

## NON FORMAL EDUCATION IN DESIGN FIELD

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### ABSTRACT

In this paper several guidelines and methodological approaches for non-formal education in the field of design are presented. The research is based on eight years experiences of the authors in organizing and guiding one week of international (Romanian and Austrian students and teachers) design workshops in Romania.

**Key words:** non-formal education, design, workshop.

### INTRODUCTION

For the last 8 years we have been organizing 7 days lasting workshops together (Transilvania University of Braşov UTBV, New Design University NDU, Ion Mincu University Bucharest UAUIM). The first workshop began in 2011 in Brasov with the theme „window and wall“ (Cionca *et al.* 2012), this was followed by five workshops at Dealu Frumos, the geographical centre of Romania – in a little former Saxon village where the UAUIM is the owner of the fortified church, the Volksschule and of a Saxon property. From 2017 we continued with the workshop in a new location at Târgu Lăpuş together also with our new partners – and generous hosts „Petru Rareş“ Theoretic High school, „Grigore C. Moisil“ Technological High school and the community of Târgu Lăpuş, Maramureş County.

The basic ideas of the workshop structure are conducted on three guidelines: research, assignments and projects.

*Research* is focused on: working with and in the local and rural context; looking for qualities and characteristics of villages and local areas; respectful artistic dialogue with villagers, environment and landscape; thinking and discussing about local and rural spirit, reality and potential.

*Assignments* are conducted on the following lines: designing and crafting on base of fundamental material and formal processes; how to explore characteristics and qualities of our used material and techniques; developing methods to understand forming parameters, material and structure.

*Projects* for rural and local places based on the research, crafting and formal experiences of the assignment and based on our discussions and thoughts.

### EXPERIMENTAL METHODS

All these elements are gradually introduced with the help of the work modules.

*Formation of mixed working groups.* It is done on the basis of personal skills and abilities so that the working group is balanced by avoiding the presence of more than two persons with a strong personality in a working group.

*Group identity.* The working group consists of students and pupils from all five institutions involved; it is natural for each of them to have their own socio-cultural and professional development.

Through this module, it is intended that members of the working group become acquainted with each other. The elements that give the group identity are: adopting a name; creating their own logo. The name and logo

must indicate something important to them. Both elements, names and logo, as well as the ideational approach will be structured and presented on a poster designed and drawn by each group (Table 1).

This assignment seeks participants to:

- Have a moment of reflection and personal interrogation, as well as self-characterization;
- Explain what they are defined by;
- To synthesize what they are defined by both personally and as a group;
- Concept and graphic expression of the ideas and characteristics that make up the expression of the group.
- Synthesizing all information on a poster with a predefined size – all working groups have the same poster size – but without any limitation on content organization, adds value to this and stimulates creativity and competition;
- Presenting the group identity poster in a given time (5-10 min) gives all groups the opportunity to listen and analyze the effort and the ideational path of each group and to learn along the way.

*Measurement and perception of space.*

Space investigation should have two components: qualitative and quantitative. By qualitative component, we investigate, gather and analyze data on the human-to-space relationship (we come to know and to become aware of space) and quantitatively investigate and aggregate information regarding: dimensions, position, limitations, obstacles, etc.

Space needs to be understood, felt and lived. Sensory perception of space is defining. Human – space interaction is in constant change, this relationship is never static. It depends on boundaries, routes, directions, observation points, and center, central or strong objects.

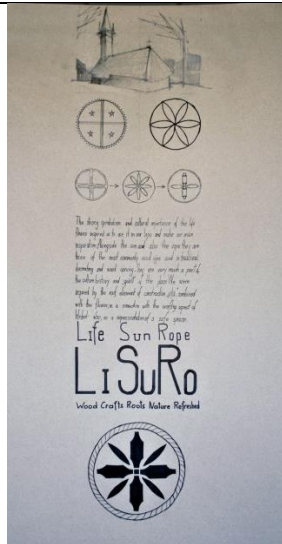
Humans live orientated. The orientation system has archetypal roots: up / down; at the hill / valley; front / rear; left/right; forward / back. Instinctively, man follows these and analyzes and describes his interaction with space thus creating sensations of freedom, suffocation, constraint, routing on a particular channel, etc. All these are very important in the qualitative description of the space and can be used in the arrangement of space.

An instrument developed for qualitative investigation and for preliminary quantitative spatial data collection is step by step measurement. This measurement is based on the human body as a measuring instrument and involves a prior preparation of the correspondence from each step and the metric of measurement of the length in two possibilities: how many normal human steps correspond a meter in length; what does a step of a meter mean. This creates a system of measurement and sensory perception of the space through which a profound knowledge of space is reached (Fig.1).

Measurement and perception will take place on the selected local outside situation and on the building structure. The idea is to enable students to work on site, to develop and handle methods of measuring with measuring tape and by foot-steps, making hand-drawn plans, using different scales. This is not only a process of technical documentation and visualisation, but also a method to feel and understand the environment, the structure and qualities of the space, the changes of atmosphere and how these spaces are enlivened by people. The slow manual or moving process of measurement will be accompanied by a kind of observing protocol: How is the light, how is the view, how is the material or structure, what are the special characteristics, how is the atmosphere, how are people moving ... and further more. Outcomes of this module are the following:

sketches, plans, measurements, skills of measuring and observing, observation protocol.

**Table 1: Identity poster group – Târgu Lăpuș, 2017**



#### **LiSuRo**

**Key words:** Life | Sun | Rope | Wood | Crafts | Refreshed | Nature | Roots | New/Old | Good/Bad | Flower

The strong symbolism and cultural importance of the life flower inspired us to use it in our logo and make it our main inspiration. Along side the sun, and also the rope, there are three of the most commonly used signs in traditional decorating and wood carving. They are very much a part of the culture, history and „spirit“ of the place.

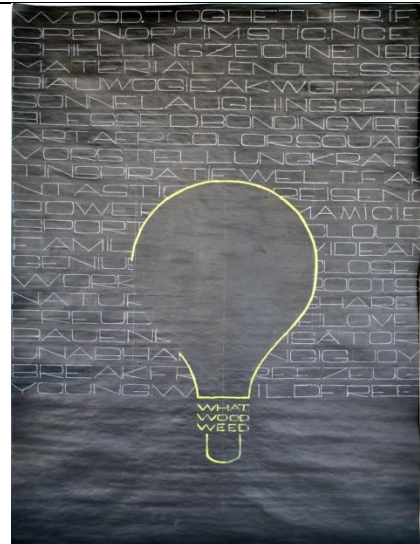
We were inspired by the roof element of construction – șită, combined with the flower, as a connection with the crafting aspect of life in this area, but also as a connection with the safe space that a roof represents, bringing the community together. The sun brings the cosmos and the nature into the mix, nature being so present in the life of the



#### **UniForm**

How did it start? „It all began with the love that a girl had for unicorns. That girl, Ivy, had three unicorn friends, all of them different in their personality and their outer looks. This, one could tell immediately by their different colored and patterned horns. „We are all unicorns and we have unique forms!“ , they said and decided to name their group „UniForm“ One day they were strolling around Lăpuș Land making people smile and discovered a wooden church. They were fascinated by the forms and shapes which they had seen and let their imagination run free, creating together and uniting their different minds in a special group logo.

„How did it evolve? The logo is based on the traditional ornaments used on wooden crosses, in churches as well as on columns, gates and fences. We tried to simplify the ornament and put it in a more modern context – a product of past and present. This modern aspect is supported by the very clear and straight font we used for the written text. In the logo each of us is specifically represented in our individually designed horns. All four horns meet in the center of the logo, representing our act of creating one product together. The logo



#### **What Wood Weed U**

I believe that nothing is happening randomly, so when we formed our team we started to ask things about each other. We were curious about our stories. It was hard to speak and not always what we said made sense. But we tried, and we played with the words. This is reflected also in the name of our team – „What wood weed u?“ Each word symbolises something and defines the way the members of the team are. The word „What“ reflects the curiosity of each of us, and from there , the courage to ask, to search, and to find out. For us, to be curious and to feed ourselves with answers is a need. The spirit will always need to manifest through creations.

We are also brave because it takes courage to open ourselves in front of each other and admit the fact that we don't have enough knowledge, but we want to find out new things. „wood“ - the strong bond we have with nature, the material we use in our creations, the idea of handcrafting, „weed“ –this word makes the title funnier and reflects optimism, the brighter side of every experience. If we refer to the phonetic sense we can separate „weed u“ in „we“ and „do“ – We get along well with each other, we are hard workers and we want to materialise our ideas, thoughts and emotions , by giving a shape to our environment .

Our logo symbolizes the process from the moment you start questioning (you can remark a question mark there) to the moment

community since the beginning of time.

The rope holds it all together. It represents the always intertwined good and bad in life, and its constant evolution. The circle underlines the never-ending growth, change and evolution. Acting as a boundary between outside and inside, the rope also focuses the attention in the centre of the logo.

Therefore, our sign is a reinterpretation of multiple local symbols, grounded in nature, as the root of life.

**Team LiSuRo:**

Paloş Eliza, Sas Diana, Harald Mehofer, Filip Daniel, Enache Cristian Robert.

is the center of the poster, being colorful and expressive while the rest stays in the background through its simplicity. The logo is „held“ by a simple frame giving it stability in the space. This frame is based on the wooden gates common in this area and was again simplified. The combination of the past and the present is also reflected in our group name, combining the original idea of „unicorn“ with the word that evolved, namely „uniform“. Through all this, we tried to include the theme of this workshop, namely „People, Craft and Tradition“ in our logo.

The name „Uniform“ can be read in different ways and in itself is the opposite to its most common meaning of „the same“ or „one shape“. We chose to divide the word in two parts, „Uni“ standing for „unity“ and „uniqueness“ and „form“ standing for the different forms of our personalities. This interpretation led to the three catchwords (unity-fantasy-identity) we chose to use as a bottom-line for our poster trying to capture the aim of this workshop: To use our fantasy for creating a unity out of many individual identities.

**Team UniForm:** Eveline Liță, Flaviu Dobrean, Klara Maria Voggeneder, Alex Lăpuşan.

you find the answers and the final concrete idea (which is represented by the light bulb – and because the light bulb is a well-known object it symbolizes the final product of our work). Our poster’s background is black- that shows the emptiness of space or the silence where the ideas come from. We have to focus on CREATING SOMETHING OUT OF NOTHING. The logo is in the center of our poster and is much brighter than the rest which contains words that define our identity as a team: roots, inspiration, joy, family, laughing, *amici*, *kunst*, or random words that shows our emotions in that unique moment. Those words are written in german and romanian which show our roots and the english is the thing that brings us together. It’s our crafting tool to socialise. The blank space from the bottom of the page breaks the rules of a normal graphic composition, and lets the story to continue and also makes the viewer curious about the future and it focuses on the part of the logo where the name is. Everything on the poster is very calculated and that reflects our analytical part.

**Team What Wood Weed U:** Roxana Zorzolan, Georgiana Purcaru, Delia Pop, Madalin Man, Viktor Schöll.



**Figure 1: Footsteps measuring: area preparing in the courtyard of Rogoz Museum and measuring assignments in courtyard of „Petru Rareş“ High school, Târgu Lăpuş, 2018.**

*Research and inspiration in the local area.* This module can take place at local villages and museums. The main interest is focusing on hand crafted wooden construction and construction details of buildings and

wooden environment but also on traditional woven structures, such as fences, little barns, objects of everyday use. We can observe the haptic and atmospheric qualities of hand-

made objects and constructions, the simplicity and cleverness of their crafts-concept and the huge range of variety and expression based on local material, low-tech manufacturing and the manual skills and poetry of the

persons who crafted them. Observing, photographing, sketching and making notes is our method of research and starting point of our further design process (Fig. 2). The outcomes of this module are: sketches, documentary photos, notes.



**Figure 2: Research and inspiration in the local area, Rogoz, 2018.**

*Weaving structure.* The introduction of weaving is inspired by the structure of traditional fences. Wooden strips will be holed in a file. Vertical sticks are pulled in the holes and we can begin to insert weaving material of round or splitted rattan. The most simple structure to hold in tension weaving material is to bend short pieces between 3 skewers like warp and weft:

- if we are adding the weft in this constellation one above the other we get the first simple structure;
- if we would like to multiple this field of structure we will see that we get a point of contact;
- if we shift this point together in manner that the ends of the wefts are crossing on the same skewer we get a crossing intersection field;
- if we turn the second field of structure with its convex part in the opposite part;
- if we are adding the weft one above the other and turn the convex part in a changing manner we get a convex-convex structure;
- if we are adding a raw of two (3,4,5...) wefts above the other raw in a changing manner (2,3,4,5...) we get

a convex-convex structure with distances;

- and in this manner on ...

Excellent synthesis typologies of woven furniture design are presented by Raycheva and Angelova, 2017. Students (groups) should develop their own methodic strategies an try to develop possibly a wide range of variations – from the most simple to the more complicated constellations.

- The development of methodical strategies should be based on the morphologic parameters of form which are part of the weaving process:
  - number of covered skewers – min. 3 ... 4, 5, 6 ...
  - distance of skewers
  - rhythm of covering skewers with weft material (1:1:1, 1:2:1, 1:3:1; 2:3:2 ...)
  - rhythm and direction of weft material
  - length of weft material
  - Composition of contact zone or intersection of contact zone.

The introduction is accompanied with images of woven structures and woven fences. The outcome of this module is: models with woven structures in different variations (Fig. 3).



**Figure 3: Woven structures – preparation work by Thomas Gronegger, Târgu Lăpuș, 2017.**

*Wooden structure.* Introduction on how to use pre-prepared wooden strips to craft simple orthogonal constructions which create frames filled with thin wooden round elements by sawing with the handsaw and connected by dowelling with these elements. All the wooden sticks are prepared with a section 1cm x 1cm corresponding to 10 x 10 cm in real size. This allows us to project models of objects using similar structure and connections as in real size.

Introduction on how to use pre-prepared wooden strips to craft simple orthogonal constructions which create frames filled with thin round elements (for these is possible to use skewers) by sawing with the handsaw, and connecting by sawing or dowelling with thin round elements.

As first assignment we create a simple orthogonal frame with wooden sticks, drilling the connection joints half size of the size

of the sticks and possibly in different directions in order to get a strong connection. The more precise you drill the stronger the connection will hold (Fig. 4).

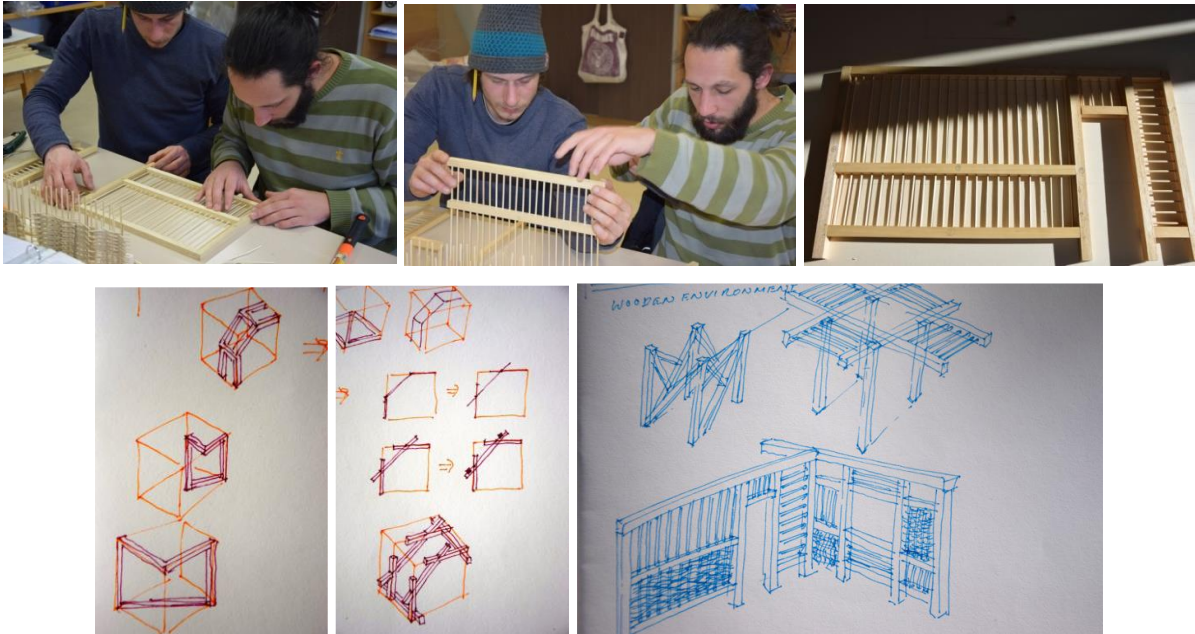
- It is important to pay attention to the size of the handsaw (cut inside or outside the marking line);

- It is important to try to drill exactly the signed profoundness (half size of the skewer);

- After splitting out the wooden piece between the drills, it is possible to clean it with a knife or grind paper;

- If the connection is to lose, it is possible to fix with glue.

The aim was to fill one of the framed fields with thin wooden round elements (distance ca. 1, 5 cm, in order to get a perfect model 1:10 of framing structure and sub-structure, ready to be filled with weaving material.



**Figure 4: Wooden structure and preparative drawing from Thomas Gronegger, Târgu Lăpuș, 2017.**

The second assignment was regarding the construction of a triangular frame with one  $90^\circ$  orthogonal connections and two  $45^\circ$  diagonal connections. This experience allows us later to get a bit out of pure orthogonal forms. We also tried to work with any angle but for the beginning it was enough to experiment working with  $45^\circ$ .

The third assignment was to construct a simple three dimensional structure with wood-connections.

We constructed a basic three dimensional object with possibly few sticks of wood (orthogonally or diagonally connected). To develop an idea for a three-dimensional object it is easier to start with a simple drawing of a transparent cube and after to integrate spatial thoughts.

*Thinking and designing simple structures/objects for local outside/inside situations.* After measuring an interesting local situation – possibly at Târgu Lăpuș or at the direct surroundings of the school, the next step was thinking about what kind of improvement could be created by simple orthogonal wooden constructions covered partly by woven structures. The inspiration

could be simple pavilions, paravans, fences, pergolas etc. These can create intimate zones, protected zones, screens (sun, wind, noise, ...) for waiting, playing, staying together etc. The analysis of the local-urban/rural situation, observing how people are enlivening this situation, and what could strengthen and improve this situation. It is important to think about what kind of object(s) could be created especially for this environment, where and how they could define places, and what size and form could they have; how could these be integrated in a sensible way in the existing situation.

For an interior object – scholars campus and working place in the area of Rogoz Museum – it is important to analyze and think about the scholars/students and their situation (communication, staying together, privacy, working and the others). After measuring and having done the perception protocol, the next step consisted of thinking about the rooms and spaces and their relation of „community spaces“ , „private spaces“ , „infrastructure spaces“ , „working spaces“ : what is happening where, what could happen and where. Is

it possible to strengthen with simple orthogonal furnitures/objects (with partly woven frames) a situation in private, community- or infrastructure spaces?

- What kind of objects could these be?
- How could these objects/furniture stay in relation with different spaces (proportion, form, size, position)?
- What kind of use could these objects have?

- What kind of atmospheric expression could these objects have?
- What could be examples for our interventions (parapet, box, bench chair)?
- What kind of improving qualities could these objects introduce in the spaces and their relation?

For both situations – inside/outside object – the design and construction guidelines are: creating simple orthogonal forms; inserting woven framework (Fig. 5).



Figure 5: Object proposal designed for outside/inside spaces, Rogoz and Târgu Lăpuș, 2018.

*Artistic visualisation and human figure scale.* This is an integrated module in which students are introduced in the area of artistic techniques and skills to translate their sketches and plans into artistic visualizations. This will be done in individual tutorials or group tutorials. The next step is the introduction of contemporary elements in very different techniques for creating a wide panorama of possible solutions. Students should be encouraged to work and try new and unknown

visualisations. Outcome: Drawings, and Paintings with different artistic techniques. Another problem is to introduce the relationship between human body – scale, gesture, position, posture, interactions – and the designed objects. This can be solved by making human figure from aluminum foil at different scales. These figures can be constructed such way to simulate all categories of gesture and interactions between designed object and human body.

If we use photography as an instrument for investigation, it is possible to find an interesting situation and also to find the answer for our questions. In the same time, it is possible to simulate and to create a monumental situation (Gronegger *et al.* 2014).

## RESULTS AND DISCUSSIONS

The spirit and the attitude regarding this workshop are:

- Developing rules for working and observing methodically.
- Using simple and humble materials, simple techniques, and starting with simple forms.
- Checking out the qualities and poetry of simple structures.

The workshop is not about looking for the new and never seen, but to try to understand and to establish relations based on the existing qualities of rural or local characteristics (forms, structures, typologies – and also contents and typical social relations).

We need to have the courage to do our best – not only by working, but also by resting, looking, walking, reflecting, thinking and enjoying.

We need to have the courage not to finalize everything, but also to show fragments commenting on what is our idea.

## CONCLUSIONS

Based on this experience of eight years in organizing and conducting one week of international (Romanian and Austrian students and teachers) design workshops in Romania,

several guidelines and methodological approaches for non-formal education in the field of design were discovered, formulated and experimented.

Our focus is the inspiring coming-working together in a wonderful intact cultural, rural agricultural surrounding area. Also the working process and the process of perception of what we see, touch, feel, hear with all our senses – and heart is an important element of our main focus.

We are not creating pressure of competition inside or between the groups, but focus on how to tolerate, respect, observe, share and learn from differences and different approaches.

We try to divide prudently our forces during the work and evening events (traditional singing and dancing nights, open work night) – seven days can be long – and it would be nice to come out relaxed and fresh and rich of experiences.

## REFERENCES

- CIONCA M., GRONEGGER, TH., TIMAR, M. C., OLĂRESCU, A. M., GURĂU, L., KENCHTL, C., LAPADAT MARCU, M. 2012. Window and Wall. Inside, Outside / Insight. New Design University Press, Sankt Pölten, Austria, Rumänisches Kulturinstitut Wien.
- GRONEGGER, TH., CIONCA, M., MARCU – LAPADAT, M., OLĂRESCU, A. M. 2014. Inside outside in-between I/II Working with a village. New Design University Press, Sankt Pölten, Austria.
- RAYCHEVA, R., ANGELOVA, D. 2017. Woven furniture design: in search of form and texture. In Pro-Ligno, Vol. 13, No. 4, pp. 455–465, ISSN – L 1841 – 4737, ISSN Online 2069 – 7430, www.proligno.ro.



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