Perception of Engineering Education

Problems and Possible Solutions

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Perception of Engineering Education

Perception

- **Perception: The way in which something is regarded, understood, or interpreted. (Ref: Oxford Languages)**
  - **Perception affects how students perceive their own abilities and potential, which can impact their educational outcomes.**
  - **Teachers' perceptions of their students can also influence their expectations and teaching approaches.**
  - **Perception is influenced by cognitive biases, societal conditioning, and misinformation.**
    - **A cognitive bias is a systematic pattern of deviation from norm or rationality in judgment.**
    - **Individuals create their own "subjective reality" from their perception of the input.**
    - **An individual's construction of reality, not the objective input, may dictate their behavior in the world.**

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National Economy

- **Overall decline in large scale manufacturing sector (Beverages, Textile, Leather Products, Wood Products, Paper & Board, Petroleum Products, Iron & Steel Products, Fabricated, Computer, electronics and Optical products, Electrical Equipment, Automobiles, Other transport Equipment, Furniture) [Ref.:PBS]**
- **Very high interest rate (Ref.: SBP)**

Employment

- **Increasing unemployment rate (Ref.: PBS)**

Innovation

- **Lagging in engineering innovation and technology development**
- **Absence of competitive products**

Comparison of leading/lagging engineering fields

Flaws in admission based on a “universal” scale

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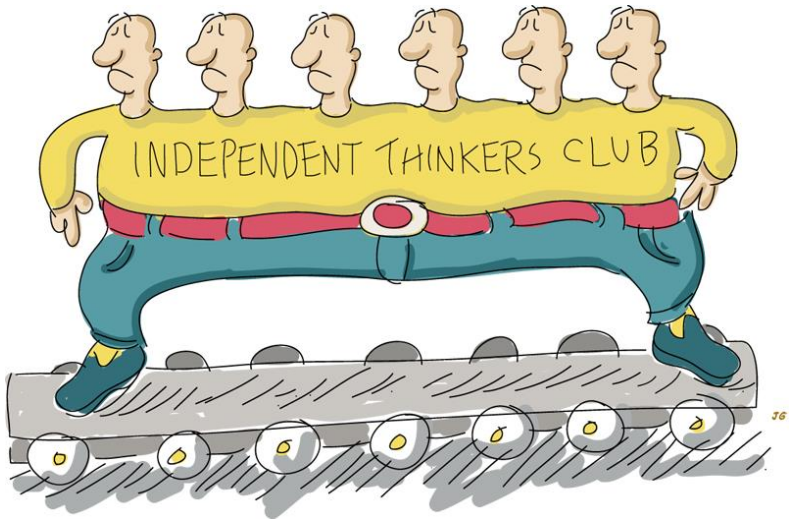
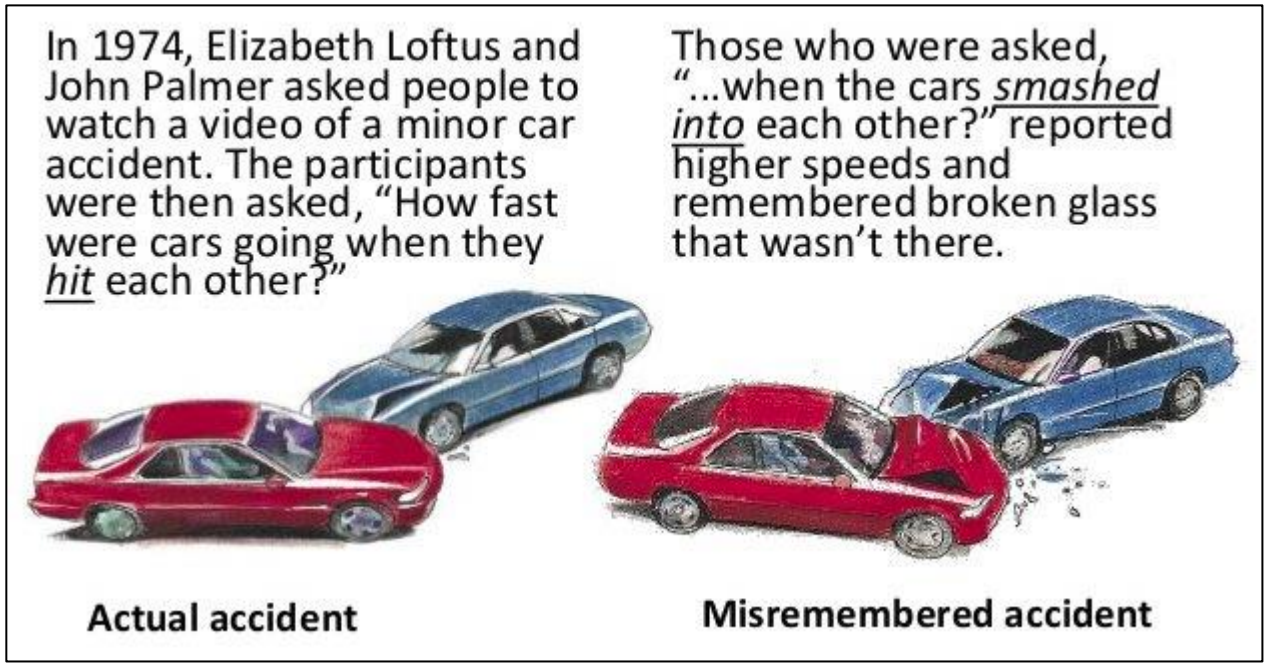
Additional Factors Behind the Perception

- **Bandwagon effect (herd mentality): The bandwagon effect is a psychological phenomenon in which people do something primarily because other people are doing it, regardless of their own beliefs, which they may ignore or override.**



Additional Factors Behind the Perception

- **Misinformation effect: The misinformation effect occurs when a person's recall of episodic memories becomes less accurate because of post-event information.**



- **Social Media**

- **Cultural Norms: stereotyping the professions without valuing the significance of every profession' s services for the society**

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Outcomes

- **Admission Problems:**
  - **Some Engineering departments are over-saturated, and others are under-saturated.**
  - **The number of students enrolled in Pre-engineering has drastically reduced: PEC had to make big changes in the admission policies.**

- **Distress among teachers and students:**
  - **Some universities have cut-down their budget for Engineering Programs: departments are being even closed.**
  - **Reduced salaries resulted in the loss of interest in the faculty, adversely effecting the standard of engineering education.**
  - **Students' perception and teachers' perception: both reinforcing each other's distress**
  - **OBE process practically failed to achieve its goals in spirit (might succeed in letter)**

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Outcomes

- **Brain Drain:**
  - **Faculty and graduates are leaving the country.**
  - **Quality of Engineering Education is deteriorating**
  - **Quality of Engineering Professionals is deteriorating.**

- **Shortfall of Professional Engineers:**
  - **Industries will import engineers as well.**
  - **Industries will further decline.**
  - **Local industries will not trust local engineers beyond O&M with stagnant growth.**
  - **Local R&D will remain a dream..**

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Perception Correction

- **It's important to recognize that perceptions can be influenced by cognitive biases, societal conditioning, and misinformation.**
- **Therefore, efforts to promote fairness, equality, and understanding in society often involve challenging and reshaping perceptions to reduce bias, discrimination, and inequality.**
- **Public education, diversity and inclusion initiatives, and media literacy programs are examples of efforts aimed at shaping more equitable perceptions within society.**
- **Pedagogical approaches and technologies influencing how engineering education is delivered and perceived.**
- **National/International level planning and identification of requirements of skills and professions with a balanced approach**

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Perception Correction

- **International Collaboration (PEC needs to be flexible to transfer the credits from a foreign university to local university)**
- **Freedom to DAI (The regulatory bodies should not involve into the policies too much: the best will automatically survive) with some guarantees of the rights of the students and faculty**
- **The DAI and PEC policies should be driven by future planning and ground realities, not by cognitive biases, societal conditioning, and misinformation.**
- **Every industry must have an R&D department. PEC can enforce the establishment of such a department with some incentives from the government. Such departments could be allowed to participate in HEC grants.**
- **A framework such as R&D department to keep the door of innovation would have far-reaching effect on the engineering education as well as quality of engineering professionals.**

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Conclusion

- **Perception of Engineering Education is very negative among the faculty and the students.**
- **The perception needs correction.**
- **The correction will be driven by policies and realization of ground realities by the all the stakeholders.**
- **Regulatory bodies should take steps to improve the perception by correcting their policies.**
- **International collaboration should be encouraged and patronized by PEC/HEC.**
- **Establishment of R&D departments and companies would be another step in the right direction.**