



DESIGN. EXPERIENCE. CHALLENGES

Proceedings of Scientific Conferences

October 5, 2013

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Selected articles

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Strategic Design

Design = Design

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Abstract. The purpose of this study is to show complex problems in the field of design and design education, as well as to map out possible solutions of determining the impact of design on economic and social well-being and to offer proposals for a new design education classification model by encouraging reflection and discussion.

Keywords: design, art, education, classification, statistics

I. INTRODUCTION

Design has changed over the centuries to become multidisciplinary through the merging of individual design fields, as well through the division of basic disciplines into several sub-disciplines that are connected to new theories, technologies and societal needs. New design fields, such as Service Design, Strategic Design and Communication Design is connected to the immaterial – systems, processes, attitudes, experience and relationships. As a result, design includes the esthetic, but also market research, functionality, safety, ergonomics, environmental sustainability, technology, logistics and consumer experience. Design is generally associated with all branches of the economy (The Organisation for Economic Cooperation and Development) and all branches could have connections with professions associated with design, it suggests that the ability to integrate various competencies in the design process: systemic thinking, technological competence, personnel and risk management skills, strategic thinking, creativity, communication skills and the ability to cooperate.

Design, as a strategic way to ensure the well being of society in the future, is one of Europe 2020's flagship initiatives. In order to use the full potential of design innovation and strengthen the ties between creativity, innovation, entrepreneurship and the public and private sector, the European Commission has initiated a European Design Initiative. In many countries national design policies, strategies and visions have been created to encourage excellence in design as the main factor of competitiveness. It seems absurd in this context to prove that design is not a trend of art, however, analysis of theoretical and design literature, as well as current regulations, reveals a dichotomy between reality and the legacy of the past. The need to find the basis of this

perception is clearly indicated in the European Framework for Cultural Statistics (ESSnet- Culture and the International Standard Classification of Education (ISCED)). The aim of this research is to pay attention to some issues related to the visible gaps in statistical systems and the place of design education in the International Classification of Education which requires to clarify the formulations of the basic terms related to art, design and design education.

II. MATERIALS AND METHODS

In order to show that design is an independent field and course of study, determine its growth, development and related problems, as well as identify possible solutions, I have used content analysis methods to analyze and interpret theoretical literature, documents and regulations relating to design and education determining the following analysis criteria: ▪ current design trends; ▪ design and art: definitions, aims, tasks, similarities and differences; ▪ design education; ▪ the impact of design on economic activity. Data analysis included coding and grounded theory (Cropley, 2002; Glaser, 2002; Bryman and Burgess, 1994) and evaluative research methods (Ritchie and Spencer, 1994).

III. DESIGN AND ART

The term 'design' has many definitions and explanations. According to Hardt (2006), the definition and explanation of the term is "complex societal activity". The actors, involved in this process, are both designers and scholars, as well as specialists in other fields. It is used both as a noun that describes the technical parameters of an object and its esthetic form in a concrete setting, and as a verb that describes the process of creating a product or service (Ralph & Wand, 2009).

Design is also defined as a strategic plan for reaching a goal that is defined by the projects parameters and processes, which, in turn, is inhibited by legal, political, social, environmental and economical boundaries (Design 2020 Vision Committee, 2011; Commission of European communities, 2009; International Council of Societies of Industrial Design; Ralph & Wand, 2009). The concept of art has been interpreted in various ways. In ancient times it was considered any type of useful skill. Architecture, painting, sculpture, military arts, metalwork and other trades were classified as art.

Today the term 'art' refers to human creative activity, expressiveness and skills through creation of both material and immaterial aesthetic values that can be perceived by the mind and create emotions (Schiner, 2012; Adjian, 2005; Heideger, 2002). Although design is often interpreted as art with a reference to common features in the process of creating both visual art and design work, design is to be considered an independent branch (Irbite, 2013a,b). Design has not lost the link with art and crafts, but its borders have widened.

Both designers and artists can learn traditional art techniques: drawing, painting, modeling and 2- and 3-dimension composition, which refine their sense of color and shape and help to understand how an image or shape is formed. Sound and moving images are elements in modern project design associated with the art of cinema and music and require new competencies in these spheres, as well. If these skills are necessary for artists as a means to develop their expression, then for designers they are part and parcel of a training system that, along with acquiring professional and special subjects, build and develop professional competencies necessary for work in the field of design. Thus art can be considered as a category of design more often than vice versa: a tool rather than the goal.

Here is a significant difference in art and design processes and their tasks. Design is rational by its nature, its main objective is to satisfy the needs of an individual or the society. However surplus value of material and immaterial culture, created by humans, is the positive impact it makes on the viewer, listener or user. Sensations or the 1st impression, which D. Norman denotes as visceral impact are intransient, they convey the information prior to understanding and interpreting it by a human in the process of cognition.

IV. DESGN THINKING

Today design is also defined as a strategy and as one of the key elements of innovation (Verganti, 2009; Nussbaum, 2009; Brown, 2005; Guellerin, 2001) for reaching a goal that is defined by the project's parameters and processes; as a driver for people-centred innovation (Design Leadership Board, 2012; Commission of European communities, 2009; Myerson, 2009) and as an integrated approach to complicated and poorly-formed problem solving (Rittel and Webber, 1973; Visser, 2010; Buchanan, 1992) – a way of thinking or design thinking. In Buchanan's (1992) opinion, design thinking is a liberal art. He considers that design thinking, with its origins in the Renaissance, has undergone a long period of development, which reached its peak in the 19th century as a vision on encyclopedic education.

The term 'design thinking' does not have a single, generally accepted definition. Various authors offer explanations and interpretations of the term. As Haasi and Laakslo (2011) concluded in their research which is devoted to the study of literature about design thinking, three main accounts are identified: design thinking as a cognitive style,

as a general theory of design, and as a resource for organizations.

V. DESIGN AND DESIGNER

There are different opinions on what 'third generation design' is from perspective of systems thinking, from which it follows that stakeholders are designers (Pourdehand et al; Goetzke, 2010; Jackson, 2003).

It has become a common practice: to involve potential users developing new products and services. People are encouraged to think and act like designers. It seems simple. But in fact, consumers or stakeholders sometimes don't know how they should think and how designers are tend to act. Hence: who is designer – anyone who tries to change something for the better or, however, a person with appropriate design education? Such a question seemed to be important for design professionals from time to time. It follows that, on the one hand, extending the boundaries of design branch makes it necessary to expand the concept of design, but, on the other hand, it is important from time to time to formulate and explain the basic concepts and terms more precisely. It could be important thinking about design education.

VI. DESIGN EDUCATION

Although design education has becomes more interdisciplinary "it is mature the need for a new kind of designers, one that has traditional skills and yet a much broader perspective on problem identification and solving" (Quartz+Co et al., 2011).

How to achieve this goal and what is the place of design education in the common classification of education?

Analysis of the International Standard Classification of Education (UNESCO Institute for Statistics, 2013) and the Fields of Education and Training indicate that design education is classified as art education. Design includes Broad field 02 Arts and humanities, Narrow field 021 Arts and Detailed fields: 0211 Audio-visual techniques and media production; 0212 Fashion, interior and industrial design; 0213 Fine arts; 0214 Handicrafts; 0215 Music and performing arts; and 0218 Inter-disciplinary programs and qualifications involving arts. Today, design schools around the world offer interdisciplinary study programs, such as Business Design, Strategic Product, Strategic Design, Design Management and others that cannot be attributed to the visual arts. Even if design schools offer art as a part of their traditional design course, such as Industrial Design, Graphic Design and Interior Design, they are interdisciplinary, nevertheless. Professional competencies in the design field may fulfill requirements for programs that are formulated as 'Inter-disciplinary programs and qualifications', but design education cannot be grounded on the acquisition of visual arts courses.

It is difficult to incorporate design education in one of the Broad Fields categories by tying it to a defined branch

or term 'Design' to 'Arts and Humanities'. In this case, it would be possible to incorporate design specialties into the Detailed Field and to include both professional and academic education programs in the Narrow field.

Scientific Design, Design Science and the Science of Design, as classified by Cross (2001), incorporate the entire design cycle, as well as professional and academic educational programs in varying design branches in the Detailed field. I agree with Cross in that Scientific Design can be attributed to Industrial Design, but also to Social Design, Systems Design, Meta Design, Material Design and the others. The term 'Design Science' (Friedman, 2006; Ben-Eli, 2007; Fuller, 1992) used today, characterizes all aspects of modern design as a scientific activity and as a body of knowledge that includes knowledge of natural and artificial systems, knowledge and methods to create the artificial objects and systems and to design research. According to Friedman (1997), "the scientific approach to design does not contradict the artistic aspect of design".

VII. HOW TO MEASURE DESIGN?

The branch of design known as the cultural and creative industry is defined as a priority in the economic development strategy Europe 2020. However, the European Statistical System Network on Culture ignores the real situation and design's multidisciplinary nature by placing in the Visual Arts category. In the report by the Statistical System Network on Culture (Bina et al., 2012a), creativity as an activity is attributed to art and design, but frequently deconstructing the invisible boundary between the two. The document indicates that to structure the new European framework for cultural statistics, it was necessary to consider technological advances that lead to changes in society, in economy and in cultural practices, as well as improvements of statistical observation systems, such as the NACE Rev. 2 (Bina et al., 2012b). However, the reviewed NACE Rev. 2 (Eurostat, 2008) also does not include all aspects of design. Since the NACE classification system has a long history, in many cases it does not reflect reality: emerging industries mostly are not included or professional activities in the same industry are placed in different NACE divisions and classes.

The European Design Leadership Board (2012) highlights deficiencies in these classifiers indicating also that a lack of statistics on the effect of design on economic activity and its influence on GDP in Europe and its member countries makes it difficult to substantiate design's influence on and investment in the economy. Data collection methods as the problem is stressed also in the document Restarting Britain, developed by the British Design Commission (2011): in terms of economic accounting through SIC and SOC codes, there is no way to identify in this system the design elements within nondesign sectors. In order to prove the influence on general economic indicators, research on data collection and its methodology becomes an important task for design-related institutions in

every country. As stated in the study, which is conducted by the researchers from the Laboratory of analytical strategic studies ((Kılıs et al, 2007), appropriate methods can be, for example, the descriptive research method, financial survey method, contingent valuation methodology, supply – demand model, contingent valuation methodology - to compile information about people's willingness to pay. Institutions in each country, as well as individual companies should be interested in the analysis of, for instance, the effects of a marketing campaign on overall sales or return on design investment.

As seen in research carried out by the British Design Council (Design Council, 2008), nearly two-thirds (59%) of UK businesses agree or strongly agree that there is clearly a positive link between investment in design and profitability. Design is considered the sixth most important factor driving business success – higher than R&D and marketing. In order to improve the situation on a European scale, one of the most important factors is the partnership that includes "different international agencies (such as OECD, EUROSTAT and UNESCO), professional and national authorities for whom the resulting statistics should be relevant, timely and of high quality. Only then will we be able to measure the full impact of culture and creativity on our economies and our societies" (van der Pol, 2013). Since the end of the 20th century, it has become topical to talk about happiness in the world and to try to measure the happiness level of the national population (Revkin, 2005; Gropper et al., 2011; Jones, 2006). Design is directly related to human and social well-being and, also, happiness. A happy person is socially and economically active. Thus, the impact of design on the economy may also be associated with personal life satisfaction and happiness levels.

CONCLUSIONS

1. Discussion among design professionals and design educators about the use of key terms would be necessary in the future.
2. The admonition that design is classified as a visual art, as reflected in EU and UNESCO documents and classification systems, is out of date.
3. It is necessary to make changes in statistical systems, such as ESSnet – culture, as well as in ISCED classification for fields of education and training, by identifying design as a separate category for three reasons:
 - i. further developing of data collection methods could facilitate the ability to determine the effect of design on economy;
 - ii. the changes in education classifiers could promote design education and research, as well as a more responsible attitude to curriculum development in educational institutions and more serious personal attitudes of students towards their career building;

iii. these complex activities could contribute to qualitative growth of the design industry and design education.

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Product Design

Design as a tool for changing eating habits

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Abstract. Obesity is one of the largest health-related problems in the world. The aim of the paper is to explore the possibilities of changing eating habits by virtue of design thus solving the issue of overweight and obesity.

Keywords: tableware design; utensil design; eating habits; appetite; satiety; overweight; obesity

I. INTRODUCTION

Overweight is one of world's most topical health issues. Reasons of obesity can be an aggregate of most varied factors, starting from genetics and psychology to medicine and even ambient temperature fluctuations and lifestyle in general (Wright & Aronne, 2012). The Court of the European Union has recently decided that in certain cases obesity can be even considered as disability. (Kaltoft, Landsforening, Kommune, Vesel, & Savien, 2014) On the one hand people in many developed countries suffer from overweight, but on the other hand in many countries (especially in Africa) huge problem is poor nutrition and starvation. For sustainable development it is important that we not only maintain healthy planet, but also its inhabitants, thus the world needs important alterations to solve food related problems – both, excessive consumption of food and starvation.

The author has also faced obesity problem when he was overweight (40 kg) in 2011, but after changing various habits it was successfully solved. Based on his personal experience, the author of this paper wants to explore the possibilities to change eating habits by virtue of design thus solving the issue of overweight and obesity.

Today advertisements suggest thousands of diets and similar offers which help reduce the overweight but the role of design in reducing the weight is not studied extensively. The size of package, shape of plate, lighting and socializing are only a few factors which may influence the amounts of consumed food to a much higher degree than one has ever imagined. (Brian Wansink, 2004)

In the Western world meals are more and more taken in a hurry without giving a thought to the content and way of eating thus resulting in overeating even if people are not aware of it. By eating a large amount of food in one meal the body needs time to understand the volume of food which is swallowed in rush. Therefore it is necessary to create

interplay of design and eating habits which can reduce the amount of consumed food and promote losing the excessive weight.

II. QUESTIONS AND METHODS OF STUDY

To achieve the aim of the paper, the author examined the following research questions:

- Which factors influence satiety and appetite?
- How can the design of utensils and tableware influence eating habits promoting reduction of overweight and obesity?

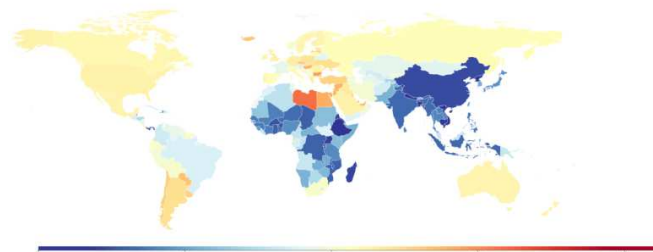
The study aims at investigating case studies in order to understand the possibilities to change eating habits by virtue of design and to develop empirical generalizations; therefore the study adopts an inductive research approach. Given the aim of the study and research questions, the following research methods were used:

- Literature review;
- Qualitative multiple-case study based on the literature review.

III. EATING HABITS

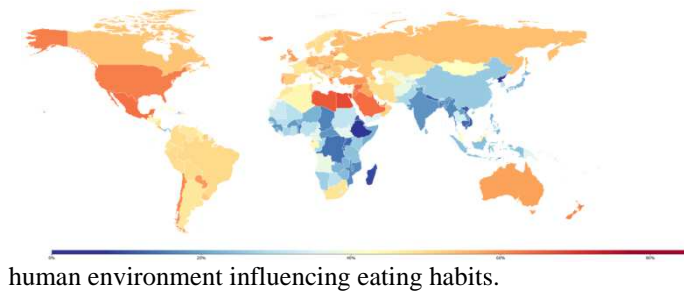
A. Overweight

Obesity has progressed in a “speed of light” during the end of the last century and it still continues to grow. It can be viewed in full in data provided by “Institute for Health Metrics and Evaluation” showing the overweight trends from 1980 till nowadays (Picture 1, 2).



Picture 1. Overweight across the world in 1980 (BMI \geq 25%), men and women, adults (20+)

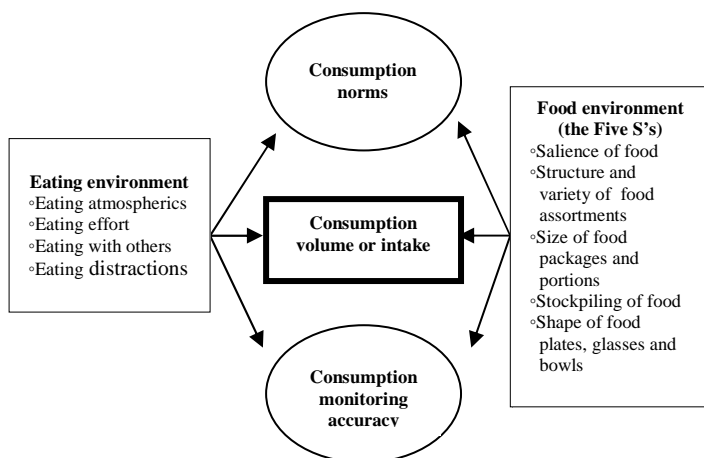
By analyzing the data from 188 countries, it was proven that more than 2.1 billion of people – almost one third (30%) of world's population – is obese or overweight. (Ng et al., 2014) Inheritance cannot change so quickly therefore it can be concluded that the cause of obesity growth is



Picture 2. Overweight across the world in 2013 (BMI $\geq 25\%$), men and women, adults (20+).

B. Appetite

Appetite can be described as hunger or willingness to eat, and it is strongly influenced by the environment. The environment can be divided into the eating environment and the food environment (Picture 3). The eating environment are external factors related to eating but not dependent on the food itself, for instance atmosphere, acquisition of food, social interaction. Meanwhile the food environment are factors which directly apply to it, the representation of food, for instance, its appearance, structure, package and size of portions or way of serving (Wansink, 2004).



Picture 3. Antecedents and mediators of food consumption volume (Wansink, 2004)

Decisions about food selection are different from the amount of food to be consumed. At first a person decides what he or she is going to eat (for instance, soup or salad) and only then he or she arrives at the size of portion (e.g., half or full bowl). Even the slightest changes in the food environment can change the notions of consumers about the size of portion; they can influence the choice of food and reduce the food consumption volume. (Wansink, 2004)

Wansink (2005) shows in one of his studies that those participants whose bowls were automatically refilled without them knowing it ate 73% more than those participants of study which ate from regular bowls. Study also revealed that 61% of respondents always eat what is served (leaving the dish empty) (Wilson &Joines, 2011). It evidences that the size of dishes we use on a regular basis play a huge role in terms of consumed food volume. On a daily basis people accept standards to follow, for instance, "I can have one bowl of soup" instead of evaluating the amount of food in terms of weight or volume.

C. Satiety

Humans possess several kinds of senses – sight, hearing, sense of smell, touch and taste. But hunger is also one of the senses which is internal body regulator creating a motivation to eat. (Martins &Gunilla, 2011)

Today's rapid pace of life and simple availability of food has an impact on eating habits, often leading to overeating when one eats more than he or she really needs. When a person eats in rush, the food is not digested properly and body finds it hard to process it. One of prerequisites of losing the weight is eating until satiety thus reducing and retaining the desirable weight. (Martins & Gunilla, 2011) In order to reach satiety, one must eat slowly as one feels full only ten minutes after starting the meal and for people who are already overweight it can appear even twenty minutes after starting the meal. (Miska, 2004) Other studies state that satiety can be sensed only after 30 minutes. (Kokkinos et al., 2010) This study showed that people who consumed equal amounts of food released more hormones which made them completely satiated if the meal took 30 minutes instead of regular 5 minutes.

Slow eating can determine the amount of energy taken from the food during the meal. It was discovered in a study carried out with women in order to determine the energy consumption during fast and slow eating. Consequently it was established that slow swallowing considerably reduces the energy consumption (quickly: 645.7+/-155.9 kcal; slowly: 579.0+/-154.7kcal; $P<0.05$) besides the water consumption was increased considerably (quickly: 645.7+/-155.9 kcal; slow: 409.6+/-205.8 g). It shows the average difference of 65 kcal between the slow and fast eater. "Slow eating decreased ad libitum energy intake in women, and resulted in more satiety after meal completion. Taking small bites, putting down the utensil, and chewing thoroughly may work together to slow eating pace and help to maximize satiation. Thus, these techniques may be recommended to reduce energy intake within meals and therefore manage body weight."(Kokkinos et al., 2010) It can be deduced that in order to achieve satiety faster and to reduce the amount of energy intake, the meal should be eaten slowly and without rush.

IV. INFLUENCE OF DESIGN

Design makes it possible to influence human habitat, things and products which people utilize in eating and food environment. Also utensil design which is directly related to eating process helps to change and improve the everyday eating and food environment.

Body is capable of changes and adaptation to what and how we eat. We can promote it due to the impact of design. By making people take smaller portions at home, one can establish new norms in food consumption and reduce calorie intake. (Wilson & Joines, 2011).

In order to understand the way to promote healthier eating habits, the author carried out a case study analysis based on the literature review.

A. Balance plate

Balance in life is closely linked with the overweight. Designer Daniel Ballou ("SeeSaw Dining Plate by Daniel Ballou, Yanko Design, n.d.) believes that balance of life can be achieved with the partner. This plate can particularly help if one of the partners is overweight.

He elaborated a similar principle which is used while swinging on the board with a lock point in the center and objects on the right and left from the center (food in this case) which balances or quite opposite – pulls down the heaviest side.

The plate must be kept at maximum balance which requires slow eating, because the meal must be taken in balanced pace with your partner. Balanced meal is possible only with synchronized speed and similar movements (Picture 4).

In this case it is important that eating and food environments are joined together through the social interplay (external environment) along with serving of food. The transformation of meal and its environment is vital to ensure sustainable development.



Picture 4. Plate "SeeSaw"

The author of the study would place this piece in category of concept design because it is directed towards hypothetical functionality. It was created after studying the routine habits of eaters and the idea was set aside from the regular aspects at the same time retaining its useful characteristics.

Unfortunately such a solution most probably would not help the couples where both suffer from overweight since they would eat in more or less the same speed. It could neither help single people to get rid of excessive weight.

B. Light plate

People who tend to eat quickly overeat because they do not receive signals from the stomach telling that it is full. Lissa Kooijman ("Changing Behavior and Making it Stick The Conceptualization and Management of Conservation Behavior.pdf," n.d.) has elaborated plate "Eatmeet" which regulates the pace of eating (Picture 5). The project is collaboration between TU/e Industrial Design, the Catharina Hospital, and Nedap Healthcare.



Picture 5. Plate "Eatmeet".

The plate is equipped with LED diodes indicating the time which should be devoted to the meal. The main idea of this plate is the light which draws extra attention to the food. LED diodes illuminate the plate for the span of time until the intake of the next bite, allowing a good time for eater to chew and swallow. Afterwards the light goes down and one can take a new bite. It encourages to enjoy the meal and to avoid eating too fast.

C. Smart fork



Picture 6. Fork "10S Fork"

Jacques Lepine has invented "10S Fork" ("10S Fork) which is the first smart fork in the world helping to change eating habits and eat slower (Picture 6). This fork registers

information which must be identified in order to know the way the meal precedes therefore one can follow-up the daily progress.

Unfortunately, no spoon or knife operating according to the same principle, are available currently.

D. Heavy utensils

In his Master Thesis the author of this paper used elaborated heavy utensils "Feel the Feeling" as a solution for fast daily food intake. (Picture 7)



Picture 7. Utensils "Feel the Feeling".

Unlike the previously described 10S Fork where the main function to slow down the pace of eating is vibration and light, the main emphasis of these utensils is heavy weight in the palm to make the eating process slower.

One utensil weighs 1.3 kg which is based on knowledge that palm is comfortable with holding up to 1.5 kg of weight; meanwhile these utensils can achieve the set objective — to slow down the eating process (Picture 8).



Picture 8. Fork "Feel the Feeling".

Practical function of utensils is intertwined with the aesthetic function. It lies comfortably in the palm (unlike the regular utensils which are held between the thumb and index finger). The inward curve of the shape is intended for comfortable fit with fingertips and support points against the surface.

The main focus of "Feel the Feeling" is based on shape which can be sensed when taken in hand. These design objects are like communication with the user.

Efficiency of utensils is compared (in equal circumstances and equal portions) by means of time sweep. The meal was taken with regular utensils and "Feel the Feeling". Consumed time in case of regular utensils was 7 minutes while in case of heavy utensils it was 11 minutes and thirty seconds. Still a more extensive study should be carried out to evaluate the duration of meal among larger number of respondents since the test was taken with only one person.

CONCLUSIONS

1. Human eating habits can be changed by virtue of design. Design as method for changing the habits provides a possibility to change human behavior, eating and food environment and understanding of the body.

2. Time is one of the most important factors for a human being to achieve satiety (20 minutes on average) which can be achieved by slowing down the eating process.

3. Current design solutions to prolong the eating process resulting in satiety are relatively innovative. Of course, they can be improved and developed to reduce the rapid progression of obesity.

4. Heavy weight utensils are only one design solution to replace the existing habits with the new ones. But it is sufficient to make the routine meals different. These utensils prolong the duration of meal. Also other examples show the possible directions of design as means to fight against overweight and obesity. Utensils elaborated by the author of this paper must be tested in wider target audience to analyze and specify their contribution to changing eating habits.

5. The overweight prevalence can be reduced by targeted design application in cutlery and crockery. Design is an important component in object generation, thus targeted design application in cutlery and crockery can reduce overweight related problems.

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Healing Design

Analysis of Related Terms

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Abstract. Lack of agreement on terms and definitions of concepts in the scientific discourse impinges negatively upon efficient communication and co-operation among scholars working in different yet related areas. 'Healing design' is one such term used interdisciplinary in architecture, design and healthcare. While used rather extensively across disciplines the term has not been comprehensively defined by any of the above scientific disciplines. The aim of the present research paper is to analyse the term 'healing design' and the related terms and set the semantic criteria for the use of the concept.

Keywords: design, architecture, healing, therapeutic, psihosocially supportive, interdisciplinary approach

1. INTRODUCTION

Nowadays, new design projects will obviously and inevitably involve a number of related industries and thus interaction among them, for instance, design, healthcare, sociology, anthropology and psychology. Although such approach opens new horizons for innovation, it also may prove problematic due to communication issues among different scientific areas. Lack of universally accepted terminology may prove pivotal in establishing efficient communication among fields. Among a great number of ambiguously defined and used terms is 'healing design' and the related concepts bearing the same or similar meaning. The term is rather widely used in architecture, design and healthcare but none of the involved disciplines has provided an uncontroversial definition nor shown consistent and unambiguous patterns of use.

The aim of the present research is to survey and systematize the existing knowledge about the use of the term 'healing design' and the related concepts and terms. As a result, the common and varying features of the use of the term will be identified helping to establish a conceptual and semantic platform for a comprehensive understanding of the scholarly vocabulary used in creative industry and the area of social care.

The paper raises and discusses the following issues pertaining to the topic under discussion:

- it analyzes how the term 'healing design' has been used in scientific discourse;
- it surveys samples of scholarly literature and identifies terms that are related conceptually to 'healing design';
- it seeks to find out what linguistic terms have been used to define the concepts related to 'healing design';
- it studies the common and different semantic properties of the concepts and terms semantically related to 'healing design'.

The present research will contribute to a better understanding of how the term 'healing design' has been used as well as identify semantically related terms. Such semantic analysis of terms and their usage has not yet been conducted in the area of product design. Scholars working in the field of architecture however have made a great input towards interdisciplinary co-operation by bringing architecture closer to social care and the health issues of the population in general. The research on the architectural environment of the social care premises has been immensely significant in establishing the definition of the term 'healing design' and the criteria a design object has to possess in order to qualify as 'healing'.

2. METHODS

In order to analyse the definitions and use of the concepts, systematic scientific literature review was used as the method for research.

A systematic literature review was conducted in three stages. During the first stage scientific articles employing the concept 'healing design' (27 articles in total) were selected from Google Scholar and Science Direct databases. The selected articles were also scrutinized for concepts related to 'healing design' used either synonymously or bearing a very similar meaning.

The second stage of systematic analysis included additional terms, both the related terms and synonyms identified during the first stage, and a new search was conducted extending the number of publications to 48 units. From 48 selected articles only 11 containing unambiguous

definitions were selected for further analysis in the third stage of systematic analysis.

The following terms were selected from scientific publications and analysed to determine the conceptual borders of the semantically complex term 'healing design': *therapeutic design, therapeutic environment and healing environment, optimal healing environment, psychosocially supportive design, healthcare environmental design, supportive healthcare design, healing oriented design.*

3. 'HEALING DESIGN' AND RELATED TERMS IN THE CONTEXT OF ARCHITECTURE AND ITS ENVIRONMENT

Analysis of scientific literature shows that architecture and its environment are the areas that most frequently employ the concept 'healing design' and the related terms. This chapter of the paper will analyse the terms and concepts that are already in use in interdisciplinary research, particularly focusing on architecture, healthcare and the end user.

One of the most prominent researchers in the area of healing design is Roger S. Ulrich, a professor at Chalmers University of Technology Department of Architecture and Centre for Healthcare Architecture and a co-founding director of the Center for Health Systems and Design at Texas A&M University. The focus of his research is on human behaviour and specifically on how the architectural and landscape environment influences stress levels in patients and the success of medical treatment. His research resulted in first scientific publications (such as „How Design Impacts Wellness“) discussing patient stress levels and the preconditions that should be observed when designing, building and refurbishing healthcare facilities. (Ulrich, 1992a) Ulrich was the first who talked about 'supportive healthcare design' and later developed scientific theory based around this concept. The author writes the following about the beginnings of his innovative research: „A starting point for a theory of psychosocially supportive design is the well-documented fact that most patients experience considerable stress.“ (Ulrich, 1992b) Ulrich's work is highly interdisciplinary as it draws on research in human psychology, environmental psychology, behavioural science and other areas involved in human healthcare.

To define the concept 'supportive healthcare design', Ulrich first identifies the variables that bear impact on health. The following variables characteristics of environment were put forward as a result of his analysis:

- noise,
- premises with or without windows,
- sunny rooms,
- single or shared hospital wards;
- floor covering,
- other environmental factors.

According to Ulrich, the concept 'supportive healthcare design' is characterised by a number of criteria arising from the use of a design product:

- reduced stress levels,
- improved sleep,
- social support for patients,
- support for hospital staff,
- reduced costs for patient care,
- reduced costs for reconstruction and maintenance,
- business advantages.

In the context of the term 'supportive healthcare design' Ulrich delineates three key aspects for creating supportive design and environment: 1) to enhance patient control and privacy, 2) social support and 3) access to nature (including landscape design).

The work of Ulrich has been influential in building and reconstruction of hospitals all over the world. He has worked as a consultant for numerous projects in the US, the UK, Scandinavia, Italy and Japan.

The year of 1992 saw publications of two influential research works – Ulrich's article on supportive health design (Ulrich, 1992c) and the second updated edition of the interior designer Malkin's 1982 book "Hospital Interior Architecture: Creating Healing Environments for Specific Patient Populations" about the design and planning of medical and dental clinics and premises.

Malkin shares her memories of the 1970s when she chose to specialise in healthcare design – “the hospital premises were nothing but disgusting.” The term 'design' was not applied to planning and building of healthcare facilities and the resulting 'design' could be rather termed 'non-design' than anything else: white walls, grey linoleum, fluorescent lamps. Family of the patients were not regarded as family in emotionally and socially responsible manner and often had limited access to the patient. Furthermore, patients were treated like prisoners – without rights to participate in the process of medical treatment. (Malkin, 2015)

A systemic review on the use of the concept 'healing environment' in the the context of healthcare premises and environment as well as personal communication with Malkin shows that the term 'healing environment' has acquired a rather blurred and unspecific connotation. A new term 'evidence-based design' has taken its place and offers a wider potential for use and meaning.” (Malkin, 2014)

Malkin distinguishes five conceptual sub-categories pertaining to 'evidence-based design': access to nature; options and choices (control); positive distractions; social support; environmental stressors and offers a set of well-defined guidelines to be incorporated in health care environment in order to reduce stress levels in patients and enhance recovery (Malkin, 2003a). In her presentation „The Business Case for Creating a Healing Environment“ Malkin points out that „the physical setting has the potential to be therapeutic if it achieves the following:

- eliminates environmental stressors such as noise, glare, lack of privacy and poor air quality;

- connects patients to nature with views to the outdoors, interior gardens, aquariums, water elements, etc.;
- offers options and choices to enhance feelings of being in control – these may include privacy versus socialisation, lighting levels, type of music, seating options, quiet versus ‘active’ waiting areas;
- provides opportunities for social support – seating by groupings, accommodation for family members or accommodation in patient rooms;
- provides positive distractions such as interactive art, fireplaces, aquariums, Internet connection, music, access to special video programmes with soothing images of nature accompanied by music developed specifically for the healthcare setting;
- engenders feelings of peace, hope, reflection and spiritual connection and provides opportunities for relaxation, education, humour and whimsy.”(Malkin, 2003b)

Her interior designs of healthcare premises as well as her input into the development of the concept ‘evidence-based design’ have in many respects defined the area of healthcare design. (Picture 4)



Picture 4. Indu & Raj Soin Medical Center; Beavercreek, Ohio; interior design Jain Malkin, architect HOK, photo (J. Malkin Inc, Porfolio, 2012)

The ‘Optimal Healing Environment’ approach developed by Samueli Institute have similar basic criteria (Ananth, 2008) “Samueli Institute is advancing the science of healing worldwide by applying academic rigor to research on healing, well-being and resilience; translating evidence into action for the U.S. Military and large-scale health systems; and fostering wellness through self-care to create a flourishing society.” (Samueli Institute, 2015)

Among the researchers working with the concept ‘healing design’ and related terms, Alan Dilani, the founder and director of the International Academy for Design and Health and developer of the Psychosocially Supportive Design approach, deserves special distinction for his input in promoting interdisciplinary co-operation between social

care and architecture. The International Academy for Design & Health is involved into a number of interdisciplinary research projects the aim of which it is to foster research activity in the areas of design, health, science and culture - „it is a global, interdisciplinary knowledge community dedicated to the stimulation and application of research concerning the interaction between design, health, science & culture” (Design&Health, 2015).

In his research Dilani develops and uses the concept ‘psychosocially supportive design’ and defines his approach in the following way: „the aim of psychosocially supportive design is to stimulate the mind in order to create pleasure, creativity, satisfaction and enjoyment. There is an important relationship between an individual’s sense of coherence and the characteristics of the physical environment”. (Dilani, 2008a), (Picture 5)

Dilani distinguishes the following main environmental variables that interact with the human sensory perception and characterise the influence of the psycho-emotional environment on the patient:

- crowding,
- nature and its meaning for health,
- daylight, windows and lighting,
- colour, space and landmarks,
- art, health and wellbeing. (Dilani, 2008b)



Picture 5. Broadgreen Hospital (Liverpool); designed by Nightingale Associate, (Pic credit: Anshen + Allen), photo (World Health Design, 2015)

Currently we are evidencing increasingly more research on the relation between environment and design and how they impact the success of patient recovery. Some of the research in the area focuses exclusively on identifying and defining the environmental and design variables that define the points of interaction. As a result, research on the 21st century architecture of social care premises and the surrounding environment has been developing rapidly and

the term 'healing design' and the related terms have been used ever more extensively.

4. 'HEALING DESIGN' AND RELATED TERMS IN THE CONTEXT OF PRODUCT DESIGN

A systematic review of scientific literature showed that the concept 'healing design' and related terms, such as 'therapeutic design', are also used in the context of product design. However, compared to the research conducted in the area of architecture and the resulting theoretical frameworks, use of the concept in the context of product design shows lack of coherence and definition. Obviously the experts in the field have not agreed on the use of the term.

This chapter of the research paper will give an insight into some artefacts of design which may be regarded as healing and possessing the properties of 'healing design'.

The works by Renate Müller clearly classify as samples of 'therapeutic design'. (Picture 1) Her work can be described best by the artist herself – her first slogan was the wonderfully succinct: "Therapeutic toy – coarse but cute..." (Reynolds, 2011a) Her toys, first produced in 1960, continued the work of Helene Hausler, a toy designer at the Technical College of Sonneberg, who had designed her large-sized coloured toys for children with impaired motor skills and mental handicap. The Leipzig trade fair in 1967 first presented Müller's toys as a marketable product and were soon tested in mental healthcare hospitals all over Germany. The toys soon became widely used as part of therapeutic treatment. Made from jute with colourful leather design elements all toys were handmade by the designer herself.



Picture 1. Author Renate Müller (1967), photo (R. Müller, 2015)

It is interesting to note that Evan Snayderman accidentally found Müller's toys in an antiques store in Germany, wrote a book about Müller titled "Toys + Design" and exhibited her toys in the 'R 20th Century' gallery in New York. This was also the time when interest about therapeutic toys made comeback.

Müller's designs are minimalist and have an undisputable conceptual value. Müller is truly original in her creativity – her works do not follow the trends of industrial design of the time period. (Reynolds, 2011b) The author of the present paper believes that Müller's work is an outstanding sample of interdisciplinary work and falls in the paradigm: design – healthcare – end user. The above assumption is further supported by the fact that Müller's design has been tested in actual healthcare environment and widely used in mental health clinics in Germany.

A particularly interesting piece of design is Richard X Zawitz's (USA) Tangle (Picture 2) that may be seen as a desk toy and a design piece as well as a therapeutic gadget. The therapeutic function of this piece is stress reduction and rehabilitation of muscles and joints.

The tangled objects were apparently inspired by Zawitz's knowledge of and experience with Daoism. This also explains the inherent notion of infinity and continuous movement present in the design and hence the various uses and interpretations. The author himself characterises this piece of design as therapeutic.

He designed his first tangled piece in 1972 and it was patented in 1982. (Zawitz, 2009)



Picture 2. Author Richard X. Zawitz (1972), photo (R. Zawitz, 2012)

Ieva Pastare's, a design student at the Art Academy of Latvia, considers that 'Drawies' may be viewed as pieces of 'therapeutic design'. (Picture 3) The design is based on a study of arm and leg movements and as a result the artist developed ergonomic clay chucks that enhance muscle development and control over movement disorders. 'Drawies' also develop the minor motor skills in children such as those involved in speaking and writing. Adults could potentially use the clay chucks to treat various illnesses, injuries and post-insult conditions, for instance. 'Drawies' could also help to maintain brain tonus and prevent dementia in elderly people. (Fold, 2013) During a

personal communication with Pastare the author of this research paper learned that Pastare regards 'Drawies' as samples of 'therapeutic design' rather than 'healing' and offers yet another term – 'rehabilitation design'. (Pastare, 2015) This leads to conclude that due to lack of unambiguously defined terms in the area, designers tend to invent their own terms that do not necessarily add to the vocabulary but rather confuse it.



Picture 3. Author Ieva Pastare (2013), photo (Fold, 2013)

Drawing on the study of the use of the term 'healing design' in architecture, research on sleep patterns and insomnia as well as empirical observations and testimonials from the users, 'Via Harmonia', a mind and body harmonizer developed by Elita Freimane (Latvia), meets the criteria to be classified as a 'healing design' product.

'Via Harmonia', a mind and body harmonizer, is a device meant for balancing out the mind and body to enhance wholesome sleep and rest.

Although the author of the above design object has labelled her product as one with 'healing design' properties, the use of this term did not seem to be unambiguous and therefore the author developed a research project to investigate the use of the term 'healing design' and related terms.

The shape of the harmonizer has been elaborated in such a way that it relaxes the hand and secures regular pressure on the nervous knots (points of acupuncture). The ergonomic shape of the harmonizer fits equally well for both hands. In 2014 'Via Harmonia' was patented as a device for fixing the hand position and stimulation of palm receptors.



Picture 4. Author Elita Freimane (2012), photo: E.Freimane

5. DEFINITIONS OF 'HEALING DESIGN' AND RELATED TERMS

The systematic critical review of scientific literature samples showed that the initial assumption of lack of unambiguous terminology was correct – a phenomenon with identical properties was often labelled in various ways.

For instance, the term 'healing environment' in Abbas and Ghazali's research has been used with the following connotation: „the overall environment (both physical and non-physical) created to aid the recovery process. In contrast to curing, healing is a psychological and spiritual concept of health.” (Ananth, 2008) (Abbas and Ghazali, 2010) Malkin defines the concept similarly but not identically: „In short, the term 'healing environment' describes a physical setting and organisational culture that is psychologically supportive, with the overall goal of reducing stress in order to help patients and families cope with illness, hospitalisation and, sometimes, bereavement”. (Malkin, 2003 c)

Inspired by research in global healthcare system and motivated to raise awareness of healing processes in medicine and social care, Wayne Jonas, the president and managing director of Samueli Institute put forward a new concept – 'an optimal healing environment': „An OHE, as defined by the Institute, is one where the social, psychological, physical, spiritual, and behavioural components of healthcare support and stimulate the body's innate capacity to heal itself.” (Ananth, 2008)

The concept of 'psychosocially supportive design' developed by Alan Dilani comprises the properties of both 'healing environment' and 'optimal healing environment': „psychosocially supportive design stimulates and engages people, both mentally and socially, and supports an individual's sense of coherence. The basic function of psychosocially supportive design is to start a mental process by attracting human attention, which may reduce anxiety and promote positive psychological emotions.”(Dilani, 2008c).

Unfortunately, the author did not come across a single source where the term 'healing design' and/or related terms had been given a definition.

CONCLUSIONS

1. It was concluded based on critical literature review that the term 'healing design' had never been defined according to certain criteria and there are no clear borderlines among the related terms or criteria for their use.

2. The following terms related to the concept 'healing design' were found in scientific literature: 'therapeutic design', 'therapeutic environment' and 'healing environment', 'optimal healing environment', 'psychosocially supportive design', 'healthcare environmental design', 'supportive healthcare design', 'healing oriented design', 'evidence - based design'.

3. Lack of uniform definitions and unambiguous use of terms in the interdisciplinary paradigm *architect – healthcare – end user* negatively impact communication among scholars thus impeding the process of development of the particular scientific area and efficient use of scientific resources.

4. The above research indicated that the concept of 'stress reduction' is the main common criterion characterising the term, 'healing design' and related terms. "The unifying concept is reduced stress levels for patients, medical staff and families. In fact it is the main aim of a healing environment because stressful working conditions more frequently lead to mistakes while patients exposed to psychologically inadequate environment may acquire psychosomatic disorders." (Malkin, 2003d).

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Interior and Universal Design

Funkcionālisms mākslas telpās Latvijā

The Use of Functionalism Style Features in Art Spaces in Latvia

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Abstract. The study has been formed as expanded formulation of the author position trying to find and analyze the unifying substance between art, space, time and society. The goal of the research is to prove that the functionalism style in the interiors of exhibition halls and art spaces contributes to the formation of synergies between artworks, space and people. The author analyses the social-cultural influence of the functionalism style on society, as well as the expression of the style in art centres and galleries interior design and makes conclusions.

Keywords: *functionalism, interior, architecture, art spaces, galleries, Riga*

IEVADS INTRODUCTION

Mākslas centra funkcijas atšķiras no mākslas galerijas vai mākslas muzeja funkcijām. Mūsdienās mākslas centrs ir multifunkcionāls sabiedriska centrs, kas paredzēts, lai veicinātu mākslas attīstību un nodrošinātu dažādu pakalpojumu sniegšanu. Mākslas centrs ir vide un tehniskais aprīkojums izstādēm, kā arī citām mākslinieku un dizaineru aktivitātēm, semināriem, izglītojošiem pasākumiem.

Mūsdienu arhitektūras un interjeru izveide ir daudzveidīga, tai skaitā, tā tiek balstīta uz iepriekšējo gadsimtu stilu iezīmēm. Viens no šādiem stiliem ir funkcionālisms. Cilvēki atsakās no pārmērības interjerā un pievērsās uzmanību komfortam, kas pakārtots funkcionalitātei. Tēma ir aktuāla radošiem cilvēkiem. Māksliniekiem ir būtiski eksponēt savus darbus un parādīt savu veikumu sabiedrībai, tomēr ne visas mākslas darbu eksponēšanas telpas tam ir piemērotas. Pārblīvētā interjerā ir grūtāk uztvert mākslas darbus. Uzmanība tiek pievērsta arhitektūras un iekšējās apdares dekoratīvajiem elementiem, otrajā plānā atstājot mākslas darbus, kas ir galvenie apskates objekti mākslas galerijās.

Vai funkcionālisma stilā iekārtotas izstāžu un mākslas centru telpas ir piemērotas mākslas darbu eksponēšanai un citām aktivitātēm?

Veiktais pētījums ir saistīts ar izstāžu telpām Rīgā, kurās bez izstādēm notiek arī radoši pasākumi, interjeru analīzei. Analizējot autores izvēlētos un dabā apsekotos mākslas estētiskie veidoli, kasatbilstu laika garam un tehnoloģiju attīstībai. Jaunais stils izplatījās visā Rietumeiropā, kā arī

centru un galeriju interjerus, tiek meklēts vienojošais un atšķirīgais interjeru iekārtojumā un izveidē. Pētījums veidojies kā autores pozīcijas izvērsts formulējums, mēģinot izprast vienojošo substanci starp mākslas centru un sociumu. Saikne, ko savā starpā ir veido arhitektūra un interjers, ir parādība, ko sabiedrība tiecas piedzīvot un izbaudīt. Šī parādība ir vērtējama arī atvērtas sociālās telpas un jaunu mākslas formu, kurā tiek apvienoti cilvēki, māksla, laiks un telpa, kontekstā. Pētījuma mērķis ir pierādīt, ka funkcionālisma stilā iekārtotas izstāžu zāles un mākslas telpu interjeri veicina sinerģijas starp mākslas darbiem, telpu un cilvēkiem veidošanos.

I. PĒTNIECĪBAS METODES RESEARCH METHODS

1. Lai noskaidrotu funkcionālisma stila raksturīgākās pazīmes, tika veikta teorētiskās literatūras analīze.

2. Lai atbildētu uz pētījuma jautājumu, tika veikta mākslas centru un galeriju interjeru kontentanalīze.

Pētījums tika veikts 3 posmos:

- interneta vietnēs pieejamās informācijas analīze;
- interjeru analīze klātienē, kurā izmantota gadījuma novērojuma metode;
- lai noskaidrotu mākslas centru, galeriju darbinieku un īpašnieku viedokļus, klātienē tika veikta nestrukturēta intervēšana.

II. FUNKCIONĀLISMS FUNCTIONALISM

19. un 20. gs. mijā, attīstoties zinātnei un tehnoloģijām, intensīvās urbanizācijas un celtniecības, kā arī iedzīvotāju skaita palielināšanās dēļ, radās pārmaiņas visā rietumu civilizācijas kultūrā un sabiedriskajā apziņā. Iepriekšējiem gadsimtiem raksturīgā izdaiļošanas un rotāšanas tieksme bija pretrunā ar jauniem atklājumiem un rūpniecisko ražošanu.

20. gadsimta 20. gados industriāli tehniskās revolūcijas izraisītajā rūpniecības attīstībā formējās jauns arhitektūras stils - funkcionālisms. Tika meklēti jauni formālie jeb

ASV un Japānā kā "internacionālais stils". Šveices arhitektūras vēsturnieks Zigfrīds Gideons (Siegfried Giedion)

ieviesa terminu "funkcionālisms" kā 20. - 30. gadu "netradicionālās" arhitektūras apzīmējumu. "Funkcionālisms - 20. gs. 20. un 30. gadu modernais arhitektūras stils. Raksturīgs ģeometrisks būvmasu kārtojums, gludas sienu virsmas, plaši iestiklojumi, uzsvērts horizontālisms, līmeniski jumti." (Kupše, 2002).

"Funkcionālisms - arhitektūras virziens, racionālisma paveids, kas radās 20. gs. sākumā Rietumeiropā un kura pamatprasības ir celtnes ārējā izskata nosacītība atkarībā no tās konstrukcijas un iekšējā plānojuma, kas savukārt atkarīgi no celtnes funkcijas" (Oerts, 1998). Savukārt svešvārdu vārdnīcā dota sekojošā definīcija: "Arhitektūras virziens (racionālisma paveids; radās 1910.-1920. gada Vācijā), kura pamatprincips ir celtnes atbilstība tajā notiekošajiem darba un dzīves procesiem" (Andersone et al, 2005).

Funkcionālismu mēdz apzīmēt ar trim "f" burtiem atbilstoši populārajam sauklim form follows function (forma seko funkcijai) (Ambrose, Harris, Stone, 2008). Funkcionālisms ir pilnīga atteikšanās no rotājumiem. Tos aizstāj vienkāršas formas un sabalansētas proporcijas, arhitektūrā un interjerā tiek izmantoti tādi materiāli kā stikls, metāls un betons. Krāsu izvēle balstās uz neitrāliem toņiem, dominē balts, pelēks, melns, kā arī materiālu dabīgās krāsas.

Funkcionālisma estētika sakņojas tā laika mākslā valdošā kubisma formu izteiksmē. Funkcionālisma pamatprasības ir atturīgu un izsmalcinātu formu kopums ar formu pakārtošanu funkcijai, ražošanas loģika un lietošanas ērtība.

Funkcionālisma stila arhitektūras un interjera raksturīgākās iezīmes ir:

- lēzeni jumti;
- gludas plaknes
- lieli iestiklojumi;
- krāsu gamma;
- atteikšanās no rotājuma;
- vienkāršas ģeometriskās formas;
- metāla, betona un stikla izmantošana.

Mūsdienās funkcionālisma popularitāte izskaidrojama ar cilvēka nogurumu saspringtajā dzīves ritmā, vēlmī savu apkārtni veidot nesamākslotu, vienkāršu un viegli uztveramu. Šis stils ir piemērots spēcīgām personībām, kas vēlas dominēt uz apkārtējās vides fona, neizjutot diskomfortu telpiskajā vidē, kurā ir maz vizuālu orientieru. Funkcionālisms tas nav tikai stils kā ārējā izpausme, tas ir domāšanas veids, ideoloģija un dzīvesveids. Lai dzīvotu attiecīgā vidē, jāmainās pašam - jādzīvo racionāli, darbīgi un sociāli. Mūsu laikmets tam ir labvēlīgs un atbilstošs.

III. FUNKCIONĀLISMA IEZĪMES MĀKSLAS CENTROS RĪGĀ

FEATURES OF FUNCTIONALISM IN THE ARTS CENTERS IN RIGA

Rīgas Mākslas Telpa 2004. un 2005. gada laikā SIA „BM&DR” arhitekta Anda Kalniņa vadībā veica Rātsnama apakšzemes telpu projektēšanas darbus. 2007. gadā uzsāka būvniecību, telpu pielāgošanu izstāžu nodrošināšanai. Rīgas

mākslas telpa (turpmāk tekstā - RMT) tika atklāta 2008. gadā. RMT ir daudzfunkcionāla mūsdienu mākslas izstāžu zāle. Tās galvenais uzdevums ir laikmetīgās mākslas popularizēšana un atbalstīšana gan vietējā, gan starptautiskā mērogā. RMT darbojas bez pastāvīgas mākslas ekspozīcijas un kolekcijas veidošanas funkcijas. RMT ir divas izstāžu zāles - Lielā un Intro zāle (Rīgas Mākslas Telpa, 2014). Autore, sarunājoties ar SIA "Rīgas nami" pasākumu centru pārvaldes projektu koordinatori Dagniju Lezdiņu, uzzināja, ka kopējā telpu platība ir vairāk nekā 1700 m². Visas izstādes un pasākumi tiek pielāgoti esošajai platībai. D. Lezdiņa uzskata, ka plānojums ir nepārdomāts, it īpaši, ja paralēli tiek rīkoti pasākumi. Uz jautājumu par mākslas darbu eksponēšanas vides pielāgojumu, koordinatore atbild, ka to varvērtēt no diviem aspektiem: no dizaina viedokļa, tad ideāls ir balts fons, un no mikroklimata viedokļa - mākslas darbiem ir nepieciešams īpašs temperatūras un mitruma režīms.



1.attēls. Rīgas Mākslas telpa, lielā izstāžu zāle
Picture 1. Riga art space, large exhibition hall

Interjerā izmantots divu veidu apgaismojums: vispārējais un lokālais. Vispārējo apgaismojumu veido vienkārši un funkcionāli griestos iebūvēti gaismas ķermeņi, kas izkārtoti ritmiski vienmērīgi apgaismojot visu telpu. Lokālais apgaismojums (gaismas ķermeņi uz slīdēm) tiek izmantots, lai apgaismotu mākslas darbus. Bez izstādēm telpas tiek izīrētas dažāda rakstura pasākumu rīkošanai - koncertiem, korporatīvajiem pasākumiem, lekciju priekšlasījumiem, uzņēmumu jubilejas ballēm, radošām bērnu darbnīcām un citām aktivitātēm. Būtiskākais, atšķirībā no vairuma izstāžu telpu Rīgā, ir RMT atrašanās vieta. Izstāžu zāle atrodas Vecrīgā, pašā Rīgas sirdī - vietā, kas ir ērti pieejama gan vietējiem mākslas cienītājiem, gan Rīgas viesiem, arī māksliniekiem tas nav mazsvarīgs faktors. Funkcionālisma iezīmes: betona izmantošana interjerā, piemēram, betona grīda un kāpnes; balto un pelēko toņu lietojums; stikla un metāla izmantojums; gludas plaknes, dekoratīvā neesamība (1. attēls). Mūkusalas Mākslas salons Mūkusalas Mākslas salons (turpmāk tekstā - MMS) Rīgā tika atklāts 2011. gada sākumā. Tās īpašnieku mērķis ir iepazīstināt ar Jāņa Zuzāna ģimenes privātkolekcijas darbiem, kas aptver darbus no 19. gs. līdz mūsdienām, tādējādi sniegt iespēju skatītājiem papildināt savas zināšanas par Latvijas mākslas vēsturi, tās nozīmīgākajiem procesiem un personībām. (Mūkusalas mākslas salons, 2014 a) MMS ir vienīgā izstāžu

telpa Rīgā, kurai ir viena no apjomīgākajām Latvijas mākslas privātkolekcijām. MMS darbības mērķis ir atklāt krājuma plašo spektru, kas prezentē Latvijas mākslas vēstures spilgtākās parādības, kā arī iepazīstināt interesentus ar aktuālās mākslas personībām un procesiem. (Mūkusalas mākslas salons, 2014b).

MMS nenodarbojas ar komerciju. Intervijā ar MMS vadītāju Diānu Barčevsku, autorei kļuva zināms, ka ēka tika celta apmērām pirms desmit gadiem un tās arhitekts ir Uldis Lukševičs. Iekārtot izstāžu zāli palīdzēja dizainers Aivis Cimža.

MMS ir divas izstāžu zāles - pirmajā un otrajā stāvā, labierīcības, garderobe un vairākas saimniecības telpas, administratora darba vieta ir apvienota ar izstāžu zāli padarot komunikāciju pieejamu ikvienam no apmeklētājiem. Divstāvu ēku no iekšpuses savieno metāla konstrukcijas kāpnes, stāvus balsta kolonnas. Vienā ēkas fasādes pusē ir plašs logu stiklojums ar atdalošām metāla joslām. Kopumā interjers ir vienkāršs un lakonisks. Krāsu salikumi neitrāli, pelēcīgi, kas variē ar toņiem no gaišā līdz tumšam. Interjerā dominē betons, metāls un stikls (2.attēls). Apgaismojums ir pārdomāts un daudzveidīgs, sadalīts zonās. Tiek izmantots arī vispārējais apgaismojums - pie griestiem stiprināmas konusveidīgas lampas. Gar sienām prožektoru sliedes, kas apgaismo mākslas darbus. Runājot par termoregulāciju, D. Barčevska ar pārliecību saka, ka mitruma līmenis tiek ievērots, tam jābūt ap 50%. Telpās ir apsildāmas grīdas un ventilācija, lai gaisa kondicionē, jo gaisa svārstības ir kaitīgas mākslas darbiem. Apmeklētājiem tiek piedāvāti arī kultūras pasākumi - teātra izrādes, lekcijas, kas papildina informāciju par eksponējamo izstādi.



2.attēls. Lielā izstāžu zāle Foto: Alīna Dukāte
Picture 2. Large exhibition hall. Photo: Alīna Dukāte

E. Barčevska min, ka galvenais, veidojot mākslas centru, ir konservatīvi tīra vide ar baltām sienām, lai telpā ir pēc iespējas mazāk lieku elementu. Toties pelēko krāsu viņa uzskata par fonu, kas labi kontrastē ar metāla konstrukcijām. Barčevska arī uzskata, ka reti kura no Rīgas mākslas galerijām atbilst šiem priekšstatiem par tīru vidi.

Funkcionālisma iezīmes:

- konstrukcija balstās uz kolonnām;

- betona lietojums interjerā, piemēram, betona grīda pirmajā stāvā (otrajā stāvā grīda klāta ar pelēkām paklājflīzēm);
- plašs logu stiklojums,
- metāla kāpnes un pelēko toņu izmantojums.

Galerija "Māksla XO"

Galerija "Māksla XO" savu darbību uzsāka 1999. gadā atverot izstāžu zāli Konventa sētā, Vecrīgā. 2010. gada septembrī galeriju papildināja jaunās izstāžu telpas, kas atrodas arhitekta Teodora Hermanovska projektētajā, 1930.gadā uzbūvētajā namā, kas ir spilgts funkcionālisma stila paraugs.

Galerijas darbības pamatprincipi tiek balstīti uz ideju: atrast tās īpašo vietu un nozīmi starptautiskajā mākslas pasaulē, piedāvājot spēcīgu, radošu un daudzpusīgu Latvijas mūsdienu un laikmetīgās mākslas paaudzi (Galerija XO).

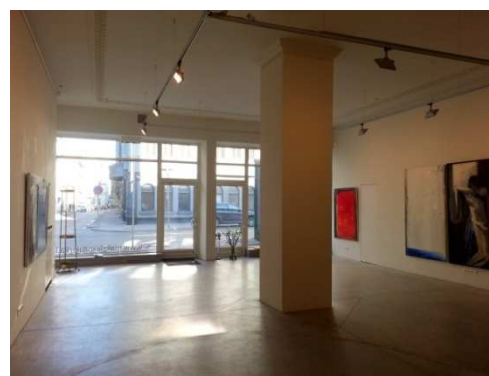
Intervējot galerijas dibinātāju un vadītāju Ilzi Žeivati, darba autore uzzināja, ka telpu, kas ir pielāgotas izstādēm, iekārtošanā ir piedalījies pati Ilze. Tikušas izveidotas divas atšķirīgas zāles: baltā un pelēkā. Divās zālēs var veidot dažādas izstādes, ir iespēja atrast piemērotāko fonu katram mākslas darbam.

Kopējā zāļu platība ir 130 m², neskaitot palīgtelpas, kas ir divos stāvos.

I. Žeivate uzskata, ka mākslas centrā vissvarīgākais ir apgaismojums, tomēr Latvijā nav lielas prakses mākslas darbu izgaismošanā. Parasti tiek izmantoti universāli piemērojami prožektoru.

Galerijā tiek izmantoti prožektoriem uz sliedēm, tomēr autorei šķiet, ka pelēkajā zālē apgaismojums ir trūcīgs un nepietiekams.

Neparastākais, ar ko sastapās autore galerijā "Māksla XO", ir mūzika. I. Žeivate skaidro, ka mūziku izmanto, lai cilvēks justos brīvi, lai palīdzētu viņam sajust un baudīt mākslu un novērstu neveiklības sajūtu. Funkcionālisma iezīmes: betona lietojums interjerā, piemēram, betona grīda; stikla izmantošana; gaišo un pelēko toņu kombinācija(3.attēls).

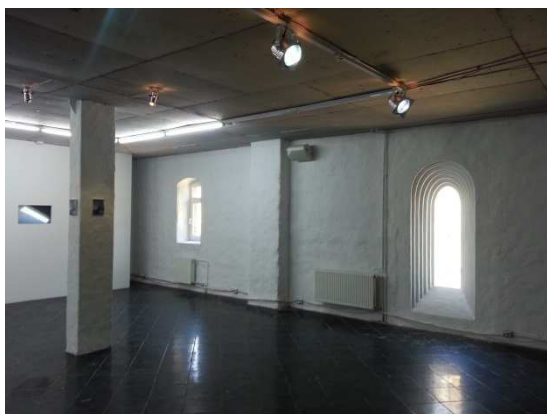


3.attēls. galerija „MākslaXO”,izstāžu zāle. Foto: Alīna Dukāte
Picture 3. Gallery „Māksla XO”, exhibition hall. Photo: Alīna Dukāte

IV. MĀKSLAS GALERIJAS RĪGĀ, KAS NEATBILST FUNKCIONĀLISMA STILAM ART GALLERIES IN RIGA WHICH DOES NOT MEET THE STYLE OF FUNCTIONALISM

Lai apstiprinātu pētījuma jautājumu par interjera stilu, kas būtu labākais fons mākslas darbu eksponēšanai, ir nepieciešams veikt izpēti citās mākslas galerijās izmantojot salīdzinošo metodi.

Darba autore intervēja izstāžu zāles kim? direktori Zani Onculi, kura pastāstīja, ka tā ir dibināta 2008. gada pavasarī, bet darbība tikusi uzsākta 2009. gada maijā.



4. attēls. Izstāžu zāle "kim?" Foto: Alīna Dukāte
Picture 4. Exhibiton hall. Photo: Alīna Dukāte

kim? atrodas vēsturiskajā Spīķeru kvartālā. Tas ir laikmetīgās mākslas centrs, kas vietējo un starptautisko auditoriju aicina uz regulāru izstāžu apmeklēšanu, lekciju, filmu un performanču programmām. Izstāžu zāles darbības koncepcijas mērķis ir stimulēt jaunas, intelektuāli un emocionāli atvērtas auditorijas veidošanos, kas pakāpeniski tiktu ieinteresēta visdažādākajās laikmetīgās kultūras izpausmēs: mākslā, mūzikā, kino, teātrī, dejā, arhitektūrā, dizainā, literatūrā un filozofijā.

kim? nosaukums sakņojas atvērtajā jautājumā "Kas ir māksla?".

kim? ir izvietots trijos stāvos, tas ietver divāas izstāžu zāles. Telpas ir samērā nelielas. Griestus balsta kolonnas. Izstāžu zāles sienas ir baltā krāsā, grīda klāta ar pelēkām flīzēm. Apgaismojumam izmantoti prožektoru un diožu lampas. Kopš 2010. gada rudens kim? pakāpeniski tiek veidota lasītava. kim? piedāvā izīrēt savas telpas dažādiem pasākumiem: konferencēm, prezentācijām, radošām darbnīcām un svinībām (kim?).

Galerijas interjers neatbilst funkcionālisma stilam: dažās telpās grīda ir segta ar lamināta dēļiem, sienas zālēs ir klātas ar dekoratīvo apmetumu, vietām caur sienu konstrukcijām parādās koks, dažviet dominē arī sarkanais ķieģelis (4.attēls).

Mākslas galerija "Putti"

Rīgas mākslas galerija "Putti" ir dibināta 2000.gadā. Tās mērķis ir popularizēt Latvijas mūsdienu rotu dizainu un rotu dizaineru darbus vietējā un starptautiskā mērogā. Vārds

"Putti" radies no itāļu valodas vārda "Putto", kas nozīmē rotaļīgu eņģeliša figūru tēlotājā mākslā, lietotu renesanses un baroka laikmeta gleznojumos un ciļņos. Sākot ar 2006. gada vasaru, galerija iatrodas jaunās, īpaši tai radītās telpās Vecrīgā.

Galerijas telpās regulāri notiek izstādes un pasākumi, kas popularizē latviešu un ārzemju laikmetīgo un konceptuālo rotu virzienu, tāpat tiek organizētas viesmākslinieku izstādes. Rotu unikalitāti izceļ harmoniskais interjers, kurā savu vietu atrod arī tērpi (Mākslas galerija "Putti").

Autore, intervējot galerijas īpašnieci Agitu Putāni, noskaidroja, ka galerijas telpu ar kopējo platību 270 m² interjers tika iekārtots pašu spēkiem. Darbi tiek eksponēti uz podestiem un galdiem, kas ir veidoti no koka un stikla. Galerijas sienas ir krāsotas pelēkā krāsā, grīda klāta ar lielām, gaišām flīzēm, ir arī mozaīkflīžu josla, kas piešķir interjeram dinamisku ritmu. Mēbeles ir baltā un sarkanā krāsā, piešķirot telpai akcentu. Sienu nišās un letē attēloti dekoratīvie ziedi melnā krāsā uz balta fona. Telpā ir daudz stikla paneļu un spoguļu. Galerijā ir apsildāmas grīdas. Apgaismojums ir vispārīgs, telpas vidusdaļā pie griestiem grozāmās prožektoru sliedes, vietām industriālā stila gaismas ķermeņi (5.attēls).



5. attēls. Izstāžu zāle, galerija „Putti”. Foto: Alīna Dukāte
Picture 5. Gallery „Putti”, exhibiton hall. Photo: Alīna Dukāte

Galerijas "Putti" interjers vairāk atbilst minimālismam ar citiem stilistiskiem akcentiem, nekā funkcionālismam. Kopumā galerija ir piemērota mākslas darbu eksponēšanai.

Mākslas galerija "Alma"

Galerijas "Alma" darbības koncepcija ir balstīta uz stabiliem, ilgstošā profesionālā darbībā izkoptiem pamatiem. Galerijas dibinātājas ir māksliniece Astrīda Riņķe un mākslas zinātniece Ilva Krišane. Galerija "Alma" specializējas glezniecības darbu izvietošanā privātos un publiskos interjeros, kā arī sniedz konsultācijas mākslas darbu novērtēšanā. Galerija atrodas Rīgas klusajā centrā, vienā no pilsētas jūgendstila arhitektūras ēkām (Galerija Alma).

Galerijas apgaismojumam ir izmantoti pie sliedēm stiprināmi prožektoru. Vienā no zālēm apgaismojums ir nepietiekams tumšo sienu dēļ, kas absorbē gaismu.

Galerijas interjers neatbilst funkcionālisma stilam vairāku pazīmju dēļ. Pirmkārt, pirmajā zālē sienas ir krāsotas spilgti tumši sarkanā krāsā, turpretim funkcionālisma interjeros tiek

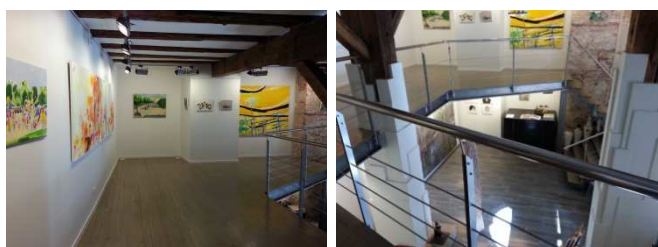
izmantoti gaiši un neitrāli toņi. Otrkārt, grīda klāta ar masīvkoka dēļiem, atšķirībā no funkcionālisma, kur dominē betona grīdas. Griesti ir rotāti ar ģipša rozetēm un apmalēm, kas nav raksturīgi funkcionālismam. Tomēr galvenais ir fakts, ka galerija atrodas jūgendstila ēkas telpās, tādā veidā arī logi, kas ir daļa no interjera, neatbilst pētāmā stila pazīmēm (6., 7. attēli).



6., 7. attēls. Galerija „Alma”, izstāžu zāle. Foto: Alīna Dukāte
Pictures 6.,7. Gallery „Alma”, exhibiton hall. Photo: Alīna Dukāte

Mākslas galerija „Daugava”

Galerija "Daugava" tika dibināta 1993. gadā. Motivācija tās izveidei bija vēlme radīt telpu mākslinieka un sabiedrības komunikācijai. Galeriju kopš dibināšanas vada mākslas zinātniece Anda Treija. Galerija "Daugava" 19 gadus atradās Vecrīgā, bet no 2002. gada maija tā darbojas 17. gs. noliktavas ēkā. Galerijas vajadzībām telpas projektēja arhitekti Andris Kronbergs un Eduards Beernaerts (8.,9. Attēli).



8., 9. Attēls. Galerija „Daugaava”, izstāžu zāle. Foto: Alīna Dukāte
Pictures 8., 9. Gallery „Daugaava”, exhibiton hall. Photo: Alīna Dukāte

Galerija "Daugava" ir komerciāla galerija: darbību nodrošina pārdodot un izīrējot mākslas darbus (Galerija Daugava).

Viesojoties galerijā, autore secina, ka tās interjers neatbilst funkcionālisma stilam. Interjers iekārtots balstoties uz arhitektūru, nesošās sienas ir no ķieģeļiem, ļoti biezas. Mākslas darbi izvietoti gan pie ķieģeļu sienām, gan pie balti krāsotām rīģipša sienu konstrukcijām. Galerijas kopējā platība ir ap 170 m². Telpās skan klasiskā mūzika, kas, atrodoties skaistajā Vecrīgas ēkā un baudot mākslu, skatītājus atraisa pārdomām un liek aizmirst ikdienas rūpes.

Visā telpā ir prožektoru uz slīdēm. Pēc autores domām, šī ir viena no retajām galerijām Rīgā, kurā ir atbilstoši projektēts apgaismojums: pienākot klāt mākslas darbiem, lai tos apskatītu, neveidojas ēnas. Siltumu nodrošina apsildāmās grīdas, ir uzstādīti arī radiatori, bet, kā pastāstīja A. Treija, tie netiek izmantoti.

V. REZULTĀTI

RESULTS

Izpētot funkcionālisma stila iezīmes interjerā, var secināt, ka mūsdienu mākslas centros un mākslas galerijās telpas tiek iekārtotas funkcionālisma stilā vai ar tā iezīmēm, jo tieši šāda rakstura interjeros veidojas sinerģija starp mākslas darbiem, telpu un cilvēku, kurš tajā atrodas. Veicot pētījumu, autore saskārās ar tādu fenomenu kā terminu neatbilstošu lietošanu, piemēram, dažas galerijas sevi dēvē par mākslas telpām, muzejiem, saloniem, pildot vienu un to pašu funkciju.

Autore secināja, ka Latvijā nav izveidoti tādi mākslas centri, kas atbilstu to multifunkcionālajai būtībai, tomēr arvien vairāk mākslas galeriju sāk pielāgoties mākslas centru funkcijām un darbībai.

Apmeklējot izstādes un citus pasākumus, ko piedāvā mākslas centri un galerijas, autore atkāja to interjeros nepilnības.

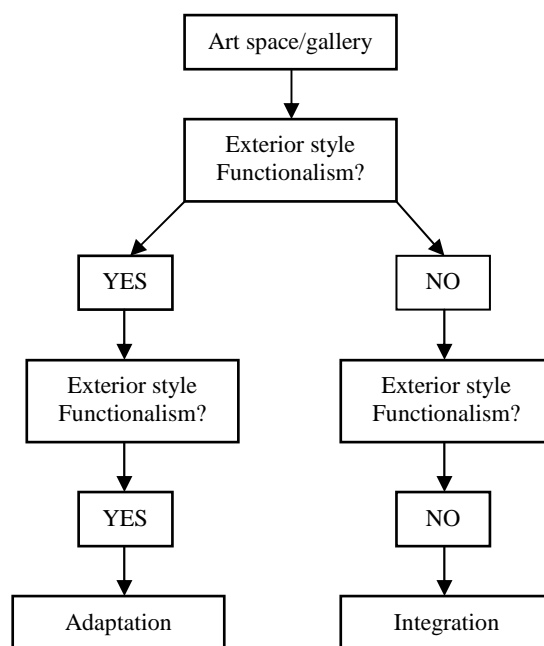
Svarīgākās un problemātiskāko tām:

1. Nepietiekams apgaismojums un ēnu veidošanās uz mākslas darbiem.

2. Nepiemērota telpu temperatūra/klimats.

3. Vietas trūkums.

1.TABULA. MĀKSLAS CENTRU UN GALERIJU IEDALĪJUMS
TABLE I. BREAKDOWN OF ART CENTRES AND GALLERIES



Adaptation - adaptation to circumstances

Integration - merger or accession

Māksliniece Ilze Jaunberga personālizstādē "Kritiskā temperatūra" intervijā LNT teica: "Cilvēkiem ir bail iet iekšā galerijās, jo tās ir ļoti sterilas" (Jaunberga, 2012).

Savukārt Ilze Žeivāte sarunā ar darba autori min, ka mūsu zemē cilvēki nav atraisīti, atšķirībā no vāciešiem, kuriem nav nekādu problēmu ienākt galerijās/izstāžu zālēs, skatīties, runāt, diskutēt, apsēsties zīmēt. Latvijas iedzīvotāju

mentalitātes vai kādu ētisku iemeslu dēļ cilvēki neuzdrošinās palikt vienatnē ar mākslu, tāpēc, lai tāda sajūta nerastos, izstāžu zāles piemēro ne vien mākslas darbu izstādīšanai, bet arī citiem radošiem pasākumiem.

Izvērtējot Rīgas izstāžu zāļu, mākslas centru un galeriju interjerus, autore secināja, ka funkcionālisma stilā ir iekārtots pavisam neliels skaits no tām. Galvenais faktors, kas to nosaka, ir ēkas, kurā atrodas izstāžu zāle vai mākslas centrs, arhitektoniskais veidols kas ierobežo vai padara neiespējamu telpu iekārtošanu šajā stilā.

Lai pārskatāmāk izprastu problēmas būtību, pētījuma autore izveidoja shēmu (1. tabula), kurā iedalīja mākslas centrus un galerijas divās grupās - adaptētās un integrētās.

SECINĀJUMI CONCLUSIONS

1. Par funkcionālisma pamata ideju arhitektūrā kļūva funkcionālisma lozungs : "Forma seko funkcijai".
2. Mūsdienās funkcionālisma popularitāte izskaidrojama ar cilvēka nogurumu saspringtajā dzīves ritmā, vēlmi savu apkārtni veidot nesamākslotu, vienkāršu un viegli uztveramu.
3. Funkcionālisma mērķis - cilvēku dzīves kvalitātes uzlabošana ar zinātniski tehniskā progresā palīdzību.
4. Arhitektūrai ir nozīmīga saikne ar interjera izveidi, cilvēka psiholoģisko stāvokli un viņa noskaņojumu. Arhitektūra ir ēkas kompozicionālā uzbūve, proporcijas, faktūra un gaisma. Interjeram ir jāveido šo elementu sasaiste.
5. Mākslas darbus nepieciešams eksponēt vietā, kur tos ir viegli uztvert. Mākslai un cilvēkam ir jādominē telpā.
6. Funkcionālisma stils ir piemērots izstāžu zāļu un mākslas centru interjeros. 7. Izstāžu zālēs un mākslas centros, kuru interjeri veidoti funkcionālisma stilā, veidojas sinerģija starp mākslas darbiem, telpu un cilvēku, kurš tajā atrodas.

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Universal Design in Sports Clubs

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Abstract. Universal accessibility is a key concept that states that all environments should be accessible by everyone, regardless of ability (University of Ulster, 2003). Everybody is different and there is no 'average' person. Nowadays one of the most serious problems is poor health of the population and, as stated by numerous physicians, more often the reason of this situation is a sedentary lifestyle. Due to frequently changing weather conditions and busy work schedule, outdoor activities have become less frequent and therefore there is a need for an alternative activity possibility such as fitness club. The aim of the article is to look at the fitness clubs from the point of the universal design. It also stresses the idea that the positive effects of physical activities are connected not only with one's health, but with the overall quality of life as well.

Keywords: universal design, accessibility, fitness, sports, people with disabilities

I. INTRODUCTION

Universal design is defined as follows: Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. This definition is attributed to Ron Mace and has been developed by the Center for Universal Design at North Carolina State University. Theoretical literature about universal design, documents regarding this field, as well as available information on the Internet sites were analyzed to show the worldwide tendency to include universal design principles in everyday life, as well as sports clubs. Universal design – clarification of the definition (by The Ministry of the Environment, Norway, 2009)

- Of products and environments.

The universal design strategy is applicable to products and environments within all sectors and subject areas. The term environments refer to all the physical and technical environments that are shaped by humans. The term products here also encompass products and software in the ICT sphere as well as products used in the provision of services. Universal design requirements in the service sector are linked to the physical and technical conditions governing

access to or use of the relevant service. In the educational sphere, universal design is linked to the physical and technical features of the teaching environment.

- To be usable by all people.

The phrase "usable by all people" is to be incorporated as a first starting point without exception. Environments and products are to be designed such that they may be utilized by persons of all ages with different levels of skill, ability and functionality. Factors relating to mobility, vision, hearing, comprehension and sensitivity to the environment (asthma/allergies) are important in this context.

- To the greatest extent possible.

A key feature of the universal design strategy is its focus on seeking ever-better solutions. Universal design is an innovative strategy. Technology, knowledge and awareness levels are subject to rapid paced change. The principle of universal design is a dynamic tool that reflects the need for ongoing consideration of new means of minimizing limitations. The ability to design products and environments such that they are usable by all may be inhibited by certain limitations relating to current knowledge, technological development, access to products and solutions and practical and formal circumstances. The universal design strategy may come into conflict with other areas of statutory regulation, such as conservation and safety considerations. In such cases an effort should be made to seek solutions that satisfy universal design requirements to the greatest possible degree.

- Without the need for adaptation or specialized design.

This phrasing emphasizes that the primary solution chosen is to be usable by all. Primary solutions are presumed to give adequate consideration to use of technical aids for personal use, such as wheelchairs, hearing aids, etc. There should not be a need for any supplementary activity or work to make a solution usable for individual groups. Separate solutions for persons with disabilities should not be established, nor should the solution in any way signify that it has been specifically designed for persons with functional impairments. Special solutions intended to compensate for general solutions that are not usable by all, such as stair lifts, should be avoided. In the

event that special solutions or technical devices must be employed to render a solution universally usable, the primary solution must be designed in a manner that functions alongside or in an integral fashion with the special equipment. Current development trends indicate that roles traditionally filled by people are increasingly becoming automated. The self-service solutions that are introduced must be based on the principle of universal design, but this should not exclude the provision of personal service and assistance. According to the Council of Europe's European Sports Charter 1993, sport means all forms of physical activity which, through casual or organized participation aim at expressing or improving physical fitness and mental wellbeing forming social relationships or obtaining results in competition at all levels.

A. *Sport (committed to helping people and communities across the country create sporting habits for life) in the Accessible Sports Facilities Design Guidance Notes (2010) states following:*

- "Good design needs to be based on a sound understanding of such issues as the current trends and practices within individual sports, developments in the sport and leisure industry and the lessons to be learnt from previously built schemes;"
- "Good design needs to be embraced within the earliest vision statement for a particular project and enshrined in the initial briefing stage through to the final detailed specifications and operational arrangements;"
- "Disabled people are disabled by poorly designed environments and providing add-on or special facilities creates segregation rather than inclusion. For example, the reason a wheelchair user cannot use the fitness equipment room in a sports centre is not because he or she is in a wheelchair. The design and management of the facility creates the barriers and limitations that disable. Consequently, the correct view would be that 'a wheelchair user cannot use the fitness equipment room because the equipment is inappropriate and / or the room is located on an inaccessible floor'. Or 'the person cannot use the fitness equipment room because the staff has not had adequate training'."

B. *North Carolina Office on Disability and Health (2008). Removing Barriers to Health Clubs and Fitness Facilities. Chapel Hill, NC: FPG Child Development Institute.*

- The message of health, wellness, and disease prevention through physical activity has become more widespread in recent years. Along with much of the population, people with disabilities and older adults are looking toward health clubs, gyms and fitness centers as a means to be more active and achieve a healthy lifestyle.
- A disability can affect walking, seeing, speaking, hearing, or thinking to varying degrees. It can be temporary or progressive, visible or invisible. The number of people who experience some kind of

disability during their lifetime increases as the population ages. This creates a growing market for fitness facilities to target in order to expand their business and enhance their bottom line.

- The 1996 Surgeon General's report, Physical Activity and Health, provided a new perspective on the benefits of physical activity for all Americans, including people with disabilities and older adults. Disability is not an indicator of poor health, requiring specialized programs for physical activity. Instead, people with disabilities look toward community facilities to meet their health and exercise needs. For many people with disabilities, "Exercise is not an option, but a necessity for management of the condition," says Kerri O'Brien, Fitness and Retention Manager for BM Sports Clubs, and member of the Life Fitness Academy. And for many older adults, being fit allows them to choose where to live and how to spend their time.

C. *Bennett, R.P. (1999). "Equipping for People with Disabilities," Fitness Management, 15, 32-33.*

- Part of the problem is that club owners and exercise equipment manufacturers traditionally focused on what is generally classified as 'the 7 percent.' Even though the demographics of health clubs are changing, and people with disabilities and the elderly are becoming a larger part of the general population, many clubs are still trying to attract the 7 percent of the population between the ages of 19 and 30, and the equipment that is usable by a larger portion of society is slow to appear in facilities.

II. SPORTS FOR ALL

It is obvious that all people should have equal possibilities for active spending their leisure time, but in reality the situation is different. Nowadays nobody can complain about the lack of sports clubs, but how many of them are suitable for people with functional disabilities? It has been proved scientifically that regular exercising is the basis for physical and mental health as well as rehabilitation component, whereas a sedentary lifestyle is seriously harmful to humans that very often turns out to be irreversible. The main obstacles that prevent a person from being physically active are costs, lack of understanding, length of distance, cultural and language barriers, difficult access to local recreation centers and safe playgrounds (The Ministry of Health of the Republic of Latvia, 2012).

Benefits of Physical Activity according to the data published in the home page of English Federation of Disability Sport (Inclusive Fitness)

A. Health Benefits

- Reduce the overall risk of cancer.
- Boost the immune system.
- In combination with a balanced diet, help to maintain a healthy weight (Nearly 7 out of 10 men and 6 in 10

women in the UK are overweight or obese according to the National Audit Office (NAO)).

- Lower high blood pressure - reducing the risk of developing heart disease.
- Promote healthy blood sugar levels to prevent or control diabetes.
- Evidence suggests that active people live a longer life- (Achieving the recommended levels of moderate intensity physical activity can reduce premature mortality by between 20-30%).
- Provides natural pain relief.

B. Social Benefits

- Boost self-confidence and help prevent depression
- Regular exercise can even help with the treatment of depression and anxiety.
- As muscle definition is improved and body fat reduced, this can help to make you feel better about your appearance.

C. Everyday Life

- Physical activity improves co-ordination.
- Improves strength and balance and hence reduces falls and fractures.
- Improvements in quality of sleep.
- Promotes psychological well-being and reduces feelings of stress.

D. Economic Benefits

- Perform better at work as you have a greater mental and physical ability.
- Motivation improved leads to increased productivity and efficiency.
- Annual costs of physical inactivity in England to be in the region of £8.2 billion; costs of obesity alone being a further £2.5 billion.
- Sickness absence costs employers a minimum of £18 billion each year, which roughly equates to 16% of salary costs.

III. PEOPLE WITH DISABILITIES

European Commission the social exclusion defines as follows – socially excluded person is unable to access services and goods, is unable to exercise his rights and to take advantage of opportunities because there are obstacles that prevent it, such as, lack of access, public stigma, emotional and physical violence, etc... Application of the principles of Universal Design in the furnishing of a sports club promotes social inclusion of people, encourages them to be physically active despite their disability. A sports club is a place where humans are able to socialize – to maintain lively not only the body, but the spirit as well. The quality of life improves. Accessible environment should become a routine and close to a person's concept that is not associated only with the hospital and formal state institutions interiors.

Mindfully designed, accessible to all, sports club removes the barriers among the different social groups, educates society about accessibility and its necessity in everyday life.



Picture 1. Latvian Paralympics

The organization “Apeirons”, a NGO where people with and without disabilities are together, stress in their materials that sports and physical activities should be recognized as one of the most important factors of integration. Therefore, it is necessary to support and expand all kinds of sports activities, to inform the society, to educate the staff, design appropriate sports centers, to cooperate with organizations, which are dealing with it. Alongside with all this there should be organized sports events during which disabled people should participate together with people without disabilities (NGO “Apeirons”, Handbook “A Bridge To Understanding”, 2003). In order to implement such a plan sports clubs should introduce universal design principles.

The myth that people with functional disorders are passive and uninterested dispels the Latvian paralympians (Picture 1) who in spite of health problems take an active part in competitions and receive awards. According to the data of the Latvian Ministry of Welfare (2008) there are in Latvia 1400 professional sportsmen with different functional disorders. During the competitions there take part people from 6 disability groups - athletes with amputations, cerebral palsy, mental disorders, spinal cord disorders and athletes with physical disabilities who are not included in any of the above groups.

TABLE I. THE NUMBER OF PEOPLE WITH DISABILITIES IN LATVIA. DYNAMICS 2008- 2011

Year	People with disabilities	% increase	I group	II group	III group	Children with disabilities
2011	148 919	5.1%	17 222	75 026	49 164	7 507
2010	141 701	4.2%	12 539	78 508	43 157	7 457
2009	136 024	14.4%	14 000	72 077	42 537	7 374
2008	118 898	10.1%	8 948	63 037	39 357	7 556

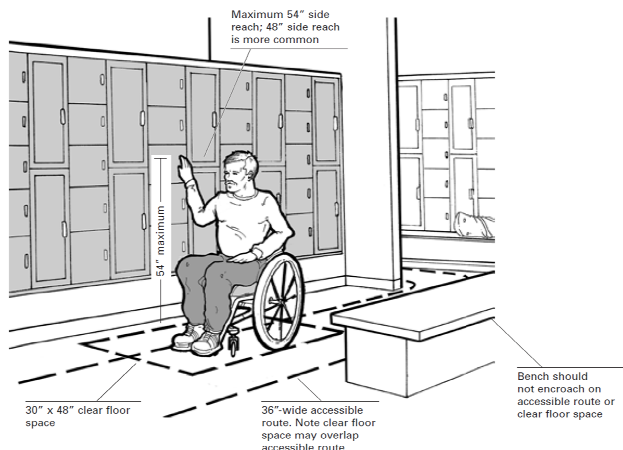
As shown by the statistics table (Table 1) below (The Ministry of Health of the Republic of Latvia, 2012), there is a tendency in Latvia that the number of people with disabilities is increasing from year to year. In addition, as a result of a household trauma, anyone can come in a disabled status. Doctors prescribe to patients during the rehabilitation process physical activities because they promote faster recovery.

IV. UNIVERSAL DESIGN STANDARDS

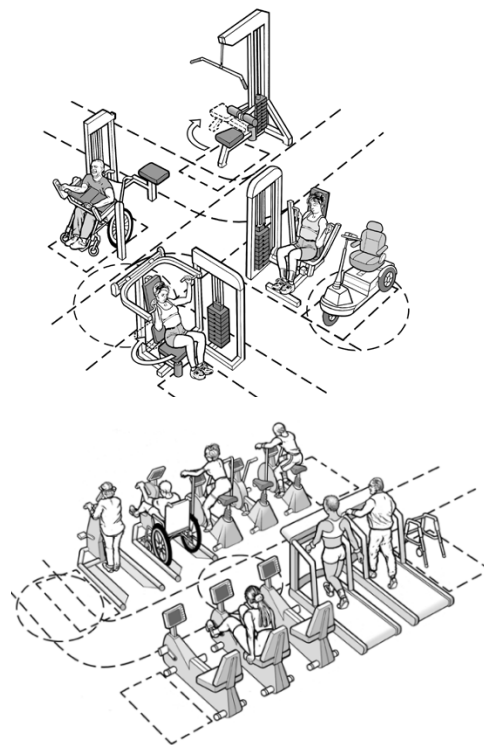
In terms of Universal Design standards, NGO „Apeirons” and Liepaja Society of the Blind have issued useful materials in the Latvian language. The 9th booklet issued in 2002 by “Recreation, sports” has information about the parking places for disabled, tribuners, dressing rooms, swimming pools, but information about gym facilities is lacking. There are issued 10 booklets in the series “Environmental access to library”. Also “Building Code guidelines” published in 2011 by the Liepaja Society of the Blind should be in the library of every interior designer because it summarizes information of every possible.

The fact that abroad sports clubs in accessibility context have come into focus is seen from the materials available on the internet as well as from the information leaflets in English, such as. Removing Barriers to Health Clubs and Fitness Facilities (North Carolina Office on Disability and Health in collaboration & The Center for Universal Design; 2008) and Accessible Sports Facilities Design Guidance Note (Sport England, 2010). In detail, there have discussed club placement principles and there is set out the theoretical basis that provides the designer with deeper understanding about the needs of people with functional disabilities (Picture 2, 3).

Figure 5. Accessible Lockers



Picture 2. Removing Barriers to Health Clubs and Fitness Facilities



Picture 3. Removing Barriers to Health Clubs and Fitness Facilities

V. INSPIRING PROJECTS

A good example is The Inclusive Fitness (English Federation of Disability Sport, Inclusive Fitness, 2012) Initiative (IFI) that has been established for over 10 years and now managed within the English Federation of Disability Sport (EFDS). This is a complex solution which includes not only accessible to the environment and sports equipment, but also specialized staff training and continued development (Picture 4). Sports Society has built its visibility and quality mark that serves as a guide for choosing a sports club. There are 400 such clubs currently operating in England.



Picture 4. English Federation of Disability Sports

Virginia G. Piper Sports and Fitness Center (Pictures 5, 6) was opened in Phoenix, Arizona in February 2012 for people with functional disorders (area 4181 m², total construction costs – 12, 5 million USA dollars). The center offers a variety of options to promote a healthy and active lifestyle for people with disabilities. The SpoFit offers a wide variety of amenities to help people achieve their health and fitness goals (Picture 7). SpoFit has a fitness center with wheelchair accessible weight machines, an aquatic area equipped with lifts and elevators, accessible locker rooms, and more (The Virginia G. Piper Sports and Fitness Center for Persons with Disabilities, 2012).



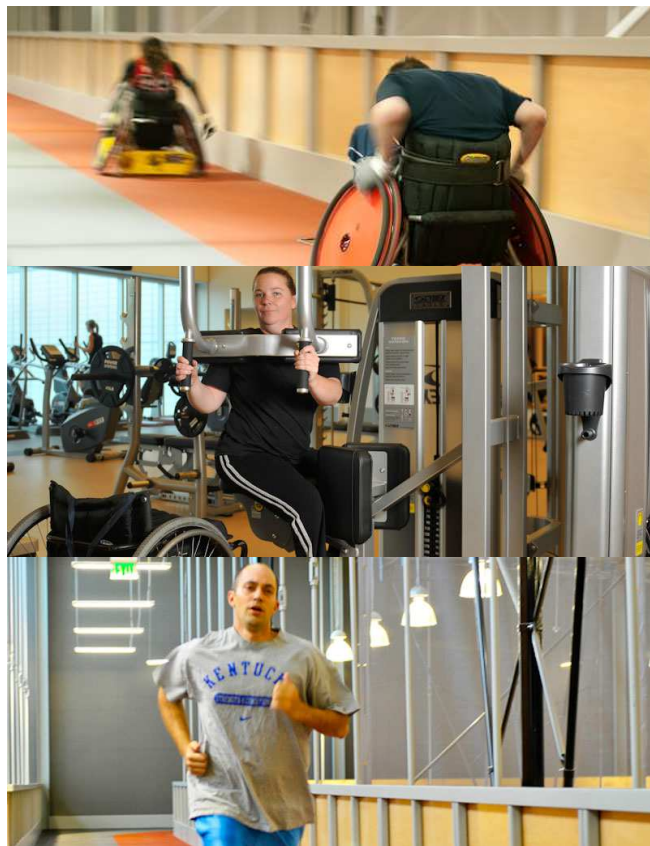
Picture 5. Virginia G. Piper Sports and Fitness Center

Award-winning Baldinger Architectural Studio6 designers were able to realize their vision and the end result is awesome. As told by the project supervisor Ilan Baldinger, the whole focus of this project was to focus on creating a building which is entirely devoted to people with disabilities. For people with disabilities, there's a difference between a facility that meets ADA (the Americans with Disabilities Act) requirements and one that is truly accessible. "The ADA is kind of a catch-all standard, but the disability community is much more diverse," says Ilan Baldinger, the architect behind the Virginia G. Piper Sports and Fitness Center for Persons with Disabilities (SpoFit) in Phoenix, Ariz., one of a handful of such facilities in the country. "We still had to comply with the ADA, but then we had to go beyond. For example, elevator controls are required to be at a certain level.



Picture 6. Virginia G. Piper Sports and Fitness Center, interior

But a person in a wheelchair with limited arm mobility finds that it's very difficult to reach controls at that level." (E. Attwood, Adaptive Recreation and Fitness Facilities Set an Example for All, 2013).



Picture 7. Virginia G. Piper Sports and Fitness Center

Sports promotion has become a global trend. An example of this is the Singapore project "Vision 2030" the motto of which is "Live better through sports", care of the elderly people conveniences is particularly outlined (Picture 8).



Picture 8. Project "Vision 2030". Singapore

CONCLUSIONS

Including Universal Design principles in sports club is a serious challenge for both designers and architects because to create a highly functional environment in accordance with specific regulations, combined with aesthetically enjoyable presentation is not easy. However, it is a great opportunity to search and find original solutions, derive moral satisfaction from important contribution to the welfare of society and genuine concern for fellow human beings.

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Materials Design

Untraditional fibreboard

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Abstract. There is too large consumption of wood for production of fiber boards, which is a reason for more and more intensive deforestation, in order to reduce it there are some options sought for partial or complete substitution of wood in the board materials with the raw materials supplied by the agricultural flora and/ or by-products of their processing. Article describes a new type of fiber boards for the furniture production, developed in cooperation with ATB (Leibniz-Institute for Agricultural Engineering) by using a new method to prepare raw materials and specific production technologies of ATB. The main raw materials are aerobically aged hemp stalks. The samples are made of materials with different curing time and varying the binder. Specimens are 8 mm thick and correspond to a medium-density fiberboard, fitting standard EN622. On the experimental processing line 1.200x800x8mm and 1.200x800x16mm size board samples are developed and the tests are performed to determine such parameters as bending strength, perpendicular tensile strength, thickness swelling and thermal conductivity according to EU standard methods. The proposed material whose main component is the annual renewable resource, hemp stalks, could be used for furniture, interior design and heat isolation.

Keywords: *Hemp, Fibre board, Urea Formaldehyde Resin, Phenol-formaldehyde, wet preservation.*

I. INTRODUCTION

Despite of constantly increasing number of researches and offerings of new products, including those in the field of boards, there are still many unsolved or partly solved issues created by integration of non-traditional natural materials in boards, including the necessity to provide a steady flow of raw materials with stable physical and mechanical properties throughout a year, to shorten the technological processes, providing the corresponding properties of an end product for its use, to minimize the energy consumption, to substitute the completely or partly non-renewable resources to be cultivated for a long period of time with some fast growing and productive resources.[1]Research and practice has showed that alongside with natural fibres used in textiles, they can also be used successfully as reinforcements of composites, compounds of building materials, as heat and sound insulation materials, and in many other applications [2]. Fibreboards as well as three-dimensional pressed parts can be produced for the application in construction and furniture industry [3]. Hemp fibreboard can be seen as an alternative to such boards that are made from processed wood fibres and resins. MDF

(Medium Density Fibreboard) is cellulose composite that is processed comparable to the strength found in trees [4]. Therefore, it is not necessary to use over 60 year's old trees to make houses and furniture that lasts less. Instead of wood, hemp that takes only about 100 to 150 days to grow, can ensure the same house and furniture that lasts as long [4]. At the usual harvest date in September, European weather conditions are often harmful to harvest good quality hemp straw. The harvest of hemp by chopping method followed by anaerobic storage is favorable for the farmer, because the typical weather risk can be avoided. The following actions are the same as for ensiling of fodder [5]. Fiber hemp as a raw material for production of composites and boards deals with practically all ecological issues, that threaten the future of mankind, as well as it is also a highly productive, not very demanding, and good for cultivation agricultural plant. The aesthetical and mechanical properties of prototypes can be improved by laminating, covering with textiles, for example, flax/ hemp fabric of different textures. In order to obtain fully ecological material of boards, the synthetic adhesives should be substituted with the natural products, such as lignin available in the hemp fractions, starch, etc.

II. MATERIALS AND METHODS

According to ATB developed technology harvested and chopped whole hemp plants (seeds, leaves, fibres, shives) are wet preserved under anaerobic conditions [6]. Raw material that is stored for 14 days to maximum 12 months is used to manufacture the boards; Phenol formaldehyde resins (PF) – Prefere 16J536 and Urea-formaldehyde copolymer in water (UF) - Hexion LL4547 in amount 10 g/kg of mixture dry mass are used as the binders. The plant raw material processing as well as the subsequent procedures were conducted at on experimental production line with 330 kg/h capacity that is developed and tested in Leibniz-Institute for Agricultural Engineering Potsdam-Born (ATB) (Figure 1). To ensure optimal moisture the preserved material is mixed with dry hemp straw and processed with an extruder and in a second step with a disc mill. Next the material is passed to the hot air dryer (150 °C). Dry material is divided into 20 kg units that are placed in the mixer, where it is mixed with glue and passed to the three chamber dissipation machine where with airflow system on conveyer belt fleece is formed and passed to the double belt pre-press. The resulting fleece (6.5 kg/m²) is pressed in the heated press to 180 degrees with holding time 283 seconds fewer than 100 bar pressure.

Pressing resulted in the board with dimensions 1.200x800x8 mm and 1.200x800x16 mm which were cut according to testing standards.

All products from a comminution process are characterized by means of the average particle size as well as the variation of particles size. Sieving as the simplest and most widely used methods for particle size analysis determines the separation of fine material from coarse material.[7] Sieving is carried out by stacking sieves in ascending order of aperture size and placing the sample on the top sieve. The stack is vibrated for a fixed time (8 min) and the residual weight on each screen is determined for each sample. Results are usually reported in the form of a cumulative percentage of passing sizes. Bending strength test of board material samples (25 from each board) were executed on universal testing device Zwick/Roel Z010 (maximum strength 100 KN) using EN310 [8] testing standard. The thickness swelling and water absorption tests after immersion in water were carried out according to EN 317 [9]. Pre-weighed-measured specimens (25 from each board) were immersed in water for 24 hours at 20 °C. After 15, 30, 45, 60 min and 2, 3, 4, 5, 24 hours each soaking, the specimens were wiped of excess of water, measured for thickness and weighed. The thickness swelling and water absorption was determined on the basis of initial dry measurements. Thermal conductivity of the board samples was determined using the thermal conductivity measuring instrument FOX600 of the company Laser Comp according to the standard ISO 8301[10].

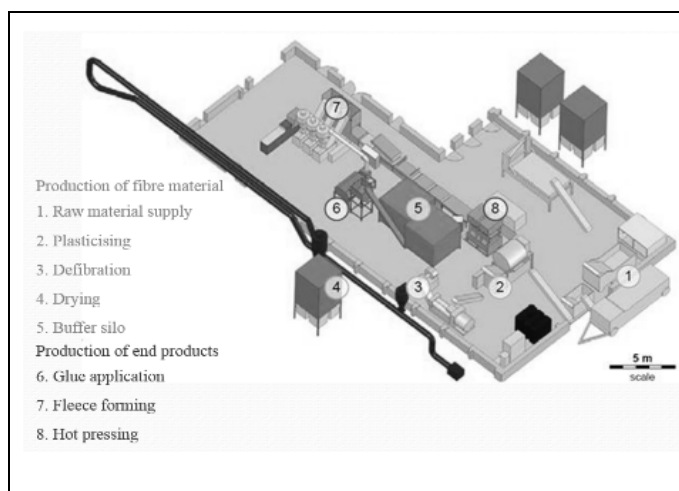


Figure 1. ATB Technological line

III. RESULTS

Sieving and size distribution

A sieve analysis of the fibre material was carried out to obtain a distribution of particle sizes according LVS EN 933-2:1995 [11] standard. As can be seen in Figure 2 the finest fibre material is got from mixing two weeks storage material with dry hemp material (FDH) as a result getting

higher amount of large particles than small particles. In contrast mixing the twelve months storage material with dry hemp material (PDH) there are 17% less large particles and 60% more small particles. Approximately 40-45% of the particles were of a size greater than 2000µm.

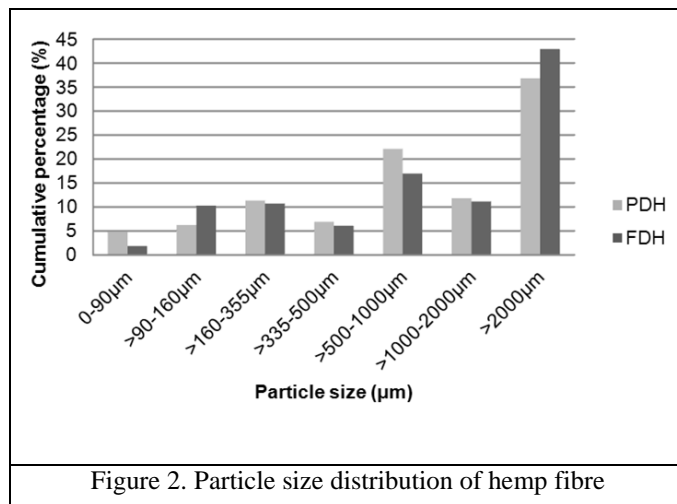


Figure 2. Particle size distribution of hemp fibre

Board material swelling

The results of swelling tests (Figure 3) reflect changes of material samples in thickness. The lowest water absorption values in all range show samples from preserved hemp with PF binder. That is on average 16% less than other samples sorption capacities. All other materials have quite similar results; FDH-UF has on average 3% less water absorption compared to PDH-UF. The fastest rate of thickness changes are noticed at the first 15 minutes (Figure 3).

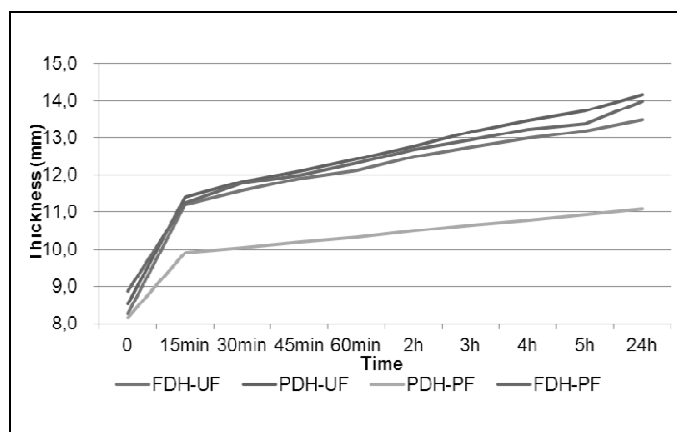


Figure 3. Changes of material samples in thickness

Bending strength

As seen from graph in Figure 5 the lowest value of bending strength is 7.95 N/mm² for FDH material where the UF adhesive is used. The highest bending strength 14.66 N/mm² show PDH material with the PF adhesive. The average bending strength of samples FDH-UF is for 7% less than for PDH-UF. But the bending strength for FDH-PF

material (10.51N/mm^2) is for 39% less than that of PDH-PF sample (14.66 N/mm^2). Bending strength average of all experimental samples are higher than for hemp shive board, but only PDF+PF sample show average bending strength value higher (22 %) than wood chip board (Figure 4).

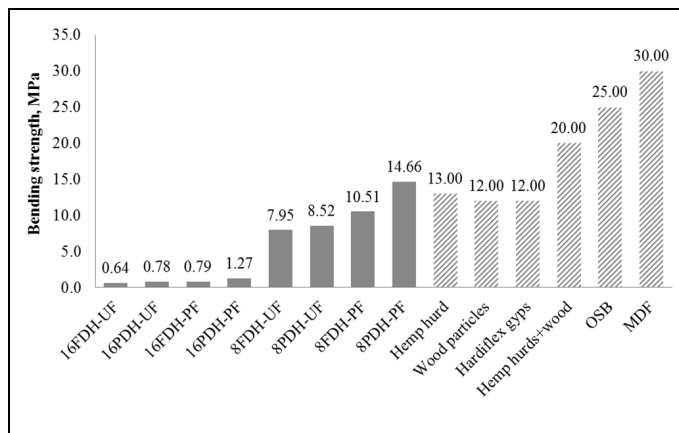


Figure 4. Bending strength as function of fibre type, adhesive and bending elongation

Thermal conductivity

Compared to the wood-fibre board, both the 16 mm experimental board with the hemp fibre – shive mix preserved for 14 days, and the board with the hemp fibre – shive mix preserved for 365 days, has lower thermal conductivity and density (Figure 5), whereas their thermal conductivity can be compared with the respective indicators of rape, flax and reed boards; at the same time the density of boards with rape and reed hemp fibre – shive mix is lower, but for the board filled with flax it is higher than the densities of the previously mentioned experimental boards of 16 mm thickness. The thermal conductivity coefficients of the 8 mm thick boards are lower than those of the wood-fibre board; however their densities do not exceed the density of the wood-fibre boards to be taken into account.

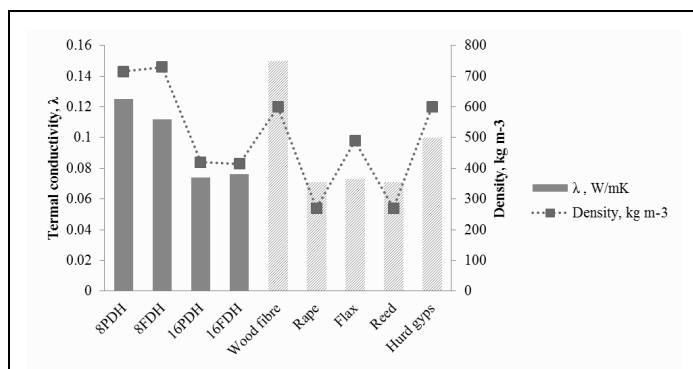


Figure 5. Thermal conductivity of experimental and reference boards

Application of boards made of hemp- shives mix

The types of boards developed in the thesis might have a wide application both in the interior design, and construction. Both the 8 mm and 16 mm boards can be used as raw materials in the raw material frame constructions – furniture facades (Figure 6.a.), partition walls of workplaces (Figure 6.b.). The pasted over boards can be used both in the panels of decorative walls and ceilings, as well as in the table surfaces (Figure 6.c.), if there is some thickened board placed under them. The potential of the material is extended by its good possibilities of veneering and laminating. Due to its loose structure, the 16 mm thick material of boards is a good heat and sound insulation material. It can be also used as raw material in the sandwich-type boards.

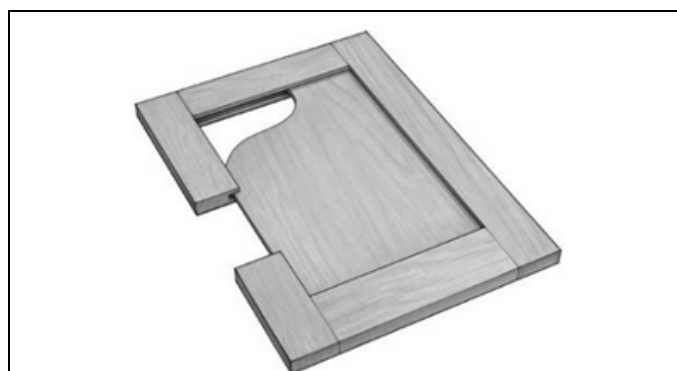


Figure 6.a. Frame constructions

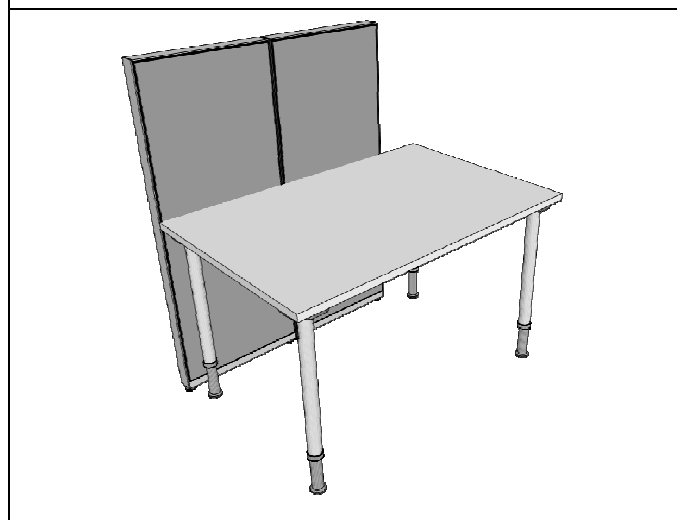


Figure 6.b. Partition walls of workplaces

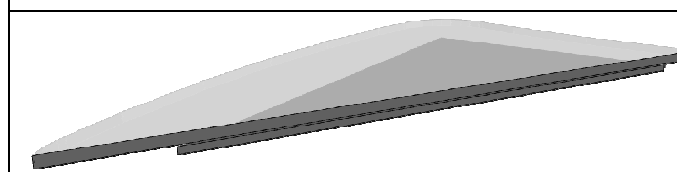


Figure 6.c. Table surfaces and thickened board placed under them

The 8PDH-PF board samples have the highest bending strength. Veneering them with 0.7 mm cut veneer of ash-tree from both sides and binding the veneering with the board with 120 g/m² of polyvinyl acetate D3 (PVA) adhesive, the bending strength of the board increases by 52 %, reaching the average value of 30.7 MPa, which is enough to use the board as a construction material, provided that the bending strength established according to the standard EN 622 is 25 MPa in such load bearing constructions as in the bodies of furniture, table surfaces, and systems of shelves.

CONCLUSIONS

- The use of chopped and wet preserved hemp for the production of boards permits usage of the whole stem, including its leaves and seeds. It makes obtaining of the raw material independent of the weather conditions, the material storable in a compact way, reduces changeability of its properties, shortens the processing cycles significantly, reduces their power-intensity and simplify the technological processes, at the same time create necessity to develop new types of products, test their properties, and determines their application areas. The investigations to combine hemp fibre – shive mix types with different binders show that higher quality of board could be reached by combination of PF glue with one year preserved hemp compared to UF glue and fresh material (two weeks preserved).
- The boards of 8 mm thickness with the PF binder made of the raw materials of hemp preserved for 365 days have a higher density and higher bending strength indicators, but also have a larger thermal conductivity, approaching the average showings of wood-pulp.
- The boards of 16 mm thickness with the PF and UF binders and smaller filling of the hemp mass are significantly lighter, with a rather low thermal conductivity and can be used as sound and heat insulation materials, as the middle layers in the multilayer packets, if necessary, increasing the sound and heat insulation properties.

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**Experience
Design**

Study of user needs for designing a high-quality learning environment

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Abstract. The paper analyses the teaching environment and human interaction. The paper analyses a survey on user needs, and the emphasis is put on learning environment design. The concept of learning environment and its constituent components are explored in this article. The summarized information is topical and important today, because the design of educational facilities provided according to the user needs, increased productivity and improved human well-being. Research is carried out with the following methods – the analysis of literature and Internet sources, survey, and analysis of pupils' drawings.

Keywords: user needs, learning environment, human and environmental interaction

I. INTRODUCTION

Education paradigm envisages that the learning environment must be developing and active to encourage the development of overall harmonious and creative personality, to promote the socialization of personality, awareness and preservation of cultural values. It is important to create such conditions at school and in the classroom which enable students to develop their personality (Šūmane, 2001).

The environment, where we acquire knowledge and develop for a definite period of time, creates certain associations, which persist throughout our life. Thus, learning environment must be designed so that these associations would be positive and memorable to its users, and the premises must be arranged according to the user needs. However, many people are excluded from the use of certain parts of the created environment, because in the project there have not been taken into account different human needs. (Ilgtspējīgas un konkurētspējīgas..., 2005).

Strategic Research Agenda for the European Construction Sector „Achieving sustainable and competitive construction sector by 2030” new development aim is sustainability. In order to satisfy the customer / user needs and to achieve sustainability, the Research Agenda envisages "the creation of the environment that is accessible

to everyone and everyone could use healthy, high-quality designed, energy-efficient, safe, secure and stimulating indoor environment."

In all spheres of contemporary life, including the field of design, a person holds the central place. Needs stimulate personal progress and development. As soon as one need is satisfied, there appears another one to strive for (Gerkena, 2007).

The topicality of the research nowadays is connected with the provision of quality learning environment, which meets the users' needs, and if necessary the existing buildings or definite rooms are adjusted for new functions. The environment where we spend our day, learn and work must be arranged so that person feels comfortable, is inspired, is in harmony with people and person has a desire to return there.

"Provision of services according to the needs of users nowadays is the main task of customer services" (Gerkena, 2007). Therefore, attention must be paid to the research of user needs at their initial stage to be able to identify in a timely manner and take into account the potential and current user needs in order to create qualitative and sustainable learning environment.

In this article the term "user" is selected to refer to people who use the product or service. The user is the most important criterion for assessing the quality of learning environment. In response to the people's feedback and their satisfaction level it can be concluded that the provided service or product meets their needs. In case of the customer or user dissatisfaction it is clear that the dialogue between the users of the definite environment and the service provider has not occurred, i.e. needs of users have not been fully heard or satisfied.

Human needs can be defined as "stimulus for change." Identification of needs is the impulse for the implementation of high-quality and sustainable learning environment.

Study objective is to analyse the concept of *user needs* to identify the conditions for high-quality learning environment, to carry out the analysis of data on user's needs.

Research methods are the analysis of literature and information sources, survey and analysis of drawings.

II. THE ROLE OF USER NEEDS WHEN DESIGNING LEARNING ENVIRONMENT

The term 'need' in a simplified way is defined as "human feeling that he lacks something" (Gerkena, 2007).

More detailed explanation – *need* – objectively (biologically, socially, intellectually etc.) conditional human individual or social need for the physical, social, intellectual, cultural, etc. values that are necessary for human life and work; internal necessity, the required capability. Needs create a significant incentive for individuals to act and develop willpower. If the needs are satisfied, it contributes to the welfare of each individual and the whole society. If the most urgent needs are not satisfied, if the person lacks things that are necessary for his successful development and work or if the person has no access to things vital for his subsistence, there occurs privation. The notion of needs evolves with the development of society (Beļickis, Skujiņa, 2000).

People's needs can be divided into two groups (Gerkena, 2007):

1) primary or physiological needs – these are innate needs (such as the need for food, drink, sleep, sex, breathing);

2) secondary or psychological needs – the person acquires them as a life experience (e.g., success, respect, power, identity, self-actualization, love (psychological).

D. Lieģeniece (1999) inspecting the holistic approach in the upbringing draws attention to the fact that the functional mechanism of all development levels is a need that motivates the action.

Satisfaction of needs is defined as a process that is directed to the provision of things, processes, information etc. necessary for individual's successful life and development and fulfilment of the appropriate (individual) requirements that are implemented either by the individual himself with the effort of his own will, or another person on behalf of the individual. In order to be able to cultivate and achieve greater efficiency in this process, it is necessary to be aware of the nature of needs and arrange them by their importance (Beļickis, Skujiņa, 2000).

Activity terminates when the need is satisfied, when balance is reached between the new factors that led to the need and the mental orientation that existed before the discovery of this factor. Satisfaction of needs causes a sense of gratification, puts an end to the specific behaviour caused by needs (Lieģeniece, 1999).

Ilze Šūmane (2001) in her article on the formation of learning environment mentions the role of the hierarchy of needs introduced by American psychologist Abraham Maslow. This hierarchy is essential and very important and when it is respected, the person is satisfied with the environment. Maslow has arranged needs in five levels. The first level is the physiological need, the second – the need for safety, the third – the need for affiliation and love, the fourth – the need for self-esteem, the fifth – the need for self-actualization.

The following levels of needs should be taken into consideration in the learning process:

- physiological needs (balanced day mode, range of motion, rest, good nutrition);
- security (both physical and mental so that the student would feel protected and would feel a positive emotional support);
- sense of affiliation to the class (sense of class identity, circle of friends, sense of class collective);
- the pupil's healthy self-esteem (values, skills and identification of positive abilities and properties, which help to overcome difficulties);
- self-actualization (during studies, in a variety of activities during lessons, sports, extracurricular activities, etc.).

Stability and awareness provide security. Stable and unchanging conditions give people a sense of security (Gerkena, 2007).

According to Maslow, personality changes in compliance to the structure of needs. The main needs vary depending on the circumstances in which the person finds himself. Only reaching the highest level – the level of self-actualization – the person is fully capable of carrying out self-realization and fulfilling the meaning of life (Gerkena, 2007).

Nowadays satisfaction of physiological needs is related to the definite sense of comfort. (Personības vajadzību struktūra, 2008). Physiological needs account for one's comfort and environmental effects on the person. Thus, it can be concluded that quality training environment could be attributed to the first two levels of needs set by Maslow, which include basic human needs, because learning environment can affect the users' level of comfort. Consequently, attention must be paid to the quality of learning environment in order to have a positive impact on its users.

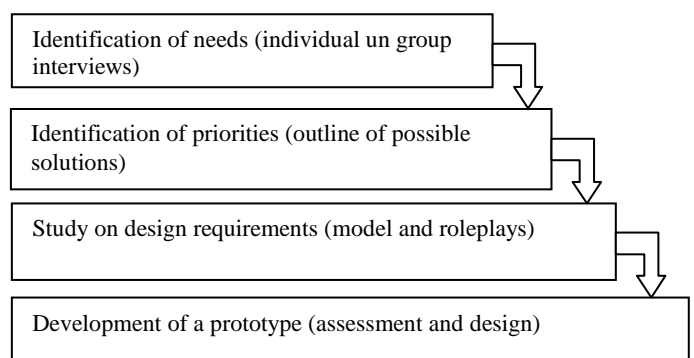


Figure 1. Four stage design process oriented to user needs
(Carey-Smith, et al., 2013)

British researchers (Carey-Smith, Evans, Orpwood, 2013) in their work „A user-centred design process to develop technology to improve sleep quality in residential care homes" indicate the identification of needs as a primary task of pre-designing stage. The design process oriented to

user needs consists of four stages (see Fig.1.). Carrying out them successively, technological solutions were developed that improved the quality of sleep. The needs of the user of definite environment must be ensured so that the person feels comfortable.

III. LEARNING ENVIRONMENT AND ITS CONSTITUENT COMPONENTS

One of the explanations of the concept of the learning environment is defined by Ilze Šūmane (2001). She believes that the learning environment is purposefully organized environment in which a child, pupil, student or adult form their experience, values, skills, knowledge and attitudes toward themselves and the world around them. The issue of learning environment is important for all those who are learning, regardless of their age. Learning environment is a pre-school institution, school, university. Learning environment is also a cultural environment, museum, library, computer and internet-related space, a centre of interests etc.

Šūmane highlights three generalized structural elements of learning environment - environment of things, mental conditions, human resources (see Fig. 2).

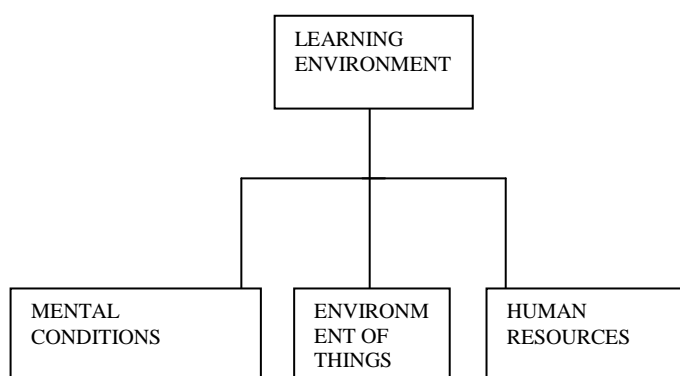


Figure 2. Structural elements of learning environment (Šūmane, 2001)

Environment of things is a space with its objects, i.e. classroom arrangement, workplace, materials, equipment, visual aids (Šūmane, 2001).

D. Lieģeniece considers that the environment of things helps educators create evolutionary environment. It is focused on the growth of child's personality holistically. It is an environment where conditions are created for the development of sensory organs and physical coordination, acquisition of general activity approaches and formation of knowledge, skills, abilities and habits. The environment of things can be used as well in the development of imaginative

and elementary abstract thinking (Lieģeniece, 1999).

D. Lieģeniece, describing conditions of the environment of things, names four functions of the environment of things:

- the function of aesthetic upbringing - clean environment is an important educational tool for forming values in a child, it becomes a model of an aesthetically-filled living environment;
- the function of promotion of creativity – it enables a child to creatively express his inner world through various creative genres, including research;
- the function of building work culture- - environment depicting various products of human activity, to promote the awareness of work culture among students;
- the function of intellectual upbringing - environment of things as a means of cognition of the surrounding world and generational experience.

Human Resources are the participants of the learning process – students and teachers. Child-centred approach to learning regards the child of a definite age as the main subject of the learning environment who has his own needs and interests. Pupil's personal experience, already formed attitude towards classmates is the factor that influences his and his classmates' personal development. The model of teacher's personality and its uniqueness play a significant role.

The created mental conditions are the third element that forms learning environment. The created conditions play the most important role in forming an active learning environment. Many objective circumstances influence the environment of things and people, but the creation of mental conditions in learning environment is primarily a teacher's competence and responsibility. Mental conditions in the learning environment are formed by favourable relationship between the classmates, teacher's classroom management style, educational situations created in the learning process and other factors (Šūmane, 2001).

Šūmane (2001) believes that if a student enters the classroom with a positive self-image and well-being, i.e. if his basic personal needs are satisfied, he will feel well in the class and will be ready to work hard. The student will work hard only if he feels comfortable in the class. Therefore, teacher's task in the learning environment is to facilitate the satisfaction of a pupil's basic needs in the classroom.

In the interaction with the environment the child receives information and support for his development, but for his own action it is necessary to have a condition when the "external" impressions become the "internal" descriptors (Lieģeniece, 1999).

It has been proved that if one of the basic needs is not satisfied, then the person cannot fully concentrate on his work and it affects the emotional state until the needs are satisfied.

The learning environment of the new century at school and outside is an important ground for effective and active school. Learning environment must not lose the presence of emotional experience, so that learning does not turn into an

impersonal process of memorizing information. Emotions and personal experience in the learning process can contribute to more voluminous and more valuable acquisition of information (Šūmane, 2001).

There is continuous interaction between a person and the environment. Each person reacts differently, because the environment, as well as people, who are in this environment and their reaction, is different.

IV. THE ANALYSIS OF THE RESEARCH ON MUSIC SCHOOL STUDENTS AND TEACHERS NEEDS

According to the set designing task – to develop music school interior, during the pre-designing stage the following research was carried out: the analysis of the situation in the object and the research on user needs. Zane Ludborza's Music School is a private educational institution located in Rezekne. In 2014 there were 44 students and 6 teachers. In this school accordion and piano education programs are actively implemented. The goals of the development of the education institution intend to continue the renovation of the building, cleaning up the school territory and creation of an open-air stage, thereby creating a clean and aesthetic environment, as well as to provide the necessary facilities and premises with the necessary equipment that would cultivate and develop students' skills (Pašnovērtējuma ziņojums, 2014).

Since 2005 school facilities are located in a former kindergarten on the ground floor, while the first floor is the owner's family living place. The ground floor has a total area of 191.2 m², which includes 4 classrooms (77.8 m²), a hall (53.9 m²) and corridors.

It is problematic to create a comfortable environment due to the narrowness of rooms, lack of sound insulation and room furnishing that is not ergonomic for pupils of different age.

In order to create an interior appropriate for music school students and teachers, a research on user needs was carried out.

42 students and 4 teachers took part in the research.

The division of respondents by their age group is shown in Table 1.

TABLE 1. RESPONDENTS' (LEARNERS) DIVISION BY THEIR AGE

	Age	Number
Pre-school	5-6 years	0
Primary school	7-10 years	15
Basic school	11-15 years	25
Secondary school	16-18 years	2

Students' task was to draw the school environment in which they would like to learn. Drawings were assessed according to Maslow's levels of needs (see Table 2), as well as the relation of drawing element to the type of learning environment (see Table 3).

TABLE 2. COMPLIANCE OF DRAWING ELEMENTS WITH MASLOW'S LEVELS OF NEEDS

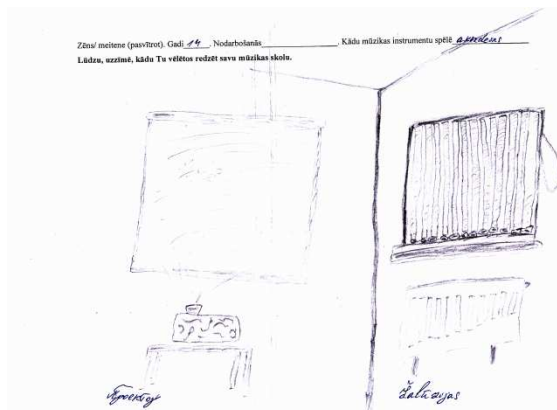
Type of environment	Elements	Number
Environment of things	Projector, interactive whiteboard, blackboard (4), markers, tables (5), piano, drums, violin, chairs (2), refrigerator, music school inscription (2)	20
Aesthetically relaxing environment	Flower Garden (2) Orchard (3), a pond with ducks (2) pond (6), aquarium, fountain (3), swings (3) fireplace	21
Human Resources	-	0
Mental conditions	-	0

TABLE 3. COMPLIANCE OF DRAWING ELEMENTS TO THE TYPES OF LEARNING ENVIRONMENT

Levels of needs	Elements	Number of presentment
1) physiological needs	Canteen, cafe (5) coffee / vending machines (3), rest area / room (3), armchairs (2), dressing room, light fixtures	16
2) the need for security	Blinds (3), lockers (3), the clock in the class (2), a school bell (5), school bus (6)	19
3) the need for affiliation, communication and love	Tennis table, a computer for every person(3), students evenings, educational tours, school discos, camp, school website, e-class	10
4) the need for self-esteem	Bandstand (2) concert hall (3), solfeggio	7
the need for self-actualization	classes are divided in separate programs, more classrooms.	

The compiled results show that in most of students' drawings there are found elements related to security (19 times). Students wish to have blinds (3) (Picture 1), because in the ground floor classrooms they can be observed from the street in the evening hours, many students (6) want a school bus (Picture 1), because music school is attended by children who do not live in Rezekne and have difficulties of getting home. Students (5) want to have a traditional school bell at school that would provide the usual rhythm of

lessons and breaks. An indicator of comfortable and safe school environment is also a student's personal locker (3) (Picture 3).



Picture 1. Students wish to have blinds



Picture 2. Students' wish to have a school bus

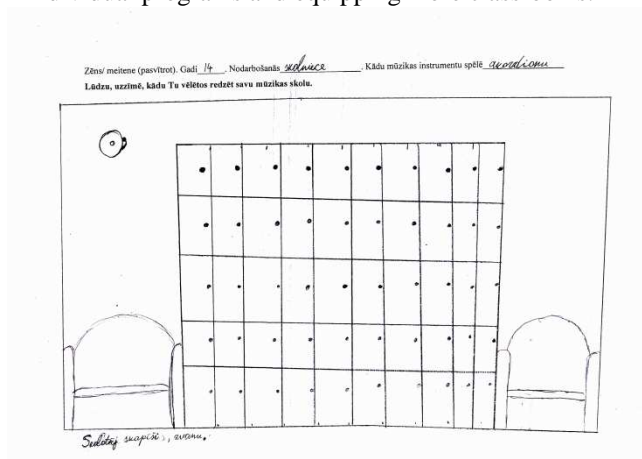
Slightly fewer (16) drawing elements correspond to the level of physiological needs. Many students dream of a school canteen or cafe (6) or at least a coffee / candy vending machine (3) (Picture 4), because students have a long working day and feel hungry in the evening. The desire for recreation is characterized by an indication of the rest areas / spaces and soft chairs. For general comfort learners need a contemporary

interior with a dressing room and lighting devices, which can fulfil different functions.

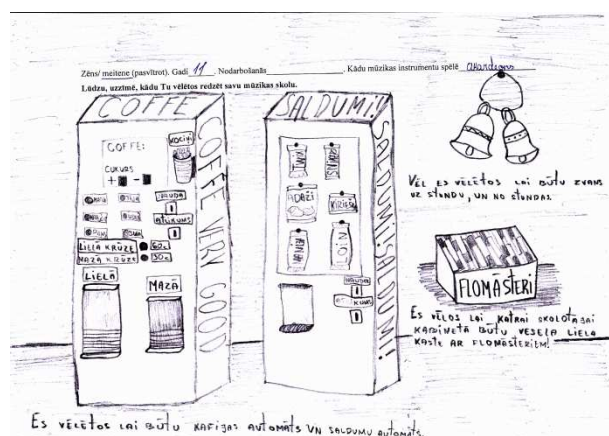
Despite the fact that Zane Ludborza's Music School has developed many traditions, still there is need for affiliation, communication and love that is revealed in the drawings – a tennis table, students' evenings, educational tours, school discos, camps, school website, and e-class. Pupils also would like to have personal computers (3) (Picture 5).

The need for self-esteem and self-actualization is related to music school students' wish to perform music that is depicted in their drawings of the stage (2) and the concert hall (3). For some students it seems that the training could

be improved by organizing solfeggio lessons separately for individual programs and equipping more classrooms.

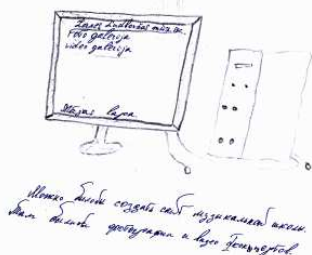


Picture 3. Students' wish to have a personal locker



Picture 4. Students' wish to have a coffee / candy vending machine

According to Šūmane's classification of the types of learning environment, most students' drawings depict the environment of things where musical instruments are named: piano, drums, violin and classroom equipment: projector, interactive whiteboard, blackboard (4), markers, tables (5) chairs (2), and even a refrigerator and a music school inscription (2). The elements that characterize mental conditions and human resources did not appear in drawings, but the elements characterizing aesthetically relaxing environment were found in the students' drawing: flower garden (2), orchard (3), a pond with ducks (2) pond (6), aquarium, fountain (3) swings (3), and fireplace. Perhaps musical motifs encourage students to see visualizations of music in the surrounding landscape.



Picture 5. Students would like to have personal computers

In turn, the music school teachers expressed their views in writing doing the questionnaire. Four music school teachers aged between 30 and 69 years took part in the questionnaire. All four teachers are satisfied with the arrangement and equipment of the current space. They also believe that the solution of music school interior plays an important role and it can affect its users. Talking about the things and elements that could disturb daily activities, all respondents agreed and said that they do not see such things. However, three teachers named a number of things, such as furniture, blinds, shelves, projector, and lockers. One of the respondents was not satisfied with the sound insulation and found it a disturbing factor for school learning environment. In response to the question, what improvements you would like to have in music school premises, they mentioned furniture and sound insulation.

Carrying out the analysis on user needs, the author of the article clarified ideas about the development of the music school's interior design, while the school administration and teachers became better acquainted with their students and their desires.

CONCLUSIONS

1. Identification of user needs and attempts to meet their needs makes it possible to prevent various risks connected with the process of human and environmental interactions.
2. To ensure sustainable quality learning environment in schools means to meet all levels of human needs – physiological needs, the need for security, the need for affiliation, communication and love, the need for self-esteem, the need for self-actualization.
3. The analysis of Music School students' drawings demonstrated the need to supplement the components of learning environment such as environment of things, human resources and mental conditions with aesthetically relaxing environment.
4. In the process of designing the interior of music school, special attention must be paid to the functional and aesthetic decoration of the space, furniture ergonomics, space sound insulation, sitting area and placement of dressing room.

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