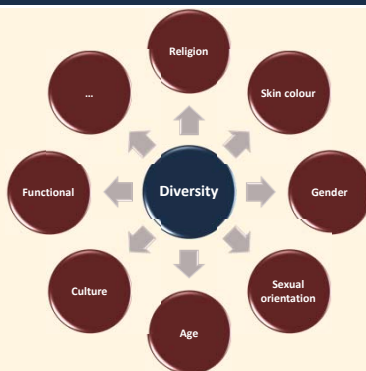


Functional Diversity

José Luis Fuertes, Loïc Martínez

The diversity concept

Human Diversity



Functional Diversity

Definition

- People whose bodies or organs do not work in the usual way

Examples

- A person with quadriplegia moves in a wheelchair
- A blind person is guided by sound and touch
- A deaf person communicates using sign language

Reasons

- Illness
- Accidents
- The environment
- Human nature: we all evolve

Diversity and Discrimination

Discrimination

- Society discriminates against anyone who is different
- Discrimination: prejudicial treatment

Social evolution

- Guided by the fight against discrimination
- Examples:
 - Discrimination against women
 - Racial discrimination
 - Religious discrimination
 - Sexual orientation discrimination
 - Cultural discrimination

Discrimination on the grounds of functional diversity

Reality

- Our society discriminates against people with disabilities
- Society is built without considering functional diversity... but we all change over time
- This limits equal opportunities and equality of participation

Examples

- A person in a wheelchair cannot go to all restaurants
- A deaf person cannot go to all cinemas
- A blind person cannot go shopping alone

Functional Diversity

Functional Diversity Classification

Sensorial

Sight

Hearing

Touch

Motor

Mobility

Dexterity

Cognitive

Understanding

Language

Learning

Sight

- Blind people
- Diversity in visual acuity
- Diversity in the perception of images
- Diversity in color perception



Sight

Myopia



Presbyopia



Macular degeneration



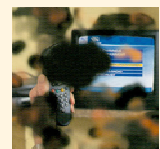
Glaucoma



Cataracts



Diabetic retinopathy



Hearing

- People with profound hearing loss
 - ▣ Prelinguistic
 - Sign language users
 - ▣ Postlinguistic
 - ▣ Diversity in volume perception
 - ▣ Diversity in frequency perception
- ▣ Potential problems with reading and writing skills!



Touch

- Diversity in sensitivity to:
 - ▣ Pressure
 - ▣ Temperature
 - ▣ Pain
- Contact allergies
- Inability to touch



Mobility

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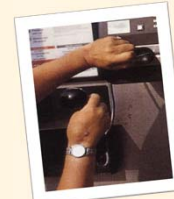
- Total inability to walk
 - ▣ Wheelchair users
- Walk with difficulty
 - ▣ Walkers
 - ▣ Crutches
 - ▣ Sticks



Dexterity

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- People who cannot use their hands
- People with tremors
- Ability to grasp
- Ability to rotate the wrist



Understanding

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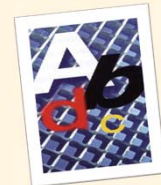
- Reading comprehension difficulties
- Listening difficulties
- It is hard to diagnose what is wrong with these people
- Easy reading texts



Language

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- Language acquisition
 - ▣ Immigration
- Functional illiteracy



Learning

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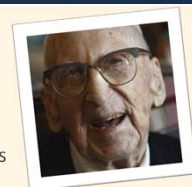
- Learning difficulty
- Learning retention difficulty



Ageing

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- As we get older
 - ▣ Our sight gets worse
 - ▣ Our hearing gets worse
 - ▣ We get slower
 - ▣ We find it hard to remember things
 - ▣ We struggle to learn
 - ▣ ...
- ▣ And we do not want to admit it!

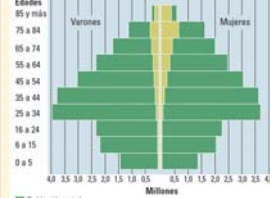


Diversity Statistics

INE, 2008

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Pirámides de población



3,85 millones de personas con discapacidad

En 2008 hay 3,85 millones de personas residentes en hogares que afirman tener discapacidad o limitación. Esto supone una tasa de 85,5 por mil habitantes.

Tipos de discapacidades

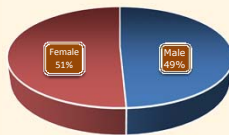
(Personas de 6 y más años con discapacidad)

	Tasas por mil hab.	
	Varones	Mujeres
Total	72,6	106,3
Movilidad	42,6	77,5
Vida doméstica	29,5	69,2
Autocuidado	31,3	55,3
Audición	21,9	28,4
Visión	17,8	28,4
Comunicación	16,3	18,6
Aprendizaje y aplicación de conocimientos y desarrollo de tareas	12,7	17,1
Interacciones y relaciones personales	14,0	15,4

IMERSO, 2013

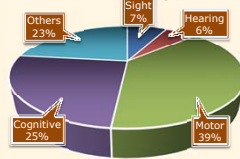
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Disability grade > 33%

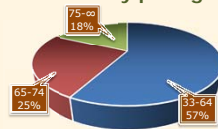


Spain, 2013	Population	47,129,783
Disability grade > 33%	Male	1,263,879
	Female	1,301,014
	Total	2,564,893

Disability type



Disability per age

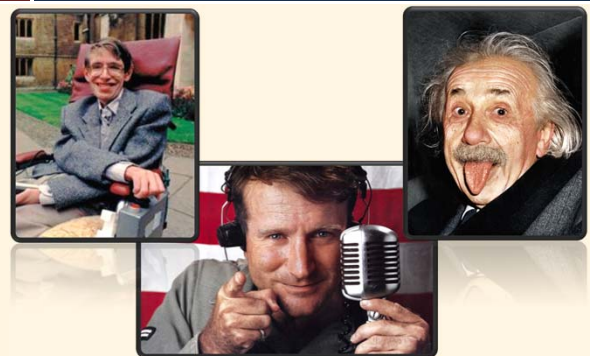


Outcomes from diversity

Gifts from diversity



Gifts from diversity



The result of normality

25

- Switzerland...
- ▣ Cuckoo clock



Typewriter

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- Pellegrino Turri
- ▣ 1808
- ▣ Visual diversity



Telephone

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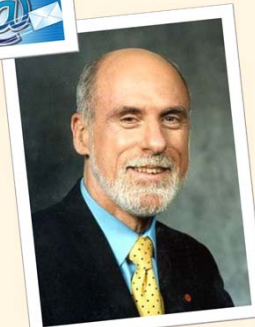
- Antonio Meucci
- ▣ 1857
- ▣ Mobility diversity
- Alexander Graham Bell
- ▣ 1876
- ▣ Hearing diversity



E-mail

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- Vinton Cerf
- ▣ 198x
- ▣ Hearing diversity



Text to Speech

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- Ray Kurzweil
- ▣ Visual diversity



Speech Recognition

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- Mobility and dexterity diversity



Icon Interfaces

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- For augmentative communication
 - ▣ Speech diversity

