Activity Theory as a Framework for Understanding Information Literacy

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Abstract. Information literacy is often described as a set of skills allowing an individual to find, evaluate, and use the information that he needs. In this paper, we discuss the value of re-examining the information behaviour models in order to understand the skills and motivations necessary for the performance of different types of information activities. We also determine the benefits to be gained from the use of activity theory, with the aim of understanding and defining the literacies underlying the success of information activity. Engeström's model of conceptualization of the structure of activity is mainly explored to understand interrelated elements in information activity. The results of our research show that information literacy is essentially a social practice that cannot be reduced to the knowledge of information retrieval stages. These results lead us to think that an information literacy program should be perfectly integrated into its context of implementation and exploitation.

Keywords: Information literacy, information behaviour model, activity theory, information activity.

1 Introduction

Information search can be viewed as a simple or indeed trivial activity in the sense that it is easily mastered by individuals. However, it can also be seen as a complex activity requiring special skills. The latter view implies that the methodological and theoretical questions must be dealt with in order to know how to address the problems of information search and, therefore, to input the processes and skills underlying such activity. This activity is motivated by the desire to satisfy an information need depending on the cognitive (declarative knowledge, procedural knowledge) and psychological (feelings, thoughts, etc.) states of the individual. It is oriented towards the objective of finding the relevant information among the information provided in the environment which is to be explored, an environment often offering a variety of search tools and information sources (documents, work colleagues, experts, etc.). These few arguments in favour of complex activity place information search on a more general level, which is that of , Information Literacy (IL) with whatever it implies regarding acquired social and individual skills.

A great part of the literature concerning IL provides a considerable number of definitions all based on the dominant assumption that IL is essentially the knowledge

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of the procedural steps for the search, use and production of information. For Eisenberg [1, p. 40] : *"* IL *is the set of skills and knowledge that not only allows us to find, evaluate, and use the information we need, but perhaps more importantly, allows us to filter out the information we don't need"*. This definition focuses primarily on the ability to "filter" information in order to rule out what is not relevant. It is a difficult task with which Internet users are confronted daily. Today, having "good filters" to retain only reliable, useful and relevant information is a prerequisite to benefiting from the various information environments. These filters privilege the intentional retrieval and use of information, and demonstrate that information literacy is not just a catalogue of skills that the individual must acquire and assimilate.

Street [2, p. 77] distinguishes two models of literacy, namely an "autonomous" model as well as an "ideological" model. The "autonomous" model conceptualises literacy from the hypothesis: *"that literacy in itself -autonomously- will have effects on other social and cognitive practices."* In this model, literacy is primarily an individual attribute and an intellectual capacity, which can be described in terms of expectations and predefined objectives. Learning to be literate is supported and determined by dominant "ideologies", isolated from the context in which they are applied. According to the "autonomous" model, IL and Information and Communications Technology Literacy (ICTL) for example, are important elements of development and professional success. Indeed, given that information technologies are evolving very rapidly and that information environments are constantly changing, employees, students, as well as citizens must generally undergo a regular "reskilling" so that they maintain a proper or even higher level of IL and ICTL.

The "ideological" model conceptualises literacy in a socio-cultural perspective of learning. Literacy is seen as a social practice focused primarily on the learner (employee, student, etc). There is no universal definition of literacy and its evaluation is based on ethnographic approaches. All literacy practices are embedded in a social context. Thus, being literate depends on each individual and on his/her social and cultural context, a constantly changing context, which determines what society expects of its literate people. As the expectations of a society keep changing, the definitions of literacy must change to describe 'naturally' shifting objectives better. Objectives of literacy are not limited to individual results. According to the "ideological" model, the Information and Communications Technology (ICT) and information environments in general are an integral part of all literacy practices.

Nowadays, the information activities of people, regardless of the context of search and use of information, are highly mediated by technological tools. Thus, mastering information is necessarily linked to Information and Communications Technology Literacy. As for IL, ICTL cannot be reduced to a set of skills. In fact, the technological tools at our disposal do not only support our information activities, they largely condition and shape our way of retrieval, seeking and even producing information. These tools are not neutral; they contain socially-constructed practices within themselves. Changes and developments in ICT change the way we define and conceive IL, and act directly or indirectly on many of our cognitive and non-cognitive capacities. For this reason, it is not always easy to separate skills related to ICTL from those related to IL.

We will begin by reviewing some results of research on Information Behaviour (IB) and Information Literacy, by focusing on identifying outstanding questions

regarding these behaviours and their consideration in information literacy programs. The Engeström's model [3] as a form of conceptualization of the activity structure, will be essentially explored to grasp the inter-relational elements in an information activity.

2 Advantages and Limits of Information Seeking Models

According to Saracevic [4], there are two types of user studies: one theme is more pragmatic, closely related to the design of information search systems including web search engines, and the other one is more theoretical, providing models to deepen the understanding of information practices.

Information behaviour models are often used as a theoretical framework to develop hypotheses of research or to explain aspects of information behaviour. We learn from these models, such as those of Ellis [5] and Kuhlthau [6] , that individuals, in their search for information likely to meet their needs, go through different stages, and that each stage corresponds to a cognitive and emotional state, and specific actions (exploring sources, selecting resources, etc). The Bates' model [7] focused more on the information searching and retrieval process emphasises that people use multiple sources, transform their queries as they interact with the information system, and proceed by successive selections to locate and retrieve the information they need. In an information searching process, the steps defined by these models are not all mandatory. Depending on the situation and context of the information search, individuals can choose between the various stages of the process. Ellis, for example, showed that the characteristics or steps of the model may vary from one group of people to another.

These three models (Ellis, Kuhlthau and Bates) provide a relatively complete description of the processes underlying the search and retrieval of information. This description can guide and direct the implementation of an information service or development of a method for teaching and learning information-literacy skills. For example, the Guided Inquiry method [8] was developed from the Khulthau model. It aims at developping students' skills for a better control of information environments integrating various technologies.

Unlike the Ellis, Kuhlthau and Bates models, the Wilson and Dervin models [9] are based on a more global process of information seeking. For example, the Wilson model specifies, among other things, personal and environmental variables that can shape and influence the individual's information behaviour. These variables expand the usefulness of the model, which, in addition to the description of the process, provide explanations on the causes responsible for a particular behaviour. Wilson considers the context (the work environment, socio-cultural environment, physical environment, etc.) as an important determinant of the individual's information behaviour. Nevertheless, the model does not explain how, for example, the socio-cultural environment may influence and condition the individual's information behaviour. The model does not tell us either how interactions between the environments of the context could influence information behaviour. The knowledge

of these causal factors would complement the description of the information search process, which, for example, could enrich the content of IL training. Thus, explaining to the learner (student, employee, etc.) why, in a given situation, they do not need to go through such an information search step or, conversely, they must go through a specific step to complete the search process, generally favours learners' understanding of various actions and operations required for information seeking. It is as if the causal factors determine the 'semantic field' of each step.

At this stage in our work, information literacy is treated essentially as a set of generic skills, which may be used in different contexts. However, recent research [10-13] has started to criticise this vision, and proposes considering information literacy as a social practice determined by culture and the context in which it is set. This vision of IL is obviously very close to Street's 'ideological' model, briefly described in the introduction to this paper. According to Limberg [14], IL is "*a set of abilities to seek and use information in purposeful ways related to task, situation and context in which information seeking practices are embedded*". This definition is clearly different from the current definitions of IL, which tend to reduce the information process to universal sets of skills (recognizing an information need, locating, evaluating, using and producing information). These definitions do not usually question the nature of the information and how it becomes knowledge. It is often seen as something which is external to the individual, which can be managed and retrieved. As a whole, IL is more than a relationship with standardised forms of skill. IL depends on the context and, as such, should be explored through information practices of individuals and groups in situations. This perspective places IL in different social contexts (everyday information practices, leisure, work, and education).

In the next development, we will use the activity theory to answer an important question: what is an information activity? Then, in the light of the activity theory, we will try to demonstrate that information literacy is largely a social practice, which varies from one context to another.

3 Origin and Nature of the Activity Theory

The activity theory was initiated by Vygotsky in the twenties and early thirties. According to Vygotsky, higher mental functions like thinking, memory, etc., should be considered as products of mediated activity, where the mediating role is attributed to psychological tools and interpersonal means of communication. Vygotsky's idea of mediation of mental functions by psychological tools is often represented diagrammatically by a triad linking the subject, object and mediating tool (artefact). This triad model ignores social relationships and does not extend the analysis to other subjects involved in the conduct of the activity either directly or indirectly. Indeed, the analysis must be focused on the subject in this motivated and mediated "enquiry" of the object (as defined by the objective of the activity). Engeström has completed the triad model originally developed by Vygotsky, adding the community element and two mediators: the rules and the division of labour.

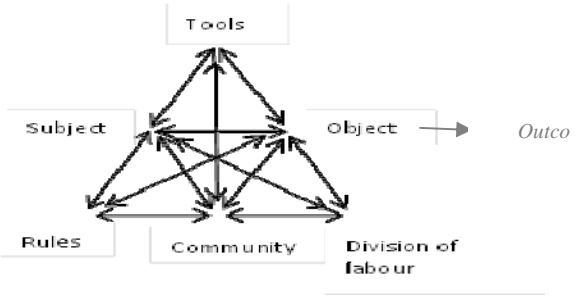

Fig. 1. Structure of the activity system according to Engeström (Source: Engeström, 1987)

The activity is observed as a system with its own structure, own internal transformations, and own development. If we rely on the definition of the activity system, we consider that an activity is performed by a motivated subject; it aims at transforming an object into a result. The object is shared by members of a community working together to achieve a common goal. The tools, rules and the division of labour influence the relationship between subject, community and the object. This definition of the activity system, complemented by the principles of activity theory allows us to answer the main question the following subsection: what is an information activity?

4 What Is an Information Activity?

To answer this question, we consider that the information activity is composed of all the interactions of individuals with the information environment. In the principle of object orientation of the activity, these interactions are motivated and intentional. They can transform the object (a document retrieved from a website, an excerpt from a book or an article, information provided by an expert, etc) regarded as "raw material" into a significant and collectively constructed object (a summary report, a solution to a problem, an idea to develop, etc). This significant object is a form of construction of meaning that reflects a certain form of mastery over the collected information. This mastery depends largely on the ability of the community members to assess the relevance of the information resources. This assessment of the relevance must be regarded as a cognitive activity closely linked to the context (learning, work, daily use of the information, etc.).

Beyond the steps and characteristics of the information searching process defined and described by different information behaviour models, the result of the analysis of an information searching activity, depending on the Engstrom model, reveals that the informational activity is both individual and social. It should enable, according to the motivations and goals of the individual or community, to acquire knowledge, either directly or indirectly. Moreover, information activity is strongly mediated by material or conceptual tools. It evolves and adapts to the different changes that may affect the

subject or the mediation tools. These different characteristics of informational activity lead us to think that the descriptions of information literacy cannot be reduced to the sole cognitive dimension.

5 Dimensions of the IL

Using the preceding analyses of the activity system, according to the Engeström model, we can define IL according to the following dimensions: (1) A social and organisational dimension manifesting itself at several points during information activity. This mainly happens during the interactions of the subject with the community or the group. However, it also happens through the mediating role of tools (physical, ICT, abstract, standards, rules, and division of labour), and the links of the information activity with other activity systems of the organisation (company, school, university, etc.). (2) A cognitive dimension that certainly depends on the motivation of the subject or the community but essentially results in the acquisition of new knowledge during interaction with objects in the information environment. (3) A psychological dimension, which takes into account, among many other things, the motivations of the subject or the community involved in an information activity; according to the activity theory, the motive is at the origin of the target of the activity. (4) A physical dimension, which concerns the interaction of the subject or the community with the objects of the information environment; such interactions are essentially mediated by the ICT. The link of this dimension to the cognitive dimension is obvious: the transformation of raw objects (information resources) into significant objects is the result of both physical actions and cognitive actions. (5) A dynamic dimension, which takes into account the evolutionary aspect of the activity system. Generally, this evolution can only be observed in a medium to long term system. It is essentially subjacent to the profound changes in the tools of mediation.

6 Conclusion

In most of the activities of contemporary society, often called the information or knowledge society, information and communication technologies have emerged as key mediator tools for the search, access and production of information. However, as we have just discovered through the information models described above, the role of these technologies as artefacts or mediators is not studied much or sometimes not at all in the literature of information science. In IB as in IL, it is very important to know that mediating is an essential element in achieving the goal and the result of the information activity. It is also important to explain the historical and cultural influence that mediating artefacts may have on information activity. This is because they were created and produced by specific activities and, therefore, they inherently carry the history and culture of these activities. We believe that the theoretical framework of the activity theory allows us to understand the mediation concept and have a better understanding of the mediating role of tools or artefacts.

The aim of our work is not to design yet another IL model, but to understand and define the underlying literacy required for the success of the information activity. We based ourselves primarily on information models to demonstrate their usefulness but also their limits to define the elements of a model for training and learning IL. Secondly, we used the framework of the activity theory to analyse interrelated elements within an information activity. This analysis allowed us to define IL in terms of five dimensions: social and organisational, cognitive, emotional, physical and dynamic dimensions. These dimensions or facets of IL lead us to think that an IL teaching and learning program should be perfectly anchored in its functional environment.

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