H and I, who already graduated, six informants were encouraged to write down their dissertation-related experience in their working journals as it occurred. This 4-month working journal was used to capture the action, thinking, feeling, and resources used during this process. Informants' personal documents, such as correspondence and notes, were collected with permission and used as a supplementary data to discover personal thinking and communication traces.

3.5 Data Analysis

The data was analyzed by the employment of Grounded Theory (Strauss & Corbin, 1990), and by the use of a software, ATLAS.ti version 4.1. The procedures used for data analysis include the

following steps. The data analysis is still ongoing.

(1) Deciding the unit of analysis.

The unit of analysis was identified by research stages first then by intentions of the informant. For each intention the data might be further divided by the activity.

(2) Labeling and dimensionalizing.

The second step assigned a code to describe the phenomenon. After these phenomenon were labeled, the coding were grouped according to their nature or function, and a sets of dimensions were generated (TABEL 3).

Transcription ⁴	Labeling	Dimensionalizing
<i>While deciding to change my research topic,</i>	to formulate	<u>Intention</u>
<i>I started from flipping through Leguminosae in the Flora.</i>	Searching	<u>Activity</u>
<i>I am familiar with this family and its genera.</i>	the flora	<u>Resources used</u>
	experienced	<u>Knowledge state</u>

TABLE 3. Examples of coding process.

(3) Constructing major concept and identifying salient types of information behavior.

The dimensions, as identified in the previous literature (Wilson, 1997; Dervin, 1992), serve tentatively the framework for the analysis of the information behavior in the first place. During the iterative process of data analysis, the tentative framework was modified as the new dimensions of information behavior emerged. In above examples, Intention, Activity, and Resources used were some of dimensions of information behavior. Certain types of information behavior were identified further by the combination of salient intentions and activities. Besides the dimensions of information behavior, those related to information behavior were viewed as potential contextual factors. In the above example, Knowledge is one of the contextual factors.

(4) Identifying relationship.

By looking into the process of dissertation research, the relationships between certain types of information behavior and context were identified. The relationships were described according to the direction and the nature of the influence.

4. PRELIMINARY RESULT

⁴ The original transcriptions are in Chinese. All quoted paragraphs are translated by the author.

4.1 The Information behavior within dissertation process

The data show that information behavior can be described by 4 dimensions: (1) intention to interact with information; (2) the activity performed; (3) the information resources used; (4) the help from that information resources. With the use of these dimensions, we can specify different information behavior. TABLE 4. demonstrates some salient types of information behavior revealed in my data. These include: CHAINING, GATHERING, LEARNING, EVALUATING, EXPLORING, and CONSTRUCTING.

Information behavior	Intention to interact with information	Activity performed	Resources used	Help form the information resources
Chaining – to find information resources that are related together.	To explore To identify	Examining Searching	specimen bibliography in the papers flora databases	Referring
Gathering - collecting plant materials or information resources.	To obtain	Examining Networking Collaborating Reproducing	specimen papers the peers other scholars	Referring Resources providing
Evaluating - assessing the value or workability of the topic, method, and resources etc. with the use of information.	To evaluate	Reading Consulting Exchanging information Comparing Experimenting	papers flora the peers specimen research result	Help on making decisions No help
Understanding - making sense of a topic, method etc.	To know how To explore	Reading Exchanging information Taking courses Consulting	monograph papers other scholars	Expending one's knowledge or no help
Constructing - creating or generating one's opinions, arguments etc.	To create	Writing Searching	papers oneself	Supporting evidences

TABLE 4. Some salient types of information behavior.

4.2 Contextual factors of Dissertation Research Process

Some contextual factors found in the dissertation research process were: TASK, PROBLEM, KNOWLEDGE, RESOURCES STATE, and CONDITIONS. These factors were identified in each case. However, not every factor functions equally to every information behavior.

Contextual factors	Sub-categories	Attributes
TASK	Formulating questions Reviewing Literature Collecting data Analyzing data Writing Dissertation Publishing	N/A N/A N/A N/A N/A N/A
PROBLEM	Inquiry- related Materials-related Method-related Result- related	With directions—With focus—Without focus---Confused Simple----- Complicated Well-established----- Debatable Doubtful-----Unmatched-----New Findings-----Matched
KNOWLEDGE	About the domain	Experienced--Incomplete--Don't understand--Don't

	About the resources	know---Inexperienced Content/scope----Channel-----Location
RESOURCES STATE	Accessibility Availability	Easy-----Difficult-----Inaccessible Incomplete-----Can't find-----None existence
CONDITIONS	Economic support Equipment Requirement The audience Trends/tradition of the domain Expectation Viewpoints Social Status Political concerns	Yes-----No Yes-----Shared with other labs N/A N/A N/A N/A Low High N/A

TABLE 5. The Dimensions of Context

4.3 The relationship between context and information behavior

There are more than one kinds of relationship between context and Information behavior. The following examples illustrate two salient relationships as identified from the data: (1) the context encourages certain type of information behavior, and (2) there is interaction between context and information behavior. In the following sections, each relationship is demonstrated by one example.

4.3.1 The research *Traditions(CONDITIONS)* of plant systematics and the (TASK) encourage *Chaining(BEHAVIOR)*.

One of the goals of plant systematics research is to uncover the history of the evolution of a specific taxon (or plant). This contextual factor encourages the informants to *Chaining(BEHAVIOR)*. Usually, the activity and resources-used dimensions of *Chaining(BEHAVIOR)* are searching citations or examining specimen. Many informants mentioned that historic literature and specimen are very important in this domain. Their *Tradition(CONDITIONS)* encourages researchers to trace back to the first published paper on that plant. Besides, *Chaining(BEHAVIOR)* often happens when the informants start to *Review the literature(TASK)* on a topic. For example:

G: It is very difficult that, [in this domain] we have to trace back to the very original data (Context-Trends / Tradition of the domain). These data are usually ancient ones, [are published] like 1800's or 100-200 years ago. This kind of data might be rarely used. For example, if I found a new [plant] in Taiwan, but it has no records on the Flora Taiwanica. Then, I should be very happy....I have to make sure if it had been published or not,. If it is the published one, I have to trace those papers(Information behavior – Chaining). After I had seen that stuff, then I can make sure that this one is new. If I didn't see it, I felt less confident....

Q: What will be next? After you see this [the floral], and think this is workable. What did you do next?

G: I must find some related literature(Context-Task-reviewing literature). The first thing I need to do is, I have to make sure that what are the species of this taxon? Because here [Flora Taiwanica] Mr. Y

had made some treatment, we can start from the literature cited in this species. That is I went to find these [cited] literature, and I collect this kind of literature(Information behavior – Chaining). Another way is, this is a species, and this species had been named like this, and we also traced these literature(Information behavior – Chaining). Okay, after I got the literature, It can help me. Some of the literature is with illustrations, and I found these illustrations. The illustrations are easier for understanding than texts are. If the illustration are fine. After this literature, next, inside the literature, he[Mr. Y] cites type specimen. The specimen he examined. [He listed them here,] if he thinks these specimen are such thing. Inside here are the species that is used for original publishing. Its original paper is here, and I went to find these(Information behavior – Chaining).

4.3.2 Resources state(CONTEXT) evoked Gathering(BEHAVIOR) and is reshaped by Gathering(BEHAVIOR).

Not only has the context influence on information behavior, but also information behavior reshapes the context. TABLE 5. demonstrates an excerpt that illustrates the interaction between contextual factors and information behavior that happened during the process of obtaining literature. This interaction is demonstrated in 2 steps. First step is from time #1 to #2.. the “none existence” of Resources(CONTEXT) evoked the Gathering(BEHAVIOR) by networking with the writer of desirable articles. The second step is from time #2 to #3. the result of another Gathering(BEHAVIOR) i.e. exchanging information reshaped the attributes of the availability and accessibility of Resources(CONTEXT), and changed the original context of time #1.

Time	Transcript excerpts	Coding of Context and Information Behavior
#1	<i>I remembered that it was the abstract that I had retrieved from CD-ROM database [informed me the work of this author]. So, I found this [abstract]. All of that volume of that journal is his work. However, we don't have this volume in Taiwan,</i>	Behavior type – Chaining Intention: to explore a topic Activity: searching Resources used: databases Help: referring Context – Knowledge(about the resource – content): high Context – Resource(availability): none existence Context – Resource(accessibility):inaccessible
#2	<i>and I wrote him[the writer of desirable articles] a letter. I couldn't get it [that volume]. There had been no response after I had sent the letter.</i>	Behavior type – Gathering Intention: to obtain Activity: networking Resources used: the scholars Help: not help Context – Knowledge(about the resource – content): high Context – Resource(availability): none existence Context – Resource(accessibility):inaccessible
#3	<i>Then, I asked others and know that there was a guy, about 2 or 3 years ago, there was a guy who wanted to study this subject. I asked him, "Do you have any papers? Do you have this one?" He said yes, [and I asked,] "Can I borrow it from you?"</i>	Behavior type – Gathering Intention: to obtain Activities: exchanging information Resources: the peers Help: information resource provider Context – Knowledge(about the resource – content): high Context – Resource(availability): available Context – Resources(accessibility): easy

TABLE 5. Example of interaction between context and information behavior

5. Conclusions

In this paper, some salient types of information behavior were identified, including: CHAINING, GATHERING, EVALUATING, UNDERSTANDING, and CONSTRUCTING. I am proposing that context of dissertation research process includes at least 5 major factors, which are TASK, PROBLEM, KNOWLEDGE, RESOURCES STATE, and CONDITIONS. The context encourages certain types of information behavior, and there are interactions between context and information behavior. Other relationships are still under analyzing.

Based on the preliminary results, this study demonstrates that it is possible to conceptualize the meaningful notion of context of human information behavior from the empirically grounded data. These data allow us to state explicitly how the context and information behavior influence each other, which may be a further step toward theoretical construction of human information behavior.

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