Learning Journal 2
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Course: SOEN 6841
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Key Concepts Learned

Effort Estimation Techniques

1. **Algorithmic Cost Modeling**:
    - **COCOMO II** adapts to various project stages (e.g., early design, post-architecture). It required additional study to understand when to apply each sub-model (e.g., early design vs. post-architecture).
2. **Experience-Based Approaches**:
    - **Wideband Delphi** and **Estimation by Analogy** were used, relying on past data to provide insight into estimation. These methods introduce **bias**, but combining them with **risk prioritization matrices** helped visualize how estimation variations influence project feasibility.

Risk Management

1. **Risk Quantification**:
    - I utilized the **Impact x Likelihood** formula to prioritize risks, especially **integration failures**, which were difficult to quantify due to technical and resource interdependencies. I overcame this by visualizing the **ripple effects** of risk mitigation strategies, helping clarify how addressing one risk impacts others (e.g., resolving technical delays affects resource allocation).
2. **Risk Strategies**:
    - The use of **mitigation**, **transference**, **avoidance**, and **acceptance** proved critical in managing risks effectively.
    - I explored **predictive analytics tools** to preemptively adapt project deliverables, particularly addressing **technology obsolescence** risks.

Application in Real Projects

1. **Effort Estimations**:
    - Using **Estimation by Analogy** in comparing AI integration of a project for education platforms to similar projects. This will help to establish realistic effort metrics for database structure and UI components.

2. **Risk Management**:
    - I integrated a **feedback loop** within **risk prioritization matrices**, enabling real-time adjustments to mitigation strategies as project conditions evolved. This was an effective communication tool for stakeholders and enhanced cross-team alignment.

Peer Interactions

Collaboration with peers provided valuable insights:

- I shared a **visualization** combining **COCOMO II estimates** and **risk prioritization matrices**, which led to discussions on how visual tools simplify complex project details for stakeholders.
- A peer introduced **Agile workflows** with **dynamic risk monitoring**, inspiring me to explore **real-time data updates** for risk tracking, particularly for iterative projects.

Challenges Faced

- Choosing the right **sub-model** for different stages was challenging. I created a **comparative analysis** to better understand how each sub-model applies in varying contexts.
- Quantifying risks, especially due to interdependencies (e.g., technical delays vs. resource shortages), was initially difficult. To overcome this, I visualized the **ripple effects** of mitigation strategies, allowing for clearer risk prioritization.
- Transitioning to **Agile** risk management was a learning curve. Initially, lack of frameworks led to confusion, but over time, the team gained flexibility and confidence in adjusting strategies as risks evolved.

Personal Development Activities

- I practiced creating **visualized effort estimation reports**, integrating **COCOMO II** and **Wideband Delphi**, which provided clarity on project timelines and resource allocation.
- Developed a **risk register** with fields for **categorization**, **prioritization**, and **mitigation**, incorporating a feedback mechanism to track ripple effects. This register helped in real-time decision-making and improved project transparency.

Goals for the Next Week

1. **Deepen understanding of COCOMO II** by comparing sub-models for varying project sizes and stages.
2. Develop a **template for dynamic risk monitoring** that integrates **real-time data updates** and **contingency plans**.