

# Effectief leren van multimedia

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# Effectief Leren van Multimedia

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CELSTEC  
Open Universiteit

# Multimedia = ?

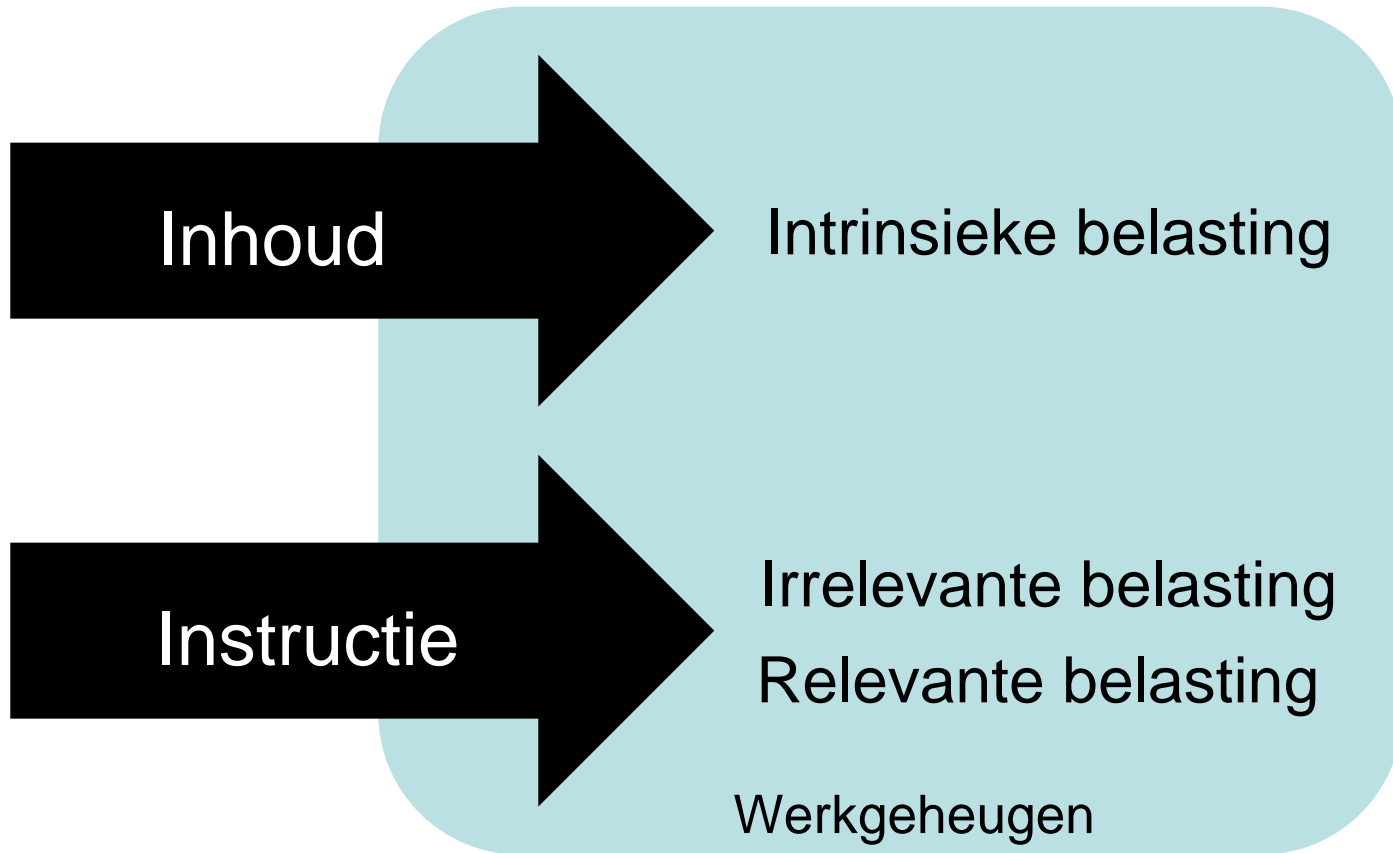
**Verbale informatie +**



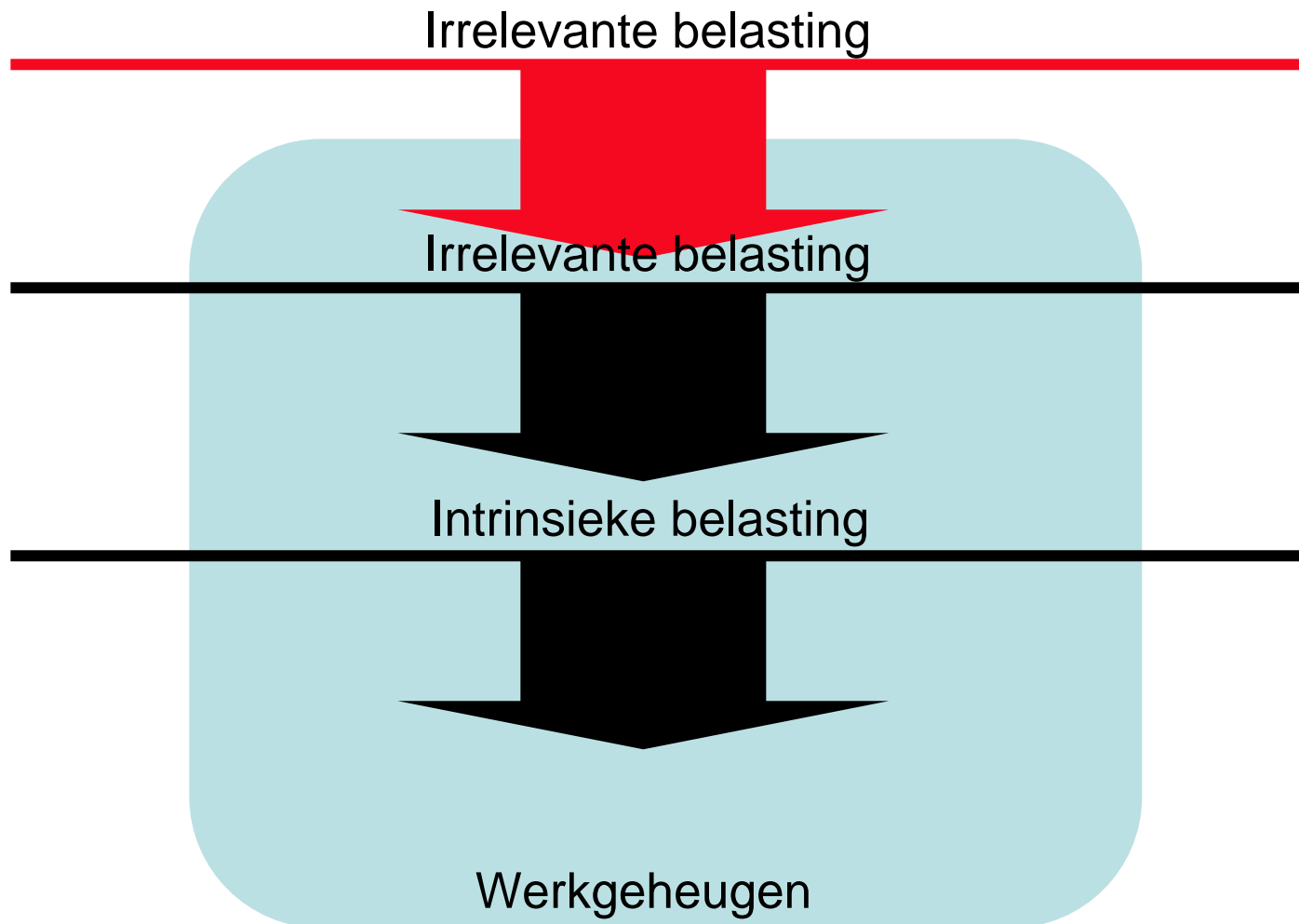
# Werkzeuge

- Digit-span test

# Cognitieve belastingstheorie

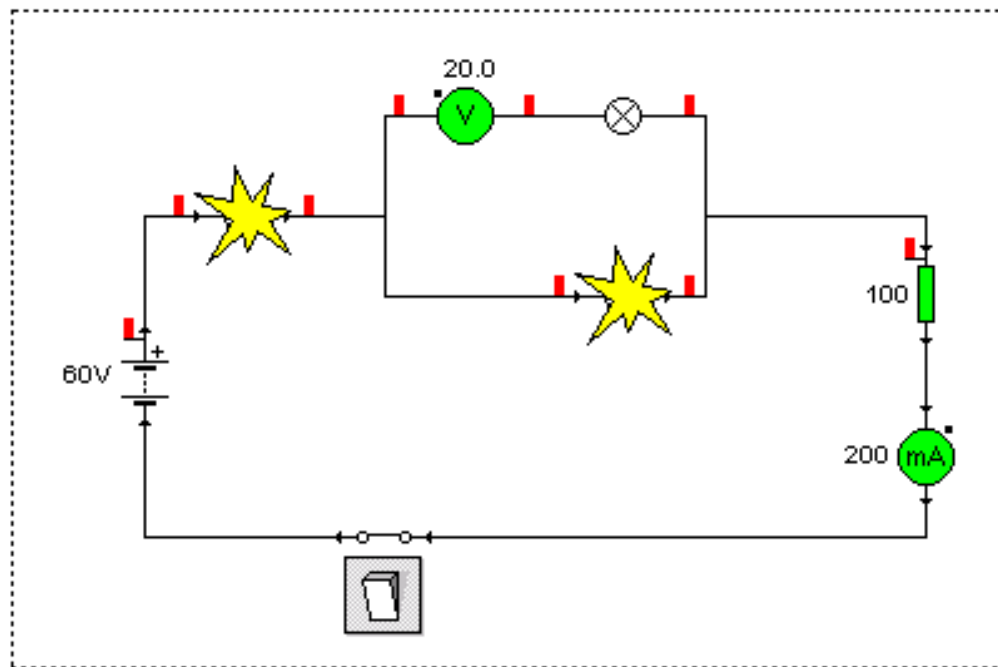
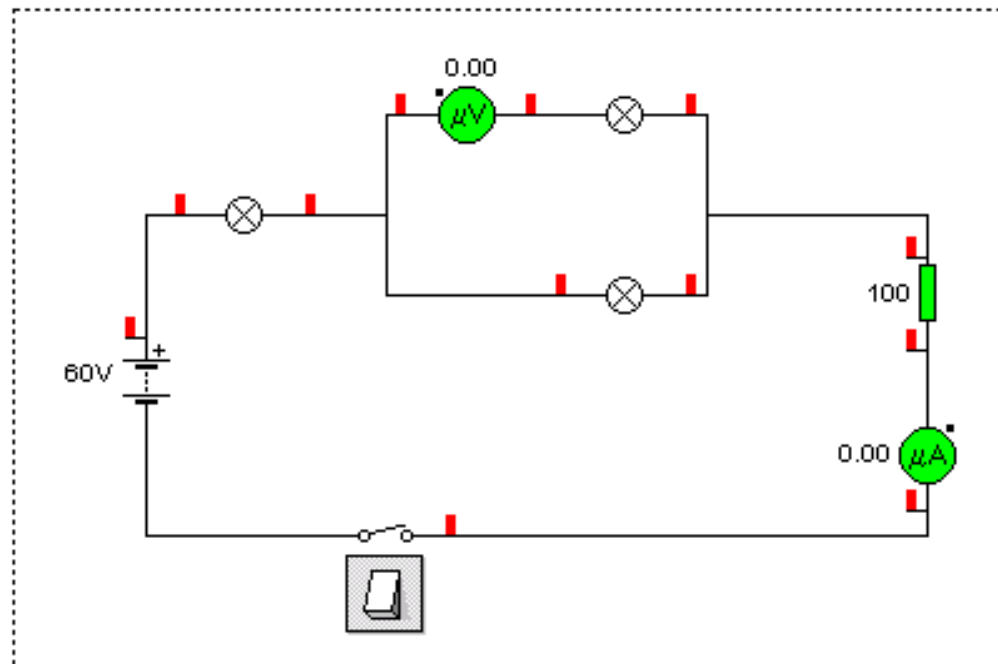


# Cognitieve belastingstheorie



# Inhoud

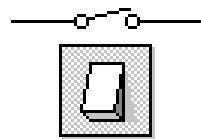
- Managen intrinsieke cognitieve belasting
- Verlagen irrelevante cognitieve belasting



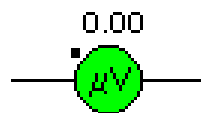




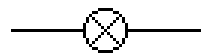
A source of electrical potential (voltage variable). Current flows from the positive pole of a battery to the negative pole.



A switch.



A voltmeter is connected in parallel because electrons cannot pass through this meter.



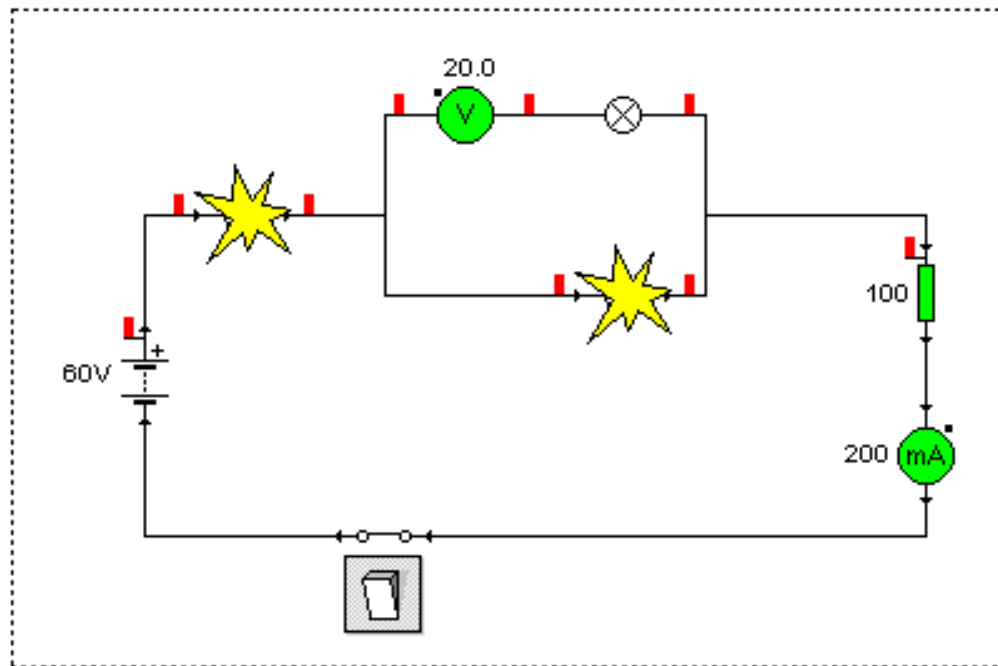
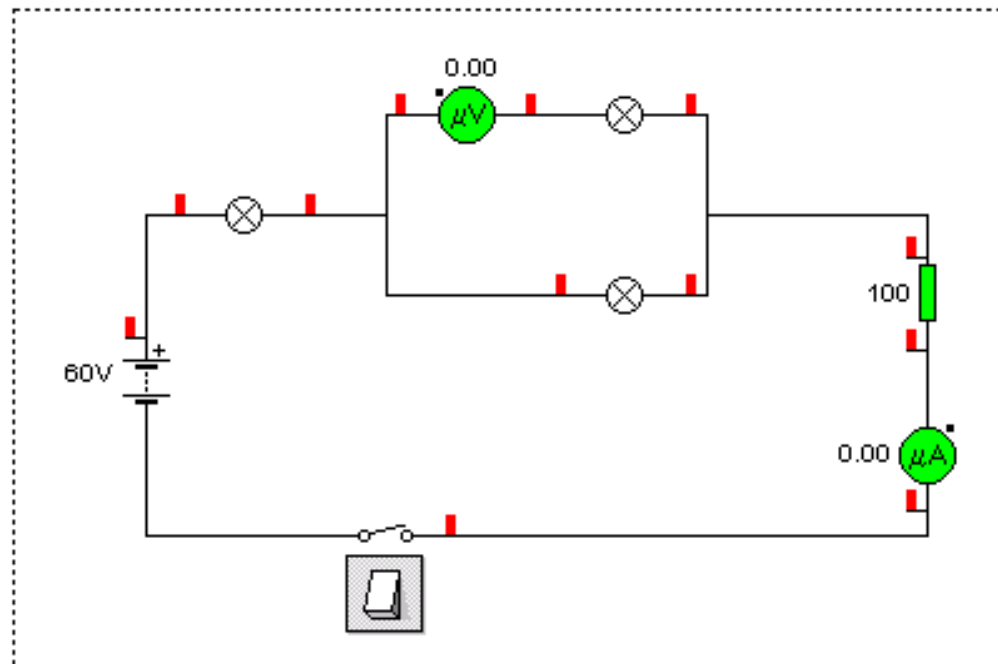
A lamp (9V; 60mA; always the same).



A resistor (100 Ohm; variable).



An ammeter is connected in series because this meter has no resistance.



# Voorbeeld

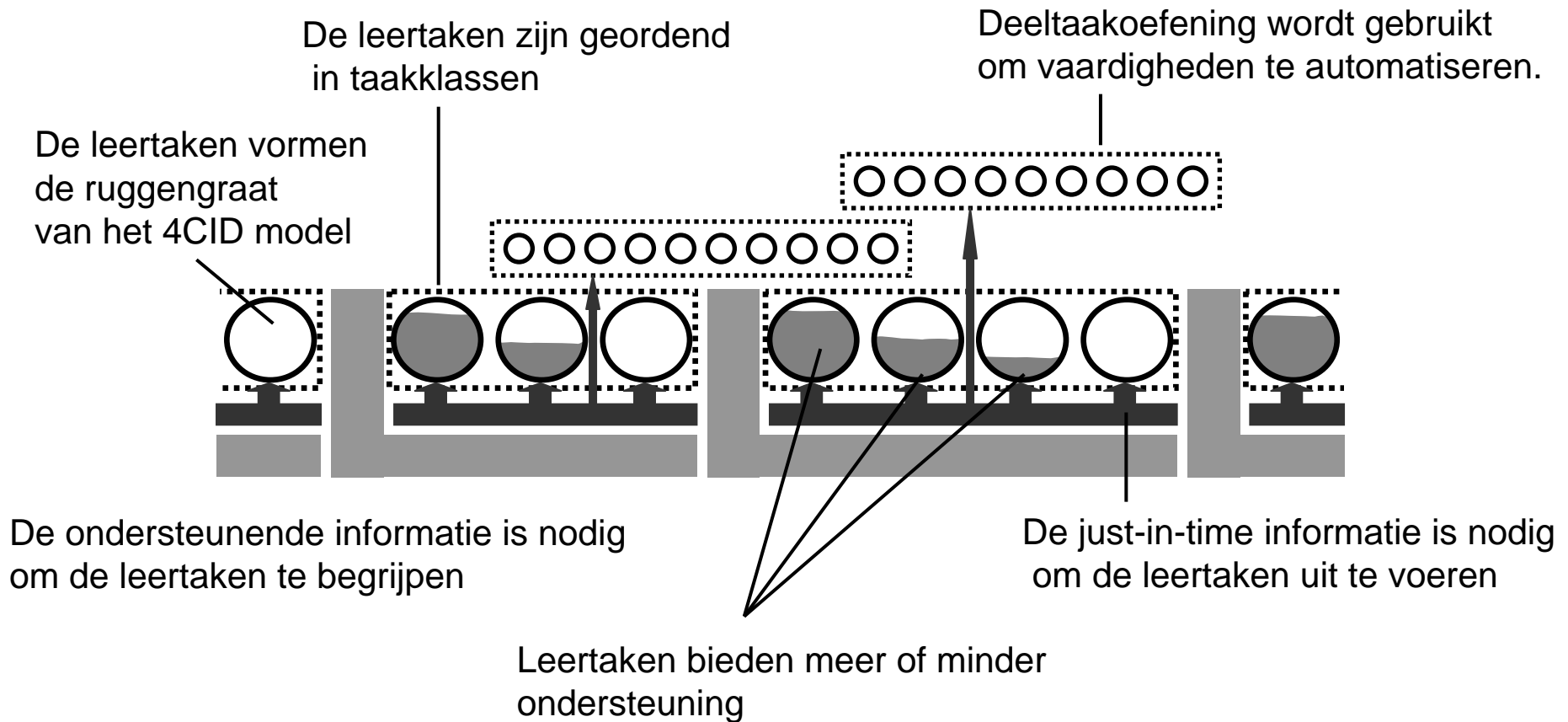
- Vrouwen

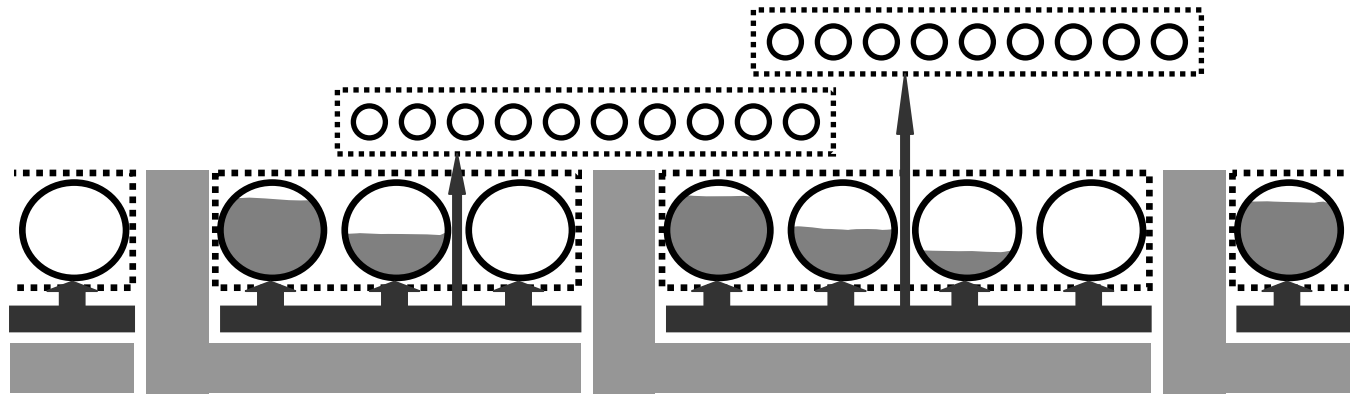
<http://youtu.be/O5Y2fsDiNHk>

# Pretrainingsprincipe & Segmentatieprincipe

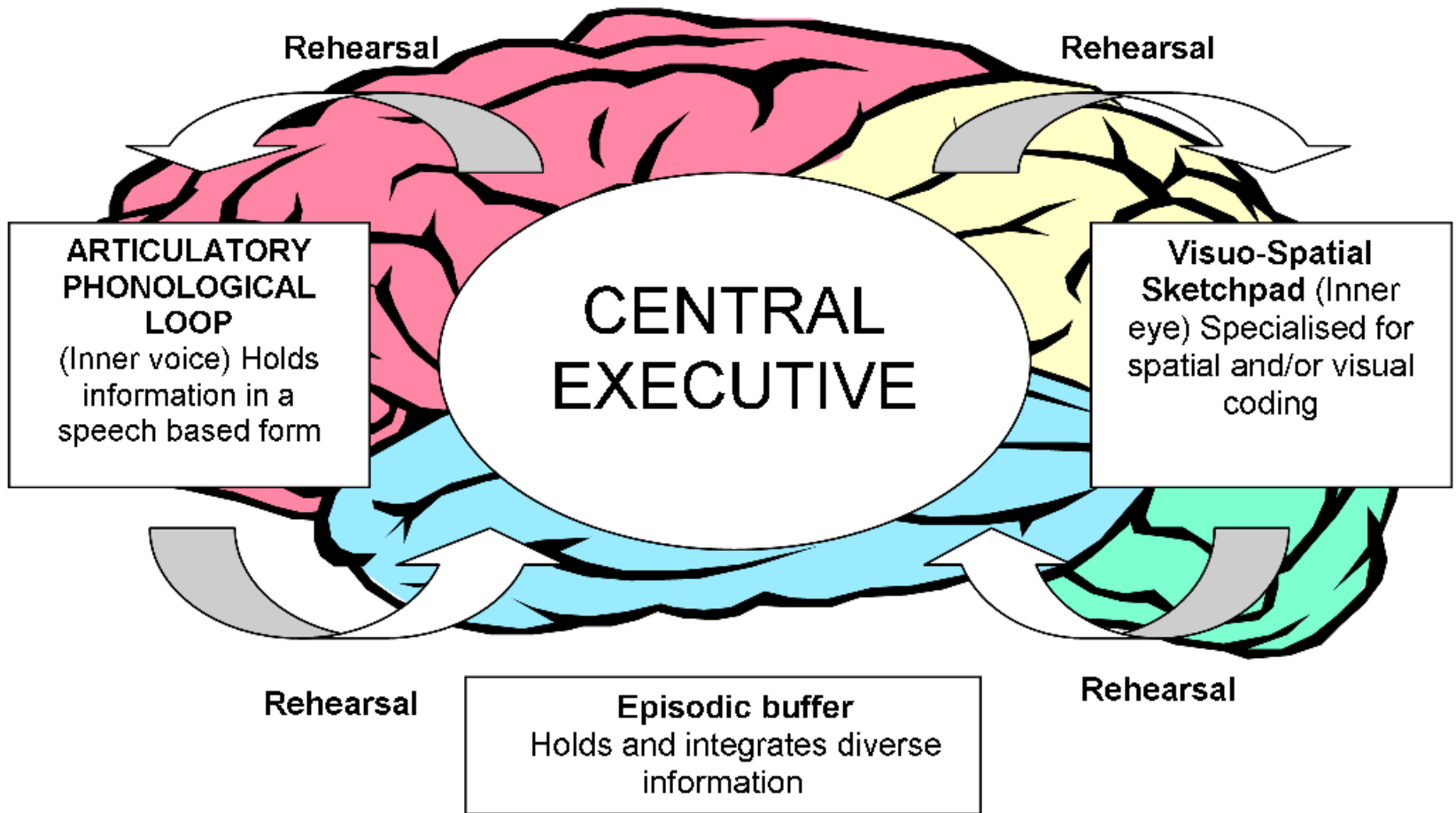
- Managen van de intrinsieke load
  - Probleem: simultane verwerking van complex materiaal
- Pretrainingprincipe
  - Oplossing: seriële verwerking van complex materiaal
  - Resultaat: Schema constructie in verschillende stappen
- Segmentatieprincipe
  - Oplossing: gepersonaliseerde verwerking van complex materiaal
  - Resultaat: Ondersteuning organisatie en integratie van nieuwe informatie

# Het 4 componenten instructie ontwerp (4CID) model – van Merriënboer, 1997





# Modaliteitsprincipe



# Modaliteitsprincipe

- Managen van de intrinsieke load
  - Probleem: simultane verwerking van complex materiaal
  - Oplossing: gebruik maken van de fonologische lus
  - Resultaat: ‘vergroting’ van het werkgeheugen



# Voorbeeld 1

- DWDD

<http://www.youtube.com/watch?v=3tAwM5w4-AI>

# Voorbeeld 2

Schoolbord



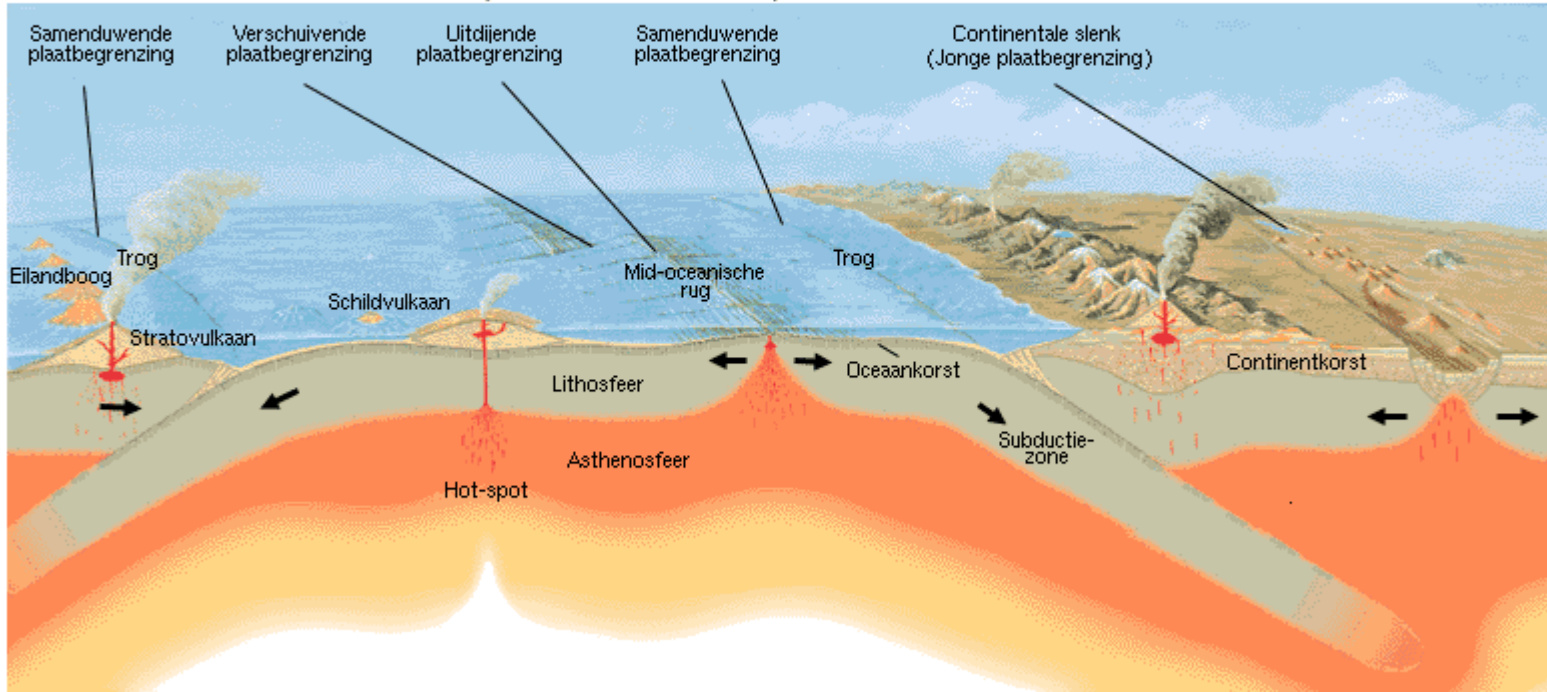
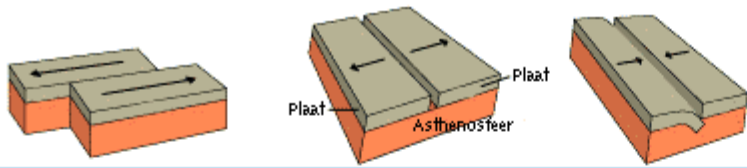
Stoel

Tafel

Prullenbak

# Redundantie principe

- Verlagen irrelevante cognitieve belasting
  - Probleem: verwerken van overbodige informatie
  - Oplossing: verwijderen overbodige informatie
  - Resultaat: verlaging cognitieve belasting
- Expertise reversal effect



# Platentektoniek



**FOKKE & SUKKE**  
 ZIJN GETIPT DOOR HUN WETENSCHAPPELIJK BUREAU



# Coherentieprincipe

- Verlagen irrelevante cognitieve belasting
  - Probleem: verwerken van overbodige informatie
  - Oplossing: verwijderen overbodige informatie
  - Resultaat: verlaging cognitieve belasting

# Voorbeeld

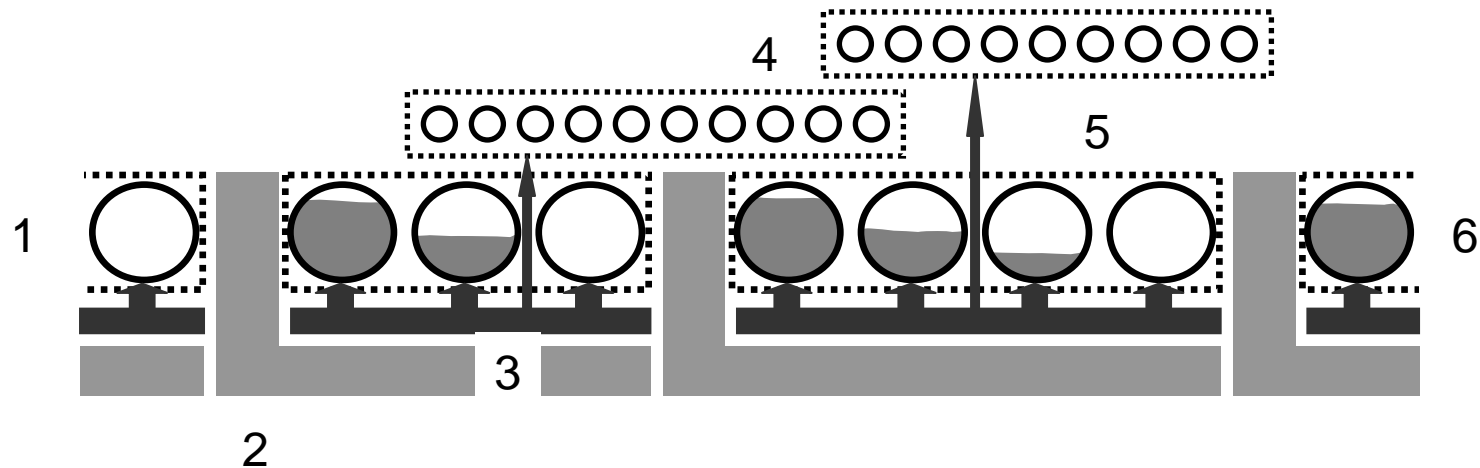
- Oververhitte motor

<http://www.youtube.com/watch?feature=endscreen&NR=1&v=hzZD5SbTjR8>

# Signaleringsprincipe

- Verlagen irrelevante cognitieve belasting
  - Probleem: overbodige informatie kan niet geschrapt worden
  - Oplossing: highlighten van informatie
  - Resultaat: verlaging cognitieve belasting

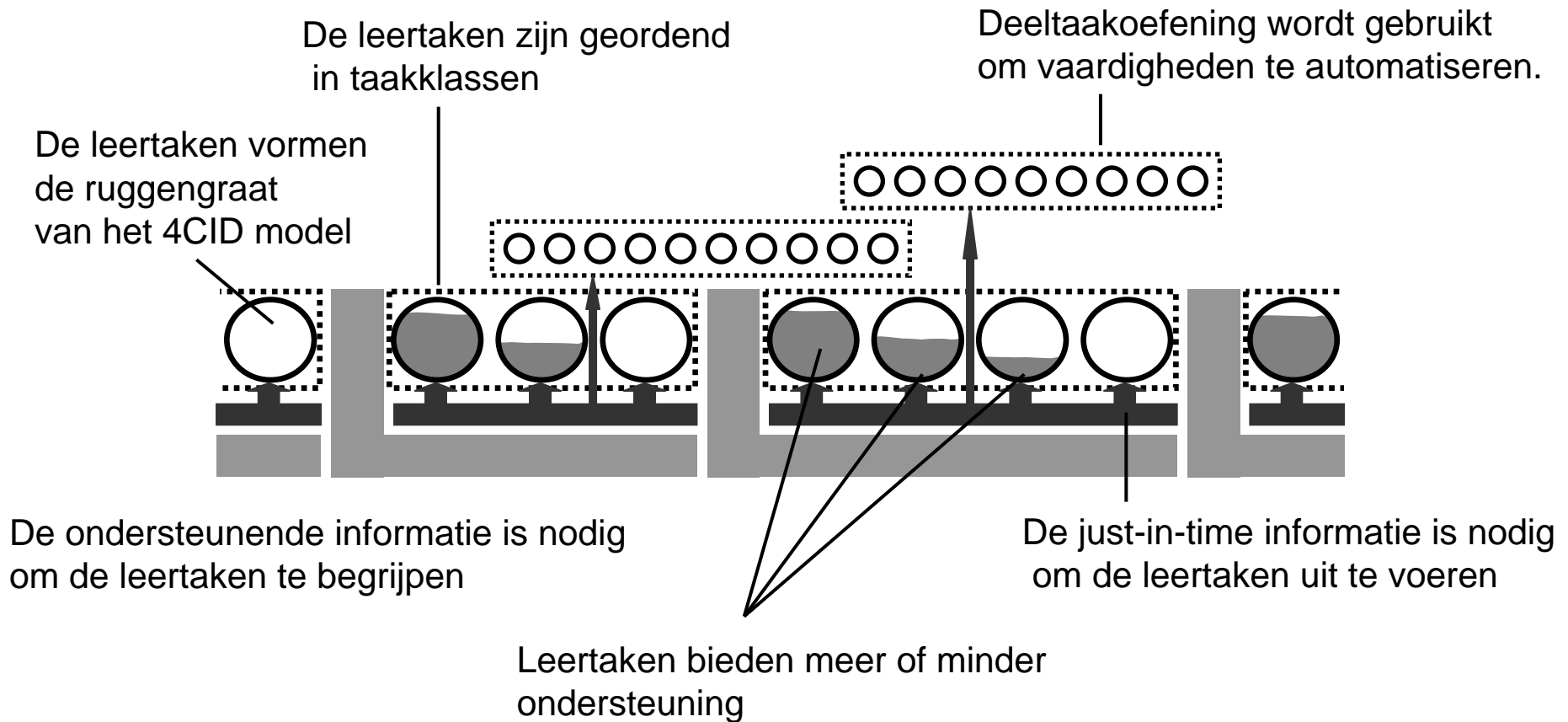
# Het 4 componenten instructie ontwerp (4CID) model – van Merriënboer, 1997



1. De leertaken vormen de ruggengraat van het 4CID model.
2. De ondersteunende informatie is nodig om de leertaken te begrijpen.
3. De just-in-time informatie is nodig om de leertaken uit te voeren.
4. Deeltaakoefening wordt gebruikt om vaardigheden te automatiseren.
5. De leertaken zijn geordend in taakklassen
6. Leertaken bieden meer of minder ondersteuning



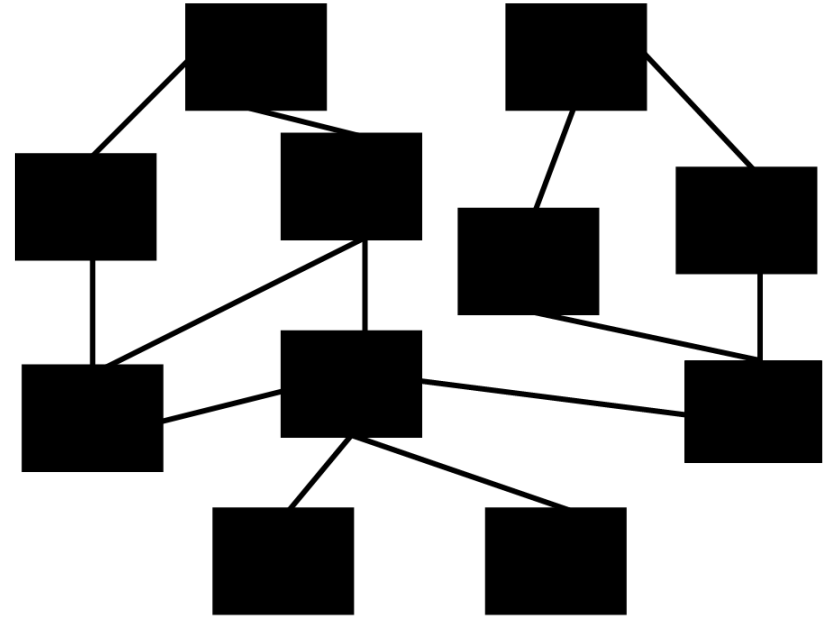
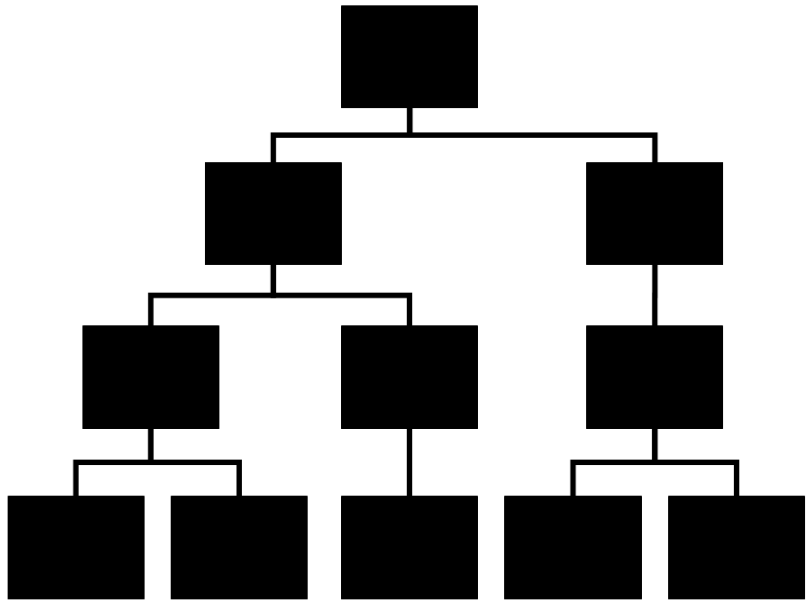
# Het 4 componenten instructie ontwerp (4CID) model – van Merriënboer, 1997



# Ruimtelijke *split-attention* principe

- Verlagen irrelevante cognitieve belasting
  - Probleem: onnodige visuele zoekprocessen
  - Oplossing: integreren plaatje en verklarende tekst
  - Resultaat: verlaging cognitieve belasting





# Temporeel *split-attention* principe

- Verlagen irrelevante cognitieve belasting
  - Probleem: onnodige herhaalprocessen in het geheugen
  - Oplossing: integreren plaatje en verklarende tekst
  - Resultaat: verlaging cognitieve belasting

# Discussie

- Kritiek
  - Duur experimenten

# Discussie

- Kanttekeningen
  - Multimedia
  - Multimedia & motivatie
  - Multimedia & leerstijlen
  - Pedagogische agenten
  - Multimedia leeromgevingen

Bedankt voor uw aandacht