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**Key Concepts Learned**

**Project planning** is an ongoing, iterative process from the initial concept through to the system’s final delivery. **Work Breakdown Structure (WBS)** is a systematic way of dividing the project into smaller, more manageable tasks. It is crucial for establishing a foundation for scheduling, budgeting, manpower allocation, communication, and quality assurance.

**Top-Down Planning**, the total time for the project is first assigned, with smaller tasks being scheduled within this time frame. **Bottom-Up Planning**, individual tasks are scheduled first, and these are aggregated to form the entire project duration. Tools such as **Gantt charts** and **Activity Networks** are visual aids to help map out the tasks, dependencies, and critical paths within a project.

**Resource allocation** plays a vital role in project planning, and it must be based on matching required skills with available resources. The amount of effort and time required for tasks determines how resources are allocated, considering factors like overtime work or staff availability. Identifying project milestones and deliverables.

*Estimating task difficulty*, *managing workforce productivity*, and *minimizing task dependencies to avoid delays*, are common challenges.

**Goldratt’s Critical Chain Method** focuses on removing unnecessary buffers in task schedules to improve efficiency. **Critical Path Method (CPM)** helps identify the sequence of dependent tasks that determine the project’s overall duration, ensuring that delays are minimized on the most crucial tasks.

**Monitoring** involves collecting data to compare the project’s actual performance with the baseline plan. **Control** refers to taking corrective action if there are deviations from the plan, including task rescheduling, reallocating resources, or even terminating the project in extreme cases.

**Earned Value Management (EVM)** is an essential tool for tracking both schedule and budget progress. It integrates cost and time constraints to measure how the project is progressing. *Resource leveling* and *schedule optimization* prevent or minimize delays by optimizing how resources are allocated and adjusting schedules to remove unnecessary slack.

**Risk management** requires adjusting the project’s scope, budget, or timeline to accommodate unforeseen issues.

**Application in Real Projects:**

The principles of project planning and monitoring discussed can significantly enhance the management of real-world software projects, helping teams efficiently handle complexities. The Work Breakdown Structure plays a crucial role by breaking down large features into smaller tasks, ensuring clear responsibilities, better resource allocation, and early identification of bottlenecks. For well-defined projects, Top-Down Planning helps establish a broad timeline first, while Bottom-Up Planning is better suited for dynamic projects where individual tasks can be detailed before setting the overall schedule. Visual tools like aid in tracking dependencies, deadlines, and potential delays, though accurate task breakdowns are a challenge early on.

Resource allocation has immediate practical implications, as misallocation can cause delays and overburdening. Careful planning is required to predict task effort, and methods like resource leveling help balance workloads. Implementing methodologies like Goldratt’s Critical Chain and Critical Path can optimize task dependencies and timelines, though they require well-defined scopes to be effective. Earned Value Management offers a useful approach for managing large projects with tight budgets, but it demands precise data tracking and reporting, which can be time-consuming.

Corrective actions are vital when deviations from the baseline occur, ranging from resource reallocation to potentially terminating unfeasible projects. Risk management is also a key focus, requiring continuous adjustments to the project’s scope, timeline, or budget to accommodate unforeseen challenges. However, constant adjustments risk scope creep or budget overruns if not managed carefully, making it a balancing act to keep the project on track.

**Peer Interactions**

This past 2 weeks we were tasked with a Topic Analysis poster, where we were presented with a topic and had to expand on it and present it in pairs. During this activity, my classmate and I researched about the topic and discussed while creating the presentation. Presenting and attending the other presentations helped deepen our understanding of Project Management.

**Challenges Faced:**

We had another quiz and this time it went better than the first one. I could answer almost all questions correctly, however while reviewing the answers I still don’t understand why the correct answer fits better than the one I chose.

**Personal development activities:**

The Topic Analysis presentation helped me improve my presentation skills as well as my ability to condense information in a small canvas like a poster.

**Goals for the Next Week:**

Next week we have the midterm. My sole goal is to test my understanding of the topics and get a good grade.