Week 6 – Seven (7) Design Criteria

Q1 and Q2: Enter Details – Name, Student SUT ID

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Q3 and Q4: Team number.

Team - 6

Q5: Design criteria 1 - Choose 3 approaches used in your design idea.
(Analyze, Reduce, Eradicate, Prevent, Predict)

Reduce , Prevent , Predict

Q6: Design criteria 2 - List 3 different technology for 3 different approaches

Reduce - Battery storing electricity from solar energy
Prevent – Solar energy
Predict – specify the electricity needed and usage amount for each family to build a solar power design

Q7: Design criteria 3 - List at least 2 or more different devices/tools for each approach in your design idea (at least 2 devices/tools for each approach, your design should have 3 approaches)

Reduce – solar power energy and batteries
Prevent – solar power monitoring system
Predict – PV solar panels and batteries

Q8: Design criteria 4 - List 3 benefits and explain in a few words how your design idea is beneficial to the end user/community.

1. Enhanced Access - Consistent electricity improves critical services like education and healthcare. Communities can operate educational devices and medical equipment at any time, leading to better learning and health results

2. Financial Benefits - Decreases dependence on fuel for generators and reduces food waste. By ensuring a steady electricity supply, families save on fuel costs and avoid losing food due to power outages

3. Positive Environmental Effects - Encourages the adoption of renewable energy sources. Switching to solar power lowers carbon emissions and lessens reliance on fossil fuels, which is beneficial for both the environment and public health.

Q9: Design criteria 5 - List 3 Impacts and explain in a few words how your design idea is impacting the community

1. Economic Growth - Local jobs are created in solar installation and maintenance. Solar projects provide employment, helping the local economy and ensuring steady incomes for community members.

2. Energy Independence - Less reliance on imported fossil fuels. Using local solar energy makes communities more self-sufficient, improving energy security and reliability.

3. Improved Quality of Life - More access to reliable energy. Steady electricity enhances living conditions, leading to better education, healthcare, and overall community well-being.

Q10: Design criteria 6 - List 3 guiding principles and explain in a few words how your design idea will satisfy a particular guideline principle.

1. Sustainability - Utilize renewable energy sources for lasting benefits. The design taps into solar power, a clean and sustainable option, which reduces the dependence on finite fossil fuels and minimizes environmental impact.

2. Community Engagement - Involve local communities in the planning stages. The design seeks feedback from community members to ensure the solar project meets their needs and builds local support.

3. Efficiency - Maximize energy generation while reducing waste. The design incorporates high-efficiency solar panels and energy management systems to boost energy production and decrease losses, optimizing resource use.

Q11: Design criteria 7 - List 2 constraints/challenges and explain in a few words how it is affecting the end user/community.

1. High Initial Costs - The upfront investment for solar panels and installation can be significant. Many potential users may find it difficult to afford the initial costs, which can limit access to solar energy and prevent communities from benefiting from renewable energy solutions.

2. Inadequate Grid Infrastructure - Current electrical grids may not be prepared for the higher input from solar energy. Poor grid infrastructure can create challenges in incorporating solar power, leading to inefficiencies and possible power outages for users, which can restrict the advantages of adopting solar energy in the community.