# 32
# Information Intents

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Developed by Ross Todd, this new theory is situated within the study of information utilization, and has its foundation in the cognitive view of information science, information-seeking behavior, information utilization, and knowledge representation. By focusing on the drivers and effects of information utilization, information intents assumes the "active-creative role of the user for the process of use, explicitly talking of cognitive transformation, knowledge conversion, adaptation, reformulation, or re-invention" (Wingens, 199, p. 37).

Historically, the study of information utilization has emerged from several different traditions, including sociology of knowledge, applied social science research, and more recently, human information behavior. It focuses on what people in a range of contexts do with information they seek out or have provided for them, and rests on the assumption that information has the potential to influence, to make a difference to their thoughts, actions, and emotions. Despite considerable empirical research into information utilization since the 1970s, the state of the art of theory building has remained low, and characterized by generalizations centering on the predominant classification of conceptual, instrumental, and symbolic utilization (Beyer & Trice, 1982). Accordingly, information intents theory was developed to provide a richer understanding of what happens in people's minds when they consume information.

Brookes' Fundamental Equation was employed as a general framework for elucidating information intents. Brookes argued that the "theoretical" pursuit of information science should be "the cognitive interactions between users and the public knowledge systems" (Brookes, 1980a, p. 248). He explicated this as an abstract "Fundamental Equation of Information Science," most commonly expressed as $K[S] + \Delta I = K[S + \Delta S]$ (Brookes, 1980b, p. 131).





Brookes saw the equation as an interactive cognitive process of what people already know, how what they know changes through selectively taking in information, and the effect of these changes.

Specifically, a person's existing knowledge structure $K[S]$ is changed by an increment of information $\Delta I$, and this modification has some effect, a changed knowledge structure $K[S + \Delta S]$ where $\Delta S$ indicates the modification effect. The same information $\Delta I$ may have different effects on different knowledge structures, the adjustments being shaped by perceptions, attitudes, and values, that is, people's frames of reference. Existing private knowledge is transformed as new information is continually selected and integrated, creating new knowledge structures. Information intents is posited as both driver and outcome of this cognitive transformation.

Information intents was explicated through an analysis of adolescent girls' existing knowledge about the drug heroin and how their knowledge was modified by exposures to information about it, and what were the cognitive effects of this modification. A quasi-experimental methodology involved baseline measures of existing knowledge, the introduction of staged exposures to information, and documenting and mapping of the sequence of knowledge structures. The information exposures were in the form of different, publicly available information about the nature and history of heroin, individual implications of heroin use, and community implications. Free generation written discourse and question- answering protocols were used to acquire knowledge at each phase, as well as perceptions of the process. Knowledge was mapped in the form of Conceptual Graph Structures (Graesser & Clark, 1985). These structures were analyzed across the exposures to derive the information intents and their corresponding manifestations of changes in knowledge structures.

The theory proposes that cognitive information utilization can be characterized by five information intents, which are both drivers and effects of information utilization. These are:

- *Get a complete picture* – to build an expanded, more complex picture: add specific detail; add new facets or dimensions to an existing idea; make new connections between existing ideas; trigger to remembering and recalling

ideas not thought of at the time

- *Get a changed picture* – to make changes to existing ideas; correcting specific facts and broader perceptions
- *Get a clearer picture* – to see existing ideas and how these ideas are related together, with greater understanding and clarity
- *Get a verified picture* – to verify existing ideas when some doubt existed as to the certainty of these ideas, even though on surface the ideas appeared stated as certain
- *Get a position in a picture* – to express an opinion, state a viewpoint or estimation of constructed pictures as a personal value judgment guess, inference or conclusion

These intents are manifested in distinct patterns of changes to knowledge structures. The five information intents and manifestations are shown in Table 32.1.

The Theory of Information Intent posits that people engage with information in purposeful, deliberate, and selective ways to get expanded, and/or changed, and/or clearer and/or verified pictures, and/or by being able to state positions. As drivers and outcomes of information utilization, information intents enable people to move forward in their information endeavors, constructing new pictures that represent new understandings. This is not random acquisition, but one shaped by a desired cognitive intent in the context of individual frames of reference such as personal experience, existing knowledge, and current stage of life cycle.

This theory has been used in two recent studies. The first, *Student Learning Through Ohio School Libraries* (Todd & Kuhlthau, 2004), involved 13,123 students and 880 teachers. This study sought to identify how students benefit from school libraries through elaborating conceptions of "help" and providing a measure of these helps as perceived by students. One of the seven conceptual categories ("Using Information") focused on information intents. The study showed that the impact of the school library in enabling information utilization for knowledge construction ranked third highest of the seven categories of "helps," with helps related to getting information and using information technology ranking higher. The second study, currently underway, is tracking how



Table 32.1 Information intents and manifestations of changes in knowledge structures.

| Information Intent | Manifestation of changes in knowledge structures |
|---|---|
| Get a complete picture | a) inclusive: adding specific instances, examples or types<br>b) elaborative: building associative structures:<br>• property-oriented structures<br>• manner-oriented structures<br>• cause-oriented structures<br>• goal-oriented structures<br>c) integrative: separate structures integrated more holistically |
| Get a changed picture | a) construction: building up a complete picture<br>b) deconstruction: removing incorrect ideas<br>c) reconstruction: replacing with more appropriate ideas |
| Get a clearer picture | a) explanation: tells how and tells why<br>b) precision: appending information to add precision of detail |
| Get a verified picture | a) no change<br>b) emphatic: repetition of ideas to add weight or emphasis<br>c) inclusive: including more precise, specific ideas<br>d) defensive: defend and reaffirm viewpoints |
| Get a position in a picture | a) reactive: expressions of agreement/disagreement<br>b) formative: deriving personal conclusion based on facts<br>c) potential positioning: foreseeing future use of facts<br>d) predictive: predicting new events and states |

students in 10 New Jersey schools utilize information in the school library for knowledge construction.

The theory provides a framework for understanding of the cognitive dimensions of how and why people utilize information in the process of constructing knowledge, and for describing the transformation of their knowledge structures through information utilization. It is applicable to understanding the cognitive drivers and outcomes of purposeful information utilization, and a cognitive effects approach to conceptualizing how libraries and information services help people.

A major difficulty with exploring cognitive information utilization is the problem of peering into people's minds. The methodology for elucidating information intents is workable, sensitive, and detailed enough to allow new concepts and perspectives to emerge. However, it is time consuming, demanding considerable time commitment and cognitive load on participants.

Information intents provides an approach to a stronger user-centered design of electronic information retrieval systems by providing a framework of an alternative set of categories of desired outcomes, which could be built in information systems as a central design feature. It could allow people to enter the system, not just in terms of content or document description, but also in terms of the desired cognitive intents they seek, such as wanting facts, opinions or viewpoints, arguments, explanations, or even wanting to identify misconception. It provides a new way of looking at the dialogue between users and information professionals from the perspective of understanding the kinds of cognitive intents and outcomes desired with a view to establishing a sharper understanding of user needs. The theory also provides opportunities for information literacy instructional design by focusing on developing cognitive processes and knowledge construction processes.

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