

A control room with multiple computer monitors displaying data and charts. The monitors show various graphs, tables, and diagrams, likely related to mining operations. The room is dimly lit, with the primary light source being the screens. A person's hand is visible in the foreground, interacting with a control panel that includes a joystick and several buttons.

Applying universal and equitable design principles for equity and inclusion in mining

Authors: Yhana Lanwin

Evolution of design principles



UNIVERSAL DESIGN

- Equitable use
- Flexibility in use
- Simple and intuitive
- Perceptible information
- Tolerance for error
- Low physical effort
- Size and space approach for use



INCLUSIVE DESIGN

- Inclusive design is good design
- People at the heart
- Acknowledge diversity
- Offer choice
- Flexibility over time
- Enjoyable use



EQUITABLE DESIGN

- Clarity in language, goals and measures
- Recognise personal biases and heuristics
- Identify situational challenges
- Address system inequality
- Seek out points of exclusion
- Extend the solution to everyone

Day in the life scenario 1: Mining operations



MALE OPERATOR



FEMALE OPERATOR

Wake up and get ready	10 minutes	20 minutes – put on creams for chaffing and band-aids to manage sores from ill-fitting workwear and gear
Bus to site	Uncomfortable – seat too small	Uncomfortable – as person in next seat in personal space
Pre-start / Toolbox	Difficult to follow – font small, writing illegible	Difficult to follow – Supervisor reading script in monotone
Operate equipment	No adjustment required	BYO back support. Minor hand pain from size of gears
Activity	Gym	Yoga – in room as no comfortable space
Dinner	Vegetarian – 1 main choice only	Many options – varying quality
Shower routine	10 minutes – BYO products	20 minutes. BYO showerhead and products as water irritating skin
Sleep	Poor – Standard single and double bed length of 188cm is too short	Average – Bed and linen quality and noise from air conditioner impact sleep

Day in the life scenario 1: Mining operations

DESIGN PRINCIPLE

CHANGES



Perceptible
information

Recognise variation in information processing, reading level and physical ability (sight, hearing)
Re-design toolboxes with clear goals, essential messaging visual and auditory supports



Tolerance for
error

Recognise that women have more sensitive skin than men
Adjust water quality standards or upgrade shower heads for all



Size and space
approach for use

Recognise that the 'average' Australian male no longer fits in a Single or Double bed based on length
Set minimum standard as King Single

Day in the life scenario 2: Control room Supervisor

Conference
proceedings
Page 13

- 13% of working age Australians have a disability
- 20% of Australian experience mental health conditions
- 30% of solo parents living below the poverty line

WORK DESIGN RISKS

SUPERVISOR 1

Mental health condition
Fatigue
Anxiety
Family issues
Burnout

SUPERVISOR 2

Physical disability –
Back problems
Physical injury
Family issues
Substance abuse

SUPERVISOR 3

Low socio-economic
background
Fatigue
Social isolation
Mental health

Day in the life scenario 3: Office worker

Conference
proceedings
Page 15

PERSON 1
Neurodivergent








PERSON 2
Carer



- 20-40% of Australians are neurodivergent – Autism, ADHD, Dyslexia etc.
- 10% of Australians are carers – looking after people with disabilities or older people

Design process

-  **1 Identify user groups** – population demographics, employee data
-  **2 Research** – standards, guidelines, leading practice, studies
-  **3 Co-design** – *‘nothing for us without us’*
-  **4 Options analysis** – ROI, impact prioritisation
-  **5 Measurement and feedback** – leading, lagging indicators, error rates, incident data, workforce stability etc.



Contact

Yhana Lanwin

yhana@sansprejudicesolutions.au

+61 423 132 791

**SANS
PREJUDICE
SOLUTIONS**