

University of Kent

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Creating Inclusive Built Environments at Universities

Purpose: The purpose of this paper is to investigate whether adopting an inclusive approach at University of Kent and the American University of Beirut is preferable to just meeting building legislative requirements. The reason for choosing universities as case studies rather than schools is that higher educational institutions play a major role in providing the professional training for high-level jobs, as well as the education necessary for the development of the personality of all their students including individuals with disabilities. Moreover, universities play a major role in promoting social inclusion and participation in the mainstream society.

Acknowledging that antidiscrimination disability legislation ensures and promotes the full realization of all human rights and fundamental freedoms for individuals with disabilities to get equal access to higher education and employment, this paper aims to investigate whether the two universities have managed to eliminate barriers to ensure that all its potential users including individuals with disabilities get equal access to higher education which will then enable them later to get access to employment services.

Methodology /Approach: Two educational institutions were selected to examine to what extent the two universities have anticipated wide spectrum of users' needs in enhancing accessibility for all their users. To achieve this, mixed methods of data collection were used resulting in collecting qualitative and quantitative data at the University of Kent in high income country in the UK and the American University of Beirut in a low income country in Lebanon.

An online survey was the first stage method used at the two case studies. The purpose of the online questionnaire was to ascertain the views of all users, including individuals with disabilities, and details of their experiences in accessing the built environment at the universities. The online survey contained 24 questions divided into three sections consisting of multiple choice and free text answers, and the same questions were used at the two case studies. The second section aimed at collecting information about the level of accessibility of buildings and barriers encountered, and included questions about participants' experiences in accessing the built environment, means of transportation used, external and internal features, signage, and emergency exit routes. The last section was directed towards those willing to take part in personal interviews and consultations, and hence it asked for personal contact details.

Access audits were the second stage method for collecting data. An access audit is the process of examining the accessibility and usability of services and facilities against predetermined criteria. Its aim is to identify physical barriers and consider means of eliminating or mitigating them (CAE, 2005). The study carried out physical assessments on six selected buildings at each university to investigate the level of accessibility and the ways in which these buildings accommodate the needs of individuals with disabilities. The audit investigated the compliances of selected buildings to a building regulation standard which is laid out in the British Building Regulations 2000 (Part M Access to and use of buildings, and Approved Document M, 2004), to determine the level of accessibility for potential users including individuals with disabilities. The researcher had to adopt the same standard in Lebanon because of the absence of a Lebanese building regulation standard. Acknowledging that the access assessments need to meet validity and reliability criteria, the auditing process involved measuring the compliance of the physical and management features to the same standard.

Consultation with students and staff members with disabilities and sharing their experiences in accessing the built environment at the two universities was important in highlighting accessibility issues.

Moreover, the study carried out personal interviews with commissioned architects at the two universities to investigate their knowledge and understanding of the needs of disabled people during the design and implementation phase.

Similarly, personal interviews were carried out with education providers at the two universities to determine their input in complying with their legislated duties to remove physical barriers and promote equality and diversity.

Findings

Data analysis of the two phases of the research showed that the built environment at the two case studies did not cater for all users. Observations from access audits and feedback from consultations with users, including individuals with disabilities, suggest that the physical environment on campus and inside buildings did not fully follow inclusive design principles, in that the level of accessibility differed greatly within and between buildings, and in many instances different disability groups such as wheelchair users were served more effectively than individuals with visual, hearing and cognitive impairments.

Moreover, feedback from consultation with individuals with disabilities and education providers highlighted the importance of reviewing the management practices and procedures with staff members across departments and buildings, so as to improve facilities and services to attract more disabled applicants. Insufficient training in disability awareness was one of the key reasons for staff members and architects failing to cater for the specific needs of disabled people. These findings suggest that the two universities need to make further changes to make its built environment and building designs more inclusive and user friendly.

The research concluded from the analysis of the two university case studies that there are five main barriers to inclusive design: These are: (1) socio-cultural differences and inclusive design; (2) misinterpreting inclusive design and disability; (3) accessible design and regulation barriers; (4) procedural barriers; (5) organisational barriers.

A key finding from consultation with users was that inclusive design approach is preferable to interviewed and surveyed participants at both universities to just meeting accessible regulations and approach. These results highlighted the market demand for both universities to base their entire businesses on the inclusive design strategy. By recognising the diversity of their users' life styles and obtaining their individual experiences, both universities can identify and remove the physical and mental barriers to achieve an inclusive university environment.

Introduction

For many decades, since the introduction of a range of antidiscrimination disability legislation, the design of the built environment in many countries has been influenced by the needs of disabled people. In the USA, the Architectural Barriers Act 1968 was the first antidiscrimination legislation to be passed to protect disabled people against discrimination, while the Chronically Sick and Disabled Persons Act 1970 was the first British legislation to be introduced to promote disabled people's equal rights to gain access to public facilities and services. The original legislation in both countries has been revised and amended several times to strengthen its requirements and eliminate barriers for disabled people. The Americans with Disabilities Act 1990 and its amendment in 2008, the British Disability Discrimination Act 1995, its amendment in 2005 and the current Equality Act 2010 have caused a shift in attitudes towards creating built environments that are accessible for disabled people (Goldsmith, 1997, Imrie & Hall 2001, Steinfeld & Maisel 2012).

It was over 16 years after introducing the Architectural Barriers Act in USA, and Chronically Sick and Disabled Persons Act in Britain in 1970, that design guidance was introduced to implement the law and eliminate architectural barriers for disabled people (Goldsmith, 1997,p 101,121). The Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the British Approved document Part M have been introduced to address issues of access into newly constructed facilities so they become accessible to and usable by disabled people (Goldsmith, 1997,p 77).

These guidelines and regulations were revised to cover a range of facilities to meet the needs of disabled people in the public and private sector and were useful tools for designers to determine appropriate design parameters or space requirements and essential design features. However, producing disability acts aimed at eliminating discrimination against individuals with disability, has not been always accompanied by building regulations that ensures inclusion. For instance, Lebanon introduced antidiscrimination disability legislation in 2000, known as the Lebanese Disability Act (220), to promote disability rights and eliminate physical barriers but did not provide a national building regulation standard that designers can refer to. Acknowledging the importance of such a national standard, many Lebanese disability activists, NGOs and architects drafted a guideline in 2011 which contained six provisions for new buildings to enhance accessibility only for people with physical disabilities without taking into consideration the needs of other types of disabilities. All the above mentioned building guidelines and standards aimed at promoting accessible environments that were geared in the first place towards a specific group of people, namely "individuals with disabilities."

The process of designing accessible environments for individuals with disabilities has gone historically through different phases which are often described as models. The two most relevant ones to this study are the medical and the social models which will be examined in-depth in the literature review. These models shaped the approach to the design of the built environment.

Prior to the disability rights movement that started in the 1960s, disability in the USA and Britain centred on the medical model has restricted many individuals with disabilities from interacting with society and the environment, since their impairment was considered to be the main reason preventing interaction.

In the absence of a medical cure for their physical condition, individuals with disabilities have had to attend welfare facilities such as special rehabilitation centres, special schools and welfare units that have resulted in exclusion and segregation from mainstream society.

In Lebanon, the religious and tragic model of disability was prominent. Disability was perceived as the result of sin or punishment from God which led to isolating disabled people from mainstream society.

According to Mencap (2012), In Britain, the industrial revolution led to mass migration to cities and social pressures which resulted in the creation of the Poor Laws in 1834 and the building of “asylums”-purpose –built institutions to house people with mental health difficulties which was described at that time as “mad” or “feeble minded.” The development of segregated institutions continued into the early 20th century, although the purpose of moving people to institutions changed. During the periods between the two World Wars, laws were passed to promote segregation of disabled people especially those with learning disabilities from the mainstream society. These laws encouraged the building of special schools for children with learning disabilities which promoted segregation and isolation. In the 1930s, the IQ test was introduced and people scoring low marks in the test were categorised as 'mentally defective' and were prohibited from attending even special schools.

The introduction of the British National Health Service in 1946, and defining disability according to the medical model had led to introducing a new terminology “mentally handicapped” which resulted in replacing special institutions and schools by hospitals.

Attitudes towards people with mental health difficulties and physical disabilities had shifted from seeing them as “dangerous or degenerate” to viewing them more sympathetically as people in need of treatment, although still a drain on the public purse. People with a learning disability remained segregated and isolated, and the standard of care was extremely poor. This remained the case right up until the closure of the long-stay hospitals. (Mencap, 2012, p3). This situation prompted many individuals with disabilities to call for equal rights which emphasised the right of choice and of opportunity to have access to education, employment, transport at and public and private services. Acknowledging that the special institutions were a major barrier to inclusion of individuals with disabilities in mainstream society, the disability rights movement has led to a shift in attitudes towards promoting inclusion in getting access to education, employment and services.

This movement has led advocates of accessibility and architects in the USA to work on eliminating physical barriers, and University of Illinois Champaign-Urbana was the first university in the world to attempt to enhance accessibility at its buildings for disabled people in 1956. Moreover, the independent living movement which started in the USA at the University of California Berkeley in 1972 called for the removal of architectural and transportation barriers that prevent people with disabilities from getting equal opportunities in sharing fully in all aspects of the society. Hundreds of independent living centres and units were established across the United States, and throughout much of the rest of the world (Goldsmith, 1997 p 54-57). This movement along with disability rights and access advocacy called for the need to design buildings accessible for people with disabilities and raised the awareness of bringing people with disabilities into mainstream society, ensuring equal opportunity and eliminating barriers to access and use in the built environment (Steinfeld and Maisel, 2012, p 15).

The social model of disability changed the way of thinking about disability as it shifted the issue from the individual and placed it on the society. Instead of disability being the bad luck or fault of the disabled person, disability has become the fault of the society which did not provide an enabling environment resulting in the dis-empowerment of certain groups in the society (Finkelstein, 1981; Barnes, 1991; Oliver 1991b,1996) Hence, the solution lies in the hand of the society. One important component of this solution is to adopt an inclusive approach to architecture design to eliminate barriers for users with different age group and abilities (Goldsmith, 1997, Imrie & Hall, 2001).

As a result, advocates of accessibility began to put their efforts into enhancing the built environment by providing designs and environments that all people can use and enjoy regardless of age group, abilities and capabilities. The new paradigm known as inclusive design surpasses the necessity to create accessible environments for individuals with disabilities. It aims at creating environments that maintain quality of life and independent living for all potential users by eliminating barriers and avoiding stigma. To achieve this goal, inclusive design demands a shift in attitudes and perspective towards placing end users at the heart of the design process, acknowledging diversity and differences by offering choices and designs that cater for wide users.

In spite of the major strides achieved in this field, many facilities and built environments still have significant barriers that restrict access by many users such as children, mothers /carers with children and old people.

Case Studies

This paper draws attention to university built environments at two case studies “University of Kent” in the UK and the “American University of Beirut” in Lebanon to investigate whether the two universities have accommodated end users’ entitlements. Recognizing that the University of Kent was founded in 1965 and the American University of Beirut was founded in 1864, when the aspect of access was not properly anticipated, this paper aims to explore whether adopting an inclusive design approach in both universities is preferable to just meeting legislative requirements.

University of Kent case study & the American University of Beirut

The Scope of Work

1- Online Survey

The purpose of the questionnaire was to ascertain the views of students and staff members and their experiences in accessing the built environment at University of Kent- Canterbury campus. The data for this survey were collected over three academic terms (Summer 2009, Fall 2010, Spring 2011). The survey contained 24 questions consisting of multiple choice and free text answers. 236 respondents of both sexes and a range of ages, ethnicities and disabilities took part. The survey was circulated among all disabled students registered at the Disability and Dyslexia Student Services DDSS and a representative sample of 1000 non-disabled.

At the American University of Beirut the data were collected over Fall term 2011 only and not circulated again, since the researcher had to abide by the University research ethical approval granted by the Institutional Review Board IRB who stated that the online survey had to be circulated during the Fall term 2011 and not be circulated among the whole population at the University.

The survey contained 24 questions either multiple choice or free text. All respondents were asked to consider their experience in accessing the buildings at AUB. Some 62 respondents of both sexes and a range of ages, ethnicities and disabilities took part in this survey.

2- Access audit assessment

The study was scoped to conduct access audits of six buildings at the University of Kent. The selection was driven by the need to evaluate the major buildings and facilities used by students, in addition to appraising recently built or modified buildings. A shortlist was developed, and following consultation with students and staff members who completed the online survey, Templeman Library, Eliot College, Venue-Student Union, and Registry were selected. In addition Marlowe Building was selected as an example of older buildings and the New Arts Jarman Building as an example of new buildings.

Of the six buildings selected for access audit at the American University of Beirut, four were those most frequently used by students and staff members, the remaining two were selected according to the date they were founded. The four frequently-used buildings were: Jafet Library, College Hall, West Hall, and the New Women dorms. Then Jesup building was selected as an example older building dating from 1883 when the University was founded, and Olayan School of Business, opened 2010, was selected as an example new building.

The access audit investigated the compliances of these buildings with England & Wales Building Regulations 2000 (Part M Access to and use of buildings, and Approved Document M, 2004).

The audits were designed to take into account the journey from the user’s transportation means to reach the university, till the final destination, taking into account factors such as signposts, the design of pedestrian environments, bus stops, and car parking spaces and major level changes. The access audit evaluated two physical environment components, the external environment and the internal environment (Sawyer & Bright, 2007).

3- Personal interviews with students and staff members with disabilities

The purpose of this method was to obtain data on the experiences, views and satisfaction with the level of accessibility and the services provided at the built environment. Ten participants of both sexes and a range of ages and disabilities took part in semi- structured interviews. Acknowledging that there are no statistical data to provide accurate numbers of disabled students and staff members at the American University of Beirut and recognizing that the disabled population is small, a total number of 10 participants were selected. The research used the same sample number at University of Kent to make the study more comparable. Face-to-face interviews were carried out with 10

participants at each case study in order to capture their experiences in accessing the university buildings and their satisfaction with the services provided.

The researcher conducted twenty personal interviews with students and staff members with disabilities at both Universities. At University of Kent, seven interviewees had a disability from birth; three of them became disabled after birth before joining the university, while four interviewees at the American University of Beirut had a disability from birth, four of them became disabled after birth but before joining the University, and two participants were temporarily disabled by injuries.

At the American University of Beirut five interviewees were postgraduate, three undergraduate and two staff members had a variety of disabilities; two were wheelchair users, three had visual impairments, three were blind and two had temporary disabilities.

4- Stakeholders consultations

Education providers and architects took part in this exercise that aimed at obtaining feedback from a design, operational and commercial perspective, regarding the effectiveness of the legislation / design standards and regulations in providing accessible environments and promoting inclusion.

A total of 6 semi-structured interviews were held with stakeholders, four education providers and two architects, to consider the effectiveness of the regulations and the challenges associated with providing an accessible and inclusive built environment and educational service.

The purpose for interviewing architects was to investigate their knowledge regarding catering for the needs of disabled users when designing new buildings or renovating or designing an extension for existing buildings. At Universities, limited, with the number of buildings built after 2004 when the Part M building regulation standard was introduced, the researcher had to interview only architects who were commissioned to design and build university buildings. Hence she was limited by the number of suitable architects, which meant interviewing two architects at each university.

Analysis of Findings

Barriers to Inclusive Design at both Universities

The two case studies revealed that the two universities did not fully embrace the inclusive design principles in tackling accessibility barriers.

1- Socio cultural differences and inclusive design

Data analysis of the two phases of the research highlighted that individuals with disabilities are socially and culturally marginalized and segregated when using university services that produce bias in the built environment. In a developed country such as the UK, cultural attitudes towards individuals with disabilities are reflected in the views of interviewed architects at the University of Kent. They acknowledge their legal and moral obligation to eliminate architectural barriers for individuals with disabilities by complying with building regulations such as Approved document M and British Standards. Although these regulations enhance accessibility for individuals with disabilities, they provide marginalized and segregated university facilities and services that produce a bias. This bias is reflected in special provisions that reflect the dominance of the medical model of disability. In contrast, in a developing and low-income country such as Lebanon, negative attitudes and indifference towards individuals with disabilities are reflected in the views of several interviewed architects at the American University of Beirut. They acknowledge that accessibility for individuals with disabilities in Lebanon is considered a luxurious thought or as one architect stated “as Caviar.” He further noted that Lebanon is already struggling to maintain an infrastructure that is hardly developed for able-bodied people much less individuals with disabilities. Interviews with architects revealed that many of them preserve social and cultural attitudes in responding to the design needs of individuals with disabilities by relating impairments to medical conditions that are mainly attributed to mobility deficiency and impairments. The cultural bias towards responding to wheelchair users’ needs rather than acknowledging the wide spectrum of disabilities is reflected in architects’ understanding of disability. Moreover, access audits revealed that the age of a building does not always correlate with its accessibility, since accessibility is only defined and understood by professionals and architects as catering for one type of disability, namely physical disability or impaired mobility.

2- Misinterpretation of inclusive design and disability

One of the barriers to achieving inclusive design at the two universities was the misinterpretation of inclusive design. The research findings reveal that some interviewed architects associated inclusive design with the design that anticipates the needs of individuals with physical disabilities to enable those to access university built environments. As Steinfeld (1994) argues, enhancing accessibility for individuals with disabilities aims to provide the right to access and use the environments; however, it does not prompt the diversities and social inclusion of all users that inclusive design acknowledges.

Moreover, the study findings show that there is no census about the definition of disability among interviewed stakeholders at the two universities. Whilst, most stakeholders at the University of Kent recognize disability as an impairment that restricts an individual from interacting with the built environment, they acknowledge three impairments (mobility, visual, and hearing impairments). However stakeholders at the American University of Beirut categorize individuals with disabilities as people having impaired mobility who would be mostly impacted by physical barriers, and ignore that other groups could be impacted by the same barriers. The other groups are people with mental and cognitive impairments, heavy pregnant women, obese people, short and tall stature, mother/ carer, children and old people.

This narrow understanding of disability that responds to wheelchair users' needs only is confirmed by findings from access audit assessments at both universities, which is manifested by providing ramps set off to the sides of main or back entrance stairs or platform lifts along internal stairs while neglecting to tackle other population needs such as older people, women and men, young children and people with other disabilities.

3- Accessible design and regulation barriers

Difficulties with understanding the difference between accessible design and inclusive design is reflected in the built environment at both case studies. The study findings highlight that architects and designers at both universities outlook inclusive design as complying with accessible regulation standards to provide accessible designs and special features that tend to promote exclusion and social isolation.

Accessible design provides separate facilities for people with disabilities that lead to exclusion and seclusion (Goldsmith, 2001; Steinfeld, 1994; Steinfeld and Maisel 2012; Nussbaumer, 2012). The ramps provided in Eliot College and West Hall which are set off to the side of the staircase, the passenger and platform lifts provided in the Templeman Library and Eliot College, different main entrances (medical gate alternative to AUB main gate, and the Templeman Library and College Hall registrar's back entrances, are all examples of accessible design. These accessible examples have the medical and technical presences that promote a negative and stigmatizing reflection on individuals with disabilities. A significant limitation about accessible design is highlighted in the views of interviewed individuals with disabilities at the two universities who describe these specific features as unreliable, expensive and difficult to repair. Not only these specific features hamper them from accessing the built environment, but also uphold a negative image about their impairments and disabilities.

Feedback from architects reveals that most of them rely at the first place on building regulation standards to enhance the accessibility level for individuals with disabilities at both universities. Whilst architects at University of Kent use statutory building standards such as Approved Document M and design guidance such as British Standards on an extended existing building or a new designed building, architects at the AUB referred to French and American standards to cater only for physical disabilities, in the absence of statutory Lebanese building regulations. Although these regulations assist architects in enhancing the level of accessibility at some university buildings at the two universities, findings from interviews with architects and access audit assessments reveal that these regulations alone are insufficient tool to achieve inclusive built environments as they set minimum standards centred on accessible design. It is centred on covering the access needs of individuals with mobility, visual and hearing impairments and do not provide access and egress provisions for other users such as people with cognitive impairments, people with temporary disabilities, people with dyslexia, and people with asthma who experienced difficulties in accessing or evacuating buildings at the two universities.

Many interviewed architects at University of Kent describe the regulations as generic, vague and ambiguous as they do not define clearly why such provisions are used and which types of disability such provisions cater for. Feedback from participants with visual, cognitive impairments, and mental health difficulties at both universities stress out the prominence of visual and audible signage in wayfinding and orienting around a building which building regulations such as Approved Document M do not provide guidance for. Another limitation of Part M that is supported by Imrie and Hall (2001) findings is the lack of provisions about material finishes, interior decorations and lighting types that generated health and safety problems for many participants at University of Kent. Participants with mobility and visual impairments found difficulties in managing slippery and highly reflective floor finishes. On the other hand, the carpet floor finishes tended to cause asthma and health problems for participants with respiratory conditions and was difficult to manage by most interviewed wheelchair users. By not including design guidance in the Part M

about decoration, material finishes and signage, many individuals with visual, cognitive and other impairments can be excluded in the accessibility enhancement process.

3- Procedural barriers

Procedural barriers are another main limitation to achieving inclusive university environment at both universities. The lack of financial resources and the knowledge about inclusive design and disability needs played a major role in embracing inclusive design.

Interviews with individuals with disabilities and online surveys at the two universities highlighted that physical and management barriers coexisted at both. There was an absence of disability knowledge and understanding of users' needs, and a failure to involve or consult users when a building was refurbished or renovated or new services were introduced. Many individuals with disabilities believed that eliminating the physical barriers can solve part of the accessibility issue, but it is not sufficient to provide a completely accessible environment. One participant with mobility impairment noted that the University of Kent never consulted users when refurbishing a building, and although he volunteered in writing proposing suggestions to enhance accessibility, these suggestions were not seriously taken into consideration by the Estates Department at the University. Although most education providers recognised the importance of users' participation in eliminating barriers and creating an inclusive environment, they admitted that such involvement is never practised. One education provider noted that accessibility issues arise immediately a new building is opened due to the lack of consultation with users.

A key element in achieving this, as many suggested, lies in providing appropriate and effective management and maintenance procedures that are monitored and checked regularly.

4- Organizational barriers

Inclusive design policies at both universities are highly lacking. The two universities do not acknowledge the users' needs nor do they give incentives for adopting the inclusive design approach. Their understanding of inclusive design is centred only on eliminating physical barriers and enhancing the level of accessibility for wheelchair users, disregarding the broader range of other users' needs.

Findings reveal that physical barriers may be relatively easy to overcome but without having inclusive management policy and practice, both universities will fail to achieve inclusiveness. By providing appropriate and effective management training courses to all staff members and employees, both universities will be able to provide inclusive environments, transportations, services and information that are inclusively managed and maintained. The training should cover working with individuals with disabilities, legislation, inclusive building regulations, disability awareness and how to make written information accessible and understandable for individuals with disabilities.

The interviews with individuals with disabilities, education providers and architects at the two universities highlighted the importance of education and training in raising awareness about disability types and specific needs. Such awareness is vital in enhancing services so that all users can get benefit from.

Another barrier to achieving inclusiveness at both universities is the failure to broaden and provide the knowledge and information in educational setting. This barrier must be overcome. As an example, many times instructors at both universities fail to anticipate the needs of many users including those with visual and cognitive impairments, by failing to change their teaching methods or provide large printout materials or easy to read documents.

Conclusion

The study reveals that the exclusive design approach still takes precedence over the inclusive design approach in both universities. Five barriers are identified that hinder the adoption of inclusive design. The socio-cultural differences; the misinterpretation of inclusive design and disability; the accessible design and regulation barriers; as well as the procedural and organisational barriers have led to creating exclusive environments at both universities.

To achieve an inclusive university environment, the socio-cultural, as well as economic and organisational attitudes towards disability should be understood in terms of the users' civil, moral and legal rights. The definition of disability should be understood according to the human difference and its interaction with the socio-cultural and economic and organisational attitudes and barriers. Rather than defining disability as a reality that sees the individual personal problem to adapt to the existing built environment, it should be understood as the person's difference and needs to integrate in the society. Hence disability should be understood as what is wrong for the person and not what is wrong with the person.

Feedback from users highlighted the essential requirement to involve users in the design phase. Most users blame the existence of accessibility barriers at both case studies on their exclusion from the design and implementation phases. The collaboration between designers and end users should occur at all stages of the design process from the preplanning till the construction phase to attain an environment or facility that quarters the needs and aspirations of wide spectrum of users including marginalised groups and individuals with disabilities. Projects based on the participatory approach exemplify the architects and designers understandings of the users' life styles and cultures which enabled them in creating inclusive environments that all people with different age group, culture, and abilities can benefit from.

Whilst the concept of inclusion is becoming more vital in enhancing accessibility and its principles are applied in public spaces, this study has shown that that building regulations with minimum requirements such as Approved Document M followed at University of Kent, have failed to create an inclusive environment. The study proposes that inclusive building regulation in both countries must include more information about provisions and users' specific needs as well as provisions for children, women, mothers with children etc. The regulations should include information about inclusive means of transportation and their specific dimensions and features, inclusive vehicle parking, external routes leading to buildings, internal features, interior features, acoustics, lighting, signage and inclusive information and communication systems.

Such regulations, oriented towards a user-centred approach, will assist architects in designing products, provisions and environments that reduce the need for specific accommodations and avoid any stigma. Such regulation if revised must include detailed and clearer information about provisions so that architects acknowledge the reason for using such provisions for particular users. Moreover, the revised regulation must be provided in different formats such as Braille, large fonts and easy to read formats to enable architects, access consultants, access groups and designers to access this valuable information.

In order to achieve an inclusive environment, universities must implement an inclusive and holistic approach throughout inclusive education and environment. Inclusive design cannot be reached in an educational organisation without meeting the conditions of inclusive education. The concept of inclusion in both the physical and educational environment must be recognised by accommodating the users and learners' needs to maximise social justice, democracy, and social participation.

This can be achieved by changing instructors' attitudes and raising awareness about diverse disability needs. Inclusive technology is a main driver in enhancing the learning environment at both universities. Through training and providing modified keyboards, speech enhancement instruments, text to speech, enlarged printed out notes, easy read notes, in addition to I pad tablets, software and other high tech gadgets and devices, instructors will change and adopt these necessary demands to accommodate the diverse needs of their students. Establishing a centre at both universities for inclusive education is crucial in maintaining and providing inclusive services to all users including people with disabilities.

An inclusive design strategy does not need to be limited to the design process. It can be a foundation for universities to base their entire business philosophy on. A truly inclusive university should be reflected not only in its built environment, but should also be seen in the employment practices, services and information that are accessible to potential users.

An inclusive way of thinking can influence not only the physical features of buildings, but also employment policy, personnel management, customer service, educational curriculum, communications strategy and marketing. This implies that both universities can promote and adopt inclusive design throughout their departments and services. By formulating a holistic approach that roots itself in university culture, policy and practice, inclusive training courses could be delivered to each department which would enable them to target their facilities to accommodate potential users' needs including individuals with disabilities. Moreover, introducing inclusive design into their curriculums in the architecture, engineering, interior and graphic design departments, plus involving students in proposing inclusive design solutions for existing and new buildings, will enable students to take part in enhancing and shaping their university built environment. Such recommendation has been suggested by interviewed users with disabilities and architects. Interviewed architects pointed out that the paucity in accessibility knowledge was one of the reasons for creating environments that do not acknowledge the different users' needs. Introducing inclusive design in the educational curriculum leads to a better understanding of inclusive design among students and contributes towards developing inclusive solutions that can offer a cost-effective and uncomplicated method for innovation. This finding

is supported by Steinfeld and Maisel (2012, p 74) who stressed out the importance of integrating inclusive/universal design in professional educational programmes to increase the rate of inclusive/universal design adoption. Another main component in mainstreaming inclusive design in an educational setting is by introducing the level of adoption of its principles into university ranking criteria. Inclusive design principles could be part of the ranking criteria where inclusive policies, practices and services are audited. Universities adopting these inclusive design criteria in their built environment and educational system would be given more points in their ranking. By fulfilling this requirement, inclusive design will become mainstream in an educational setting.

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