Re-Conditioned Body Parts

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Type: Feasibility Study, Exploration
Student time: Ten weeks
Location: At school

Summary

Students, in groups of 4-5, can explore the market for sale of human body parts as poor humans sell their parts for money to the rich and wealthy. Students will explore moral and ethical issues involved in the business of body parts and suggest some engineering solutions. They can also explore the feasibility of constructing artificial body parts or using animal organs, etc. Considering this as a global problem, they will propose solution(s) or measures to be taken to stop the trafficking of body parts.

ABET Descriptors

Engr Sci Content: Freshman/Sophomore Human Engineering
Type: System of organs in human body
Elements: Need identification, setting objectives, evaluation
Features: Open-ended, synthesis, global politics and economy, written and
                       oral communication
Constraints: Alternatives, moral and ethical issues, economics, human factors
Effort: Team

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Memorandum

To: Engineering Students
From: Human Rights Commission (HRC)
Subject: Sale of Re-Conditioned Body Parts

HRC is highly critical of sale of body parts by the poor to the rich for financial gain for the sole purpose of survival of oneself and one's family. In the Socioengineering Age, when technology is invading the global village at ever-increasing speed, we ask you to explore this problem from humanistic and technical considerations. You are being challenged to come up with alternative modes of delivery of body parts or suggest other solutions. You will also study the norms of human moral and ethical issues as perceived in various cultures. Your dean suggests that you are capable of envisioning the future and have strong background to understand socioengineering issues as they are develop in the global scenario. It is understood that the present trade of body parts is not satisfactory and in many ways is unethical and illegal. It encourages kidnapping and murder for the sole purpose of obtaining body parts. After looking through various web pages and published literature, we have been unable to determine which would satisfy all inhabitants of this global village. You can explore several reports available on internet and in the literature, media, etc. You will make a survey of the potential problem(s) and suggest a solution after generating several alternatives. Are we technologically advanced to make artificial body parts? What are the possibilities? Please make your recommendations to us.

Evaluation Criteria:
- A survey of body parts trade.
- Tradeoffs between artificial and real human body parts.
- Economic, social, moral, legal, and ethical issues involved
- Oral report to HRC (participation by all team members, visual aids required). Supporting written report , one week before the presentation deadline

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Engineering Notes:

- **Ergonomics:** The scientific, interdisciplinary study of humans in cultures across the global village and how humans perceive the aesthetic and essential functions of various body parts.
- **Biological factors:** Functions of body parts in human anatomy. Essential and non-essential elements and factors for survival and comfort.
- **Global Trade:** Value of values and money under various settings.
- **Cultural factors:** Perceptions of various human groups under variety of conditions for living.
- **Technology:** Ways technology can help us to find alternative solutions. Artificial organs. Biomedical solutions

Design Competency Outcomes:

- **Group Dynamics:** Understand their own and other members' style of thinking and how they affect teamwork; roles and responsibilities of each member of the team; effective listening, speaking, and visual information processing to be an effective communicator in a group; creating supportive workplace environment.
- **Data, Information, and Knowledge Engineering:** Gather data from various sources-internet, journals, surveys, newspapers, government databases, visits to other places, etc. Organize data in a way to give useful information to the group and public at large and put sufficient knowledge into it to make intelligent choices.
- **Needs Analysis:** Understand open-ended nature of problems, develop specific goal statements, and recognize need for an appropriate design as opposed to the existing paradigms, views, and human norms.
- **Generating Alternatives:** Create conducive environment for idea generation, brainstorming, understanding constraints of each idea, and synthesis of the ideas to make whole larger than the sum of its components.
- **Evaluation and Decision Making:** Iterative approach for evaluating design and designing a process of continuous improvement. Develop a follow-up plan.
- **Implementation:** Time and resource management to complete the project and make changes in the design as the project progresses to various phases. Sources of funding, resource sharing by several institutions to derive the maximum benefit, ergonomics and other human factors for using resources.
- **Communication:** Production of records, technical papers, memos, ideas in an acceptable and comprehensible style; presentation techniques to peers and public at large; nonverbal interpersonal communications; personal appearances.