

## Motivating the next generation for social responsibility

Anette Kolmos and  
Milan Vestergaard  
Aalborg University, DK

### Anette Kolmos

- Professor and Chair holder of the UNESCO Chair in PBL in EE
- Born 1956 – 55 years old
- Past president of SEFI – European Society of Engineering Education 2009-2011



### Milan Vestergaard

- Stud.Polyt (Student of Science?) – Global Business Engineering, 6th semester, AAU
- Born 1988 – 23 years old
- Board member of the Student Society, Aalborg University
- Student representative, Academic Council, AAU
- Function: To present a student view of PBL, both personal and from a general student-political point of view



## agenda

- Two generations – two stories
- New teaching and learning models
- What is the learning?
- How do we proceed??

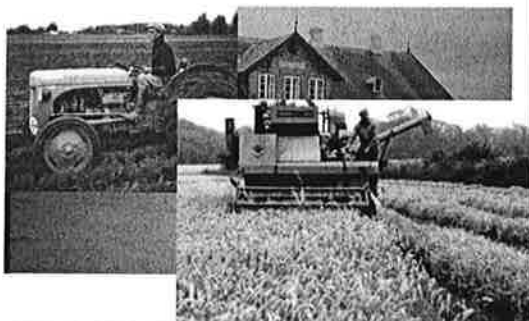
### Story of mobility 1961



### We moved a language



### Loss of labour – from seven farmhands to one



### Globalisation



**Globalisation**



**Globalisation and media**

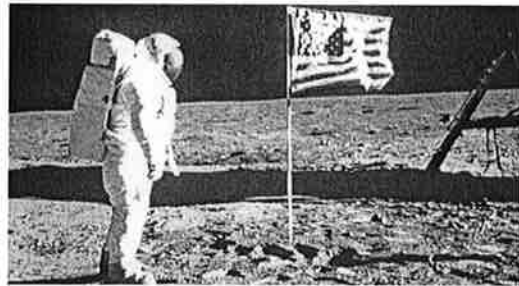


Broadcasting a maximum of 2-3 hours per day

**Kennedy 22 November 1963**



**21 July 1969**

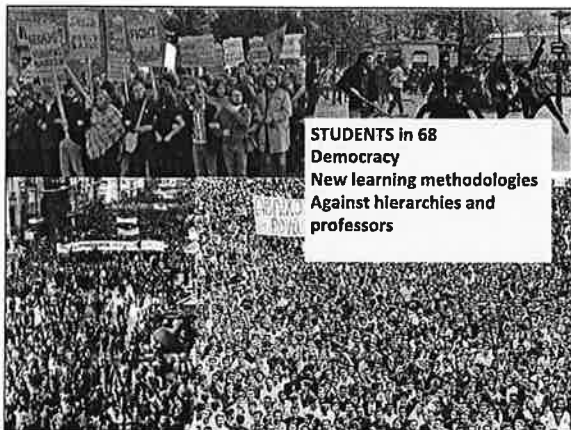


### Sustainability ..... ???



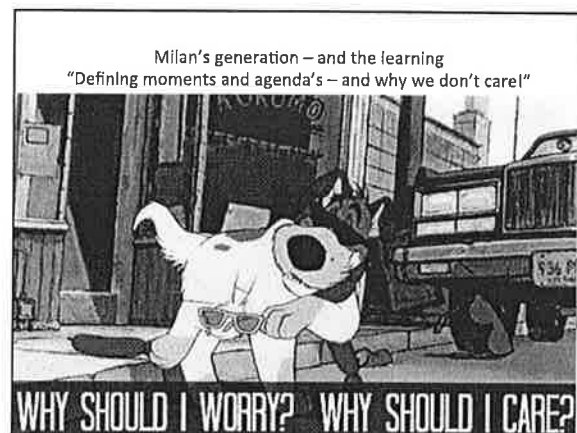
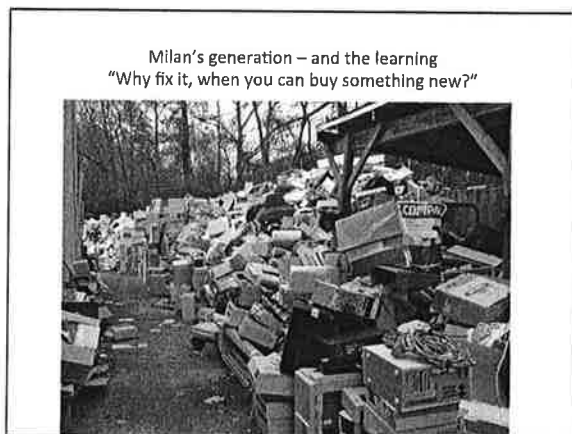
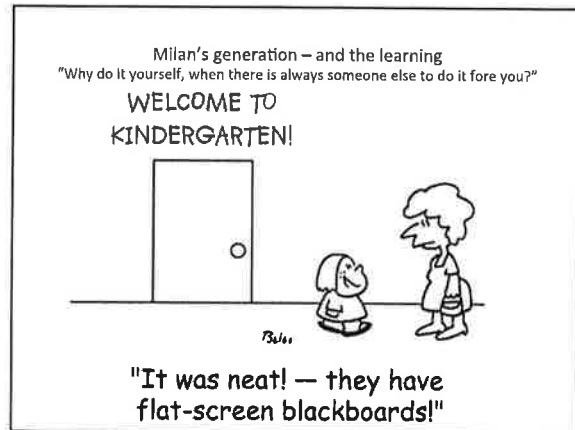
DDT (from its trivial name, dichlorodiphenyltrichloroethane) is one of the most well-known synthetic pesticides. wikipedia

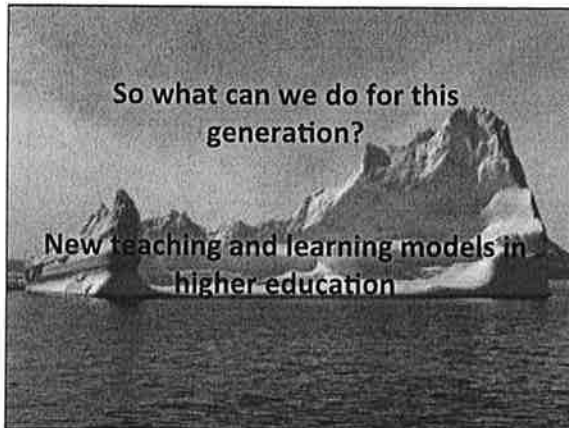
### Professor in EE



### Milan's generation – and the learning

- Generation "ME"
  - Me for millennium – Me for self-centered!
- A spoiled generation
  - The generation that never learned to fix anything!
- A "Disney" Generation
  - we believe that everything will be all right, no matter what we do!





### History of PBL

- Problems form the focus and stimulus for learning
- Problems are the vehicle for development of problem solving skills
- New Information is acquired through self directed learning
- Student-centred
- Small student groups
- Teachers are facilitators/guides
- Problem orientation
- Interdisciplinarity
- Exemplary learning
- Participant directed
- Teams or group work

### McMaster/Maastricht/Medicine model

- Thematic blocks
- group based
- based on case studies
- interdisciplinary
- individual exam

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### Aalborg model

#### 1: Project based/organised

- **formulation of objectives and problems**
- **unique and complex tasks**
- **active searching and writing process which may lead to deeper understanding**
- **teamwork**
- **deadlines**

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**Aalborg model**  
**2: Problem based**

|  |  |
|--|--|
| <b>Problem based – open</b>  | <b>Discipline based – narrow</b>   |
| <ul style="list-style-type: none"><li>• methodical objectives</li><li>• problem based themes –</li><li>• ill defined problems</li><li>• learner directed</li><li>• interdisciplinary</li><li>• exemplarity</li></ul> | <ul style="list-style-type: none"><li>• subject objectives</li><li>• methodological/discipline themes</li><li>• subject understanding</li><li>• “Well defined problems”</li><li>• learner and teacher controlled</li><li>• disciplines</li><li>• exemplarity</li></ul> |




**One project per semester**


**Diversity of physical facilitation**  
**More than 1200 rooms for teams**



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**Self organised groups**  
**Project management**



50% of the time

**Courses, lectures, seminars**

**Many different types of projects**

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**Facilitation and group dynamics**

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**PBL- learning principles**

**Learning**  
 Problem based and/or Project  
 Contextual learning  
 Activity based

**Social**  
 Participant directed  
 Team based learning

**Content**  
 Theory-practice/context  
 Interdisciplinary learning  
 Exemplary learning

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### PBL Cases

- 3 Cases:
  - “The impossible project” 1<sup>st</sup> semester
    - The first project, and learning PBL
  - “The Traditional” - 3<sup>rd</sup> semester
    - How a project can combine numerous subjects into something more interesting
  - “The independent” – 5<sup>th</sup> semester
    - When a semester project becomes your own


### PBL Cases “The impossible”

- **Project:** Understand, Map and try to improve business processes at Printca A/S (circuit boards manufacturer)



- But i don't know anything about circuit boards – or manufacturing?

### PBL Cases “The impossible”




### PBL Cases “The impossible”

- **Result:**
  - Understanding the importance of scope.
  - Understanding how to map a business process
  - Understanding how to make a 100 page report in collaboration with 4 others
  - Giving actual, usable suggestions to the case company
  - Make a (somewhat) academic report
  - ... still not knowing anything about circuit boards!

| Project Name  | Start | End  | Grade |
|---|-------|------|-------|
| 1. The importance of scope  | 2011  | 2012 | A     |
| 2. Understanding how to map a business process                                | 2011  | 2012 | A     |
| 3. Understanding how to make a 100 page report in collaboration with 4 others | 2011  | 2012 | A     |
| 4. Giving actual, usable suggestions to the case company                      | 2011  | 2012 | A     |
| 5. Make a (somewhat) academic report  | 2011  | 2012 | A     |
| 6. ... still not knowing anything about circuit boards!                       | 2011  | 2012 | A     |

### PBL Cases "The traditional"

- **Semester topics:**
  - Product development
  - Marketing
  - Production planning
  - Budgeting
- **Project topic:** Create a fictional manufacturing facility somewhere in the world, that should produce all LEGO mini figures
  - Invent new ways of using the mini figure
  - Market this new product
  - Produce this new product
  - Account for the financing of producing this new product



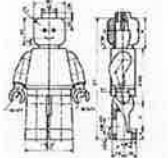
### PBL Cases "The traditional"

Think outside the box!




### PBL Cases "The traditional"

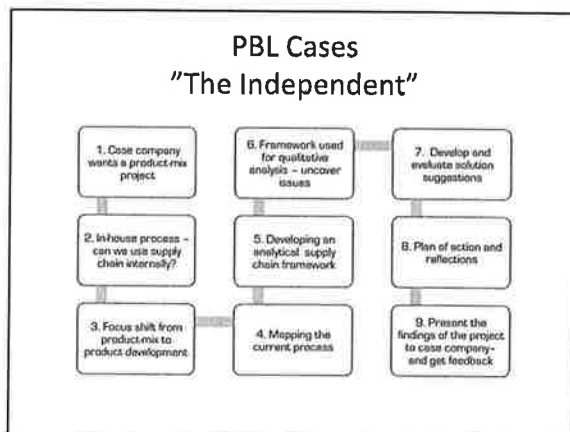
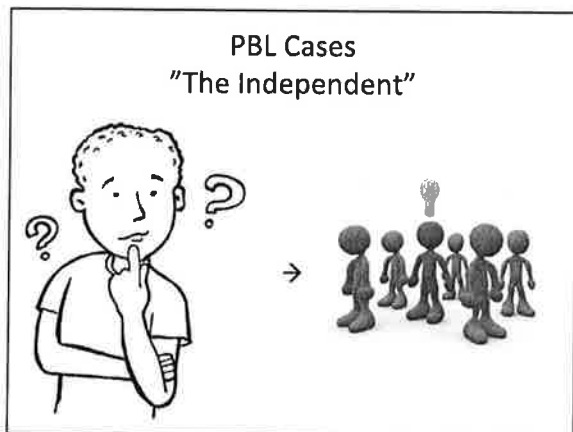
- **Result:**
  - Customize your OWN mini figure
  - New printing technology needed (faster, more adaptable)
  - How can this be done?
    - Still a project that is on-going at LEGO



### PBL Cases "The Independent"

- **Semester topics:**
  - Supply chain management
- **Given project:**





- Problem and project –  
PBL programmes**
- More motivated
  - Deeper learning
  - Increased skills and competences
  - Higher grades
  - Employability increased – relevant skills process skills: collaboration, project management... etc.
  - Higher retention
  - Faster duration
  - Higher salary after ten years from enrollment

- What is the learning?**
- From a research point of view
  - From a personal point of view

## Future

- new generation's lack of concern of sustainability