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Proposal Phase

2025

October 3 – Brainstormed and refined final project ideas. Developed a clear research question and preliminary hypothesis based on background research. Outlined possible experimental methods and identified required materials.

October 8 – Worked on completing the formal project proposal, including background research, rationale, hypothesis, and experimental design, in preparation for mentor review.

October 9 – Continued refining and organizing the proposal. Improved clarity of methodology and ensured variables and controls were clearly identified.

October 14 – Applied mentor feedback to proposal slides. Clarified experimental steps, strengthened scientific reasoning, and revised visuals for better understanding.

October 15 – Practiced presentation delivery. Focused on improving timing, clarity, and confidence while explaining the scientific concepts.

October 16 – Finalized the written and visual components of the proposal. Ensured consistency between the slides and the written part.

October 17 – Practiced presentation again and received additional feedback from mentors. Adjusted explanations and improved responses to potential questions.

October 18 – Made final revisions to the proposal based on feedback. Polished formatting and ensured all required components were included.

October 19 – Continued refining proposal details, including background research references and experimental justification.

October 20 – Finalized presentation slides and ensured visuals (graphs, diagrams, procedures) were accurate and clear.

October 21 – Edited presentation for clarity and conciseness. Improved slide transitions and strengthened explanation of variables and expected outcomes.

October 22 – Practiced presentation to ensure smooth delivery and appropriate pacing.

October 23 – Conducted another full practice run, focusing on answering possible judge/mentor questions.

October 24 – Delivered final proposal presentation. Created a detailed experimental timeline outlining research, testing, and manuscript deadlines.

Research & Experimental Development Phase

November 3 – Conducted deeper background research on biodegradable plastics and lignin-cellulose structure.

November 6 – Continued researching chemical treatment methods and alternative dissolving agents.

November 11 – Compiled recipe lists for potential experimental formulations, outlining material ratios and preparation steps.

November 21 – Designed initial lab experiment procedure, including measurements, heating times, and drying methods.

November 27 – Revised lab experimental procedure for clarity, safety, and reproducibility.

December 4 – Researched safer alternatives to sodium hydroxide (NaOH) for lignin or cellulose processing to reduce safety risks.

December 12 – Investigated ionic liquids (ILs) and deep eutectic solvents (DES) as alternative methods for dissolving lignin-cellulose.

December 13 – Identified and reviewed a DES-based experimental method suitable for adaptation.

December 14 – Researched acetic-acid-based mixtures and evaluated their feasibility for polymer processing.

Experimental Testing Phase

December 17 – Conducted the first lab test at the Renert School laboratory. Followed experimental procedure and recorded observations on texture, flexibility, and drying time.

December 19 – Observed physical changes in produced samples (sheets). Documented flexibility, strength, and surface characteristics. Continued researching improvements.

December 29 – Produced new sheet prototypes using revised experimental procedures to improve consistency and strength.

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January 2 – Created additional prototypes while adjusting controlled variables (powder type and water type).

January 4 – Began systematic testing of prototypes for flexibility and durability.

January 5 – Produced further refined prototypes based on earlier test observations.

January 6 – Designed and established a tensile strength testing method to quantitatively measure material strength.

January 12 – Conducted tensile strength testing and recorded quantitative data.

January 19 – Observed early biodegradability results and documented physical decomposition changes.

Data Analysis & Writing Phase

January 21 – Wrote the Sources of Error section, identifying procedural and measurement limitations.

January 22 – Clearly defined manipulated, responding, and controlled variables for the manuscript.

January 23 – Organized and inserted collected data into manuscript tables and charts.

January 27 – Conducted additional tensile strength trials to improve data reliability.

January 29 – Added new data to graphs and refined data visualization.

February 2 – Wrote research background and real-world applications section of manuscript.

February 3 – Completed majority of manuscript draft, including methods, results, and discussion sections.

February 5 – Finished rough draft of full manuscript.

February 9 – Reviewed edits and revised manuscript for clarity, scientific accuracy, and formatting.

February 23 – Conducted final manuscript review and began preparing presentation slides summarizing results.

March 1 – Completed final revisions of manuscript and prepared submission-ready version.