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# Designing for people that are WELL old

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## **Abstract**

In the UK, inclusion is an important topic on different social levels and the need for change in government, education and industry to reduce social exclusion is recognised. Despite a range of datasets and methods having been created to help minimise exclusion, the topic of inclusion and, in particular, inclusive design is not yet covered in education i.e. the Design and Technology curriculum. Engaging school pupils with the topic has the greatest potential to bring about long-term change towards a more inclusive society. This paper reports on the outcomes of several design workshops on inclusivity. The workshops were aimed at, and conducted with, key stage 3 and key stage 4 pupils. The overall aim of the workshop was to establish the impact that current inclusive design methods have on the mindset of the pupils. The methods used in the workshop included impairment simulators and case studies. An assessment at the beginning and end of the workshop evaluated changes in attitude. A total of 10 workshops were conducted with over 150 pupils. It was found that such methods do provide insights that result in solutions that address inclusive issues. This paper concludes with the view that inclusive design methods can impact and change the mindsets of pupils as young as 11 years old. However, if a truly inclusive society is to be achieved, there is a need to instigate change in the overall national design ethos i.e. focusing more on principles than practice and preventing the immediate leap to solutions rather than identifying the true nature of the problems.

## **Introduction**

The Qualifications and Curriculum Development Agency identifies three key aims to the Key Stage 3 and 4 curriculums. They are for all young people to become:

- Successful learners who enjoy learning, make progress and achieve;
- Confident individuals who are able to live safe, healthy and fulfilling lives;
- Responsible citizens who make a positive contribution to society [1].

The agency goes on to describe the importance of Design and Technology in meeting those aims and, in particular, that students should “learn to think creatively and intervene to improve the quality of life”[1]. In order to comply with this requirement, students should be encouraged to “combine practical and intellectual skills with an understanding of aesthetic, technical, cultural, health, social, emotional, economic, industrial and environmental issues”[1]. These are not new concepts to ergonomists who have been striving for the recognition of user capabilities within the design process.

Importantly, as part of being 'responsible citizens' these Key Stage 3 and 4 learners are required to "take account of the needs of present and future generations in the choices they make"[1]. This tessellates completely with the demands of modern design within the changing population demographic. Our citizens are becoming older and, in many cases, fitter and more demanding. It is a poor designer who fails to accommodate the needs of the elderly user into their designs partly because of the moral imperative but also for commercial success. It has been reported that the 'grey pound' is the strongest currency [2] and this is likely to continue to grow. Old people are wealthy people and modern old people like to spend their wealth.

Unfortunately, the elderly population are not perceived as glamorous and hence are often considered uninspiring and undeserving of quality design solutions. Not only is this perception false but also insulting and commercially dubious. However, it is a strong perception and it will require considered and concerted efforts to change it. For this reason, the most appropriate place to start is where the perception is most entrenched and where changes can have the greatest effect: young designers.

This programme of work has set out to see if it is possible to change young people's perception, behaviour and approach to design with a small budget, limited resources and during a short period of time. Using out of school workshops of only one hour duration a programme of activities intended to use the participant's language and topics of interest to make empathetic design a fun and engaging activity which would carry with it an important message. This message might then be embedded into future design activities those participants may undertake.

This activity had to take place outside of the conventional curriculum because of the restrictions and structure engendered by the current curriculum, teaching techniques and default to emotional design techniques. By providing empirical experiences and critical thinking it is intended to broaden the thinking of future designers such that inclusive design becomes the convention rather than a separate activity.

#### *Why focus on the physical aspects?*

People can become excluded from using everyday products for a variety of reasons (e.g. economic, cultural, social, lack of knowledge and experience, overly complicated instructions/designs) [3]. However, the most common form of exclusion experienced by older adults is when there is a mismatch between the product demand and user capabilities [4]. More specifically, the capability demand of using the product is greater than the capability of the user, resulting in them being unable to access the product to achieve their goal [5]. The reason this form of exclusion is common place amongst older adults is because they have significantly reduced motor, sensory and cognitive capabilities compared to the rest of the population. This reduction in capability is due to the effects of the ageing process and the higher incidence of medical conditions (disabilities) with age, such as arthritis, or age related Macular Degeneration [6]. Thus, in order for dependency and exclusion to be prevented, designers have to understand and account for the reduced functional capabilities of older adults in their designs [7].

## **Methodology**

A series of one hour workshops were undertaken with engagement from local schools and colleges. These were hosted at a discovery park away from the school environment. Groups of up to 30 students attended the ten sessions with a total count of 150 participants. The workshops consisted of four main components:

- An initial evaluation of the participant's perceptions of the elderly

- An educational component identifying some characteristics of old age
- Some hands on empathy exercises using simulation equipment to emulate old age whilst undertaking everyday tasks
- Reflection of the activities and dialogue on how the participant's perceptions had changed.

The learning outcome was to provide students with an understanding of the effects of ageing and how products evolve according to users' needs and capabilities. Overall, the workshop demonstrates how ergonomics can contribute to the design of successful products, and how ergonomically designed products can lead to having a positive impact on a person's quality of life.

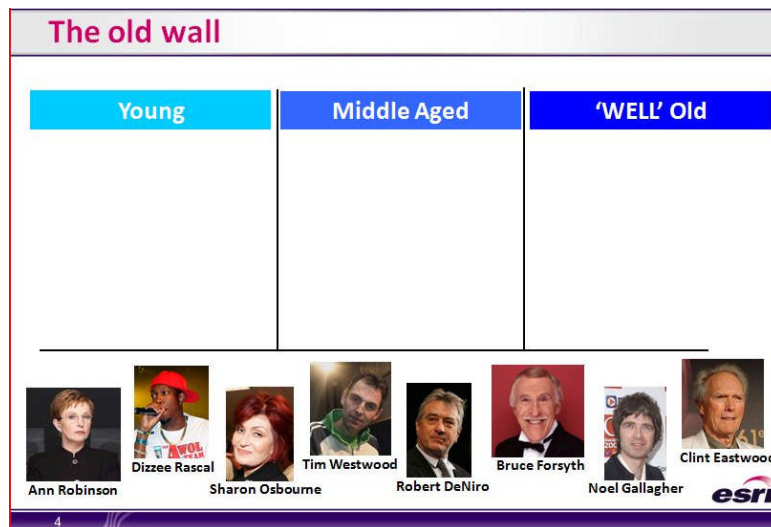
## Initial survey

The initial survey consisted of an open, semi structured dialogue with the host prompting certain questions and exploring responses in greater depth. The key prompts were:

- What age is old?
- What are the characteristics of old people?

## What is well old - The old wall

The students were then introduced to the 'old wall'. This concept, adapted from the BBC series Top Gear (The Cool Wall) required the participants to nominate categories of age for well known celebrities. This process challenged the conventions by which age is categorised. The 'old wall' is shown in Figure 1.



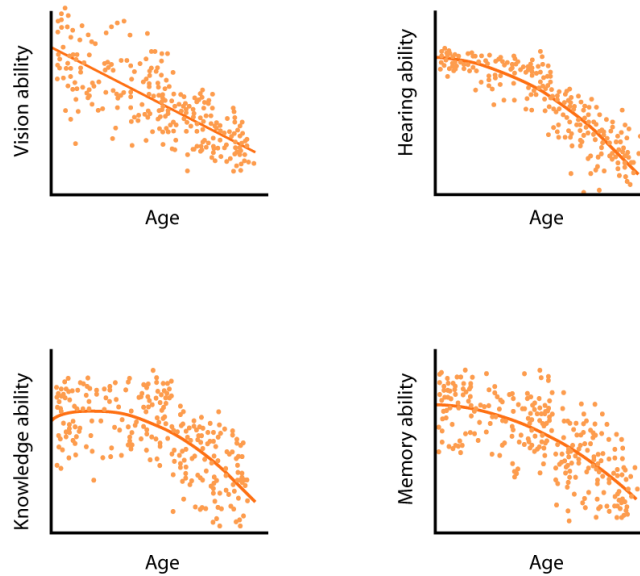
**Figure 1:** The 'old wall' used to engage with perceptions of age.

The ages of the personalities used on the 'old wall' ranged from 25 to 93:

- Dizzie Rascal 25
- Noel Gallagher 43
- Tim Westwood 53
- Sharon Osbourne 58
- Anne Robinson 66
- Robert De Niro 67
- Clint Eastwood 80
- Bruce Forsythe 82
- Kirk Douglas 93

## What happens to us when we get old?

This component of the session used simple graphics to illustrate some common effects of ageing. In particular, the decline in capability was demonstrated as a consistent downward trend in performance in various areas, as shown in Figure 2.



**Figure 2:** Decline in performance associated with ageing [8]

## Why is 65 classed as old?

Students were then given information as to why the age of 65 was considered the point at which old age was considered to commence. This related to it being the point at which humans start to show physical and mental characteristics associated with a long life. Examples including dexterity and visual capability were used.

## What about pathology?

The participants were encouraged to consider the effects of disease and disability associated with ageing. Examples used included arthritis and visual impairment, such as macular degeneration, as shown in Figure 3.



**Figure 3:** Typical vision for an elderly adult suffering from macular degeneration [8]

## Old person taster session

The participants were then given the opportunity to experience the effects of ageing through the use of age simulation equipment. Each student experienced:

- Osteoarthritis simulation gloves
- Glaucoma simulation glasses
- Cataract simulation glasses
- Elderly vision glasses

The simulation tools were used in combination to undertake a number of specific tasks. These tested the visual and dexterity capabilities of the participants in their simulated elderly age. The task included:

- Operation of a timed electronic maze. The maze featured good design criteria and offered a high level of usability. The timing feature gave empirical emphasis to the effects being simulated. This activity is shown in Figure 4.



**Figure 4:** Using the ergonomic maze

- Using a mobile phone to write a text message and dial a randomly drawn 11 digit number.
- Undertake a timed dexterity test with a Purdue peg board, consisting of placing pins in holes as shown in Figure 5.



**Figure 5:** the Purdue peg board task

- Undertake a timed steadiness test where the participant holds a stylus in a range of circular holes which reduce in diameter. The participant continues until they cannot maintain the stylus in the hole for 10 seconds without touching the sides. This activity is shown in Figure 6.



**Figure 6:** Using the steadiness meter.

- Read a range of visual acuity test charts at a fixed distance comparing compromised and uncompromised vision states, as shown in figure 7.



**Figure 7:** Impaired reading activity.

## **Reflective discussion**

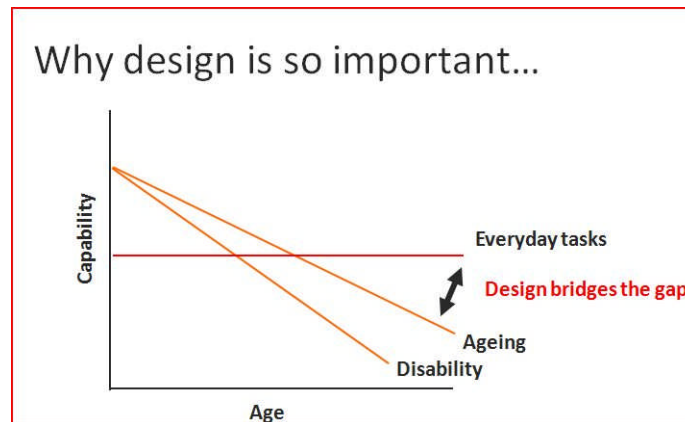
The simulation activities were followed by a reflective discussion exploring any changes in attitudes and predicting revised design criteria that may have resulted from the workshop. This was undertaken in a semi structured fashion with the host offering the following prompts:

- How do you feel about old people?
- What is it like to be old?
- What problems did you experience?

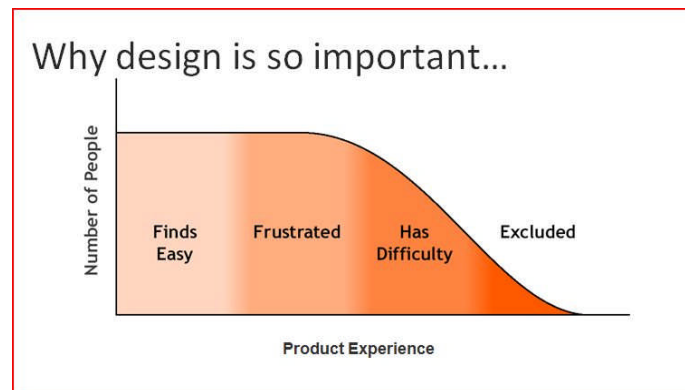
- How can we design products so that the ageing population doesn't have to suffer these problems?

## Why design is important

The final component of the workshop briefly addressed the need for inclusive design in helping users cope with everyday tasks. Two key graphics were used to show how reduced task demand through better design can better match user capabilities and hence reduce exclusion. The images used are shown in Figures 8 and 9.



**Figure 8:** The role of good design in reducing task demand



**Figure 9:** How exclusion occurs in product use [8]

## Results

The results can be broken down into several sections following the workshop activities.

### Initial survey

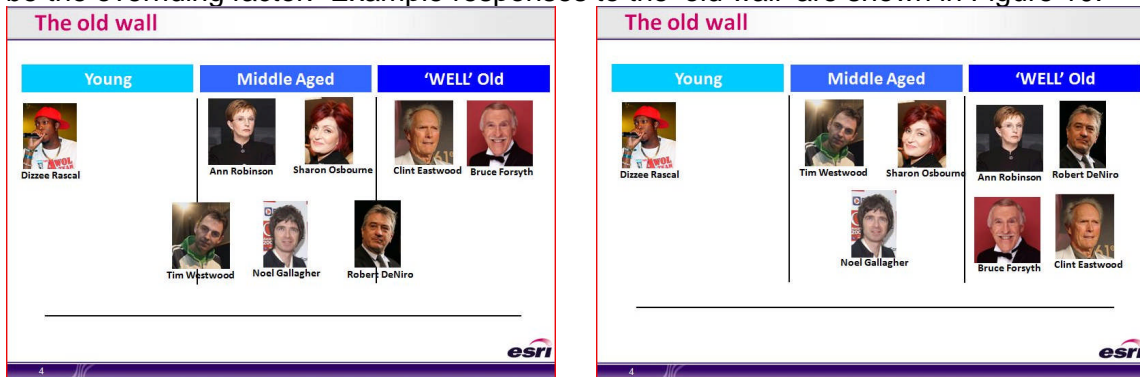
The initial survey revealed that the perception of old covered a wide range of ages, but that old age was generally considered to start at about 50 years (Table 1).



<b>Group</b>	<b>Old</b>	<b>Well Old</b>
<b>Age range</b>	50 – 80 years	80 – 100 years

## What is well old - The old wall

The 'old wall' revealed that whilst the participants were relatively consistent in their judgements of age, those perceived ages were coloured by the roles performed by the celebrities. Hence Tim Westwood, a youth orientated DJ was consistently ranked as younger than Noel Gallagher whose music was considered more mature. Most confusion arose around the middle age category where physical appearance seemed to be the overriding factor. Example responses to the 'old wall' are shown in Figure 10.



**Figure 10:** Example 'old wall' responses

## What happens to us when we get old?

The participants demonstrated fairly conventional stereotyping of the elderly when first questioned about the characteristics of old age. Typical responses were given as:

- Wrinkly
- Hard to walk
- Deaf
- Pains
- Blind
- Protective
- Grey hair
- Smelly
- Die

These are exclusively negative and reflect a poor perception of the value of old age.

## Reflective discussion

Having completed the simulation tasks, perception of old age rapidly changed. Responses were far more sympathetic and understanding. Participant comments in response to the spoken prompts are recorded below:

- a) What do you feel now about older people?
- Feel sorry for them
  - Harder to do things
  - Understand a bit better
  - More sympathy

b) What's it like to be old?

- Bad
- Uncomfortable
- Not fun
- Irritating
- Can't see
- Want to cry
- Horrible
- Frustrating
- Hard
- Every day challenge
- Complicated
- Painful
- Not nice
- Annoying
- Difficult

c) What problems did you experience?

- Couldn't see pins
- Hard to press buttons on maze
- Everything was back to front
- No movement in wrists
- Couldn't see anything
- Felt very frustrated
- Hard to pick up pegs for the pegboard
- Couldn't see detail on charts with glasses
- My hands hurt
- I couldn't move fingers
- Everything was stiff

d) How can we design products so that the ageing population doesn't have to suffer these problems?

- Design ideas
- Easy to press
- Machine does things for you
- Big bold writing
- Food out of date – grey can't be read
- Big fonts
- Brighter colours
- Eliminate fine movements
- Bigger grips
- Bold designs
- Big arrows for controls
- Make things less complicated
- Make movement easier
- Make grips easier
- Bigger buttons

The design solutions were the most marked attitudinal changes. These demonstrated that not only had the participants gained insight into the capabilities and limitations of the older user groups but were capable of devising design solutions which would help overcome those barriers. Whilst the solutions suggested might not be particularly innovative, students at Key Stage 3 and 4 were capable of drawing on design features in the market place and filtering suitable examples into appropriate applications for elderly users.

## Conclusions

This programme of activity, whilst not a scientific study, intended to establish whether young designer's attitudes towards designing for older adults could be changed by exposure to information presented in an accessible, relevant form. The participant's perceptions of old people on the arrival at the workshop was universally negative, often ranging into derogatory. Through the use of simple educative tools and simulation activities those perceptions were challenged and reversed. First-hand experience of the limitations of later life rapidly led to consistent and viable design solutions.

All of the participant's who attended the sessions found them engaging and worthwhile with keen contribution and discussion demonstrating that old age does not have to be mundane or depressing. The enthusiasm of the students for the subject once they had the opportunity to experience life as an elder was reflected in their ambition to change product design to help accommodate the needs of their relatives.

Although lacking in depth, this activity demonstrated that inclusive design can permeate the agenda of young designers and that the value and benefits can be acknowledged. It requires a longitudinal element to quantify whether the knowledge gained results in long term attitudinal shift and further funds are being sought to enable such a study to take place.

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