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CAN ART BE A COMPETENCY BUILDER?  
THAT IS HOW EXPOSURE TO ART SHAPES  
THE PERCEPTION OF DESIRED QUALITIES  
OF A TECHNICAL GRADUATE



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## **Can Art be a Competency Builder? That is How Exposure to Art Shapes the Perception of Desired Qualities of a Technical Graduate**

### **Synopsis:**

The purpose of this paper is an attempt to determine the influence of public art on changing the attitudes of spatial management students at the Wroclaw University of Environmental and Life Sciences (WUELS), regarding the desired characteristics of a graduate. The research hypothesis assumes a significant evolution of views on this topic under the influence of exposure to works of public art. The results confirm the advisability of changes in the Spatial Economy study program at WUELS aimed at a broader inclusion of Arts and Culture elements.

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## **Can Art be a competency builder? That is how exposure to art shapes the perception of desired qualities of a technical graduate**

### **Abstract**

The aim of this paper is an attempt to determine the influence of public art on changing the attitudes of spatial management students at Wroclaw University of Life Sciences (WUELS) in Poland, regarding the desired characteristics of a graduate. The research hypothesis assumes a significant evolution of views on this topic under the influence of exposure to works of public art.

To gather quantitative material, the questionnaire method of perception research was applied twice in two groups of respondents, in which one was subjected to the experiment of communing with public art and the other was deprived of it. The collected data were then analyzed using the difference in differences (DID) method, determining the differential effect of perception in the group subjected to communing with public art compared to the control group that did not participate in this experiment.

The results support the rule that in-depth exposure to public art can shape graduate students' attitudes and soft skills. These changes concerned the shift of attention from "hard" professional knowledge, toward "soft" competencies.

### **Introduction**

Educating specialists in Spatial Management in many centers these studies focus only on physical assets (land & property) and technical tools of land use planning. Meanwhile, the program of this study at Wroclaw University of Life Sciences (WUELS) in Poland, includes issues related to monitoring and forecasting socio-economic phenomena and programming sustainable development based on the best available interdisciplinary knowledge. Students must be equipped with a wide range of skills from environmental conditions through social and economic issues to technical and institutional matters. Such a comprehensive education determines the creation of effective development policies, which aim at a sustainable increase in the quality of life with respect for the used resources.

The educational results at the master's level specify the areas within the fields and disciplines of architecture and urban planning (30%), geography, economics (40%), and environmental protection and shaping (30%). The range of knowledge, skills, and competencies that a graduate of this major should be equipped with emphasizes interdisciplinary knowledge,

necessary for proper diagnosis of processes in a very complex environment. This is particularly evident in the description of competencies, in which it is assumed that the student:

- appreciates the necessity of precise problem formulation and selection of appropriate methods, techniques, and tools for its solution. Understands the need for constant improvement of professional qualifications.
- is convinced of the significance of deepened interdisciplinary knowledge due to the possibility of using it in personal and professional life. The student realizes the necessity of updating the acquired knowledge and can do it.
- correctly identifies and solves dilemmas connected with work in various fields of spatial management. He/she sees the need for continuous education.
- realizes the social consequences of actions taken. He understands the need for social participation and cooperation in decision-making processes. Is aware of the need to communicate with society. Can understandably convey specialist information.
- is aware of the effects and consequences of economic activity in public spaces and the natural and social environment. Understands and does not evade responsibility for decisions made. Recognizes dilemmas related to spatial decisions; understands other points of view. Realizes their long-term consequences.
- understands the need for lifelong learning, the necessity of independent complementation of knowledge, and the development of skills, expanded by interdisciplinary dimension. Through cooperation and group work he/she can inspire and organize the learning process of others.

The degree to which these effects are met is verified annually within the University's educational quality system, which is based on audits of individual subjects and student surveys.

The shift to a technology-based curriculum, skills training, and a problem-based approach helps students acquire specific skill sets and develop ways of thinking that provide tools to meet the challenges of a rapidly changing world and prepares graduates for the professions of the future. Using technology in an active learning environment, students develop innovative skills and ways of thinking that enhance creativity, collaboration, and problem-solving skills. Skills refer to the ability to perform a task to solve a specific problem. Mindsets refer to how students approach the world around them, the social and emotional skills they use, and how they solve the problems they encounter.

Analyzing the current study program, one can therefore conclude that it meets STEM standards (Gonzales & Kuenzi, 2012; Marrero, Gunning, & Germain-Williams, 2014). However, the need to enrich education with the element of Art and to raise the program of studies to the STEAM standard is perceived in many dimensions. It is universally acknowledged that this element will foster, above all, the ability to aesthetically shape urban complexes, including public spaces. This is primarily served by public art - created to be placed in space and presented there, creating opportunities for dialogue with the viewer as well as with the places of display. A less evident element is treating art more holistically - as an element of upbringing and shaping personality in the moral and intellectual range, and as a means of achieving harmony between a man and the surrounding world (Ghanbari, 2015; Eisner, 2002). These assumptions were the primary motivation for undertaking the research presented in this paper.

The aim of this paper is an attempt to determine the influence of public art on changing the attitudes of spatial management students at WUELS, regarding the desired characteristics of a graduate. The research hypothesis assumes a significant evolution of views on this topic under the influence of exposure to works of public art.

## Methods

To gather quantitative material, the questionnaire method of perception research was applied twice in two groups of respondents, in which one was subjected to the experiment of communing with public art and the other was deprived of it.

Respondents were given a list of 20 desirable features of a spatial management graduate. They were given to represent technical competencies (e.g. ability to use IT tools, professional practical skills), social competencies (e.g. ability to work in a team, project management skills), students' personality competencies (e.g. communicativeness, independence in solving problems), and Arts-related competences (sense of aesthetics and good style, sensitivity to art). In addition to the listed competencies, students were allowed to add their competencies that they felt were important.

The survey was conducted among 60 students divided into two equal groups of 30 people. They were students of the second level of studies (master's degree) in Spatial Management at WUELS. Both groups participated in the first round and received an identical survey form. To avoid hasty responses, respondents were asked to read the questions, then think about them over two days. On the third day, students answered the questions. The survey conducted in this way gave a picture of preferences in the entire population of respondents, which was taken as a baseline for further research.

In the next stage of the research plan, only one of the groups (half of the respondents) participated. They were presented with the task of visiting the National Museum in Wrocław and thoroughly familiarizing themselves with the exhibition "*Abakanowicz. Total*" (Abakanowicz. Total). It was a retrospective presentation of the work of Magdalena Abakanowicz (1930-2017), one of the most prominent Polish artists, sculptors, author of large figural ensembles and works of organic structure made of resin-cured fabric, as well as compositions made of wood, metal and stone, including the series: *Alterations*, *Back*, *Crowd*, *Embryology*, *War Games* (Abakanowicz ). She exhibited her work, among others, at the Metropolitan Museum of Art in New York (*Abakanowicz on the Roof*). Her works are often exhibited as part of the public space. Students were asked to contemplate this exhibition individually. In order not to be subjected to situational suggestion, they were not told the purpose of the visit or the connection to the questionnaire they had completed earlier. They also did not know the next steps of the research that awaited them after they visited the museum.

After an appropriate time distance after visiting the exhibition (two weeks), the study was conducted again with the same survey questionnaire, keeping the same procedure for completing it. Except that this work was done only with half of the students who participated in the museum visit. The results obtained in this way were related to the control group, which was the entire population of students in the first study.

The collected data were then analyzed using the difference in differences (DID) method, determining the differential effect of perception in the group subjected to communing with public art compared to the control group that did not participate in this experiment (Card, Krueger, 1994). The results of the research procedure so employed are discussed in the next section of this paper.

**Results**

The results of the survey of the entire 60-person group of respondents allowed for the creation of a hierarchy of importance that students assigned to the various graduate features. Each characteristic was rated on a scale from 1 - least desirable/unnecessary to 10 - very desirable/necessary. This is their opinion of which traits are most desirable. The results of this study are illustrated in Figure 1

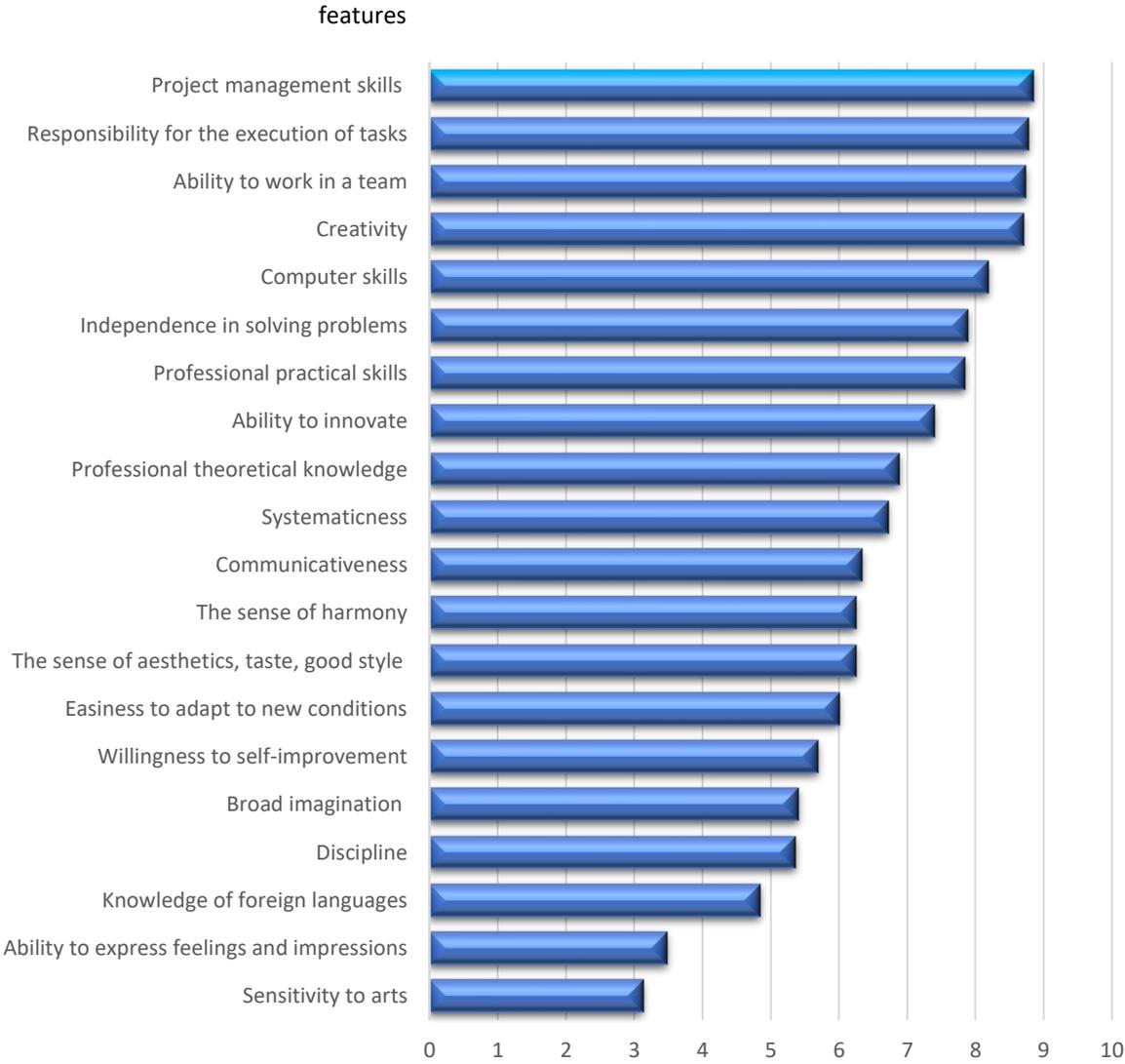


Figure 1. Importance of particular graduate features  
 Source: Own compilation

The following features received the highest scores: *Project management skills* (average score of 8.9), *Responsibility for the execution of tasks*, and *Ability to work in a team* (8.8), and *Creativity* (8.7). The top of the list is therefore rather occupied by "soft" skills. Only the next position is occupied by "hard" *Computer skills* (8.2) and *Professional practical skills* (7.9). However, they are at the same level as the other "soft" skills, *Independence in solving problems* (7.9) and *Ability to innovate* (7.4). Only in the middle of the pile was such an important characteristic for studies as *Professional theoretical knowledge* (6.9), which shows that students even in graduate studies value practice more than theory alone. Despite this, however, they are aware that it is not only the provision of classical subject knowledge that is important - universal social competence and the ability to form interpersonal relationships also count.

As expected, respondents attributed relatively less importance to elements classified as Arts. The lowest scores were given for *Sensitivity to arts* (only 3.1), and *Ability to express feelings and impressions* (3.5). *Broad imagination* was rated slightly higher (5.4). The highest, but only average scores were given to *The sense of aesthetics, taste, good style*, and *The sense of harmony* (both with an average grade of 6.3).

The results of the study in the 30-person group that was subjected to the experiment of communing with art (experimental group) turned out to be significantly different from the whole population of respondents that had been previously studied (control group). The results of this study are presented in Fig. 2, with the blue color indicating the results of the control group and the yellow color indicating the results of the experimental group.

Just one visit and encounter with the artworks of a prominent artist changed the perception of the desirable features of a spatial management graduate. Students perceived much greater importance of Arts-related features. The biggest change was in *Sensitivity to arts*, which was last in the control group list and suddenly ranked at the top in the experimental group (a change from 3.1 to 8.7), and *Ability to express feelings and impressions* (from 3.5 to 7.8). Slightly weaker growth was seen in *Broad imagination* (from 5.4 to 6.7). Features that had previously gained average ratings also advanced significantly. *The sense of aesthetics, taste, good style*, and *The sense of harmony*, which had the same rating in the control group (6.3), was rated at 8.7 and 8.4 in the experimental group. It turned out, therefore, that the features associated with Arts, were highly appreciated - advancing to the group of most desirable features of the graduate.

It is also worth noting that the increase in ratings for the attributes in question was accompanied by a decrease in others. *Professional theoretical knowledge* suffered the most, with a drop in scores from 6.9 to 4.5. Interestingly, *practical knowledge* and *Independence in solving problems* also suffered a drop in scores (7.9 to 6.5). The best-rated features in the control group were also downgraded. The first in the previous list *Project management skills* was downgraded from 8.9 to 7.2, and the second was *Responsibility for the execution of tasks* from 8.8 to 6.7. These changes can be summed up in one statement - students have discovered that they prefer experiencing more than knowing.

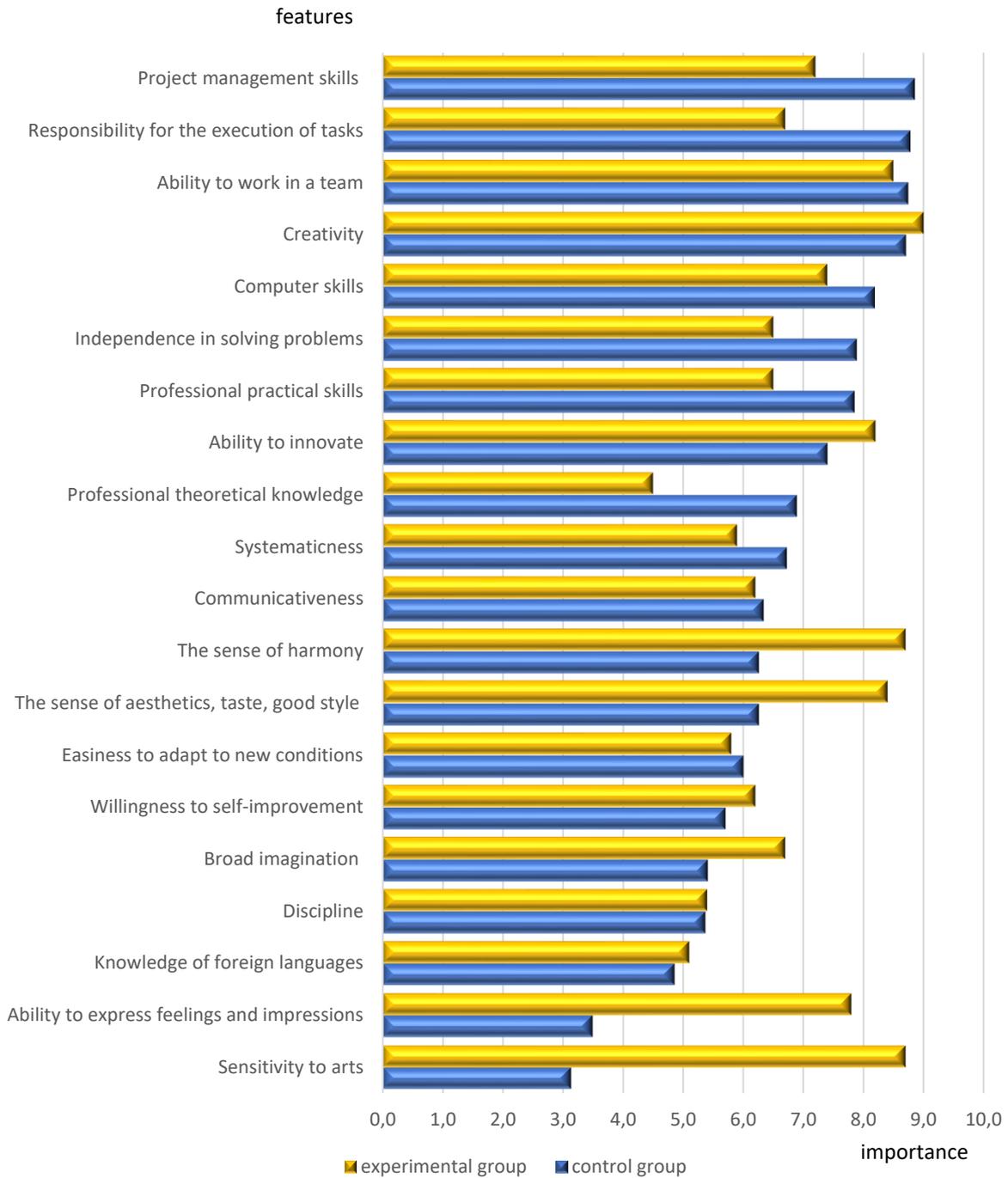


Figure 1. Importance of particular Graduates' attributes  
 Source: Own compilation

### Conclusion

The results support the rule that in-depth exposure to public art can shape graduate students' attitudes and soft skills. The opinions of the students participating in the experiment regarding the necessary characteristics of graduates changed significantly relative to the control group. These changes concerned the shift of attention from "hard" professional knowledge, towards

"soft" competencies shaping those mental dispositions whose activation can contribute to the integrated development of human personality, namely: imagination, creative dispositions, and emotional life. This fits with similar results found in other studies (Bordogna et al. 1993; Yakman, 2008; Madden et al. 2013; Dyer, 2019). As Watson's argued "inclusion of artistic thinking in the education of scientists and engineers improves their ability to create relevant products and services. The resulting paradigm shift disrupts the structured, logical flow of the thinking processes that are encouraged by the traditional STEM disciplines" (Watson & Watson, 2013).

In the narrow sense, the results confirm the advisability of changes in the Spatial Management study program at WUELS aimed at a broader inclusion of Arts and Culture elements. In short, the evolution of STEM towards STEAM may result in the enhancement of graduate characteristics desired by contemporary employers. In particular, they value competencies such as openness to innovation and a conscious process of development, the ability to work in teams, the ability to identify and justify priorities, awareness of one's limitations, creativity, and effective communication.

In a broader perspective, these results are part of the research confirming that technical education in the 21st century requires combining specialist knowledge with soft skills. Education understood in this way is associated with the "art of living", a means of achieving harmony between man and the surrounding world. This is because creative contact with art, the variety of artistic activities, and operating with the symbolic language of various fields of art foster the integration of the emotional sphere, intuition with the intellectual attitude to the world, imaginative thinking with symbolic, logical, and abstract thinking.

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