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Relevance of Technical Communication to Knowledge Management: An R&D Perspective

Anuradha Ravi

Defence Bioengineering & Electromedical Laboratory
CV Raman Nagar, Bangalore-560 093
E-mail:anuradharavi@hotmail.com

ABSTRACT

This article is based on the author's experiences in providing documentation and KM-based services to a variety of audiences. Starting from the basic definitions of the fields of information science (IS) and technical communication (TC), the interdisciplinary nature of the emerging field of knowledge management (KM) and the role of TC practitioners in building KM systems are described.

Keywords: Knowledge management, technical communication, information science

1. INTRODUCTION

Information science (IS) is the generation, collection, organisation, interpretation, storage, retrieval, dissemination, transformation, and use of information with particular emphasis on the application of modern technologies in these areas[1].

One of the definitions of technical communication (TC) is that it is reader based, focused on the subject, dependent upon technology (both for its subject matter and its means of production) representative of the corporate culture which produces it, collaborative, and marked by its technical style and visual display[2]. Incidentally, technical writing is also used interchangeably with TC in literature.

The main charter of an R&D organisation is to conduct research in its area of work and design and develop products based on the user's needs. In an R&D set up both information scientists and technical communicators render important service and contribute to the success of the R&D projects. Information scientists supply the right information and convey the right information at the right time. Technical communicators shape the information and convey the right information at the right time in the right form. The characteristics and techniques of technical writing and the role of technical writers in information dissemination has been brought out earlier[3]. The five distinctive characteristics of TC are: rhetorical modes; factual context and specific readers; vocabulary and format; objective style; and technical subject matter. The intersection of the Venn diagram of the two fields is documentation; that is, classifying and making readily available the records of all kinds of intellectual activity (Fig. 1.)

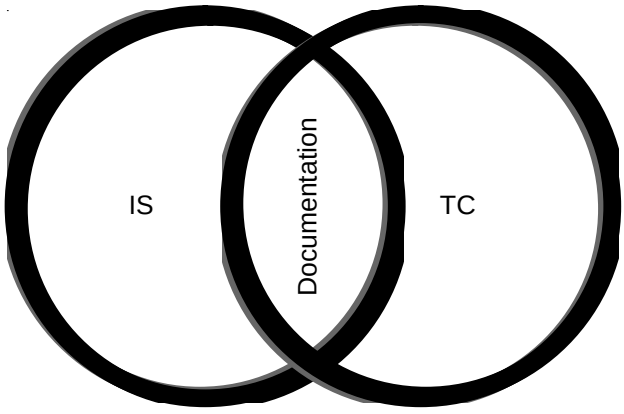

Figure 1. Overlap in fields of work between IS and TC.

2. KNOWLEDGE MANAGEMENT

Knowledge management (KM) means different things to different people depending on their perspective. Considering that the earliest papers on the subject appeared only in the 1980s, a vast body of literature has been built up. What is of interest, however, is that many of them deal with the interdisciplinary nature of KM and have identified TC and IS as constituents or contributory factors in KM.

Bellinger[4] brings out beautifully the technical relationship between data, information, knowledge and wisdom. He says that the sequence data→ information→ knowledge→wisdom represents an emergent continuum. Although data is a discrete entity, the progression to information; to knowledge; and finally to wisdom does not occur in discrete stages of development. Learning occurs by connecting new information to already understood patterns and by doing so, patterns get extended. In an organisational context, data represents facts and values of results and the relations between data and other relations have the capacity to represent information. Patterns of relations of data and information, and other patterns have the capacity to represent knowledge.

Barclay and Murray[5] give an overview of the subject starting from definition of knowledge; kinds of knowledge (explicit and tacit); brief history of KM and the nature of KM as a cross disciplinary domain. Their list of fields contributing to KM includes, inter alia, cognitive science, library and information science, technical writing, relational, and object databases.

Handoic and Zhou[6] make a case for an integrated view of KM. They give an overview of current perspective of KM and elaborate on the three main categories or schools of KM: technocratic, economic and behavioural. They reproduce Earl's taxonomy of schools of KM covering the differences in attributes such as focus, aim, critical success factors, philosophy in the different schools. In the strategic school, rhetoric artifacts is identified as the critical success factor for KM. Rhetoric is one of the main attributes of TC.

3. KNOWLEDGE CREATION IN R&D ORGANISATIONS

As mentioned earlier, the main activity of an R&D organisation is undertaking and executing projects within specific time and cost to achieve the desired goals. The goals may vary depending on the type of projects undertaken. Human energies, physical and monetary resources are dedicated towards this end in an organised manner. The management, methodology, procedures and practices may vary from organisation to organisation or from time to time within the same organisation depending upon the needs of the project tasks and the nature of the technology development. However, the steps in a project life cycle can be broadly classified as shown in Fig. 2.

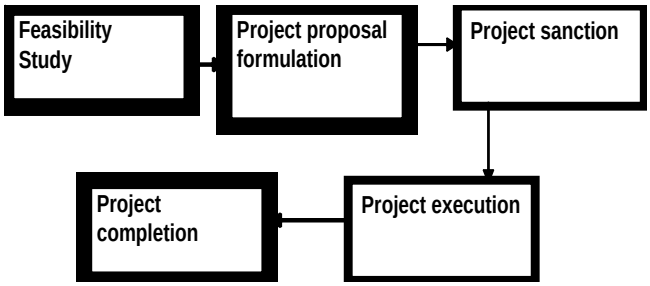

Figure 2. Stages of a project in R&D organisation.

The feasibility study examines the following aspects: goals of the projects; state-of-the-art analysis; preliminary design; resource management; project execution plan; cost-benefit analysis; and spin-offs. The project proposal drawn on the feasibility study will have details also on probable duration of completion of the project and detailed project execution plan. That is, its goals, tasks, budget, timeline and responsibilities.

The project sanction is based on thorough examination of the proposal, necessity of the project, adequacy of the core competence of the executing agency, etc. The project execution will have stages like design, development, testing, evaluation, reworking (where necessary), trials, etc.

Comprehensive critical reviews are conducted at each stage of a project's life cycle, i.e., before sanction, during execution at each stage, and after closure of the project. A whole range of documents get generated as a result of the review processes as well as the project execution itself. Chief among them are: feasibility study reports, project proposal document, preliminary design review document, critical design review document, periodic project progress review reports, test and evaluation reports, publications in research journals, patent applications, and closure reports. These form the repository of the explicit knowledge gained from the project.

Apart from these, the people of all levels involved in the R&D process—R&D managers, scientists, engineers, and technicians—get enriched by the experience and their tacit knowledge gets enhanced.

4. NEED FOR KNOWLEDGE MANAGEMENT SYSTEMS

Projects are not executed in isolation. They are related to the organisational objectives and are intended to achieve certain specific outcome such as improved performances, competitive advantage, innovation, etc. When a new project is taken up, apart from the manpower and the infrastructure built up earlier, the lessons learnt from the previous projects are also transferred to the new project. Considerable literature survey is done to find out the new information on the topic from other sources. This, in fact, is the process of extension of the patterns referred by Bellinger.

Knowledge transfer is easy in case of small teams but becomes difficult to apply across the board at inter laboratory or pan organisational levels. For this, relevant systems based on dataware housing and data mining techniques are necessary. Such systems will help in preventing wasteful repetition; development of collaborative practices, etc., and will enable knowledge discovery from unstructured textual information bases.

5. ROLE OF TECHNICAL COMMUNICATION IN KM

Even the best IT-based systems will only play a supplementary role in KM. This is because, in R&D organisations also, like in any other knowledge creation process, only a part of the new knowledge gets recorded in documents and becomes explicit knowledge which others can refer to for enhancing their own knowledge. This explicit knowledge is only the tip of the iceberg; the tacit knowledge residing in the people (workers of all levels) in the form of know-how and experience is much more. That true KM is about people and has been brought out nicely in a concept paper by the OSD Comptroller I Center, DoD, USA[7]. The paper also voices the general concern that is important to public sector organisations; that is, over the next few years, a substantial portion of the workforce would retire. This is true for many R&D organisations in India too. When people leave an organisation, they take a wealth of knowledge about their jobs with them. Knowledge management has to deal with securing and replenishing the learning experiences, as well as the work products of the people who comprise any organisation.

Knowledge management has to find means of capturing the valuable tacit knowledge. The interchange/ exchange of tacit knowledge occurs through interpersonal communications in both formal and informal settings. Considerable people skills, communication skills are required to grasp these and record them in such a way that it becomes useful for others. Technical communicators have these very skills because of their training and core competence.

Many a time, R&D organisations have to make presentations to outside agencies like budget authorities, auditors, etc., who may be from a different subject background. Answering their queries and satisfying them in an effective, convincing manner is not an easy task. It has been experienced that the presentation has to be based on both explicit and implicit knowledge. Considerable rhetoric skills as well as eloquent communication skills are required for this purpose. Again these are the very qualities which have been identified as success factors in KM systems and which are possessed by good technical communication personnel.

6. TC TOOLS FOR DEVELOPING KM SYSTEMS

TC professionals are mainly engaged in developing documentation in organisations, as has been mentioned earlier. In the IT industry in particular, they are employed for creating software documentation, help files, online help menus, etc. In R&D organisations, they are involved at all levels of the projects and the various documents evolving at each stage as explained earlier under Knowledge Creation.

Technical communication professionals use a variety of tools for this purpose. There is no particular set of tools that is a 'must' for all of them; by training and aptitude, each person picks up familiarity and skills in a particular set of tools.

The TC tool kit can be broadly categorised into Word Processors, Graphic Programmes, Desktop Publishing Software, Text Editors, HTML, XML Editors, etc. These are used to a small or large extent by almost all technical communicators. Technical writers in the software documentation use specialised tools like Robo help for generating help files. It is very difficult for a TC practitioner to keep acquiring mastery in all the latest developments in the area of TC tools, especially as one moves up the hierarchy and has administrative and other responsibilities along with the technical work; but it is necessary to be at least aware of the features of the new products in the market. For example, Adobe Systems has in September 2007 announced[8] the launch of Adobe Technical Communication Suite Software, which is an integrated solution for authoring, managing and

publishing technical information across multiple formats and languages. The suite includes Adobe Robo Help 7, an update of its help system and knowledge-base authoring tool, Adobe Frame Maker; Adobe Captivate 3, and Adobe Acrobat 3D version 8 software. This first of its kind system is expected to empower communicators in delivering compelling materials, save time, and reduce discrepancies in content.

7. CONCLUSION

TC professionals can use their inherent skills for communication and coordination along with their familiarity in handling TC tools and contribute to the development of KM systems in organisations. They have a vital role to play in sharing and leveraging of knowledge and in settling up Knowledge Portals, Discussion Forums, Document Management Systems, Document Libraries, Data Warehousing, Web Enabled Exchange Vehicles, etc. Thus it can be concluded that TC professionals have a lot to contribute in developing KM systems in R&D organisations.

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About the Author

Mrs Anuradha Ravi obtained Ist class BSc and MSc degrees in Physics from the University of Delhi. After pursuing research in superconductivity for two years in the same department, she switched over to teaching and thereafter, science editing. She has several papers on S&T communication and IT to her credit. She is the co-editor of two books: Bibliographic Databases and Networks by Tata McGraw Hill, and Medical Informatics brought out by SBMT. She received the National Science Day Oration Medal in 2005. Her popular articles have appeared in national dailies. Her fields of special interest are S&T communication with reference to new information technologies and knowledge management. She is presently the Joint Director, Information Services at DEBEL, DRDO, Bangalore.