

RESEARCH ON THE SUSTAINABLE DEVELOPMENT COMPETENCES OF THE LANDSCAPE ARCHITECT IN PRACTICE

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Abstract. The sustainable development of an environment in which people live, work, play sports and relax is among the priorities for the well-being of society. Landscape architecture and the product resulting from their work directly or indirectly influence the achievement of sustainable development goals such as: providing a healthy environment, communicating with nature, improving the well-being of people of all ages. Theirs is the role of creating a sustainable green infrastructure that will provide quality conditions for the realization of the human-nature relationship. Through the quality of the specialized work of the landscape architect, sustainable management of natural ecosystems and limitation of the consequences of climate change, especially in urbanized areas, is achieved. This article presents a study on the landscape architect's competences in training and in practice to apply the principles of sustainable development, in the context of the subject of his specialized work. The methodology used is aimed at evaluating the acquired and demonstrated competences for sustainable development of the landscape architect.

Keywords: sustainable development; green management; landscape architect; competences

Introduction

The landscape architect has a direct role in green management according the Entry standards and competency framework: Professional Competences of Landscape Institute and global research in the field of HR management in Landscape (Landscape Institute 2020; Dragozova-Ivanova 2015; Maclean et al. 2018; Arnedo et al. 2021).

The structure and content of the educational programs of these professionals requires continuous improvement of personal and professional competence, in the context of new realities and challenges. (Sharky 2016; Bowen 2012; Valor et al. 2020, Dimitrova et al. 2020; Sterev 2023; Ivanov, Molhova 2023).

In 2020, a new formulation of the nature of the Landscape Architect profession was presented, voted on at the IFLA WC 2020 (in close cooperation with the ILO):

“Landscape Architects plan, design and manage natural and built environments, applying aesthetic and scientific principles to address ecological sustainability, quality and health of landscapes, collective memory, heritage and culture, and territorial justice. By leading and coordinating other disciplines, landscape architects deal with the interactions between natural and cultural ecosystems, such as adaptation and mitigation related to climate change and the stability of ecosystems, socio-economic improvements, and community health and welfare to create places that anticipate social and economic well-being.” (IFLA Definition of Landscape Architect.

The expectations of educational institutions are to educate students by building general, basic and specific competences for the profession. Generics include transformational, instrumental, interpersonal and systems competences. It is the group of transformative competences for landscape architecture that are linked to the competences for applying the principles of sustainable development, such as:

- ✓ **Systems-thinking competence (STC):** includes analysis of systems and the relationships between individual elements in them, analysis of factors that influence and processes that take place.
- ✓ **Anticipatory competence (AC):** the ability to understand and evaluate opportunities and to build one’s own vision, based on an assessment of the risk and consequences of one’s actions.
- ✓ **Normative competence (NC):** the ability to understand and apply societal norms and values, applying the principles of sustainability, in an environment of various conflicts and interests.
- ✓ **Strategic competence (SC):** the ability to think strategically, implement innovative actions that contribute to sustainability at the local, regional and national level.
- ✓ **Collaboration competence (CC):** abilities to collaborate and work in a team to jointly solve tasks and problems; empathy and dealing with conflicts.
- ✓ **Critical thinking competence (CT):** ability to be critical of norms, practices and opinions by analyzing one’s own values, perceptions and actions.
- ✓ **Self-awareness competence (SAC):** ability to reflect on one’s own role and responsibility towards society and various stakeholders and public groups.
- ✓ **Integrated problem-solving competence (IPSC):** the comprehensive competence to apply multiple theories, principles and practices to solve complex problems to achieve sustainability.

2. Methodology

The logical framework of the methodology is presented in Fig. 1. The main steps for modelling the educational competences are:

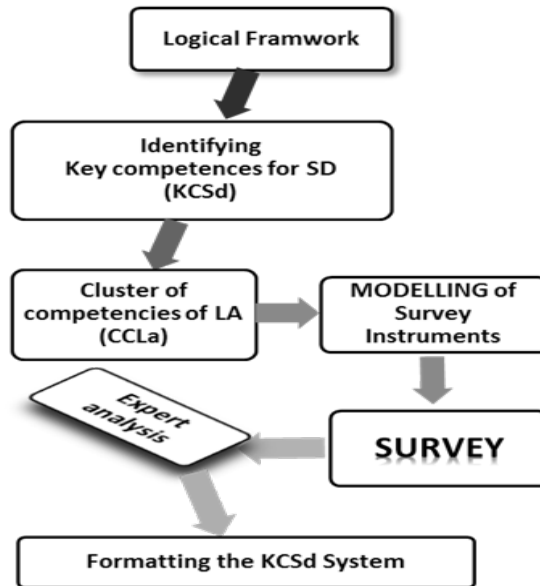


Figure 1. Research methodology

- ✓ Outlining the basic characteristics of the landscape architect's profession which define it as a socially significant and green job having a considerable role in the achievement of sustainable development (SD).
- ✓ Identifying the clusters of educational competences for sustainable management.
- ✓ Identifying the specifics of the landscape architect's competences, which are the *Key Competences for Sustainable Development* (KCSd).
- ✓ Modelling of survey instruments aimed at the opinion of managers and professionals in landscape architecture
- ✓ Expert analysis of results.
- ✓ Formatting the cluster of competences for sustainable management of the green infrastructure.

Tasks of the research:

- ✓ Identifying the personal and professional competences of the landscape architect through which directly or indirectly influence the sustainable management of green infrastructure objects, which are linked to the key competences for sustainable development (KCSd).

- ✓ Creation of a questionnaire for researching the opinion of the professional community for the evaluation of acquired competences for applying the principles of sustainable development in practice.
- ✓ Identification of key areas for improvement of training oriented towards the development of professional competences for sustainable development.

3. Results

The presented study follows the Steps described in the methodology – fig. 1. Modelling maps of educational competences on the basis of the analysis of the master's and doctoral Landscape Architecture degree programs followed the principle of acquisition by the students of knowledge, skills and competences in sustainable development and green management (Dragozova & Kovacheva 2022). It present a Modelled map of the Key competences for Landscape Sustainable Development (KCSd) accordance with Wiek, A. et al (Wiek et al 2011)'s five groups of KCSd. The main groups of competences that are subject to modelling in first Step of investigation presented by Dragozova, E., & Kovacheva, S. (Dragozova & Kovacheva 2022). The study is supplemented by a survey of the opinion of specialists from the practice of landscape architecture. It was conducted through a key question survey with landscape architects from business and institutions. The questions in the survey are aimed at the demonstrated personal competences of landscape architects, which have a direct or indirect relate with the seven groups of competences for applying the principles of sustainable development presented at the beginning. In the group of personal competences are included: self-reliance and responsibility (SRC); competence for study (CS); communicative, pragmatic and strategic competence (CPSC) and competence for systemic and critical thinking (CSCT), competence to make justified ecological decisions (CJED).

The present study is part of the modelling of educational competences of landscape architecture students in Bulgaria. The work of verifying the practice and opinion of the interested parties is part of the overall research. An online-based questionnaire was developed as a research tool, the interface of which is presented in fig. 2

The questionnaire contains 17 questions and the possibility of additional comments in free text. The rating scale is from 1 to 5, with 1 being the lowest low level of competence and 5 the highest level of competence.

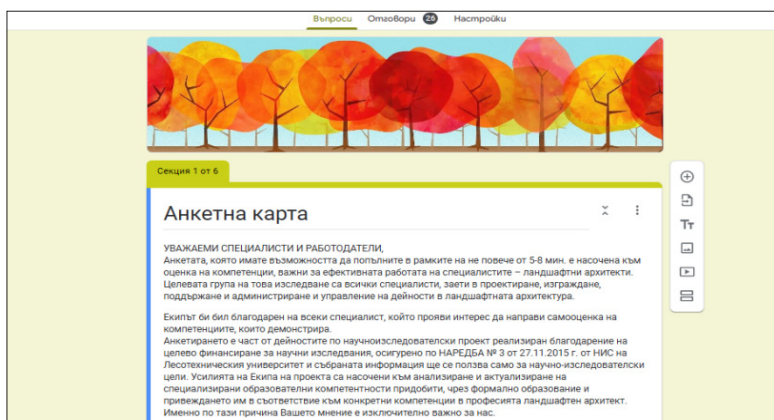


Figure 2. Form of online based survey card (<https://forms.gle/dyHntj9eopdbdX1Z8>)

Twenty six respondents took part in the Survey. Subject of the activities of the organizations are: landscaping, training, design activity, production of plants, preservation and study of cultural heritage, administrative activity, maintenance and protection of green areas, urban planning, etc.

Many of the respondents (73.1) % have extensive professional experience of over 20 years and know in detail the specific features of the landscape architect profession. On the fig. 3 the age structure of respondents are presented.

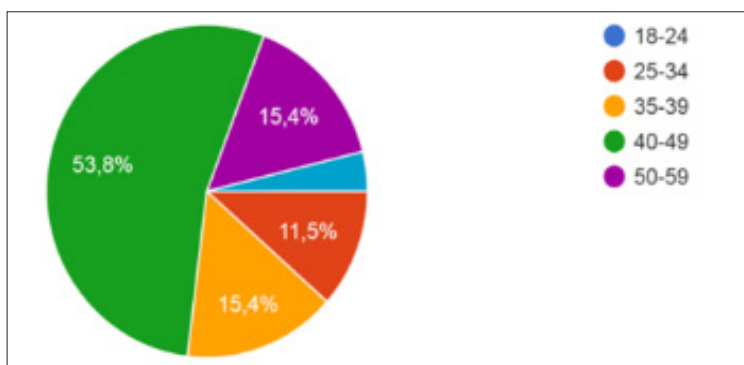


Figure 3. The age structure of respondents

From the overall analysis of the results of the survey, some of the most significant competences for a high level of professional performance of the landscape archi-

stand out. They are precisely those that reflect the socially responsible attitude towards the environment and society. It is this group of competences that are the determinants for modelling key competences for sustainable development (KCSd).

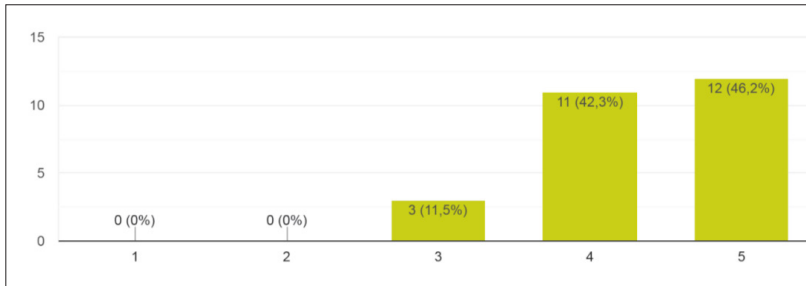


Figure 4. Knows and applies corporate socially responsible solutions in practice, environmentally friendly practices, resource-effectiveness solutions in business (the scale is from 1 to 5 from low to high; answers are given in %)

As a result of the answers, professionals believe that 88.5% show a significantly good level and a high level of competence with self-reliance and responsibility (SRC) and competence to make justified ecological decisions (CJED) – figure 4. The question refers to the competences for the application of the principles of sustainable development, related to integrated problem-solving competence (IPSC), Strategic competence (SC), Anticipatory competence (AC) and Normative competence (NC). Main problems, which are indicated by the specialists in the practice, presented in free text, are associated with the need to upgrade knowledge and acquire competences in management and understanding of economic processes.

The results presented in Fig. 5 and Fig. 6 are related to questions that reflect the level of demonstrated Systems-thinking competence (STC).

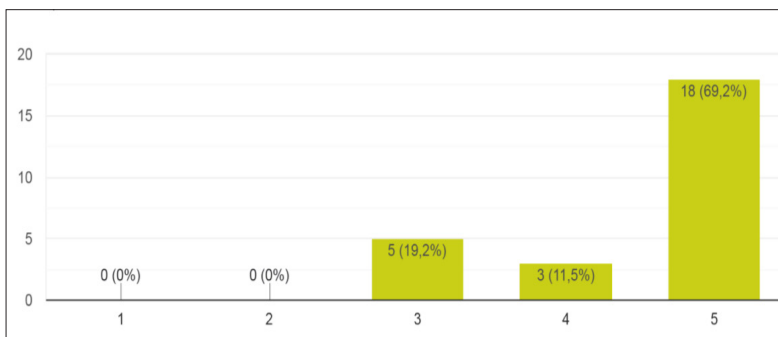


Figure 5. Researches and systematizes information when performing professional tasks (the scale is from 1 to 5 from low to high; answers are given in %)

Almost 70% of the specialists in the practice and the employers evaluate as a high level of demonstrated system thinking competence, but some of them indicate problems with rapid adaptation to the frequently changing legal (normative) environment. These frequent changes affect individual elements of the system, especially in the planning, and often make it difficult for the landscape architect to systematize the information.

Three of the competences presented for evaluation by employers are related to Collaboration competence (CC) - teamwork, making informed group decisions and effective communication. Most than 79% of them highly value the demonstration of these competences, but point to problems with communication abilities for professional performance in a foreign language.

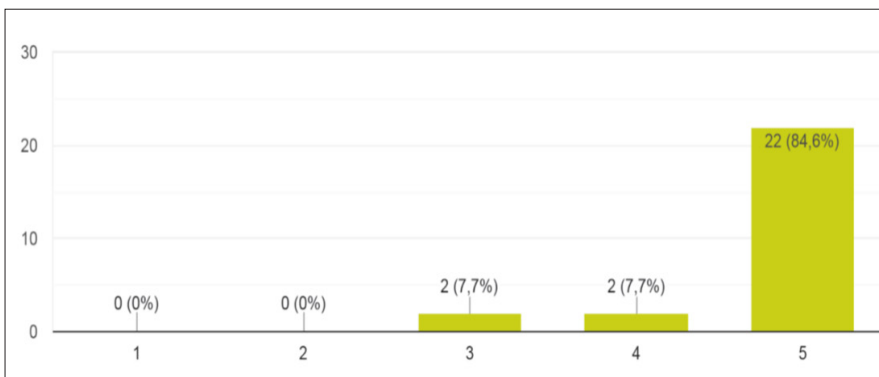


Figure 6. Teamwork (the scale is from 1 to 5 from low to high; answers are given in %)

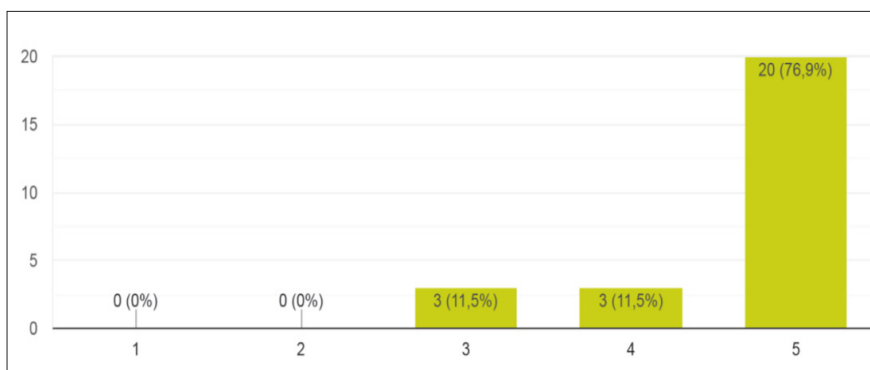


Figure 7. Participated in informed group decision-making (the scale is from 1 to 5 from low to high; answers are given in %)

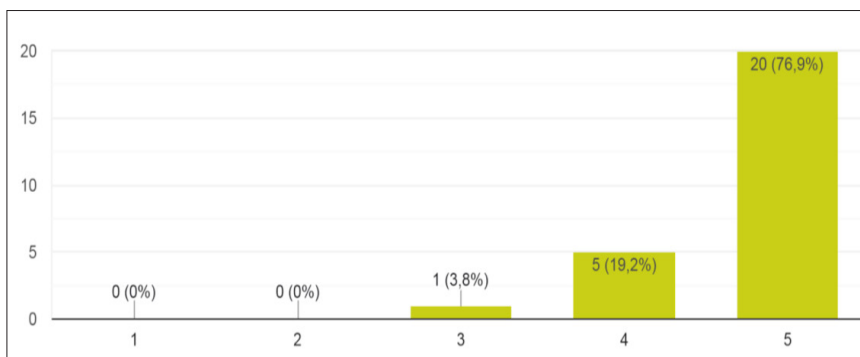


Figure 8. Communicate correct and effective in the workplace with clients and colleagues, using specialized terminology in a specific situation (the scale is from 1 to 5 from low to high; answers are given in %)

As an additional element for upgrading the communication abilities of young specialists, the need for correct and clear communication with other specialties in construction - building designer, geodesy specialist, water engineer, electrical engineers, etc. is indicated – fig.7 and fig. 8. The use of a uniform terminology specific to construction sector should be enforced in the training of future specialists.

In fig. 9 and 10 show the results of the assessment of competences for objective assessment of one's own knowledge and perceived need for their updating.

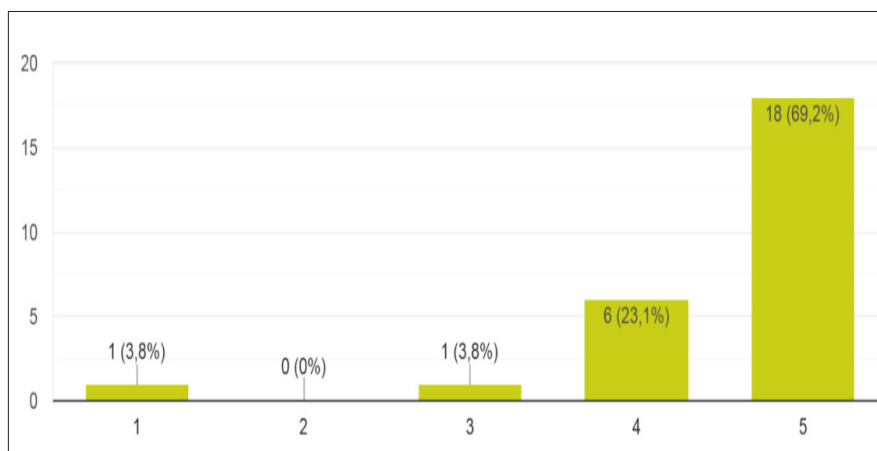


Figure 9. There are lifelong habits of learning and updating (the scale is from 1 to 5 from low to high; answers are given in %)

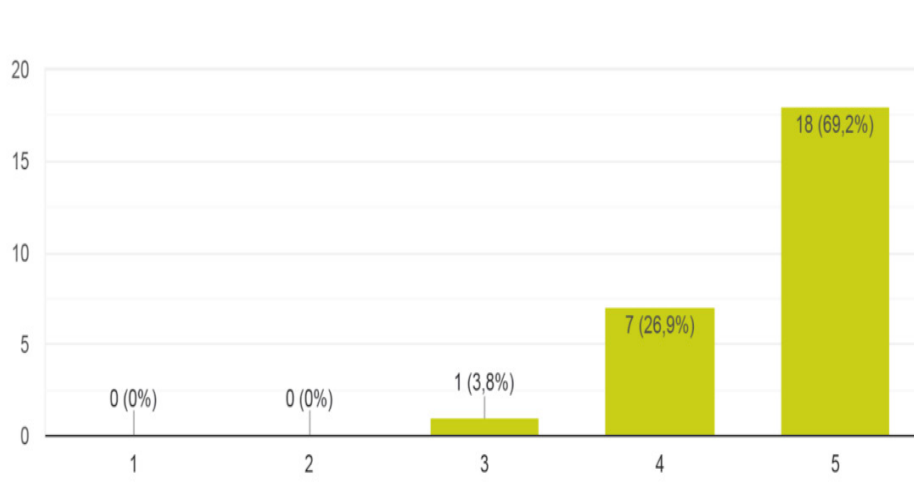


Figure 10. There is an objective assessment of his knowledge (the scale is from 1 to 5 from low to high; answers are given in %)

As a result of the answers, a high assessment was made (69.2%) of demonstrated competences for lifelong learning and work on updating knowledge. These competences refer to the group of Self-awareness competence (SAC) and Critical thinking competence (CT). 29.9% of employers believe that young professionals should be stimulated to improve their competences in using modern technologies for the visual presentation of project ideas and solutions.

The practical benefits of research can be summarized in two directions:

- supporting the process of standardization and regulation of the profession of landscape architect;
- applying educational approaches for competence-based training for acquiring knowledge and skills for sustainable management of green infrastructure.

The theoretical implication of the results of the present study is that within Bulgaria for the first time a scientifically based approach is used to study the compliance of the competences for landscape architect in the context the *Key competences for Sustainable development* of green infrastructure.

The results presented in this article are part of the overall study of the educational competences acquired by landscape architecture students and their good implementation in practice. It supports the process of:

- standardization and regulation of the landscape architect profession;
- application of educational approaches for competence-based learning to acquire knowledge and skills for sustainable development.

Conclusions

The basic conclusions from the analysis and the realized process of modelling the key educational competences for sustainable development are:

The educational training of the graduating students in Landscape Architecture should meet modern world and European standards, which includes the acquisition of competences for the application of the principles of sustainable development.

The critical analysis of the colleagues from the practice indicates specific problems in the educational preparation that can be solved through competence-based training.

The process of applying standards for educational training of students and practicing the landscape architect profession is a condition for achieving high quality services in landscape architecture.

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