Teaching and learning architecture – students' opinions towards the course of architectural design

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Abstract

The paper is a report on the research carried out at the Faculty of Architecture, Silesian University of Technology in 2013. The goal was to gather data concerning students' opinions of the course of architectural design studio. The focus of the research was put on the phase of searching for architectural concept. The survey consisted of questions concerning the issues of personality features, knowledge and skills necessary for an architect, methods of seeking the first design concepts, significant features of architectural design, important factors in the receipt of architecture, and criteria of the project assessment. There was also a question of what role the university teacher plays in the course of architectural design studio. The results allowed to get to know students' opinions and attitudes towards the course of architectural design studio, pointed out some weaknesses of study curriculum, educational methods and students' designs assessment and to put forward some hypotheses concerning threats accompanying the reform of higher education. Conclusions might be helpful in mapping out further changes in education, which should be aimed at increasing both effectiveness and innovativeness.

Keywords: *architectural education, questionnaire, architectural design studio.*

1. Introduction

The paper is yet another author's work dedicated to issues of architects' education. Previous publications documented research works focused on attractiveness and effectiveness of studies [10], alumni profile [13], methods of teaching [7] [8] [11] and ways of learning [9] [12]. There are not many research works concerning students' opinions on architecture education in Poland. Some interesting research on students' opinions on study curriculum at the Technical University in Warsaw was made by Magdalena Bieńkuńska [1]. Jacek Gyurkovich focused on the question of dividing studies into two study cycles [3]. Elżbieta Ryńska analyzed the need for a new approach to study program [6] and Małgorzata Gruszka [2] and Waldemar Jasiewicz [4] made research works about alumni profile. Presented paper is a report on a case study carried out at the faculty of architecture Silesian University of Technology. Its aim was to recognize the students' opinions on the course of architectural design. There are a few reasons for choosing the case study technique, which works well when examining substantial social issues. An architect's education undergoes significant changes as a result of (implementation of the) Bologna process implementation (and) but at the same time faces a certain crisis which originates in profession dilemmas, so it may be treated as a social issue of growing importance. It seems that it is no longer possible to achieve the desired qualitative change (making small steps) in the way of small alterations and adaptations, and the time has come for essential structural transformations. Changes must be made, but it is important not to lose (the values of) what was valuable in the previous system.

2. The research

Giving classes may be described as a kind of interaction in which people are accomplishing their own goals, coincident with the study objectives. The study objectives are described by the set of learning outcomes; the intention of both the student and the teacher is that the given (?) knowledge, skills and

competence are achieved by the student. The success of studies depends on that; the success of the student is the success of the university teacher. During the research an additional question referred to the methods applied in designing process appeared: are the students' views and attitudes towards the architectural design constant or do they change over the course of studies? And yet another question, essential from a higher education institution's point of view: what is the extent of the teacher's influence?

Questionnaire is a tool frequently used in social research; it was also chosen as a research technique for the purpose of this inquiry: the questionnaire technique with questions that measure separate variables work well as a tool for collecting data about preferences. The case study technique allows to collect data applying to relatively large group – thus the decision to use the questionnaire survey. The questionnaire was supposed to measure separate variables – the students' preferences towards the architecture design studio. The survey was prepared (on the basis of [5]) and carried out in June and October 2013. Results drawn up in a quantitative way make less room for errors and misinterpretation. The questionnaire consisted of ten questions –Table 1. Each of them had a number of standardized answers; there was a place left for an open-ended answer as well. The testee's task was to valuate those standardized answers according to ordinal-polytomous scale. Each question was constructed according to the same scheme:

Table 1. Question structure.

Question:	Yes	Rather yes	Rather not	No	No opinion
	[+2]	[+1]	[-1]	[-2]	[0]
answer 1					
answer 2					
…					
answer n					
other (please name)					

The students evaluated each of the standardized answers in a five-step scale from absolute acceptance to absolute negation (each of them had an assigned numeric value, to calculate the sum for each answer. To be able to compare the answers each sum was divided by the number of voices given for the specific answer. Thus all the results ranged between (-2) and (+2).

3. The research results

The study was designed to find answers to questions related to the students' perception on the necessary architectural design knowledge, skills and competencies, the role of academic staff, their individual design method and the amount of time spent on the development of various elements of the project. It boiled down to the following questions:
What knowledge and skills are essential in architectural design?
What personality traits are needed to be successful in the field of architectural design?
How does a student look for their first design concept?
How does a student create the first design concepts?
What important qualities should have the form of the proposed facility?
What factors should be taken into account in the assessment of the design?
What is most important in the reception of the project?
What is the role of the teacher of architectural design?

3.1. Knowledge and skills essential in architectural design

The list of questions about architectural design begins with a question of knowledge and skills necessary in architectural design. Eight out of nine standardized responses were approved by students – Figure 1.

The most preferable answers were: "knowledge of technical issues" (1.6 points) "knowledge of contemporary architecture" (1.4 points) and "computer skills" (1.4 points) (Figure 1). Those three were followed by "knowledge of the methods and design strategies" (1.3 points) and "knowledge of legal and organizational issues" (1.2 points) (Figure 1). The above five responses obtained a resolute acceptance from students. "Knowledge of the history of architecture" (0.7 points), "knowledge of the results of social research relating to the subject of the project" (0.6 points) and "artistic skills" (0.3 points) gained little less acceptance. Only the "knowledge of the theory of architecture" gained an average of 0 points, which places it at the boundary between "rather yes" and "rather not". Its significance changes during the study period, though: from almost insignificant for the second year students, it re-acquires the role of a rather significant factor in the fifth year of studies.
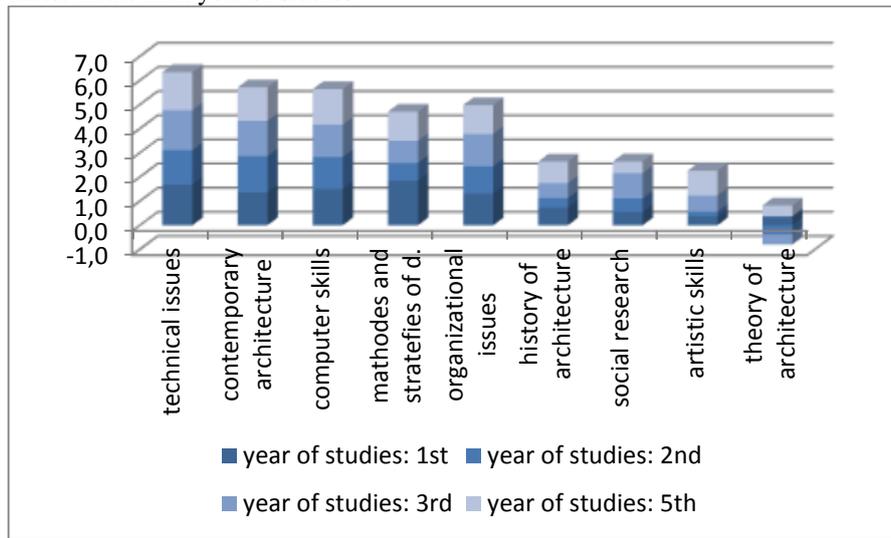

Figure 1. Knowledge and skills essential in architectural design.

The questionnaire also left the possibility of giving answers other than the standardized ones. The students' additional answers within the open-ended option were: "ingenuity", "new ideas", "spatial imagination", "a sense of aesthetics", "resistance to stress". Although they represent personal characteristics rather fit into the category of knowledge or skills, and regard the third question, they need to be discussed. "Ingenuity" can be regarded as tantamount to "creativity" present in the answers to the third question, "new ideas", "aesthetic sense" can be considered a factor affecting the "artistic talent". It must be pointed out, however, that the list of standardized answers to the third question lacks options like "spatial imagination" and "resistance to stress".

3.2. Features important in architectural design

All ten standardized answers to the question about important personality traits influencing architectural design have been evaluated positively by students, and eight of them gained on average more than 1 point, which means they were considered as definitely significant – Figure 2. The rating list goes as follows: "creativity" (1.9 points), "hard work and perseverance" (1.7 points), "knowledge" (1.6 points), "motivation" (1.6 points), "abstract thinking skills" (1.5 points), "organizational skills" (1.2 points) , "self-confidence" (1.2 points) and "talent" (1.1 points). Only "communication skills" (0.9 points) and "artistic talent" (0.8 points) received an average of less than 1 point, which puts them in a "rather acceptable" group (Figure 2). The position of "communication skills" is very low – students of all years underestimate its role both in terms of formal communication between the student and the teacher, and (this will be reflected in the responses to the subsequent question) communication between students.
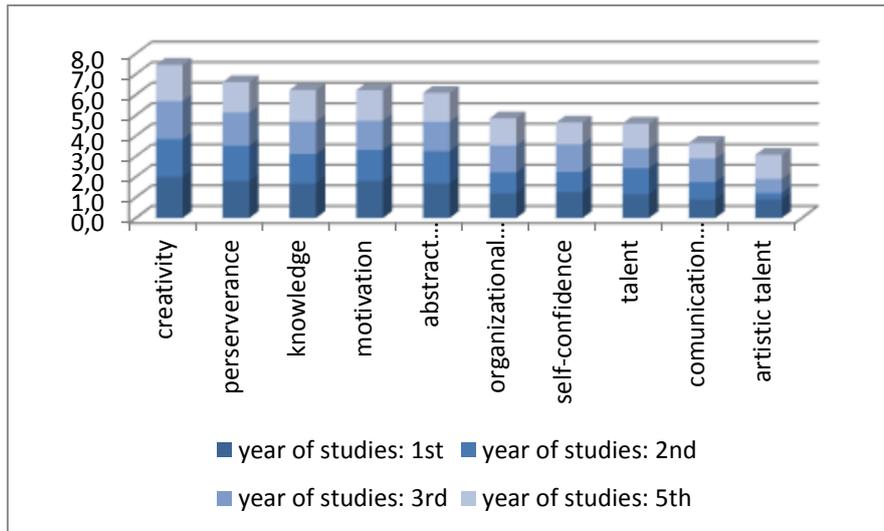
Figure 2. Features important in architectural design.

The set of the least accepted features is characteristic. It consists of "talent", "communication skills" and "artistic abilities". It seems that students definitely prefer work, knowledge and motivation to those innate abilities. The correlation of artistic skills (previous question) and artistic abilities (current question) is very high.

3.3. Ways of looking for concept

The next question concerned the methods used in the initial phase of exploration of the design concept. The aim was to define the ways in which students proceed to solve a design task. Among the standardized answers there were both analytical and intuitive methods – Figure 3. Four out of eight responses: "free sketches" (1.7 points), "analysis of the plot" (1.4 points), "analysis of spatial context" (1.4 points) and "analysis of the functional program" (1.0 points) were definitely accepted by students. "Knowing the existing implementation of a similar function" (0.5 points) and "building model" (0.4 points) belong to the group of "rather acceptable". "Analysis of the historical context" (-0.2 points) and "conversations with colleagues" (-0.4 points) were scored as rather not accepted.
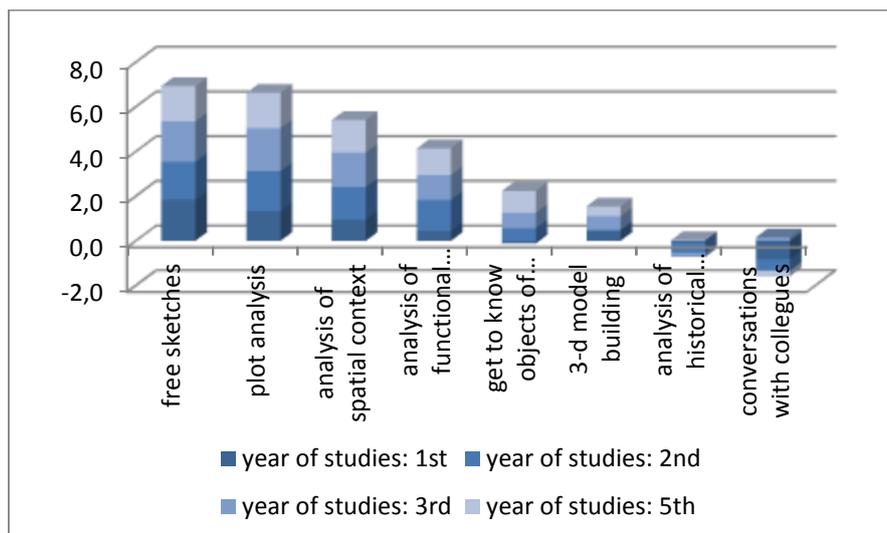

Figure 3. Ways of looking for concept.

3.4. Records of the first concept

The aim of the questions about the first depiction of the design was to get to know how students "record" their first ideas. The standardized responses comprised methods of drawing, model building and computer visualizations – Figure 4. Three out of seven responses received overwhelming acceptance. They are, in order from the most commonly accepted: "floor sketch"(1.1 points), "perspective view" (1.0 points) and "3-d model" (0.8 points). Four other: "cross-section sketch" (-0.1 points), "axonometric view" (-0.3 points), "façade view" (-0.5 points) and "visualization" (-0.8 points) were declared as unlikely to be used. These outcomes are perplexing because of the strong favoritism of the hand drawing methods (the first two places), while drawing skills and abilities - as shown in the report on previous questions - occupy the last positions on the lists of valued skills/abilities. Apparently freehand drawing is regarded as necessary, but not sufficient to be an architect. This result also coincides with answers to one of the next questions, where "free sketches" were selected as the most commonly used method of looking for design solutions.

In the other, not standardized answers, students named two additional methods: "free sketches" and "ideological sketches - zoning". It is difficult to imagine what "free sketches" could be if they're not some kind of floor plan, cross-section, elevation, perspective or axonometric view of the designed facility; it's likewise with "sketches the ideological-zoning", hence the list of answers for this question may be considered complete.
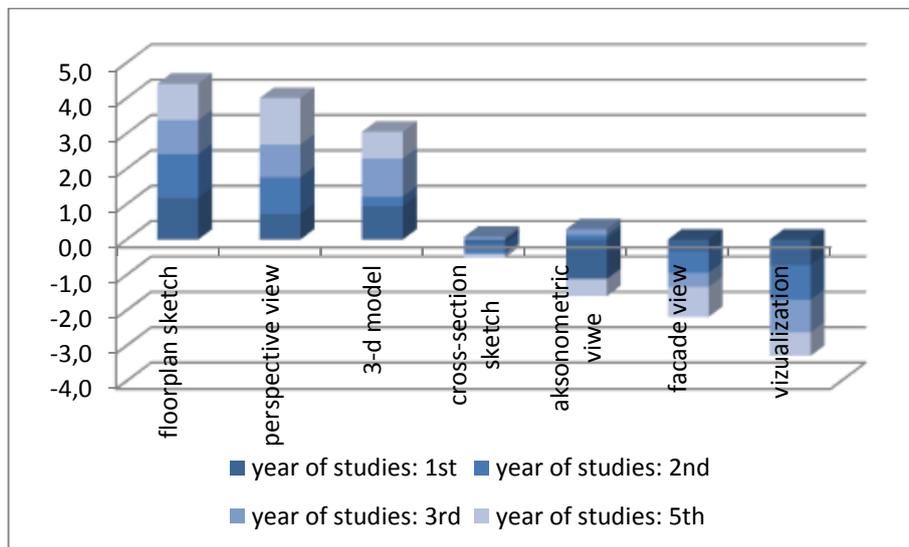

Figure 4. Records of the first concept.

3.5. Form of an architectural object

The question of the form of an architectural object was inspired by the discussion of the role of form and function and their mutual interactions. The aim was to find an answer to the question about the factors influencing architectural form. There have been seven standardized answers to this question – Figure 5. According to the students' answers, the form should: "reflect function" (1.6 points), "be influenced by context" (1,5 points) "be original" (1,2 points) "be innovative" (1.2 points) "be beautiful" (1.0 points),"follow the latest trends" (0.1 points)," be controversial "(-0.3 points). Six standardized responses were approved, the last answer fell into the group of rather not accepted.
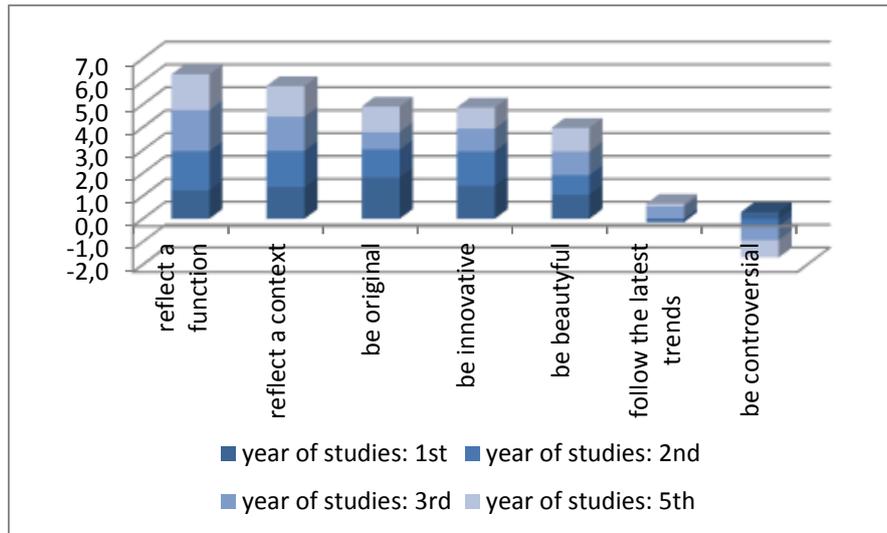
Figure 5. Expectations towards the form of architectural object.

There were relatively large fluctuations of results in this group of responses. Differences in the different years of study were as high as 1.0 point. The relatively most stable answers were the ones declaring context as a key factor in the form of an architectural object.

The least acceptable responses to the question about the factors determining the form of an architectural object are very symptomatic. According to the students, the form an architectural object should be neutral in relation to the latest trends and rather not controversial. Opting for neutral forms may be indicative of the students' high maturity, reflected in rejecting the "trendy" solutions and preferring the analysis of function and context. That might easily be considered a characteristic for pragmatic, honest "Silesian school of architecture", which rejects the fashionable novelties. To justify calling it this way, however, one should find additional confirmations. In question of the ways of looking for concept methods the acceptance of this method was not very large (0.5 points). The answers indicating seeking inspiration among existing buildings was rated on the fifth place after: "free sketches", "analysis of the plot", "analysis of the spatial context" and "analysis of the functional program". This, together with the result of the response to the current question, can confirm the thesis of low sensitivity the students of Gliwice exhibit in terms of the latest trends. To the contrary, the results of the question about the knowledge and skills necessary in architecture showed that the knowledge of contemporary architecture is considered the second most accepted answer. It can be assumed that knowledge of contemporary architecture is needed to not copy existing buildings, but creatively look for new and original solutions, but it's difficult to decide which of the answers is right.

Students definitely rejected the controversial forms of architectural object. Their aversion moreover grows over the time of studies (the difference between the first and fifth year students were up to -1.1 points). Answers of the fifth year students were close to the border of a strong lack of acceptance. There is an additional correlation between the decrease in interest for original forms (see previous questions). This is something to be worried about because it may indicate a growing conformity among students. High school graduates who were full of enthusiasm and new ideas eventually end up afraid of experimenting. Creativity involves nonconformity; such attitude is in contradiction with the main idea behind the architects' training. It seems that this issue requires further study.

3.6. Assessment of architectural design

The aim of the question of the assessment of the architectural design was to define decisive factors in high evaluation of the architectural project. There were eleven standardized answers to this question. Ten were approved, eight of them receiving overwhelming acceptance. Rating list, in order from most acceptable, goes: "creativity and originality" (1.7 points), "clarity of concept" (1.7 points), "clear

strategy of project" (1.4 points) , "aesthetic value" (1.2 points) , "technical correctness" (1.2 points) , "compliance with the building law" (1.2 points),   "completeness of design" (1.2 points), "innovative value" (1.2 points) "beauty of the designed forms" (0.7 points) , "layout" (0.5 points) – Figure 6.
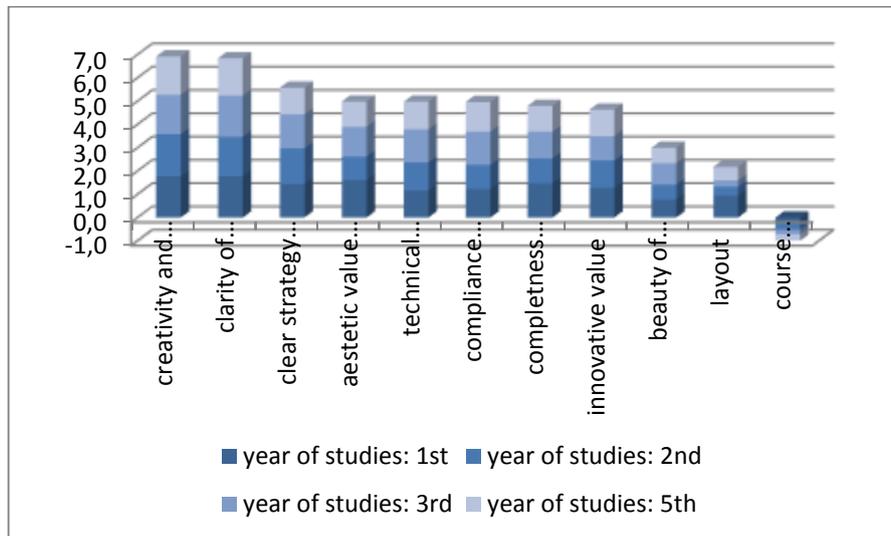

Figure 6. Factors important in architectural design assessment.

First place among the most acceptable answers is occupied by both "creativity and originality" and "clarity of concept". Rating of "creativity and originality" coincides with the high position of this feature in the responses to questions 2 and 6. "Clarity of concept" (one of the teachers' favorite) turns out to be just as important in the students' opinions. The third place, "clear strategy of the search for design solution", proves a methodical, not intuitive approach to design.

The most controversial answer was "the beauty of the designed forms" - remarks added by students pointed out the subjectivity of perception of beauty which makes it impossible to evaluate beauty in an objective way. The responses show a certain disrespect in terms of design layout - it seems that students do not design the layout in a thoughtful way, instead paying attention only to aesthetics of design. The vast majority of students rejected the idea that course attendance should influence the design assessment.

3.7. Perception of architectural design

The list of questions about the characteristics of the project ended with a question about the most important features in the perception of architectural design. This time the list of responses was short and contained only three possibilities – Figure 7. Students did not add any other answers to the standardized list. The first two answers received overwhelming acceptance, the third one - acceptance. The most accepted answer was "the functionality of a building" (1.6 points) then "interesting form of a building" (1.3 points) and lastly "layout and presentation" (0.8 points). Not surprisingly, "functionality" was once again claimed as the most important factor. "An interesting form of a building" is the most important for the first year students; over the years its importance declines. Once again, "layout and presentation" was regarded as weighing, but less important.
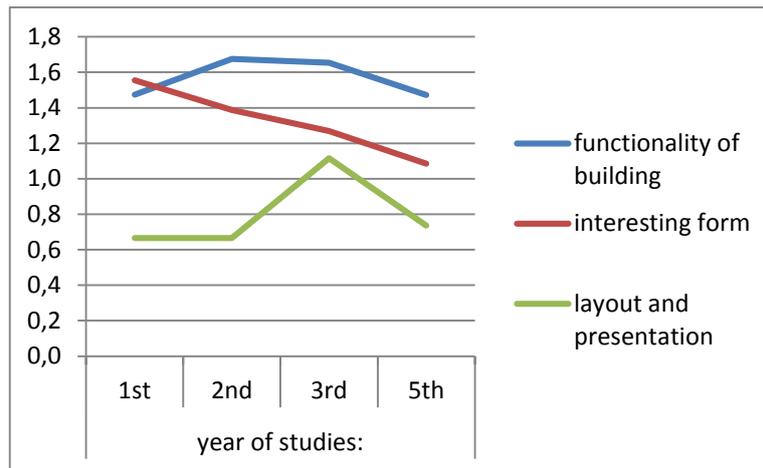
Figure 7. Factors important in design perception.

3.8. Role of an architectural design teacher

One of the questions concerned the way the teacher of architectural design is perceived. Its aim was to determine the students' expectations towards the student-teacher relation. Five out of seven responses received overwhelming acceptance: "stimulate student's creativity" (1.7 points),"inspire self-continence" (1.7 points), "teach design strategies" (1.5 points), "design debugging" (1.5 points), "check project for compliance with the building regulations" (1.4 points) – Figure 8. Two answers did not gain acceptance: "provide students with the concept of design" (-0.4 points) and "provide students with ready solutions" (-0.7 points). The teacher's role is clear - they should be a guide who stimulates creativity, motivates and inspires students to work and be self-contained. Students clearly do not want to play the role of sole "drafters" of the teachers' ideas and concepts. According to the students' opinions, the teacher should encourage and motivate the student to find his own individual designing path.
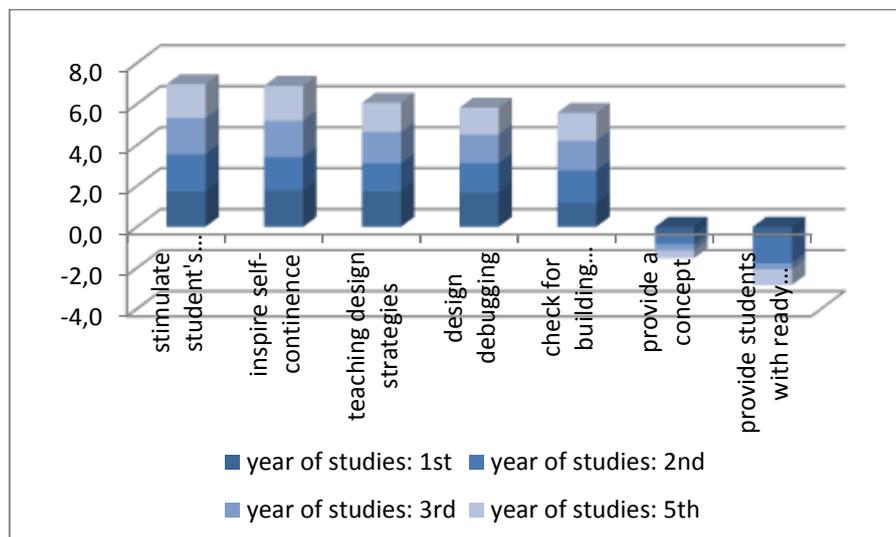

Figure 8. Role of architectural design teacher.

4. Conclusion

According to the analysis of the inquiry results, some general conclusions can be made according to the analysis. The question regarding knowledge and skills needed in architectural design draws attention to a very high rating of the computer skills. The ability to use a computer is already (according to the students) more valuable than knowledge of the methodology and design strategies, knowledge of the history and

theory of architecture and the knowledge of the results of social research relating to the design. The computer fascination may be treated as a kind of childhood illness, but it might as well be a serious indicator of the growing role of computer sciences in architecture.

When asked about the features important in architectural design, the students definitely stressed creativity supported by diligence, perseverance, motivation and talent. Communication skills were ranked relatively low. Students seemed to be oblivious to its role in both the development of the design and its presentation. This diagnosis can be confirmed by the answer to the question about the search for a design concept, where conversations with colleagues were judged unlikely to be used. It seems that the students have a tendency to treat other students mainly as competitors. This should be changed, and much attention should be paid to team work in the future, since virtually every project is a collective piece of work, and requires effective communication at all levels.

The students' reluctance to controversial solutions in responses to the question of architectural form was 'striking. Studies should be a time of experimenting and defining the students' creative personality. It seems that the students move these values away to another time, or even go as far as to drop them out. What makes it even worse is that this is a kind of conformism, which enhances during the time of studies. It clearly effects both creativity and originality, the values the students themselves declared the most important.

In the end, a reflection should be made about the teacher. Their inspiring role is much more valuable than being a technical expertise and a design debugger. It seems that the teacher's personality, their ability to influence the attitudes of students is of great importance; only a distinctive personality can be a genuine authority for the student. The more individual the personality of teachers - the better for the students and, at the same time, for the school. Thanks to good teachers, the school becomes a place where ideas clash and the best arguments win. Neither cutbacks on teachers' salaries nor attempts to transform them into officials in the bureaucratic machinery of education can be the right course in improving the quality of any school.

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