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26. Knowledge Requirements in Team Tasks

Assemble a model of shared cognition. The model captures the essential components of knowledge exchange, including the roles of each team member, the information they possess, and how they interact to achieve a common goal. This model is crucial for understanding how teams function effectively and can be used as a diagnostic tool to identify areas for improvement.

Pretest: Team Knowledge

(Kronish & Horwitz, 1999, p. 433)

Although the model designates an overview of team knowledge, we

FIG. 26.1 Model of shared cognition

Don't forget to include the diagram in the text!
Dynamic Team Knowledge

In a general context, performance refers to the efficiency and effectiveness of a team in achieving its objectives. However, understanding the performance of a team requires knowledge of team dynamics, individual contributions, and interactions. The performance of a team can be enhanced by improving the knowledge and skills of its members, fostering effective communication, and creating a supportive environment.

"The Knowledge Requirements in Team Tasks" focuses on the essential knowledge and skills required for effective team performance. It emphasizes the importance of shared knowledge, clear communication, and collaboration among team members. The document highlights the role of different types of knowledge, such as technical, procedural, and social knowledge, in enabling teams to achieve their goals.

In conclusion, the document advocates for a holistic approach to team performance, recognizing that knowledge is a critical component of successful team operations. It encourages the development of a learning culture within teams to foster continuous improvement and adaptability.

Ref: "Knowledge Requirements in Team Tasks" (1999) by Blackburn, S. & Baker, D.
Andzirg Team Knowledge

As the size of a team increases, the need for effective knowledge management also increases. Knowledge management involves the systematic collection, organization, and dissemination of knowledge within an organization to ensure that it is accessible and usable by all team members. This is particularly important in complex projects where knowledge is rapidly evolving and needs to be shared among team members.

To achieve this, teams need to develop a systematic approach to managing knowledge. This approach should include mechanisms for capturing, storing, and retrieving knowledge. It is important to ensure that the knowledge is accessible and usable by all team members, regardless of their location or role within the team.

In summary, effective knowledge management is crucial for the success of any project. By implementing a robust knowledge management strategy, teams can ensure that they are making the most of their collective expertise and that knowledge is shared and leveraged effectively.

References

<table>
<thead>
<tr>
<th>Pre-Task Team Knowledge Element</th>
<th>Possible Elicitation</th>
<th>Possible Representation</th>
<th>Possible Agreement Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of task objectives and goals</td>
<td>Document analysis • Observation • Separate interviews • Group interviews</td>
<td>Adaptation of task-action mapping (e.g., Coury et al., 1992) • Adaptation of goal-directed analysis (e.g., Woods &amp; Hollnagel, 1987)</td>
<td>Agreement metric (e.g., Minionis et al., 1995)</td>
</tr>
<tr>
<td>Knowledge of task procedures, sequences, and timing</td>
<td>Document analysis • Observation • Separate interviews • Group interviews • Concept rating tasks (Stout et al., in press)</td>
<td>Adaptation of task-action mapping (e.g., Coury et al., 1992) • Adaptation of goal-directed analysis (e.g., Woods &amp; Hollnagel, 1987) • Knowledge structures (e.g., Cooke et al., 1996; Stout et al., in press)</td>
<td>Agreement metric (e.g., Minionis et al., 1995) • Pathfinder agreement metric (Schvaneveldt et al., 1987)</td>
</tr>
<tr>
<td>Knowledge of roles and responsibilities</td>
<td>Document analysis • Observation • Separate interviews • Group interviews</td>
<td>Basic tables, lists • Adaptation of task-action mapping (e.g., Coury et al., 1992) • Adaptation of goal-directed analysis (e.g., Woods &amp; Hollnagel, 1987)</td>
<td>Interrater agreement metrics applied to responses to specific scenarios developed by knowledge engineer or teammates (e.g., Blickensderfer et al., 1997) • Agreement metric (e.g., Minionis et al., 1995)</td>
</tr>
</tbody>
</table>

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of roles and responsibilities</td>
<td>Questionnaires (Smith-Jentsch et al., 1998) • Adapted critical incident (Flanagan, 1954) or critical decision method (Klein et al., 1989)</td>
<td>Lists of characteristics</td>
<td>Interrater agreement metrics applied to responses on questionnaires (Smith-Jentsch et al., 1998) • Comparisons of characteristics lists</td>
</tr>
<tr>
<td>Knowledge of teamwork</td>
<td>Numeric similarity ratings of teamwork concepts (Mathieu et al., 1998) • Sorting teamwork concepts (Smith-Jentsch et al., 1998) • Questionnaires</td>
<td>Knowledge structures (Mathieu et al., 1998; Smith-Jentsch et al., 1998) • Lists, tables</td>
<td>Knowledge structure agreement metrics • Concept grouping agreement metric (Smith-Jentsch et al., 1998) • Interrater agreement metrics applied to questionnaire responses (Jenkins &amp; Rentsch, 1995)</td>
</tr>
<tr>
<td>Dynamic Performance Understanding: During actual task performance: compatible assessments of cues and patterns in the environment, the implications of those for the team and task, how the team is proceeding, and particular actions that certain team members need to take.</td>
<td>Adaptation of SAGAT (Endsley, 1993) • SALIENT (Muniz et al., 1998) • Retrospective protocol analysis of videotape performance (Means, 1993) • Structured interview during videotape-simulated mission (Fowlkes et al., in press)</td>
<td>Tables, charts, and lists (e.g., Baker et al., under review; Muniz et al., 1998)</td>
<td>Basic comparisons of cues and information elicited</td>
</tr>
</tbody>
</table>
2.6. Knowledge Requirements in Team Tasks

Team Member Roles and Responsibilities

Each team member has specific roles and responsibilities in the team process, which are outlined in the team's project charter or role description document. These roles include technical lead, quality assurance, documentation, and project management. Team members are expected to fulfill their roles effectively to ensure the success of the project.

Team Member Characteristics

Team members are expected to have strong technical skills, excellent communication abilities, and the ability to work effectively in a team environment. They should be able to work independently and as part of a team to achieve the goals of the project.

Knowledge of Task Procedures, Sequences, and Triggers

Team members are expected to have a clear understanding of the tasks and procedures involved in the project. They should be able to identify the sequence of tasks and the triggers that initiate each task. This knowledge is essential for efficient project management and effective team coordination.

Team Member Interactions

Team members are expected to interact effectively with each other and with other teams. They should be able to communicate clearly and efficiently, and be able to resolve conflicts and issues in a timely manner.

Team Member Performance

Team members are expected to perform their tasks effectively and efficiently. They should be able to meet deadlines and deliver high-quality work. They should also be able to adapt to changing circumstances and be flexible in their approach to problem-solving.

Team Member Evaluation

Team members are expected to be evaluated regularly on their performance and contributions to the project. This evaluation should be based on their ability to fulfill their roles, their level of commitment to the project, and their contribution to the success of the project.

Team Member Development

Team members are expected to continue to develop their skills and knowledge throughout the project. This may include attending training sessions, reading relevant literature, and participating in discussions to improve their understanding of the project and their contribution to it.
The role of knowledge in team performance is to enable team members to work together effectively and efficiently. Effective knowledge sharing and collaboration can lead to improved performance and higher levels of productivity. However, knowledge management practices can vary significantly across different organizations and industries.

In order to effectively manage knowledge within teams, it is necessary to identify and communicate the key knowledge requirements that are essential for the team's success. These requirements should be based on the specific tasks and objectives that the team is working towards.

Key knowledge requirements in team tasks may include:

1. **Technical Skills**: Knowledge of specific technical skills and tools required to complete the tasks.
2. **Process Knowledge**: Understanding of the processes and procedures involved in the tasks.
3. **Domain Knowledge**: Knowledge of the domain or area of expertise relevant to the tasks.
4. **Social Skills**: Knowledge of social skills required to work effectively in a team environment.
5. **Communication Skills**: Knowledge of effective communication strategies and techniques.

By identifying and communicating these key knowledge requirements, team members can better understand their roles and responsibilities, and work together more effectively to achieve the team's goals.

Effective knowledge management practices can include:

- **Knowledge Sharing**: Encouraging team members to share their knowledge and expertise with others.
- **Documentation**: Creating and maintaining comprehensive documentation of team knowledge and processes.
- **Training and Development**: Providing opportunities for team members to develop their knowledge and skills.
- **Feedback and Recognition**: Recognizing and rewarding team members for their contributions to knowledge management.
- **Technology**: Utilizing technology tools and platforms to facilitate knowledge sharing and collaboration.

By implementing these practices, teams can improve their performance and achieve their goals more effectively.
References

The view expressed herein are those of the authors and do not necessarily reflect the official positions of the agencies with which they are affiliated.

Acknowledgments

The authors wish to express their gratitude to the following individuals for their contributions to the development of this project. [List of acknowledgments, if applicable]
26. KNOWLEDGE REQUIREMENTS IN TEAM TASKS