



## **INCLUSIVE DESIGN; FROM PHYSICAL TO PSYCHOSOCIAL - A LITERATURE ANALYSIS TOWARD A DEFINITION OF PSYCHOSOCIAL DIMENSIONS IN DESIGN**

**Lim, Yonghun; Dr. Nickpour, Farnaz**  
Brunel University, United Kingdom

### **Abstract**

With the dual demographics of an aging population and more people living with disabilities, inclusive design has been recognised as a driving force for accessibility and social equality in design of products, services and environments. However, it is yet to be thoroughly and effectively applied. The limited understanding and knowledge of inclusive design principles among the various stakeholders and public is one contributing factor. Secondly, the conventional application and interpretation of inclusive design has mainly focused on physical inclusion, usefulness and usability aspects rather than the psychological or social dimensions of inclusion or exclusion. The psychological and social dimensions will be called “psychosocial inclusion” in this paper. The psychosocial perspective could have potential roles in next stage of facilitation and practice of inclusive design. In the existing design literature, however, the concept of psychosocial inclusion is limited. Therefore, existing definitions of the psychosocial aspects in non-design fields, alongside design were researched and analysed in order to establish an initial definition and framework of psychosocial inclusion in design.

**Keywords:** Psychosocial inclusion, Inclusive design, Psychological, Social

### **Contact:**

Yonghun Lim  
Brunel University  
Department of Design, College of Engineering, Design and Physical Science  
United Kingdom  
yong.lim@brunel.ac.uk

Please cite this paper as:

Surnames, Initials: *Title of paper*. In: Proceedings of the 20th International Conference on Engineering Design (ICED15), Vol. nn: Title of Volume, Milan, Italy, 27.-30.07.2015

## 1 INTRODUCTION

A growing aging population with disposable income and more pro-active roles in the society together with a growing and increasingly vocal number of people with disabilities is leading to increasing cases of design exclusion on physical, cognitive, emotional and social levels. Social exclusion includes issues, such as social isolation and inequality (Brynn, 2013). These social issues can be seen in the daily lives of individuals, where they have a reduced social role and less community participation opportunities. Such individuals often lack social support and contact, and they suffer from unemployment, low economic status and discrimination (Salles, 2013). This social trend has brought the need for inclusive design into focus. In this view, inclusive design has gradually developed and is now recognised within a global social context (Coleman et al. 2007; Fletcher, 2011). This is promised that it will play an important role in providing an equal and equitable future for the whole population. There are already some initiatives in developed countries such as the UK, Sweden, Norway, Sweden, Germany, the U.S. and Japan to solve these social issues through the concept of inclusive design (See Appendix). The Norwegian government's plan, for example, is entitled "Norway shall be universally designed by 2025" (Hole, 2013). Movements such as this are one of the most ambitious solutions required in considering our future as a world that we can enjoy as equals (Steinfeld, 2013). According to the Table 3 in Appendix, however, it is clear that governments and NGOs in developed countries mostly focus on enhancing the *physical aspects* of inclusivity, the built environments, services, products, ICT (Information and communication technology), actions and policy. Furthermore, many design experts have also argued that the current ideas are flawed and have instead put the emphasis on the need for further evaluation and development for better inclusion (Marie, 2013; Steinfeld, 2013; Frye, 2013; Guimarães, 2013; and Hedvall, 2013). Conventionally, the understanding of inclusive design principles has mainly focused on the physical inclusion and usability aspects rather than other *psychological* or *social aspects* (Steinfeld, 2013). In this study, these psychological and social aspects will be called "psychosocial inclusion".

Psychosocial development is an international policy trend, and the concept is strongly represented in the academic realm in the UK, in particular, since the 1990s (Roseneil, 2014). In addition, the psychosocial study covers a range of other fields of study.

As mentioned, despite psychosocial considerations being needed in the field of inclusive design study, there is a lack of clear definition and practical application of psychosocial aspects in the design field. With this in mind, the definitions of psychosocial aspects and its related terms in various fields were reviewed. The key elements, or terms, from the analysis will play a crucial role in building an initial definition of psychosocial inclusion in design.

Therefore, the aim of this paper is to explore and synthesise an initial definition and the key framework of psychosocial inclusion in design field to build thorough definition and framework in later studies by:

1. Identifying the existing definitions and key considerations of psychosocial aspects in non-design fields.
2. Identifying any existing relevant definitions and considerations of psychosocial aspects in design field.
3. Suggesting an initial definition and key framework of psychosocial inclusion in design area based on synthesising 1 and 2

## 2 METHODOLOGY

The whole research study, this paper is part of which, is based on four phases (see figure 1). The first phase is the literature analysis discussed in this paper. In this section, an initial definition and framework of psychosocial inclusion in design was identified by the illustrative data collection and coding analysis. In the phase II and III, the initial definition from the first phase will be verified and refined through a number of studies. Using the combination of these three methods as a research triangulation will lead to multiple perspectives and further validation, verification and enhancement of findings. Thus it will increase the validity and accuracy of the results (Jick, 1979). Finally, a definition of psychosocial inclusion and a framework for application in the field of inclusive design will be created (see table 1).

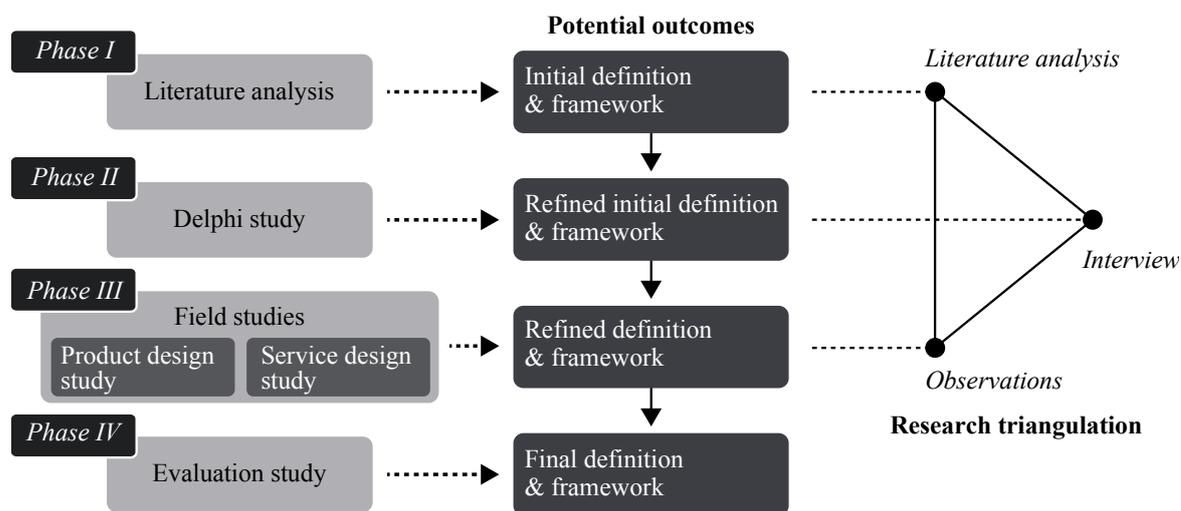


Figure 1. Research methodology

Table 1. Aims and expected benefits of studies

Studies	Aims	Potential benefits
Delphi study	To refine initial definition and framework To explore the context, importance and potential role of psychosocial issues in inclusive design	A multidisciplinary and professional knowledge on possible future directions
Field studies	To develop the refined definition and framework	An empirical analysis from practical design projects
Evaluation study	To create final definition and framework	A professional and an empirical knowledge on the results of the study

## 2.1 Data collection method

Google scholar, Scopus and the British library were used for the data collection. These three databases are effective mix of data collection sources that cover extensive materials such as published papers, books and articles. The terms ‘psychosocial’, ‘psycho-social’, ‘psychosocial inclusion’, ‘psychosocial intervention’, ‘psychosocial factors’, ‘psychosocial aspects’ and ‘psychosocial care’ were used as keywords to search the literature. Each keyword was searched with the terms identified above together with the following terms: aim, define, definition, and defining. Searching filters were not used to extend the range of searching. The number of citations is one of the important criteria for data verification, but it is possible for the latest papers to have low numbers of citations. With this, a conjunction of three criteria, such as year of publication, number of citations and correlation of study with any psychosocial aspects, were used to filter the search results.

## 2.2 Data analysis

The studies were analysed using coding methods. Process Coding, Domain and Taxonomic Coding and Axial Coding (Saldaña, 2012) were used repeatedly. They were successfully adopted to classify terms which are related to the psychosocial aspects and to identify the main themes clearly.

- Procedure

In the first stage of the coding, the words related to the term psychosocial, such as ‘psychosocial support’ and ‘psychosocial factors’ were highlighted to categorise the data. In this coding process, 34 different psychosocial-related categories were classified. The most common categories were psychosocial care (6), psychosocial support (8), psychosocial factors (23), psychosocial interventions (17) and psychosocial variables (6). In addition, some less significant categories that had similar definitions or meanings were combined together into the same main category, such as psychosocial issues, psychosocial barriers, psychosocial hazard, psychosocial risks, psychosocial problems and psychosocial difficulties. The majority of the categories from first stage were coded by both Process Coding (also known as acting coding in selected methods literature) and Domain and Taxonomic Coding (Saldaña, 2012). These methods are an effective way to departmentalise the categories and

subdivide them into smaller groups. In the Domain and Taxonomic Coding results for psychosocial support, for example, it was possible to find mutual categories in other papers. For the final stage, the mutual definitions and key elements from previous coding processes were put through the Axial Coding process to discover the mutual categories. After the Axial Coding was conducted, mutual codes were grouped in each configured category. The main themes that represent other codes were figured out. Some themes were renamed or created to tolerate other codes efficiently.

### 3 FINDINGS

#### 3.1 Non-design fields

As mentioned in the introduction, a clear definition and practical applications of psychosocial aspects are limited in the design field. Hence, the existing definitions and applications of psychosocial aspects from non-design fields, where the psychosocial aspects are widely used, were collected and analysed. Such information will subsequently be used to provide key considerations for later stage. Furthermore, the collected papers were mostly from Health (49), Mental health (16), Psychology (16), Sociology (13), Medicine (8) and Other fields (7), which could potentially suggest these areas as the nesting fields. Five dominant categories – psychosocial ‘support’, ‘interventions’, ‘issues’, ‘factors’ and ‘variables’ – were identified throughout the whole coding process, and three to five themes were also identified from each category (see figure 2).

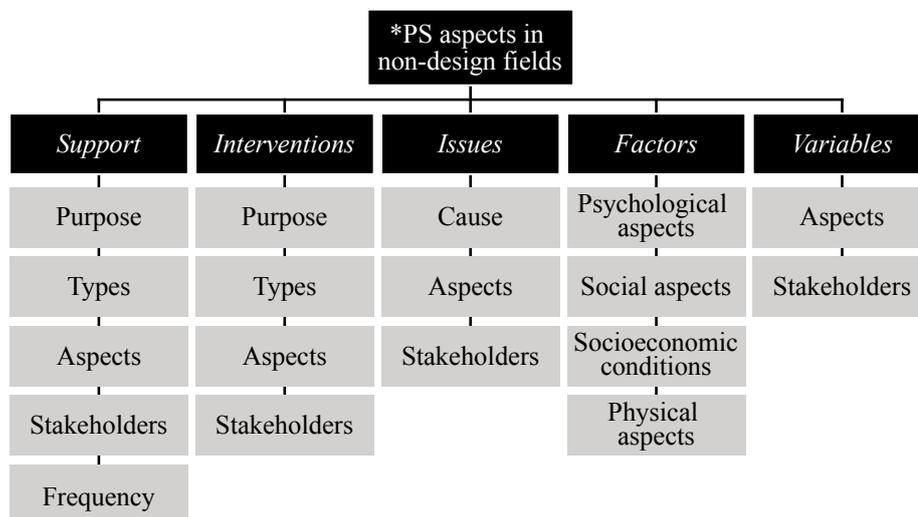


Figure 2. Psychosocial aspects in non-design fields

\*Psychosocial

#### Psychosocial Support

Five big groups were categorised as a result of the coding process for psychosocial support. There were: ‘purpose’, ‘types’, ‘aspects’, ‘stakeholders’ and ‘frequency’.

Addressing mental health issues and addressing psychosocial wellbeing were grouped in the Purpose of psychosocial support category. Their elements are comprised of addressing mental health problems, addressing mental health needs, preventing or treating mental disorder, and covering all the support and care at psychological wellbeing and health. The results show that the purpose of psychosocial support mainly concern mental health issues and psychosocial wellbeing, which is suited to the general definition of Psychosocial Support in the literature related to helping people with mental disorders to secure their emotional and psychological wellbeing or quality of life (Waycott et al., 2014; Hill et al., 2014; Sarah, 2010; IASC, 2007; Van Ommeren et al., 2007; and Johnson et al., 1996). Regarding the aspects of psychosocial support, all aspects are related to the bigger category, that is, quality of life. Stakeholders are mostly related to individuals, patients with mental disorders, such as the person directly concerned with the mental disorder, their family and their communities.

### **Psychosocial Interventions**

Psychosocial interventions (PSI) were organised into four groups: ‘purpose’, ‘types’, ‘aspects’ and ‘stakeholders’ in PSI. It is clear that improving the quality of life is the main purposes of PSI. In the types of psychosocial intervention, psychological interventions and social interventions were delineated as the main themes from the analysis. Beyond that the psychosocial aspects—social integration, recovery and improved communication—and stakeholders—individual, patients, group-based and practitioners/caregivers—were coded.

### **Psychosocial Issues**

As mentioned in the data analysis section, various coded categories of psychosocial issues – psychosocial ‘barriers’, ‘hazard’, ‘risks’, ‘problems’ and ‘difficulties’ – were all combined as psychosocial issues based on the dictionary definition of each word and the way they were used in each paper. In the category of psychosocial issue, three main themes were found: ‘causes’, ‘aspects’ and ‘stakeholders’. In the causes category, psychological harm, social harm and physical harm were the key factors. The psychological and the social aspects were taken large part of the aspects.

### **Psychosocial Factors**

There are high numbers of psychosocial factors from various study areas. They were categorised by four big themes as ‘psychological aspects’, ‘social aspects’, ‘socioeconomic conditions’ and ‘physical aspects’.

### **Psychosocial Variables**

From the analysis of the psychosocial variables category, two elements ‘aspects’ and ‘stakeholders’ were identified. The category aspects contains three themes; psychological, social and socioeconomic aspects, and elderly was identified in the stakeholder category.

### **Summary**

The literature findings were assembled, collected and then reviewed and analysed. The repetitive use of a combinational coding method was used to find logical results effectively.

From the five categories above, the psychosocial support and the interventions were combined in the same group. Both categories psychosocial factors and psychosocial variables were assembled in the same group as well based on their similarity. As a result, three main categories of the psychosocial aspects were found as follows:

- Psychosocial support / interventions
- Psychosocial issues
- Psychosocial factors / variables

From the final analysis, the main purpose of the Psychosocial support is enhancing the quality of life based on psychosocial well-being. Psychological aspects, social aspects and physical aspects are in the category aspects. The range of stakeholders is distributed widely such as individual, social group and providers. The causing of psychosocial issues are psychological harm, social harm and physical harm. The three categories and the main themes from this result will play an important role in building the initial definition and framework for psychosocial aspects in design in the final Summary section.

## **3.2 Design**

In this stage, the definition and elements of psychosocial in design were reviewed and analysed in order to conduct a comparative analysis. From this work, the initial definition and key elements of the psychosocial and its related terms in the design area will be defined (see figure 3).

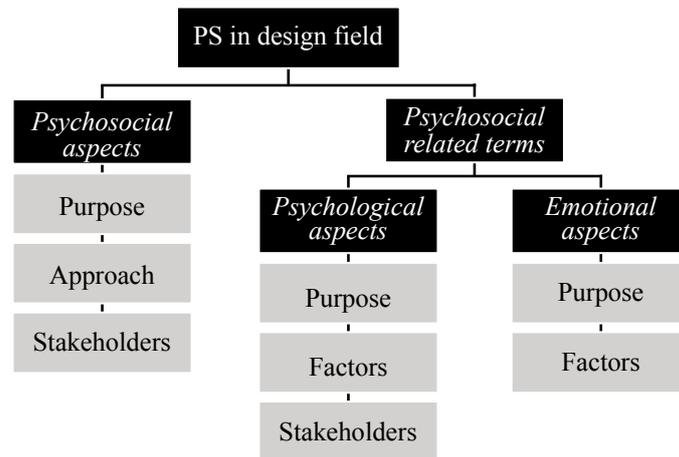


Figure 3. Psychosocial aspects in design fields

### Psychosocial aspects in design area

The papers that related to psychosocial aspects in design were collected and coded. The final identified psychosocial aspects in design are purpose, approach, factors and stakeholders. From the refined elements, the purpose of psychosocial characteristics in design is improving the quality of life. The purpose of psychosocial supportive design has been redefined as stimulating the mind in order to create pleasure, creativity, satisfaction and enjoyment, which are subcategories of the quality of life. Therefore, it is possible to say that this broader purpose of psychosocial supportive design is likely to improve the quality of life.

### Psychosocial related terms in design areas

As previously mentioned, in design area there is very few direct notions are definitions of ‘psychosocial inclusion’. While there is a few areas of design that address various key aspects of psychosocial aspects. Psychosocial related ideas such as psychological and emotional aspects in design areas were collected and analysed in this section. According to the result of coding, there are two major categories-‘psychological aspects’ and ‘emotional aspects’- in the literature that is about psychosocially related ideas. In the psychological aspects, as a result, there are psychological well-being, psychological outcomes and environmental psychology. Their dimensions are purpose, factors and stakeholders. Another major category, the emotional aspects, consisted of three subcategories that emotion, emotional factors and positive emotion. In this category, the dimensions purpose and factors were found.

## 4 SUMMARY

The final coding analysis was organised into a table entitled the ‘integrated psychosocial aspects’ (See table 2). The identified aspects are ‘purpose’, ‘types’, ‘dimensions’, ‘stakeholders’, ‘frequency’, ‘causing’, ‘factors’ and ‘approach’.

The general purpose of psychosocial aspects is improving quality of life based on psychosocial well-being. In the types, there are three different types of psychosocial interventions, which are psychological interventions, social interventions and behavioural interventions. Psychological aspects, social aspects and physical aspects were redefined as psychosocial aspects. Various stakeholders such as individuals and social groups were refined. The aspect entitled frequency shows that the psychosocial interventions should be provided in daily life for various kinds of stakeholders, as shown in the aspect entitled stakeholders. Psychological, social and physical harms are also re-categorised as the causing of psychosocial harm. In the aspect entitled factors, this result indicates the psychological and social factors should be considered together as psychosocial factors. Lastly, the theories and framework were suggested in approach.

### Initial definition of psychosocial inclusion

From the results of section 3.2 Design, the significant finding for the creation of the initial definition is the purpose of each section. Both psychosocial aspects and its relationship to design, point the quality of life of stakeholders. This result also meets the purpose of psychosocial aspects in other areas, and this common result has had a crucial role in the providing the initial definition. Furthermore, other

dimensions such as stakeholders and aspects from the coding results were also considered for creation of the initial definition. The defined initial definition of psychosocial inclusion in design is as:

*Applying the psychological and social aspects to design to enhance one's quality of life*

#### **Initial psychosocial framework**

From the eight aspects in integrated psychosocial aspects, the minor aspects 'types', 'frequency' and 'factors' were combined with other aspects or excluded for final selections. As a result, the final psychosocial framework in design were defined as:

- Purpose - What is the purpose of psychosocial inclusion in design?
- Dimensions - What are the key dimensions of psychosocial inclusion in design?
- Approach - How is the psychosocial inclusion applied?
- Stakeholders - Who is the stakeholder?
- Causing - Why the psychosocial exclusion occurs, and what is the phenomenon?

Table 2. Integrated psychosocial aspects in whole study areas

PSYCHOSOCIAL ASPECTS								
	PURPOSE	TYPES	DIMENSIONS	STAKEHOLDERS	FREQUENCY	CAUSING	FACTORS	APPROACH
*PS IN NON DESIGN FIELDS		Psychological interventions Social interventions Behavioural interventions	Psychological aspects Social aspects Physical aspects	Various stakeholders Individual Social group Providers	Routine support Daily support	Psychological harm Social harm Physical harm		
PS IN DESIGN FIELD	Improving the quality of life			Residence Providers Planners			Individual factors Social factors	Offering useful theory and framework to stakeholders
PS RELATED TERMS IN DESIGN FIELD	Successful aging Providing insights into how experienced at the urban setting			Aging			Anxiety Pleasure	
REFINED ELEMENTS	Enhancing the quality of life base on psychosocial well-being	Psychological interventions Social interventions Behavioural interventions	Psychological aspects Social aspects Physical aspects	Various stakeholders	Daily support	Psychological harm Social harm Physical harm	Individual factors Social factors Psychological factors	Theories Framework

## 5 DISCUSSION

The chosen literature was illustratively collected and analysed through the chosen coding methods to define the initial definition and framework of psychosocial aspects in design. This analysis provided the following insights.

### Insights

- In design area, insufficient understanding of psychosocial aspects has been identified. It has been identified clearly in the data collection process that there is lack of literature on psychosocial aspects in design.
- With the insight above, there is a lack of clear definition and components of psychosocial aspects in design.
- There is also a lack of models, frameworks and guidelines related to psychosocial aspects in the design field.
- The term quality of life has been identified as a main theme of psychosocial aspects in both non-design and design fields of study. Thus, it is also a key theme for the initial definition of psychosocial inclusion in design.
- The two foundations of psychosocial aspects are psychological and social inclusion.
- The psychological and social harm give rise to psychosocial issues.
- The stakeholders are varied and not limited to specific category. The literature contains many types of stakeholders such as individuals, groups, social members, the aging population and children, depending on the content. In this view, the stakeholders can include various people.

### Quality of life

According to the results of each analysis, quality of life has been identified as a key theme in the psychosocial aspects in both non-design and design fields. In this way, the definition of quality of life is the first to be understood in order to establish the initial definition of psychosocial inclusion in design and to prove the correlation between them.

Quality of life is defined as “an overall general wellbeing that comprises objective descriptors and subjective evaluations of physical, material, social, and emotional wellbeing together with the extent of personal development and purposeful activity, all weighted by a personal set of values” (ece, 1995). There are five main domains relevant to quality of life, which are ‘physical well-being’, ‘material well-being’, ‘social well-being’, ‘development and activity’ and ‘emotional well-being’. According to the domains relevant to quality of life, the psychological well-being and social well-being are based on each of the psychological aspects and social aspects (Felce, 1995). Thus, it could be claimed that the psychosocial well-being is an important domain in quality of life.

### Correlation between inclusive design and quality of life

The main purpose of this study is to define psychosocial inclusion in design, which is needed to clarify the correlation between inclusive design and quality of life. Such a relationship is the main theme of psychosocial aspects as it is shown in the result of the analysis.

The importance of quality of life can be explained through the purpose of inclusive design, which is to provide usable and accessible products, services or environments for as many types of people as possible without further knowledge or skills. In other words, this suggests that its aim is to improve people’ quality of life (Shibani, 2013). In literature analysis, the purpose of the psychosocial aspects; enhancing the quality of life, is the crucial fact that meets the purpose of inclusive design.

### A gap between psychosocial aspects in other areas and design area

It is clearly identified from the data collection and analysis above that the understanding of psychosocial aspects in design area is limited compared to those in other area. As it is identified in the previous section, however, the importance of psychosocial inclusion in design has already been prominent in many studies. With this in mind, identification of the gap between psychosocial aspects in other areas and design area plays a major role to further support the justification of this study.

## 6 CONCLUSION AND FUTURE WORK

The initial definition and the framework for psychosocial inclusion in design have been identified by the literature analysis. This is a crucial result in the design area where there has been a lack of understanding of psychosocial aspects. The findings, however, are the outcomes of the general analysis. Thus it has not been proven whether the initial definition and framework are suitable or not

when they are applied in the inclusive design area. With this in mind, the initial definition and the framework of psychosocial inclusion for design resulting from this study will be further refined through research triangulation and a triadic of three primary research methods: a Delphi study and two field studies. As a result, the final definition and framework will have more relevance to both design practice and academic design research

## REFERENCES

- Brynn, R. (2013) Improving accessibility in Europe. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Coleman, R., Clarkson, J., Cassim, J. & Dong, H. (eds.) (2007) Design for Inclusivity Gower, Hants UK
- Davidson, S. (2010) The development of the british red cross' psychosocial framework: 'calmer'. Journal of Social Work Practice, 24(1), 29-42.
- de Farias Júnior, J. C., da Silva Lopes, A., Mota, J., Santos, M. P., Ribeiro, J. C., & Hallal, P. C. (2011) Perception of the social and built environment and physical activity among Northeastern Brazil adolescents. Preventive medicine, 52(2), 114-119
- Felce, D., & Perry, J. (1995) Quality of life: Its definition and measurement. Research in developmental disabilities, 16(1), 51-74.
- Fletcher, V. (2011) Evolution and Trends of universal design in the USA, All design special issue on inclusive design, pp12-18
- Frye, A. (2013) Bridging the Gap between Theory and Practice. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Guimarães, M. (2013) Interpreting universal design in architectural education. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Hedvall, P. (2013) I have never been universal. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Hill, H. C., Paley, J., & Forbat, L. (2014) Observations of professional-patient relationships: A mixed-methods study exploring whether familiarity is a condition for nurses' provision of psychosocial support. Palliative medicine, 28(3), 256-263.
- Hole, A (2013) Aiming at equality. Trend Spotting at UD 2012 Oslo. Trends in Universal Design.
- Inter-Agency Standing Committee. (2007) IASC guidelines on mental health and psychosocial support in emergency settings. Inter-Agency Standing Committee.
- Jick, T. D. (1979) Mixing qualitative and quantitative methods: Triangulation in action. Administrative science quarterly, 602-611.
- Johnson, J. V., & Hall, E. M. (1996) Dialectic between conceptual and causal inquiry in psychosocial work-environment research. Journal of Occupational Health Psychology, 1(4), 362.
- Marie, I. (2013). An ethical perspective. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Roseneil, S. (2014). The Psychosocial Challenges of Establishing the Field of Psychosocial Studies. Journal of Psycho-Social Studies Volume, 8(1).
- Salles, M. M., Barros, S. (2013) The social exclusion/inclusion of users of a psychosocial care center in everyday life. Texto & Contexto-Enfermagem, 22(3), 704-712.
- Saldaña, J. (2012) The coding manual for qualitative researchers (No. 14). Sage.
- Shibani, M. (2013) The GAATES Vision of Universal Design and Sustainability. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Steinfeld, E. (2013) Creating an inclusive environment. Trend Spotting at UD 2012 Oslo. Trends in Universal Design
- Van Ommeren, M., & Wessells, M. (2007) Inter-agency agreement on mental health and psychosocial support in emergency settings. Bulletin of the World Health Organization, 85(11), 822-822.
- Waycott, J., Davis, H., Vetere, F., Morgans, A., Gruner, A., Ozanne, E., & Kulik, L. (2014) Captioned photographs in psychosocial aged care: relationship building and boundary work. In Proceedings of the 32nd annual ACM conference on Human factors in computing systems (pp. 4167-4176). ACM.

## APPENDIX

Table 3. Policies related to inclusive design in developed countries

Countries	Naming	Policies	Application		
UK	Inclusive design	Equality Act 2010: guidance	Social movement		
		National Planning Policy Framework	Service User interface		
		Guidance on building regulations (Part M)	Infrastructure		
		British Standards Institute BS8300: 2009: Design of buildings and their approaches to meet the needs of disabled people - Code of Practice	Infrastructure		
EU	Inclusive design Universal design Design for all	European Disability Strategy 2010-2020: a renewed commitment to a barrier-free Europe	Infrastructure Service		
		Norway	Universal design	“Norway Universally Designed by 2025”	Building and construction Planning and outdoor areas Transportation ICT (Information and communication technology)
		U.S.	Universal design	Disability Employment Policy	Physical environment Communication Technology
Japan	Universal design	Securing Housing for Seniors Law in 2001	Housing support		
		Barrier Free Measures	Infrastructure (in public area)		
		The law for Promoting Easily Accessible Public Transportation Infrastructure for the Aged and Disabled, 2001	Infrastructure (Transportation)		