

Teaching and Learning Briefing Guide

Bringing inclusive
design into built
environment education

July 2017

inspired
by 2012



Inspired inclusive design that achieves a truly accessible and inclusive environment has real value to society.

Every built environment professional can help make an inclusive built environment a reality.

Greater awareness and understanding, increased knowledge and skills, and a commitment to deliver inclusive projects, will ultimately lead to better access and inclusion for everyone in all our buildings and public spaces.

(GOV.UK, 2016)

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Foreword

The vast majority of people take for granted entering and using buildings. You might be able to skip over the step outside your workplace or the restaurant you want to eat at, but that one step can be the barrier that stops a disabled person taking a job or eating at that restaurant.

Around one in six people in this country are disabled, some of them face barriers that stop them enjoying the lifestyle non-disabled people take for granted. Inaccessible buildings are one of the main barriers they face. There is no reason why new buildings should be so inaccessible, but too many are. We all need a built environment that is inclusive and accessible.

This is why we are completely behind the work of the 'Built Environment Professional Education Project' (BEPE). The BEPE project has successfully raised the profile of inclusive design. It embeds inclusive design knowledge and skills into the education and training of our built environment professionals. Since its launch, the key built environment professional institutions have worked hard to amend professional standards and their accreditation criteria and to make it a requirement to embed inclusive design as a core part of the education curriculum.

We are grateful that the Construction Industry Council has taken on the BEPE project for its next phase. The publication, in March, of CIC's 'Essential Principles for Built Environment Professionals', set out 6 key principles to help create an accessible and inclusive built environment. The guide

highlighted the CIC's commitment to this work. The CIC's Inclusive Environment Award also demonstrates how going beyond the minimum regulatory standards can have a positive impact on accessibility of buildings – we look forward to seeing the winning entry of this year's award in the autumn.

We are therefore delighted to support the publication of this 'Teaching and Learning Briefing Guide' and we support higher education to develop new courses and to build teaching capacity in this crucial area. By inspiring the next generation of built environment professionals to learn the necessary skills from the outset, future graduates will have knowledge of how to deliver inclusion. Quality education on inclusive design will give graduates the confidence and understanding they need to create an accessible and inclusive environment.

A systematic change in the education and training of building environment professionals, along with employers becoming 'Disability Confident', will help change the lives of millions of disabled people. If our buildings, places and spaces are built with access needs for all in mind, disabled people can then retain their independence, contribute fully to society and the economy and live fulfilling lives.

We commend this guide to all in the higher education sector and those involved in continuing professional development programmes – it is another great help in raising the profile of inclusive design.



A handwritten signature in black ink that reads "Penny,".

Penny Mordaunt
Minister of State for Disabled
People Health and Work



A handwritten signature in black ink that reads "Alok.".

Alok Sharma
Minister of State for
Housing and Planning

Introduction

1. This guide is aimed at all built environment educators. Its purpose is to illustrate the key issues in terms of improving knowledge, skills and understanding in the creation of an inclusive built environment. The guide explains the importance now placed on the ability of built environment professionals to achieve social, economic and environmental inclusion. It explains the implications for education and provides examples of good practice in teaching.
2. By understanding the principles and processes of inclusive design and learning the necessary skills from the outset, graduates should be emerging into the workplace with a basic knowledge of how to deliver inclusion in their professional working practice. Educators should be able to equip their students with techniques and examples that give them the confidence to deliver inclusive buildings, places and spaces in the future.
3. This guide draws on the current work of the Design Council, previous work of the CEBE (the Centre for Education on the Built Environment) at the Higher Education Academy, and educators in the UK already embedding inclusive design into the education of built environment students.

Why all Built Environment Professionals should understand the importance of achieving an inclusive environment

“Equal participation for all”

“We want a society where everyone with lived experience of disability, health condition, or impairment, can participate fully as equal citizens.”

Disability Rights UK

4. Our understanding of how to achieve an accessible and inclusive built environment has changed considerably in the last 30 years, as has our attitude towards disabled people. Improvements in legislation and technical standards have also had a significant impact. However, many people are still excluded from jobs, homes and leisure facilities due to poorly conceived, built or managed buildings, places and spaces.
5. This has been recognised globally in the UN Convention on the Rights of Persons with Disabilities. The UK ratified the Convention in 2009, so made a commitment to ensure that disabled people have full equality under the law and are treated as full and equal citizens. Accessibility – Article 9 (UN.ORG, 2017) is one of the eight guiding principles that underlies the Convention.

UN Convention on the Rights of Persons with Disabilities

Article 9

To enable persons with disabilities to live independently and participate fully in all aspects of life, States / Parties shall take appropriate measures to ensure to persons with disabilities **access, on an equal basis with others, to the physical environment**, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which **shall include the identification and elimination of obstacles and barriers to accessibility**, shall apply to, inter alia:

- a) **Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces;**
- b) Information, communications and other services, including electronic services and emergency services

6. Article 9 goes on to say that parties / states should also take appropriate measures to provide training for stakeholders on accessibility issues facing disabled people.
7. A failure to consider the provision of an accessible and inclusive environment when planning, designing, building or operating a built facility means that for many users the building will be ineffective in meeting everyone's needs, sometimes even preventing use, leading to discrimination.
8. Typical users who may be discriminated against include older people and disabled people and families with small children – there are around 10 million people over 65 (ONS, 2016) in the UK, and around 11 million people with a limiting long-term illness, impairment or disability (GOV.UK, 2014). It is not just disabled and older people, or families with small children who benefit from a well designed and managed built environment – we all benefit – good design is inclusive design.

What is an inclusive environment

9. An inclusive environment recognizes and accommodates differences in the way people use the built environment. It facilitates dignified, equal and intuitive use by everyone. It does not physically or socially separate, discriminate or isolate. It readily accommodates and welcomes diverse user needs – from childhood to adulthood through to old age, across all abilities and disabilities and embracing every background, gender, sexual orientation, ethnicity and culture. It helps people to live independently and participate fully in all aspects of life.

Design Council Cabe's Inclusive Design Hub explains:

An inclusive environment works better for everybody – whether a place is a home, school, office, factory, park, street, hospital, care home, bus route or train station. An inclusive approach to procuring a building or development and to the planning, design and management of that building is an opportunity to use creativity and lateral thinking, combined with user engagement, to make places that reflect the diversity of people who want to use them.

Inclusive environments are:

- Welcoming to everyone
- Responsive to people's needs
- Intuitive to use
- Flexible
- Offer choice when a single design solution cannot meet all user needs
- Convenient so they can be used without undue effort or special separation and so that they maximise independence

Crucial to this is consultation with user groups, putting people who represent a diversity of age, disability, gender and community at the heart of the design process.

(Design Council, 2017)

10. Implementing the Principles of Inclusive Design (CABE, 2017) from the outset of a project will ensure that buildings, places and places are designed to meet the needs of the diversity of people who want to use them.

The Principles of Inclusive Design

1. Place people at the heart of the design process
2. Acknowledge diversity and difference
3. Offer choice where a single design solution cannot accommodate all users
4. Provide for flexibility in use
5. Provide buildings and environments that are convenient and enjoyable for everyone to use

Legislative and policy drivers

11. Consideration was first given to how buildings should be designed to accommodate the needs of disabled and older people in the 1960s– the first British Standard was published in July 1967 (BSI, 1967). As a result, the Chronically Sick and Disabled Persons Act 1970, focused on physical features such as parking and sanitary facilities. Technical advice developed further in the 1970s with the government publishing advice on the design of wheelchair accessible homes (DoE, 1975) and mobility homes (DoE, 1974) – the forerunner of the Lifetime Homes standard (IHS BRE, 2011). The access issue was clearly highlighted to

government in 1979 in a report by Sir Peter Large called 'Can Disabled People Go Where You Go?' published by the Silver Jubilee Access Committee on Improving Access for Disabled People (Department of Health and Social Security, 1979), which led to the Disabled Persons Act in 1981. This introduced a new section into the 1971 Town and Country Planning Act, which required planning authorities, on the grant of planning permission, to 'draw the attention of developers to the needs of disabled people'. This stimulated interest in access issues from planning authorities throughout the 1980s. Some authorities started to appoint access officers and attach conditions to planning permissions.

12. The introduction into the Building Regulations in 1985 of Approved Document M 'Access and Facilities in Buildings for the Benefit of Disabled People' was a turning point in the provision of access for disabled people. The provisions of Part M were initially very limited in their scope, but continued to expand throughout the 1990s (editions were published in 1989, 1991 and 1999) by which time reasonable provision had to be made for people with hearing and sight impairments as well as wheelchair users, and consideration given to environmental features including lighting and acoustics and eventually, to a limited extent in 1999 to housing. The 2015 edition of the 2010 Building Regulations (GOV.UK, 2015) finally addressed the needs of wheelchair users in the design of new homes in the new optional requirement M4 (3), with the optional requirement M4 (2) adopting most of the Lifetime Homes standards. However, as both these standards are currently optional they can only be required if the local planning authority has adopted appropriate accessible housing policies in their local plan.
13. The development of planning policy from the first statutory requirement introduced in the 1980s to the current National Planning Policy Framework (GOV.UK, 2012) has made access and inclusion a legitimate planning matter. The NPPF states in paragraph 57 that:

"It is important to plan positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes."

14. The government's Planning Practice Guidance defines an inclusive environment as "one that can be accessed and used by everyone and recognises and accommodates difference in the way people use the built environment". It lists the following key issues to consider:
 - proximity and links to public transport
 - parking spaces and setting down points in proximity to entrances

- the positioning and visual contrast of street furniture and the design of approach routes to meet the needs of wheelchair users and people with visual impairments
 - whether the entrances to buildings are clearly identified, can be reached by a level or gently sloping approach and are well lit.
15. In 2006 changes to the development control system introduced the requirement to submit a Design and Access Statement (CABE, 2006) with a planning application. Design and Access statements help to explain the design thinking behind a planning application and gives the applicant the opportunity to set out how everyone, including disabled people, older people and young children, will be able to use the places they want to build.
 16. The Mayor of London has, since the first London Plan was published in 2004, developed exemplary planning policies on inclusive design, providing detailed information on how to implement the policies in supplementary planning guidance called 'Accessible London: achieving an inclusive environment' (London.Gov, 2014). The key policy asks for the highest standards of access and inclusion (see Policy 7.2 in the 2011 London Plan) but the need to deliver access and inclusion in all types of development has been integrated throughout all the chapters of the plan, including in the requirements for accessible housing.
 17. The introduction in 1995 of the Disability Discrimination Act (DDA) and the requirement by 2004 of service providers to anticipate user needs and make reasonable adjustments, was a huge incentive to both employers and building providers to consider the physical accessibility of their buildings. Many building owners commissioned access audits in advance of the 2004 requirements. However, activity seems to have fallen off despite the improvements and widened scope made to the DDA when it was revised in 2005 and then absorbed into the Equality Act in 2010 (EHRC, 2010). The Disability Rights Commission – now replaced by the Equality and Human Rights Commission (EHRC, 2017) published a plethora of codes of practice providing advice to employers and service providers on how to ensure they are not being discriminatory.
 18. Technical standards have continued to be improved – the last edition of BS 8300 (BSI, 2009) is being revised and will be published by BSI at the end of 2017, and will include a new part on the accessibility and inclusivity of the external environment. The emerging theme today is around provisions for people with cognitive impairment – 'Designs for the Mind', along with planning for an ageing population by creating 'age friendly cities' and addressing the needs of people with dementia.

19. Whilst the provision of design guidance has been centred on new buildings, the existing building stock in the UK which is pre-1970 is considerable and presents a latent challenge in the provision of an inclusive environment. Many buildings remain unaltered or the alterations do not require planning or building control approval so are not subject to any scrutiny in terms of their accessibility, leaving building owners, facility managers and service providers to anticipate and make reasonable adjustments to accommodate any disabled visitors or members of staff.
20. Within the existing building stock there are around 350,000 buildings which are special and have been 'listed' (Historic England, 2016). Listing 'marks and celebrates a building's special architectural character and historic interest, and also brings it under the consideration of the planning system, so that it can be protected for future generations.' There is, therefore a challenge in providing an inclusive built environment whilst preserving the special features of a building. There are now, however, plenty of examples of listed buildings that have been made accessible (Historic England, 2015).
21. The London 2012 Olympic and Paralympic Games were hailed as 'the most accessible Games ever'. Those involved in the preparations went to great lengths to ensure the experience of attending the games, whether as a spectator, member of the workforce or athlete, was as inclusive and accessible as possible. Inclusive design was deliberately embedded into the planning, design and building process (ODA, 2008). This inclusive design process is being used today by the London Legacy Development Corporation (LLDC, 2012) to develop the new neighbourhoods in and around Queen Elizabeth Olympic Park.

Brief professional history

22. The provision of an inclusive environment has traditionally been considered as a design issue with the skills needed placed firmly with the Architect – 'A person who designs buildings and in many cases also supervises their construction.' (Oxford Dictionaries, 2016). However, it is increasingly evident that an inclusive environment can only be achieved with the application of a strategic vision, a champion at initial project briefing and procurement stages, throughout outline and detailed planning stages through to construction and on going management.
23. The lack of specialist knowledge by designers and the increasing power of legislative and ethical considerations has seen the evolution of the Access Officer and Access Consultant. The role of the local authority Access Officer was first promoted in the Silver Jubilee Access Committee Report in 1979. The first local authority to appoint an access officer was Leicester City Council in 1981, others followed and by the time the Access Officers Association was established by

the Access Committee for England in 1991 many local authorities employed a specialist to advise their planning and building control officers. Their numbers continued to increase with the advent of the Disability Discrimination Act in 1995 and the 2004 requirements of service providers to address physical access to buildings. The number of access officers has unfortunately considerably reduced in recent years following reduced local authority budgets and changing political priorities. A recognition of their professional skills and the importance of their input at all stages of the development and construction process is still needed. However, the broadening of inclusive design skills and knowledge is also needed by all built environment professionals involved at all stages of the construction industry – knowing what you don't know and when to call in the experts is key! As Professor Stephen Hawking said at the opening ceremony of the London 2012 Paralympic Games:

“The enemy of knowledge is not ignorance, but the illusion of knowledge”

24. All new buildings in the UK need to successfully pass through an 'approval' process which has an overall planning and a technical construction phase; this has led to the adoption of minimum accessible design features being added – often after the initial concept design has been approved – to address some of the physical needs of people with particular impairments – 'special facilities for people with special needs'. This has led to a tick box approach to the provision of access and facilities for disabled people often without any real consideration of how people use, perceive and feel comfortable or safe using buildings, or how these facilities can be integrated into the mainstream and be designed to be used by everyone. There continues to be a need to provide useful design guidance on accessible design to the construction industry and designers, through design guides from professional bodies, Approved Document M of the Building Regulations, British Standards, European Standards, and International Standards. However, educators can and should also assist in helping their students acquire a greater understanding of the social aspects of inclusion as well as the purely physical, legislative minimum standards.

International Initiatives

25. While the UK is rightly proud of its technical standards and anti-discrimination legislation and its efforts at continual improvement in legislation, standards and processes, work to create an accessible environment has been taking place throughout the world.
26. **The Institute for Human Centred Design (IHCD, 2017)** in the USA started as the Adaptive Environment Centre in Boston, Massachusetts in 1978 with a focus on helping families and communities solve

practical problems of the design of places. Following the passing of the Americans with Disabilities Act (ADA) in 1990 it became part of a national network of ADA Centres providing information, guidance and training on the ADA – helping to support the ADA’s mission to “make it possible for everyone with a disability to live a life of freedom and equality.” As well as a focus on accessible design as required by law, IHCD projects today include universal design education, research, and consultancy along with an extensive network of international collaborators including working with the UN on the human rights of disabled people. IHCD core beliefs are:

- Design is powerful and profoundly influences our daily lives and our sense of confidence, comfort, and control.
- Variation in human ability is ordinary, not special, and affects most of us for some part of our lives.

27. In 2012 the IHCD translated into English ‘Universal Design A methodological approach – a pathway to human-friendly and elegant architecture’ by Hubert Froyen, originally published in Dutch by the Department of Architecture, Hasselt University, Belgium (IHCD, 2012).
28. **The National Disability Authority of Ireland** established the Centre for Excellence in Universal Design (CEUD, 2017) in January 2007. It has responsibility to raise awareness and understanding of Universal Design principles, contributes to the promotion of standards in Universal Design and through its education and professional development programme is promoting the development of appropriate Universal Design courses in liaison with relevant academic, certifying and professional bodies; is supporting and promoting the introduction and integration of the principles of Universal Design in educational and training courses; and is ensuring, as far as practicable, the principles and application of Universal Design are included in examinations recognised by professional bodies.
29. **The International Association of Universal Design in Japan (IAUD, 2017)** has, since 2002, been working to achieve the objective: “To contribute to the healthy development of society, and improve the welfare of humanity as a whole, through further disseminating and actualizing of Universal Design (UD).” The annual IAUD Award, recognizes ‘groups and individuals who have conducted or proposed particularly noteworthy activities aimed at realizing a UD society in which everyone – regardless of age, gender, nationality, ethnicity, culture, nationality, customs, or other factors – can live comfortably, without feeling any undue inconvenience’.

UK Initiatives

30. **The Centre for Accessible Environments (CAE, 2017)**, set up in 1969, continues to provide advice, training courses, publications and a consultancy service promoting inclusive design principles and the achievement of an accessible environment. CAE was responsible for setting up the Access Committee for England back in 1984 – a collaborative group of users, providers, and regulators who helped to develop the principles of inclusive design, and worked with the Joseph Rowntree Foundation in the 1990s developing the Lifetime Homes concept. When ACE lost its funding in the mid 1990s, the Royal Association for Disability and Rehabilitation (RADAR) continued the work and helped the Disability Rights Commission with a number of publications interpreting the Disability Discrimination Act and the 2004 duties of service providers. This work was continued by the Built Environment Group at DPTAC (the Disabled Persons Transport Advisory Committee) who produced a number of documents to assist built environment professionals and clients to embed inclusive design principles into their work.
31. **The Helen Hamlyn Centre for Design at the Royal College of Art (RCA, 2017)** has been a leading centre for inclusive design since 1999 when it widened its initial focus from design for an ageing population to design to improve people's lives across a range of social needs. The Centre collaborates with business, academic, government and voluntary sector partners, engaging with students, new graduates, and academics to develop innovative and empathic research methods. International collaboration includes being a strategic partner for a series of conferences and workshops organised by the Norwegian Design Council's Innovation for All programme (The Norwegian Centre for Design and Architecture, 2010).
32. **The Commission for Architecture and the Built Environment (CABE)**, in 2006, developed the DPTAC work further and published the 5 principles of inclusive design, see paragraph 9, which are still used today as the basis for achieving an inclusive environment in the UK. The Design Council continues to promote this work via its Inclusive Environments Hub (Design Council, 2017) and is currently developing a free online Inclusive Environments CPD training programme to encourage the UK's highly skilled professionals to continue 'leading the way in building the most accessible and inclusive country in the world'. This is available as a video on their web site. The Design Council along with the CIC, helped coordinate work to promote the challenge set by the government for the construction industry to:

“identify how to work more collaboratively across disciplines, and within professions, to drive up awareness; improve skills and deliver long term improvement in the quality of inclusion whenever we construct or renew our built environment.”
(Design Council, 2015)

33. As a result a number of key built environment institutions agreed to champion inclusive design through leadership and by promoting awareness, collaborating on research, innovation and continual improvement across industry and by communicating best practice to members and encouraging knowledge sharing between professional institutions via the Inclusive Environments Hub.

34. **The Built Environment Professional Education (BEPE) Project**, launched by the Minister for Disabled People in December 2013, formed part of the Government’s London 2012 Olympic and Paralympic Legacy Programme (GOV.UK, 2015). The almost unique level of inclusivity achieved in the Olympic Park and venues provided the opportunity to stimulate an increase in inclusive design in the built environment in the UK. The aim of the five year project was that:

“Every newly qualified built environment professional will have the knowledge, skills and attitude to deliver accessible and inclusive buildings, places and spaces.” (GOV.UK, 2016)

35. This would be achieved by:

“Embedding inclusive design as a core part of the required curriculum in the education of built environment professionals, with student assessments and Assessments of Professional Competence that reflect this”. (GOV.UK, 2016)

36. A report of progress was published by the Office for Disability Issues in March 2016 (GOV.UK, 2016). The Construction Industry Council (CIC) assumed responsibility for BEPE in its transition year from a government driven project to an industry owned and led project and is now taking the project forward into its next phase of development (CIC, 2017).

37. All of the construction professions have been engaged in BEPE, a number of which are now amending their professional standards and routes to membership to make inclusive design skills and knowledge a requirement of professional membership. This is starting to demand that Higher Education Institutions (HEI’s) incorporate inclusive environments into their teaching programmes.

38. **The Global Disability Innovation Hub (GDIH, 2017)** set up by the Mayor of London in 2016 is working to make a positive difference to the lives of the one billion disabled people around the world by creating a dedicated research, teaching and practice centre at Queen Elizabeth Olympic Park (QEOP) in London with an engaged and active online community. The vision is to:

“change the way we think about disability through co-design, collaboration, and innovation. By providing a platform for the talents of disabled people and the expertise of practitioners, academics and local communities, we can change the world for the better.”

39. The aim is to become the leading place to come to research, study, practice and share disability innovations. The hub will work across institutions, sectors and faculties – linking great ideas and bright people to research and resources. The first Disability Innovation Summit was held in QEOP in July 2017.

Teaching and learning context

40. The Centre for Education in the Built Environment (CEBE) published in 2002 a framework for teaching inclusive design within built environment courses (Morrow R, 2002). The advice and recommendations made by the Special Interest Group in Inclusive Design for CEBE are still as relevant today as they were in 2002. The report set out the moral, sustainable, professional, economic and legal arguments for teaching inclusive design. It encouraged the integration of an inclusive design approach into built environment courses and was aimed at those who create, coordinate, and teach those programmes. It hoped to inform those professional institutions who represent and regulate BE professions, particularly those who validate courses in higher education which lead to entry into their profession. Recognising the variations in teaching approaches, management support and curriculum focus, a framework for teaching inclusive design was created (see table below) rather than a curriculum.
41. The CEBE report set a very useful framework for the higher education sector and some universities continue to use the framework today. However, as the BEPE project shows, this approach has not been adopted across the sector and many built environment students enter their professional life with little or no understanding of inclusive design.
42. There is little recently published literature on the integration of the design and operation of inclusive environments into built environment professional education. Recent publications developed by the HEA are about ensuring that the education process is inclusive and

non-discriminatory (HEA, 2011; Wray, 2013). Due to the paucity of undergraduate programmes which either specialise in or have significant themes around inclusive environments there is no 'model' curriculum.

A framework for teaching inclusive design within built environment courses in the UK (Morrow, R, 2002)

Part 1: COURSE CONTENT

The interrelationship between design quality, best practice and inclusive design are drawn and emphasised.

Students come into direct contact with a varied range of user groups.

Students are able to source and apply quantitative and qualitative information regarding the fit between humans and the built environment.

Students are encouraged to develop inclusive methods of representation.

The pragmatics of inclusive design are supported by a theoretical and critical framework.

Personal experience is a valued role and positive attitudes towards all people in society are fostered.

Students are aware of both the benefits and the obstacles of inclusive design. The complexity of inclusive design is understood and accepted.

Part 2: COURSE CONTEXT

Inclusive design principles are integrated from an early stage and are a substantial part of the curriculum.

Courses adopt an interdisciplinary and multi-professional approach.

Inclusive design is supported by alternative pedagogies and explicitly valued by appropriate modes of assessment.

Continual Professional Development (CPD) is understood as essential to sustaining inclusive design practice.

Courses are delivered by people who are fully aware of inclusive design principles.

43. The first specialised course teaching built environment professionals the key aspects of how to achieve an inclusive environment was created and developed by Andrew Walker at the Architectural Association (AA) from 1993 – 1998. Andrew, Head of Technical Studies at the AA, welcomed many candidates onto the post graduate day-release course in Environmental Access at a time when access and the built environment was still very much on the periphery of social conscience and unique in architectural education.

44. Marcus Omerod founded SURFACE (Omerod, M, 2017) within the School of the Built Environment at the University of Salford in 1995 and ran from 2002 for over 10 years an MSc course called Accessibility and Inclusive Design (MAID). The course had a multi-disciplinary focus linking design and the built environment to health, wellbeing and social care and welcomed learners with all types of interest and expertise. MAID is now being redeveloped into a new course in Assisted and Independent Living which aims to attract a broad spectrum of professionals, including access officers and consultants, health and social care professionals and practitioners in urban design, planning and architecture. SURFACE is a multi-disciplinary centre forging a joined-up approach to teaching, research and consultancy in inclusive design.
45. Work at the University of Reading has been focussed on research associated with the abilities of people who are disabled and/or elderly and from this body of work an EPSRC Funded MSc Inclusive Environments – Design and Management, was established. This ran between 1997 and 2009 together with an undergraduate final year 'Inclusive Environments' optional module which began in 1996 and is still being delivered. These initiatives required the production of a coherent programme, but this was never expected to provide the basis for curricula which would be widely adopted.
46. New courses and modules are being developed. Iain McKinnon at the Global Disability Innovation Hub is currently developing a 10 week module on 'Inclusive Design in the Built Environment' for a new MSc course called 'Disability Design and Innovation' – a triple award MSc between; UCL, UAL's London College of Fashion and Loughborough University. A new MSc programme on Health, Wellbeing and Sustainable Buildings also commences in September 2017 at the Bartlett School of Architecture, University College London, and will include an optional module on inclusive places developed by the Centre for Accessible Environments.
47. Despite these examples of specialised courses, there is a general lack of guidance on curricula. This has now been brought into sharp focus as the new Subject Benchmark Statements in Architectural Technology (QAA 2014), Town and Country Planning (QAA 2016), and Landscape Architecture (QAA 2016) have included a new theme of inclusive environments. The new benchmark statement for Land, Construction, Real Estate and Surveying includes a threshold standard that states that undergraduates need to:

"acquire a basic knowledge and demonstrate an understanding of the principles and processes that deliver an inclusive environment, recognising the diversity of user needs and the requirement to put people (of all ages and abilities) at the heart of the process."
(QAA, 2016)

48. The Architects Registration Board plan to address inclusive design when their Criteria for the Prescription of Qualifications are next reviewed (ARB, 2010). The vocational nature of built environment higher education means that the role of the construction professions in accrediting programmes is essential for their success.

Some factors to consider in teaching – what are the essential skills?

49. There are many connections between the built environment and inclusive environments; the following diagram demonstrates how a range of physical and environmental (built) factors lead into impacts on the environment in which we live and work which in turn can result in the non-provision of an inclusive environment. In many cases these are not simple linear cause and effect and a number of factors can contribute to a particular outcome. It is not enough to think that by removing a particular feature an inclusive environment is provided. Any broken link in the access chain, however small (such as the lack of a dropped kerb, a parking space, a lift or accessible WC) can lead to social exclusion, unemployment, homelessness or isolation.

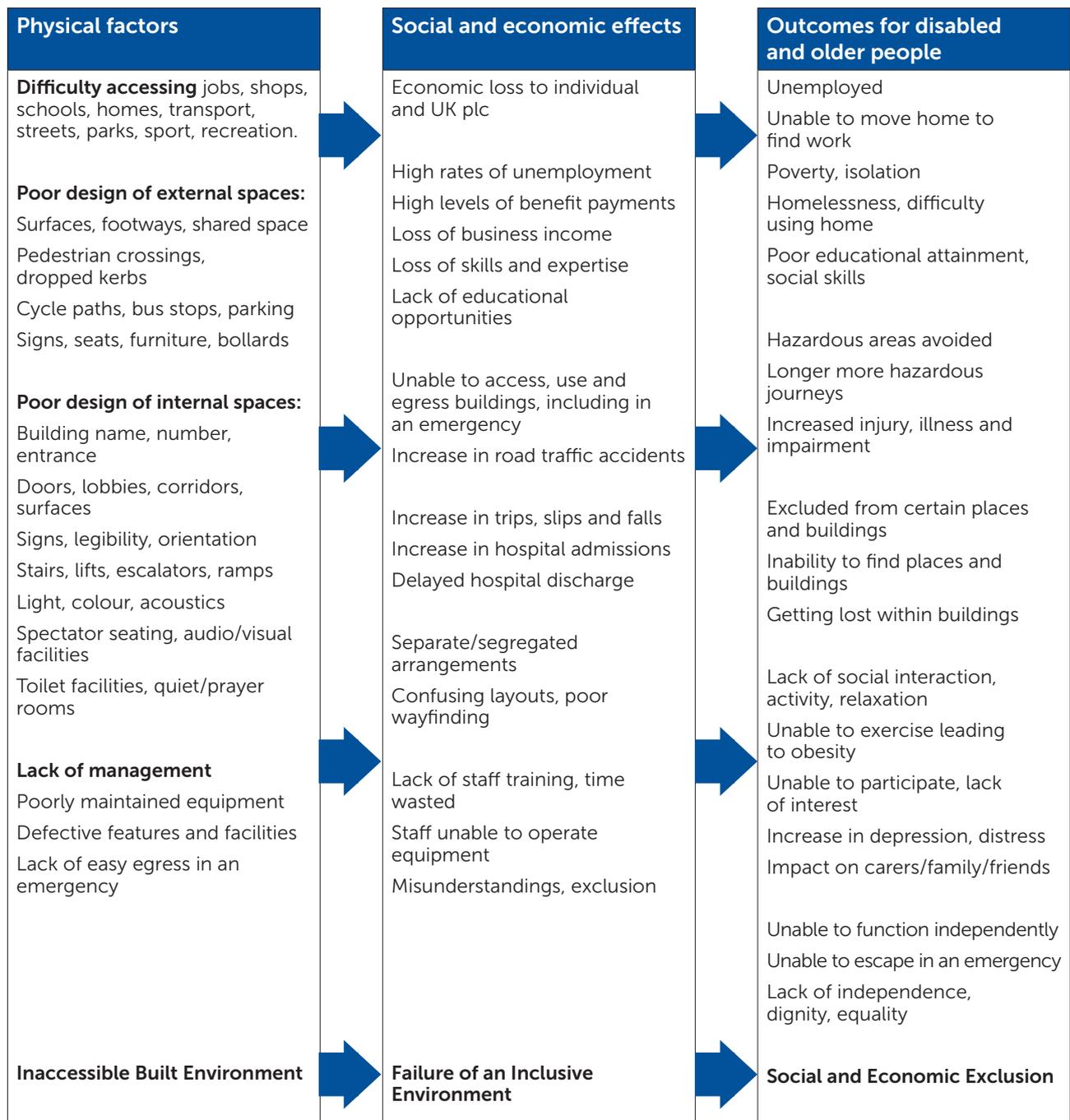
Good practice in teaching for an inclusive built environment

50. There are three distinct areas to distinguish:

1. The design, planning, construction and in-use management of specialist facilities for disabled people and for older people with particular access and care needs, such as:
 - Specialist educational facilities for disabled children and those identified as having 'special educational needs'
 - Health care facilities including hospitals, nursing homes, residential care homes
 - Specialist residential buildings such as wheelchair accessible housing, extra care housing and retirement housing.
2. The design, planning, construction and in-use management of residential and commercial buildings for the general population / unidentified users, including general needs housing, offices, shops, leisure and sports facilities.
3. The design, planning, construction and in-use management of the external environment including the public realm, streets, the spaces in-between buildings, parks, play areas, recreational facilities and rural paths.

51. Built Environment professionals working in the specialist fields identified in area one are likely to have acquired the specialist skills and knowledge required to meet the needs of disabled and older people. However those BE professionals working in areas two and three may not have the necessary understanding of how to achieve inclusion in their project, and may rely on meeting minimum regulatory accessibility standards rather than achieving inclusion.

The impact an inaccessible built environment can have on society and the economy and the outcomes for disabled and older people



52. To assist with making inclusion business as usual, the CIC, as part of the BEPE Project, published 'Essential Principles for Built Environment Professionals' which sets out the following 6 principles for achieving an accessible and inclusive built environment (CIC, 2017). These are now being adopted by many of the key built environment professional institutions and integrated into their professional codes of conduct.

1. Contribute to building an inclusive society now and in the future
2. Apply professional and responsible judgement and take a leadership role
3. Apply and integrate the principles of inclusive design from the outset of a project
4. Do more than just comply with legislation and codes
5. Seek multiple views to solve accessibility and inclusivity challenges
6. Acquire the skills, knowledge, understanding and confidence to make inclusion the norm not the exception

The approach

53. Some possible interventions include:

- Compulsory modules
- Seminars or topics as part of sustainability, technology, law and design modules
- Topics spread across several relevant modules
- Guest spot lectures from external experts or visiting lecturers
- Joint teaching sessions with students from other disciplines
- Hands-on action research projects in the community
- Live projects with local partners
- Site visits or field trips for city, estate, and building assessments
- Specialist module or project options
- Encouraging students to consider access / inclusion-related dissertation options

54. The best approach would be a combination of a number of these approaches – one guest lecture will not be sufficient to give the student the level of skills and knowledge needed to deliver an inclusive environment in their future professional life. In all of these, teaching needs to refer back to the essential connections between the built environment and social inclusion and how the professions need to understand these linkages and their impact upon them, both historically in how urban areas have developed and in making decisions for the future. Some key questions to explore with students might be:

- How an inclusive environment can support or restrict social interaction and economic activity?
- What components of the urban environment pose a challenge in providing an accessible and inclusive environment?
- What planning and design processes determine whether an inclusive environment is the outcome?

55. Subjects typically covered in a module or project discussing inclusive environments within the context of the built environment include:
- History of planning and inclusive environments
 - Inter and trans-disciplinary approaches
 - Legislation, government policy, technical standards, best practice examples
 - Equality Impact Assessments and the provision of reasonable adjustments
 - The role of inclusive environments in promoting wellbeing, social capital and community
 - Understanding the role of inclusive environments in the context of urban development and the strengths and weaknesses of existing communities
 - Sustainable development and how the quality of life and inclusive environment elements are also integral to sustainability
 - Value of accessible and inclusive external environments to promote social interaction, a sense of place and the wider appreciation of the green ecosystem
 - How people from diverse communities perceive, use and experience buildings, places and spaces
 - Current drivers in linking inclusive environments with the built environment – discrimination, exclusion/isolation/segregation, healthy and active ageing, health and wellbeing.

Where to get specialist skills and knowledge

56. For those lecturers wanting to explore this topic further there may be a perception that some specialist inclusive design knowledge is required. Although some basic understanding is essential, there is not necessarily a need for specialist knowledge in order to develop T&L strategies and curriculum as the sources shown in this Guide can be used. However, because of the opportunities that are available, it is recommended that a partner in the access and inclusive design field is identified early in the planning stage so that the utilisation of current and relevant good practice is established.
57. The introduction of the 2004 requirements of the 1995 Disability Discrimination Act led to the rise of access consultants working in the private sector and in 1999 the National Register of Access Consultants (NRAC, 2017) was established by the Centre for Accessible Environments, Department for Communities and Local Government (DCLG), Department for Work and Pensions (DWP) and the Disability Rights Commission (DRC). The aim was to establish minimum levels of competency for persons engaged in inclusive design and accessibility issues. Membership continues to grow with professionals who advise on all aspects of inclusive design, some of whom also teach / lecture and write on the issues. NRAC's Client Guide has information on how to use the NRAC to identify an Access Consultant or Auditor.

Examples of different approaches in practice

Breaking down Barriers (BdB) – University of Reading

58. Experiential learning and Technology Enhanced Learning (TEL) are central to the approach adopted by the BdB team at Reading. Inspired by teaching and learning in disciplines beyond those of the built environment, such as nursing, the BdB team has invested in a range of simulation equipment which includes bariatric and geriatric suits, modified-vision glasses, arthritic-simulation gloves and wheelchairs. Using these resources and a range of mobile apps as well as UoR-hosted online discussion boards, the BdB team has directly influenced the development of a range of activities that can enable students to learn through discovery. This is important as it has the advantages of ensuring learning is engaging, insightful and fun, while also developing students' empathy for users with varying needs. Discussion, reflection and evaluation of the learning process are built into these activities, ensuring the sensitive nature of these issues is appropriately addressed. Students are subsequently incorporating IE into their own practice through project work and dissertations. The BdB team is also working to prepare graduates to promote inclusive environments in their professional careers and respond to employers, who are adopting inclusion within their corporate agendas.

Mobility Mood Place – Edinburgh University

59. Mobility, Mood and Place (MMP) explores how places can be designed collaboratively to make pedestrian mobility easy, enjoyable and meaningful for older people. Under the RCUK Lifelong Health and Wellbeing programme, the project ran from September 2013 to January 2017 with funding from the EPSRC, ESRC and AHRC.

60. The University of Edinburgh has partnered with CAE to develop and deliver training on effective co-design with older people to local authorities, professional practitioners and not-for-profit groups. The training will be based on one of the main non-academic dissemination tools from MMP, a professionally-designed A-Z of Co-Design which explores participatory design's origins, methods and techniques, key roles, principles and issues. The programme would involve researchers and communications staff in preparatory work to design it, in collaboration with CAE.

Manchester School of Architecture

61. As part of an Arts Council funded project called Disabled Artists Making Dis/Ordinary Spaces, disabled artists were brought together with architectural students, educators and professionals, to develop new ways of working together around the design of built space. Disabled artist Zoe Partington worked with tutors Stefan White and Helen Ashton and explored how to embed disability and inclusion related issues at different stages in an ongoing project for fourth

year MArch students on the design of age-friendly homes. The Dis/Ordinary Architecture Project explores how disability and accessibility can be done 'differently' within architecture, interiors and related design practices. Instead of treating disabled people as a mainly a 'technical' problem, to be added-on at the end of the design process, the aim is to show how starting from disability – from the rich differences that biodiversity and neuro-divergence bring – can be a vitally important creative critical resource. Jos Boys (Boys J, 2014 and 2017) argues that designing with diverse bodies opens up important questions about 'what is normal', providing insights about how social and spatial inequalities are perpetuated through the design of built space, and offering valuable opportunities for change.

Universalising Design, Goldsmiths, University of London

62. Professor Rob Imrie has published a number of articles and books of relevance to inclusive design education following the completion of a research programme to investigate the role and relevance of universal design – Universalism, universal design and equitable access to the designed environment. A collaboration between Goldsmiths, University of London and the Open University, he examined the proposition that 'the values and attitudes embedded into the production of the designed environment display little or no knowledge of how to respond to the manifold complexities of the body'. This was explored through the context of disability and design, with the focus on 'assessing the relevance of the principles and practices of Universal Design (UD), and how it addresses the problems of/for impaired bodies in interacting with the designed environment'.

Possible problems and benefits

63. Inclusive design and inclusive environments are rapidly becoming part of the key curriculum accreditation criteria for the range of professional bodies that operate within the field of Built Environment Education. In this way the professional bodies are promoting the incorporation of this important issue. Some have recently signalled their acknowledgement of the importance of inclusive environments, for example the RTPI's Practice Advice Dementia and Town Planning (RTPI, 2017) indicates the importance of planners in the delivery of inclusive communities.

Employability

64. Built Environment students are faced with an array of subjects all of which are essential, in varying proportions, for their chosen professional career. Within this array they may not appreciate the potential advantages of a better understanding of the provision of inclusive environments. Because of the human factors elements within the subject, their knowledge could enhance their chances for employment as many job descriptions are calling for interprofessional understanding and knowledge. This is another area where there is an opportunity for

educators to embrace and develop curricula which responds to the clear messages from government who in 2015 set “a challenge to key players in the construction industry to create buildings, places and spaces that work better for everyone by making inclusion a key part of their work” (GOV.UK, 2015).

65. Although the numbers of students taking courses that have a fully developed inclusive environments theme are relatively small, they appear to appreciate the benefits of this approach for their future careers: A Building Surveying student at Reading said: “The module made me realise the amount of knowledge and awareness that is needed in making buildings accessible for everyone.”

Transdisciplinary skills

66. There are several common themes to the different vocational routes that a Built Environment student can follow. These common themes tend to be more evident in the early parts of the course and less evident in the later parts as the professional specialisms begin to emerge. This approach enables students to be taught in an inter – or transdisciplinary way, where students develop new skills which better equip them for the working environment and, through working with other disciplines they also develop an understanding of other approaches and the needs and priorities of other professions. This inter-disciplinary learning and teaching approach is supported by the HEA who also offer guidance on its adoption (HEA, 2015).
67. It is where the multi/transdisciplinarity approach begins to include students from the design and engineering disciplines where the challenges of research traditions, curriculum content and the general approach to teaching and learning must be acknowledged.

Conclusion

68. There is some excellent teaching already taking place on many built environment programmes, demonstrated by some of the projects submitted to the Royal Society of Arts Student Design Awards for the Inclusive City and Inclusive Living briefs – but this good practice remains patchy and inconsistent. The BEPE Project is stimulating change within the professional institutions so that inclusive design is gradually becoming a requirement of accredited courses. The changes introduced through the range of new QAA Subject Benchmark Statements mean that all Higher Education Institutions are required to adopt them.
69. The challenge now is to build capacity within the teaching and learning environment so that students emerge into the workplace with an understanding and desire to create accessible and inclusive environments.

70. The following statement is directed at educators, policy-makers and the institutions and professional organisations whose members plan, design and develop our urban environments, including their transport and resource infrastructures. The creation of inclusive communities is a central aspect of sustainable built environments. To achieve this, it is strongly recommended that:

- all built environment professionals finish basic training with an understanding of the impact of their professional activities on the achievement of an inclusive environment;
- training for all built environment professionals includes a consideration of the impact of the built environment on the inclusion in society of disabled and older people
- establishing an inclusion-related cross-professional development programme
- bringing the evidence base from research and practice into the realm of educators and policymakers in an accessible and relevant form.

"Changing attitudes towards disability and disabled people is really important and there is no doubt that the success of the London 2012 Paralympic Games has contributed hugely to this, but education should also bring about a shift in attitude and ensure that our built environment professionals understand why Inclusive Design is so important."

Baroness Tanni Grey-Thompson DBE, London Legacy Development Corporation video 'Inclusive Design at Queen Elizabeth Olympic Park'. www.queenelizabetholympicpark.co.uk/our-story/transforming-east-london/accessibility

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