

## EXPERIMENTAL APPLICATION OF THE METHOD OF FOCAL OBJECTS IN DESIGN EDUCATION

Desislava Angelova  
University of Forestry, Sofia, Bulgaria  
e-mail: d.angelova@ltu.bg

### ABSTRACT

This article discusses the practical application of the Method of Focal Objects in the learning process of students in the Engineering Design (Interior and Furniture Design) Program at the University of Forestry, Sofia, Bulgaria. The experiment has been conducted in studied course Innovative and Strategic Design with the students of the first course from the Master Degree Program. The experiment's main objective is to examine what influence the Method has on students' creativity. The methodology of the experimental conducting of the Method and the way of work have been described. Based on the obtained results, analyses have been made for the Method's application in students' learning process to develop their non-standard and analytical thinking.

**Key words:** design methods, design education, creative and associative thinking.

### INTRODUCTION

The state is considering the practical application of the Focal Object method in students' learning process in the Engineering Design (Interior and Furniture Design) Program to the Faculty of Forest Industry at the University of Forestry, Sofia, Bulgaria. The German psychologist Friedrich Kunze who calls it the *Catalog Method* created the Method around 100 years ago, in 1926. The American scientist Charles Whiting gave the name *Method of Focal Objects* 27 years after in 1958. Several authors describe similar methods developed by Whiting, using different random kinds of stimulus (Combinations of noun + verb; noun + adjective; verb + adjective; noun + verb + noun). Such is the *Method of Random Stimulation* (Using random input to create new connections) that Edward de Bono described in 1970 (de Bono, 2007). In the publications of Michael Michalko, we can also see a similar in turns of actions Method under the name *Leonardo da Vinci Technique* (Michalko, 1998, 2006).

The Method of Focal Objects belongs to the heuristic methods, in which are used different techniques for consciously challenging creative thinking by synthesizing the characteristics of various objects. Associative search and heuristic properties of chance are used for its realization. The Method helps improve existing objects and processes by selecting a large number of original modifications and creating new objects. These results can be achieved thanks to the established associative connections. The Method can also be used for a successful exercise of creative thinking. This Method differentiates from the others by its simplicity and unending possibilities for searching for new solutions. The great efficiency of the method is due to focusing different knowledge on the design object.

### ESSENCE OF THE METHOD

The essence of the *Method of Focal Objects* consists of searching for new ideas by focusing on an object and attributing it to new properties, characteristics for others, accidentally similar things. New combinations

are created, which are developed by the *Method of Free Associations*. By selection the newly created varieties, it comes up a too large quantity of original modifications with unexpected properties, and from there to the improvement of the focal object (Fig.1). The Method is based on making associations in every connection of the focal object with a random word, which could be a noun, adjective and verb.

According to Markov (2018) the *Method of Focal Objects* consists of these stages:

1. The object is identified (the focal object) that demands an upgrade, and the purpose is specified. The keyword, which contains the problem, is determined. If the problem consists of searching for new properties of the technical object, the focus could be above its name. Three or more random objects are chosen
- (nouns). The recommendation is to be used nouns that are not directly connected to the object;
2. Several features (5–7) for each randomly selected object (nouns) are recorded as adjectives. The recommendation is to be used features from different areas such as tech, poetry or fantasy;
  3. The chosen features (adjectives) are taken from the initial object (the focal object) from which new combinations are made;
  4. New combinations are developed by way of free associations. All attractive solutions are fixed;
  5. A selection and rating are made on the most compelling new ideas based on their realization. New tasks are formed for developing the further modifications of the object.

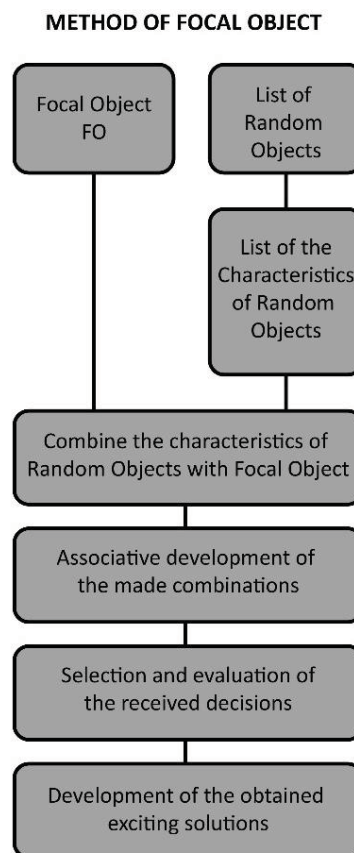


Figure 1: Stages of the Method of Focal Objects

## METHODOLOGY

The main stages which are observed during the implementation of the method with the students from the Engineering Design Program are:

- Acquaintance of the students with the essence of the Method of Focal Objects and the possibilities for its application;
- Managing the process of application of the Method in laboratory conditions;
- Monitoring the process of applying the method;
- Analysis of the way of work and use of the tools of the method;
- Interpretation of results.

The application of the Method is conducted in laboratory circumstances in the studied course of Innovative and Strategic Design with students from Master's degree, first year. The analysed examples are taken from 11 students from one group working in three teams (3–4 students per team). The process of application of the Method is done personally by the author of the state, who meets the students with the essence of the Method and its features, actively leads the Method while professionally observing and analysing the results. For the analysis of the results is used the author's self-experience. All of the participating students are having their first use of the Method. Each one of the team has the task to use the *Method of Focal Objects* in the time of one exercise of three study hours and to show its results. Every team single-handedly chooses an object to be transformed and upgraded. Every idea is docu-

mented by visualizing the image using essential artistic funds for presenting things (sketching) (Chipev. 2013)

After choosing the focal object, a list of random objects and their signs are made. By sequentially comparing these features with the design object, attempts are made to change the shape of the focal object, the principle of operation, the material, the function and other characteristics. An assessment is made of which of the received phrases can cause subsequent associative development and which can be rejected. After the selection, group development of the selected phrases is started by visualizing the ideas by the members of the group. As a result of this team activity, a different number of sketches appear, among which innovative ideas can be noticed. The number of drawings, respectively the ideas, depends a lot on the participants' skills to work in a team, their attitude to work, the ability to build associative connections between the objects, the freedom to express their opinion without worrying etc.

## RESULTS

The three teams of students chose different focal objects.

The first team, which consisted of three students, chose "an umbrella" for their focal object. Their randomly chosen objects are seven: a gun, a cup; a branch; a book; a track-suit; a brick. To every random object, the team wrote between five and six adjectives with a total of 40 combinations of phrases. From these 40 combinations, the team managed to develop nine new ideas based on associations which they visualized by pencil in a freehand sketches (Fig. 2).

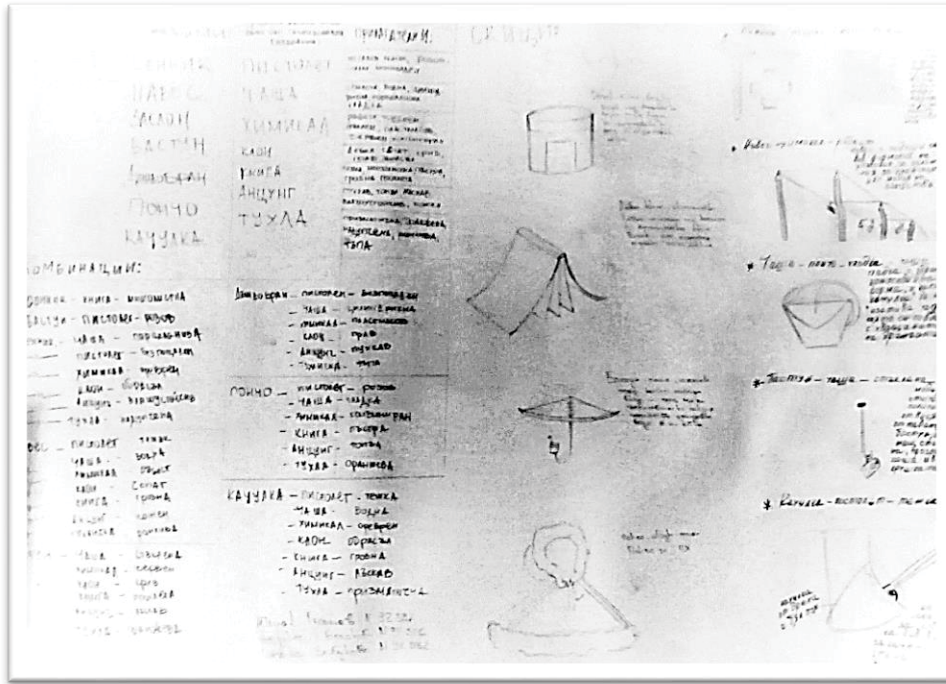


Figure 2: Worksheet of Team 1, containing all stages of the Method, personal archive

The second team, which consisted of four students, chose a "picture frame" for their focal object. Their random objects are five: pyjama, a cup, gum, a ruler, a T-shirt. To every random object, the team wrote between four and five adjectives, which were soon connected to the focal object and

formed 25 lists with a total of 122 combinations of phrases. From these 122 combinations, the team managed to develop 18 new ideas based on associations which they visualized by pencil in a freehand sketches (Fig. 3).

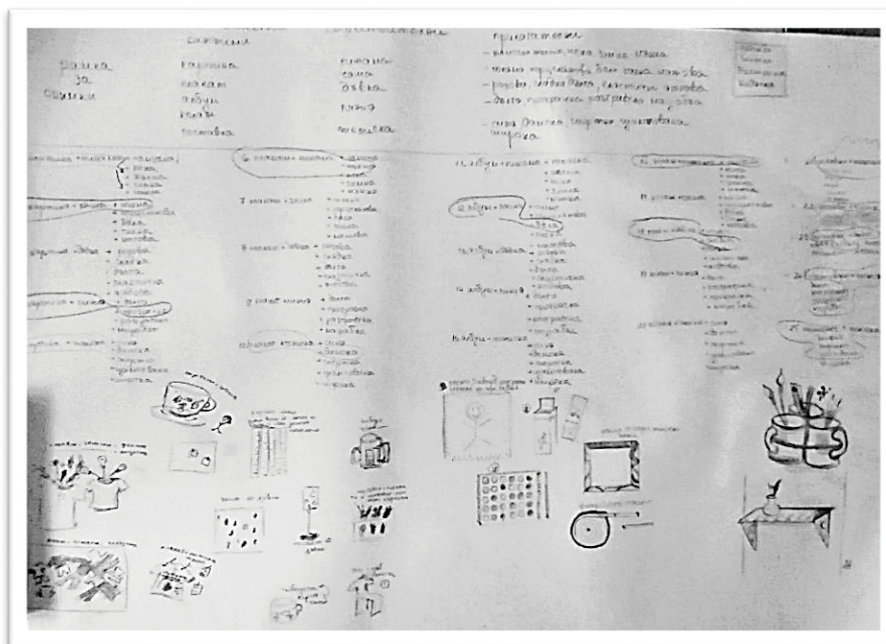


Figure 3: Worksheet of Team 2, containing all stages of the Method, personal archive

The third team, which consisted of four students, chose a "spring" for their focal object. Their random objects are five: a notepad; a chair; a bag; a ring, handcuffs. To every random object, the team wrote five adjectives connected to the focal object and

formed 25 lists with 125 combinations of phrases. From these 125 combinations, the team developed seven ideas based on associations that they visualized by pencil in a free-hand sketches (Fig. 4).

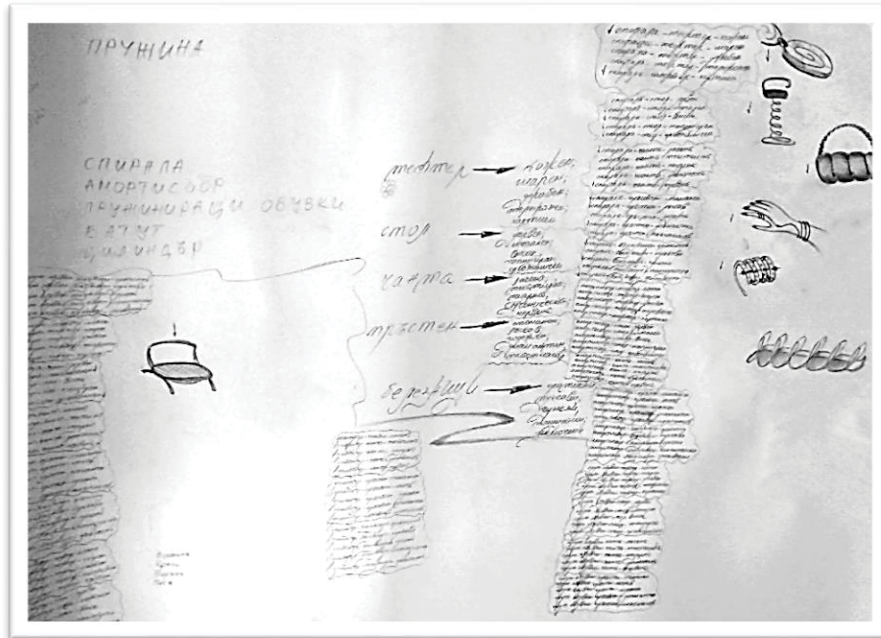


Figure 4: Worksheet of Team 3, containing all stages of the Method, personal archive

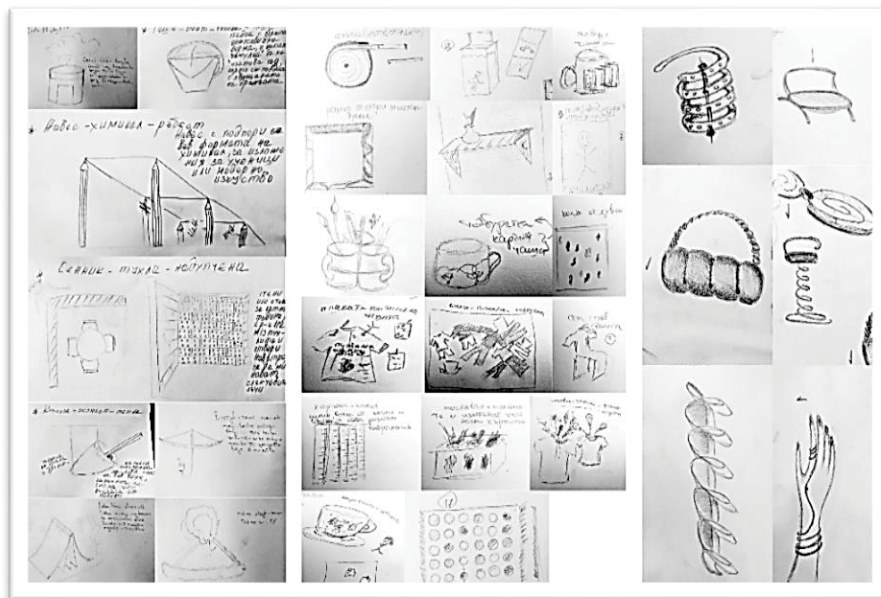


Figure 5: Visualization of the ideas of the three teams of students (from left to right: Team 1; Team 2 and Team 3), personal archive

The choice of a source subject to which other properties will be attributed is often accepted by students with the words: "What's new we can think of?," "Everything possible is already created", especially when it comes to an everyday object you see all the time. In the process of work, we can see that it is possible to come up with original ideas (Fig. 5). Of course, a portion of the ideas does not differentiate with significant innovation, but that is the whole point of the examination – more like observing the effect of the Method on students. The experiment makes it clear that students efficiently work with the Method no matter whether it is their first time using it. An extensive list of ideas and suggestions came up for modifications of the objects, which had unexpected functions. No matter the simple steps and the majority of possibilities for searching for new solutions to carry out the Method successfully and to get good results, its participants have to great imagination and ability to use the language of speech to be able to develop the combinative phrases and ideas.

### CONCLUSION

The Method of Focal Objects is a prerequisite for developing students' creativity, ability to design new objects, and ability to handle ideas and opportunities. The Method is excellent for developing non-standard and associative thinking, which can be used to improve things and processes in actual practice. It helps to overcome the inertia of thought and the "blockages" in creativity

through the principle of associative connections between different objects.

### ACKNOWLEDGEMENTS

The author is thankful to all students from the Engineering Design Master Degree Program at the University of Forestry, Sofia, Bulgaria, who took part in the experiment (Julion Georgiev; Jordanka Ctvetkova; Pavlina Zabunova; Nadezhda Remichkova; Zlatka Mandova; Bistrica Pencheva; Nedialka Hristova; Veronika Krilatska; Boriana Petrova; Petia Bogdanova).

### REFERENCES

- DE BONO, EDWARD. 2007. Now to Have Creative Ideas. 62 exercises to develop the mind. Vermilion, London, 2007, 17–21.
- MARKOV, SERGEY. 2018. Method of focal objects (MFO). Available from: <https://geniusrevive.com/en/method-of-focal-objects/>, [Accessed 26th August 2020].
- MICHALCO, MICHAEL. 1998. Cracking Creativity. The Secrets of Creative Genius. Ten Speed Press. Berkeley, 115–138.
- MICHALCO, MICHAEL. THINKERTOYS. 2006. A Handbook of Creative-Thinking Techniques. Ten Speed Press. Berkeley, 261–267.
- ЧИПЕВ, РАНГЕЛ. 2013. Методи за търсене на идеи при проектирането на дизайн вдъхновен от природата и приложението им в обучението по дизайн. Проблеми и перспективи в развитието на съвременния дизайн и декоративно – приложните изкуства, том 2, Национална художествена академия, София, 100–115 [Chipev, Rangel. Metodi za tarsene na idei pri proektiraneto na dizayn vdahnoven ot prirodата i prilozhenieto im v obuchenieto po dizayn. In: Problemi i perspektivi v razvitiето na savremeniya dizayn i dekorativno – prilozhite izkustva, tom 2, Natsionalna hudozhestvena akademiya, Sofia, 2013, 100–115]



UNIVERSITY OF FORESTRY

FACULTY OF FOREST INDUSTRY



# **INNOVATION IN WOODWORKING INDUSTRY AND ENGINEERING DESIGN**

## **2/2021**

INNO vol. X Sofia

ISSN 1314-6149  
e-ISSN 2367-6663

Indexed with and included in CABI

# INNOVATION IN WOODWORKING INDUSTRY AND ENGINEERING DESIGN

Science Journal

Vol. 10/p. 1–90

Sofia 2/2021

ISSN 1314-6149

e-ISSN 2367-6663

Edition of

**FACULTY OF FOREST INDUSTRY – UNIVERSITY OF FORESTRY – SOFIA**

**The Scientific Journal is indexed with and included in CABI.**

## SCIENTIFIC EDITORIAL BOARD

Alfred Teischinger, PhD (Austria)	Luboš Krišták, PhD (Slovakia)
Alexander Petutschning, PhD (Austria)	Marius Barbu, PhD (Romania)
Anna Danihelová, PhD (Slovakia)	Muhammad Adly Rahandi Lubis, PhD (Indonesia)
Antonios Papadopoulos, PhD (Greece)	Nencho Deliiski, DSc (Bulgaria)
Asia Marinova, PhD (Bulgaria)	Neno Tritchov, PhD (Bulgaria)
Biborka Bartha, PhD (Romania)	Panayot Panayotov, PhD (Bulgaria)
Bojidar Dinkov, PhD (Bulgaria)	Pavlo Bekhta, PhD (Ukraine)
Danijela Domljan, PhD (Croatia)	Regina Raycheva, PhD (Bulgaria)
Desislava Angelova, PhD (Bulgaria)	Roman Réh, PhD (Croatia)
Derya Ustaömer, PhD (Turkey)	Ružica Beljo Lučić, PhD (Croatia)
George Mantanis, PhD (Greece)	Silvana Prekrat, PhD (Croatia)
Ivica Grbac, PhD (Croatia)	Štefan Barčík, PhD (Slovakia)
Ivo Valchev, PhD (Bulgaria)	Valentin Shalaev, PhD (Russia)
Ján Sedliačik, PhD (Slovakia)	Vasiliki Kamperidou (Greece)
Julia Mihajlova, PhD (Bulgaria)	Vesselin Brezin, PhD (Bulgaria)
Hubert Paluš, PhD (Slovakia)	Vladimir Koljozov, PhD (Macedonia)
Hülya Kalaycioğlu, PhD (Turkey)	Zhivko Gochev, PhD (Bulgaria)
Ladislav Dzurenda, PhD (Slovakia)	

## EDITORIAL BOARD

N. Trichkov, PhD – Editor in Chief	V. Savov, PhD
D. Angelova, PhD – Co-editor	P. Vichev, PhD
N. Minkovski, PhD	

**Cover Design: DESISLAVA ANGELOVA**

**Printed by: INTEL ENTRANCE**

**Publisher address: UNIVERSITY OF FORESTRY – FACULTY OF FOREST INDUSTRY**

**Kliment Ohridski Bul., 10, Sofia, 1797, BULGARIA**

**<http://inno.ltu.bg>**

**<http://www.scjournal-inno.com/>**

## CONTENTS

PROPERTIES OF WOVEN GLASS FIBER FABRIC REINFORCED POLYPROPYLENE BASED WOOD PLASTIC COMPOSITES .....	5
Sefa Durmaz, Yusuf Ziya Erdil, Erkan Avci	
ANALYSIS OF ANATOMICAL ELEMENTS AS WOOD TEXTURE CHARACTERISTICS .....	11
Nikolai Bardarov, Nicole Christoff, Vladislav Todorov, Petar Antov, Mariana Kaludova	
PROPERTIES OF HIGH-DENSITY FIBERBOARDS BONDED WITH UREA- FORMALDEHYDE AND PHENOL-FORMALDEHYDE RESINS .....	17
Viktor Savov, Petar Antov, Neno Trichkov	
ACCESSIBILITY OF THE ENVIRONMENT TO DISADVANTAGED PEOPLE .....	27
Maria Kitchoukova	
INFLUENCE OF SOME FACTORS ON ADHESION STRENGTH IN THE FORMATION OF WATER-BASED FINISHES ON BEECH PLYWOOD .....	36
Dimitar Angelski, Krasimira Atanasova	
A STUDY ON THE EFFECT OF THE BEARING CLEARANCE OF THE WHEELS ON THE MOVEMENT OF THE BAND SAW BLADE.....	44
Valentin Atanasov, Petar Nikolov	
FORCED SPATIAL VIBRATIONS OF A WOOD SHAPER CAUSED BY THE WEAR OF THE CUTTING TOOL .....	51
Georgi Vukov, Valentin Slavov, Pavlin Vichev, Zhivko Gochev	
MODEL FOR TRAINING ENGINEERING DESIGN STUDENTS BY USING METHODS FROM HUMANITIES AND SOCIAL SCIENCES .....	63
Pavlina Vodenova, Ophelia Kaneva	
EXPERIMENTAL STUDY IN PRIMARY WOOD CUTTING WITH CIRCULAR SAW AND BAND SAW MACHINE .....	73
Valentin Atanasov	
EXPERIMENTAL APPLICATION OF THE METHOD OF FOCAL OBJECTS IN DESIGN EDUCATION.....	82
Desislava Angelova	
SCIENTIFIC JOURNAL „INNOVATIONS IN WOODWORKING INDUSTRY AND ENGINEERING DESIGN“ .....	88