Intersections of content and methodology in education at architectonic schools of the REA net

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ABSTRACT: Dealt with in this article is the comparison of content, methods and forms of education as a way of reaching mutual knowledge about architectonic education. Comparison of these attributes is a basic tool in education. It contributes positively to the field, thereby enriching the education in chosen schools. A suitable way of fulfilling this possibility of enrichment is through an intensive partnership of European Frankophone and Francophile architectonic schools in the Réseau des Écoles d'Architecture network or REA net. The Faculty of Architecture at Slovak University of Technology (FA-STU) in Bratislava is a part of this partnership. Co-operation in an educational area develops through cyclical meetings of associated schools. Co-operation in an area of education is oriented toward content and methodology; on confrontation (in a positive sense) of students' works; the possibilities of the development of knowledge and the skills of students. The aim of the study is to find enriching methodologic and content intersections in education and the creation of co-operative educational space for students and teachers at architectonic schools.

INTRODUCTION

The Réseau des Écoles d'Architecture (REA) net is of an association that aims for a higher level of mutuality in all spheres of architectonic education. The process of architectonic education in the countries that are members of the REA association have many fluid local factors that determine what is valid in education. Content and methodologic aspects of education are the focus of this study. Architectonic education at the given schools is carried out according to differing models and schemes of organisation. It is natural in education that the methods countries adopt in education will differ. However, the aim of this article is to reveal the content and methodology intersections in architectonic education, with the focus on comparisons at Bachelor level within schools.

Comparing education in the REA net requires the choice of schools, which share the same target, but have differing ways and methods for its achievement. The point of presenting intersections in education is to provide inspiration for all the faculties participating. Partnerships between architectonic schools in the REA net create a functional platform that includes organised meetings that deal with current topics resonant in a society, with active participation by students and teachers. Contributing to finding these intersections are common atelier (workshop or studio) competitions and the presentation of results dependent on pedagogical outcomes. The evaluation of results involves the comparison of forms and methods of education in the chosen schools. This is the main aim of finding such intersections in education; they provide inspiration for all participating faculties.

It is essential for the World Institute for Engineering and Technology Education (WIETE) to work as a hub in engineering education, just as the co-operation of schools is important to reaching targets for good education. Thus, the WIETE should be regarded as important for the co-operation of schools in engineering education [1]. This is inspirational for generating co-operation in methodology and for comparing schools, as well as in cases of research and the evaluation of procedures in architecture schools of the REA net.

Three schools of architecture were chosen for this study. These are: the Faculty of Architecture at Slovak University of Technology in Bratislava (FA-STU), Bratislava, Slovakia, and two French schools viz. École Nationale Supérieure d'Architecture de Toulouse (ENSAT) and Ecole Nationale Supérieure d'Architecture de Normandie (ENSA), Rouen. Looking for common intersections, as well as differences shows the direction and consistency of architectonic schools.

EDUCATION, INTERSECTIONS AND COMPARISONS

The level of education of an architect usually is revealed from the description of the professional profile necessary for a potential job performance. The question in this context is to show how to reach this level from the relatively common,

unique aims and quality of the teaching at various schools (it does not concern only the schools of the REA net). Each school has its traditions and its education is built on them; but it also has to reflect the development requirements.

The importance of co-operation, interconnection and intersection in the process of education is also confirmed by the authors Nedic and Nafalski, as well as from other areas of education. Because of the intersections in various disciplines, students are given numerous opportunities to collaborate and to develop their knowledge and skills and, at the same time, to develop a system that showcases their capability, thereby providing opportunities for growth [2].

Contribution of Internationalisation

Internationalisation of education contributes to better preparation of students for work. So, this is the reason why not only the comparison of methodologies, but also the determination of benefits in the models for education is appropriate [3]. In the competitive global economy and environment, states have no choice, but to adjust themselves in order to be more efficient, productive and flexible. To enhance a nation's productivity and competitiveness in the global situation, decentralisation and the creation of a *market in education* have been the two major strategies employed to restructure education [4][5].

Standard education at conventional universities to a large extent neglects the need to reflect on real-life. But, reflecting on real-life issues where there are multiple global challenges, should create a basic healthy axis of university education that is also based on comparisons between individual schools. It is generally known, there is a need to take restorative steps, which would bring nearer the ideal and there is a slow shift in this direction.

However, much more serious is the absence of really innovative, educational programmes. Transdisciplinary and integral forms of education are still an *unknown land*. It is the looking for it and its recognition that is the way out of this complicated, seemingly unsolvable set of problems. Comparison of education can be an impulse for general innovation and it can give a school necessary *impetus.*

Integrative learning as used in engineering design courses is about making connections between academic knowledge and engineering practice, and this requires the active involvement of both student and teacher [6]. A pedagogue is required to master the subject and is also expected to handle educational techniques or methods. A positive attitude to the evaluation of the faculty, the evaluation of education styles and feedback for evaluation, should always serve as a basis for revision or improvement of usually used techniques and education methods. The aim is to prepare complex specialists, who will find their place in an international job market [7][8].

It is not helpful for internationalisation to become a catchall phrase for everything and anything international. Internationalisation needs to have parameters for evaluation and comparison [9]. The view that *mutual values* are a measurable, testable and certifiable concept in organisations is valid also for universities or schools [10].

Looking for a common denominator enables schools to be put on the same level, which makes comparison easier of comparable values (methods, facts, values and content). The reason for comparison is that the level of education is an important part of economic and industrial development of society.

The authors look at similar subjects methodically to look for intersections, so as to compare them. Monitoring can be in set cycles. Monitoring of an undergraduate profile was dealt with by Parasuram et al [11]. Competencies expected from undergraduates are influenced by universal attributes, which should characterise all undergraduates of universities.

However, there are competencies which come from specifics of a particular school. These specifics, if they are proven by practice, are particular to each school [11]. A suitable example is the specifics regarding methods of architectonic design. The REA net association has the aim of looking for common areas and specifics mainly in architectonic design and related subjects.

The engineering design method can be considered a design thinking paradigm to solve any complex problem, because it provides a logical understanding of the design process and is a guide to achieving a solution to the problem [12].

RESEARCH RESULTS

The biggest problem in education for universities (except economic problems) is what and how to teach. This leads to the essential question: what influences the correct choice of methods? Typical attributes for undergraduates of a university including architects are important for the social perception of the given profession. Attributes provide a mechanism, which influences methods and the content of education, and identifies the positives at intersections in education [13].

Research was aimed at the comparison of Bachelor study programmes, because education at this level leaves distinct methodological traces for the next development of education and the personality of a student. For a basic comparison, an analytic letter was prepared of a Bachelor study programme on architecture and urbanism at FA-STU in Bratislava and, on this basis, other evaluations at other schools were unnecessary.

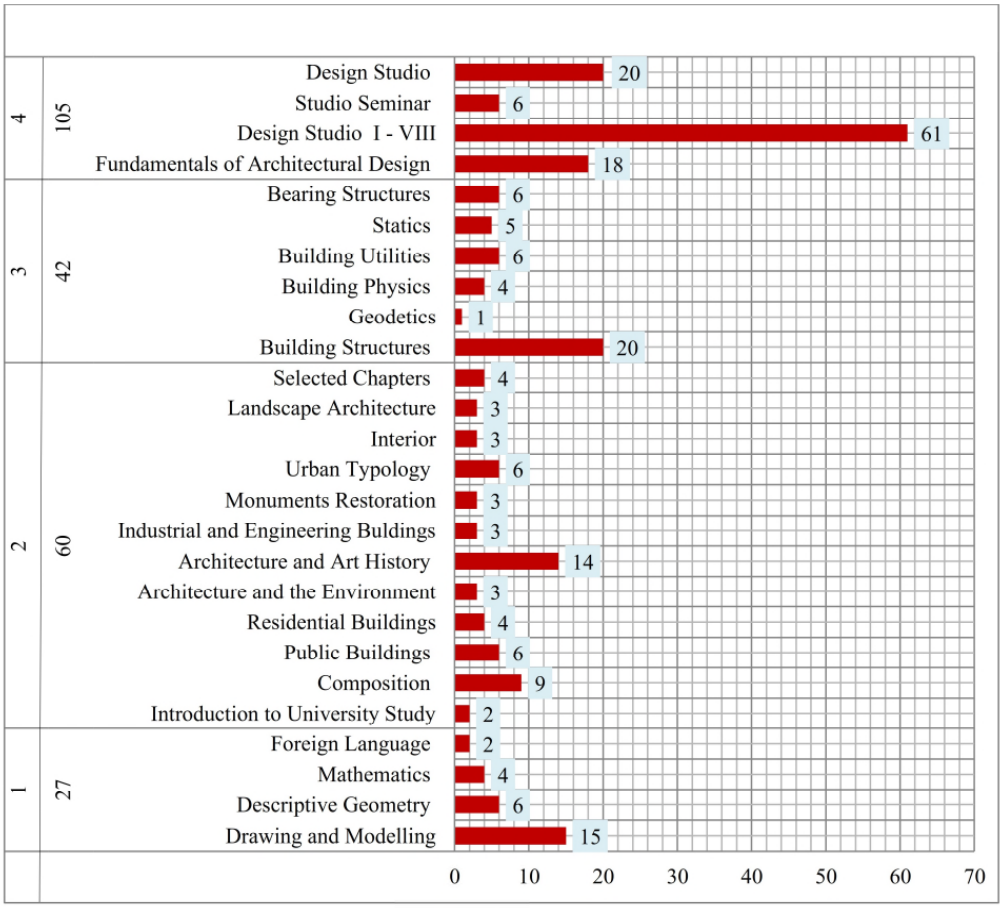

Figure 1: Credit structure of subjects at FA-STU Bratislava.

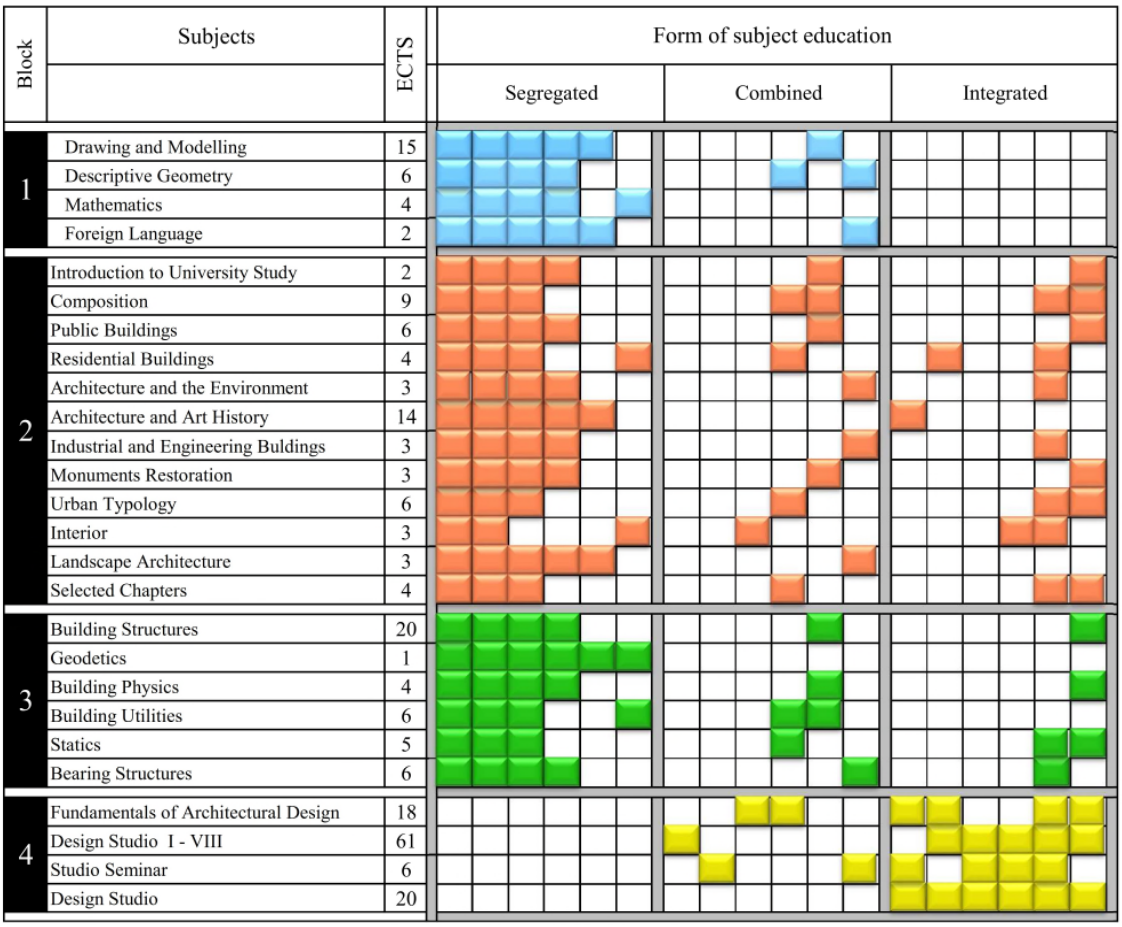

Figure 2: Subject blocks with knowledge from other subjects.

To compare individual schools it was necessary to determine content and subject area. Four blocks of subjects were identified which reflected the content of the education [14]:

1. Subjects of general - theoretical (social) character.
2. Subjects of special - theoretical character.
3. Subjects of structure - technical character with intersection to the subjects of a creative character.
4. Subjects of creative character (atelier of design).

Comparison of subject areas was performed using the same methodology. Comparable teaching was quantified with the assigned number of credits in individual blocks of subjects (see Figure 1 and Figure 2).

The main aim was to create a universal methodological comparative model of education of the given blocks of subjects at different schools, based on characteristic forms of teaching with an indication of the most important application of knowledge in other subjects i.e. integrity of knowledge. Diversity of forms of education works like a mosaic, with traditions of education in the school, needs of local practice, and finally appropriateness for the internationalisation of education. The results of the research can be an inspiration for content and methodological innovations in architectonic education of individual schools.

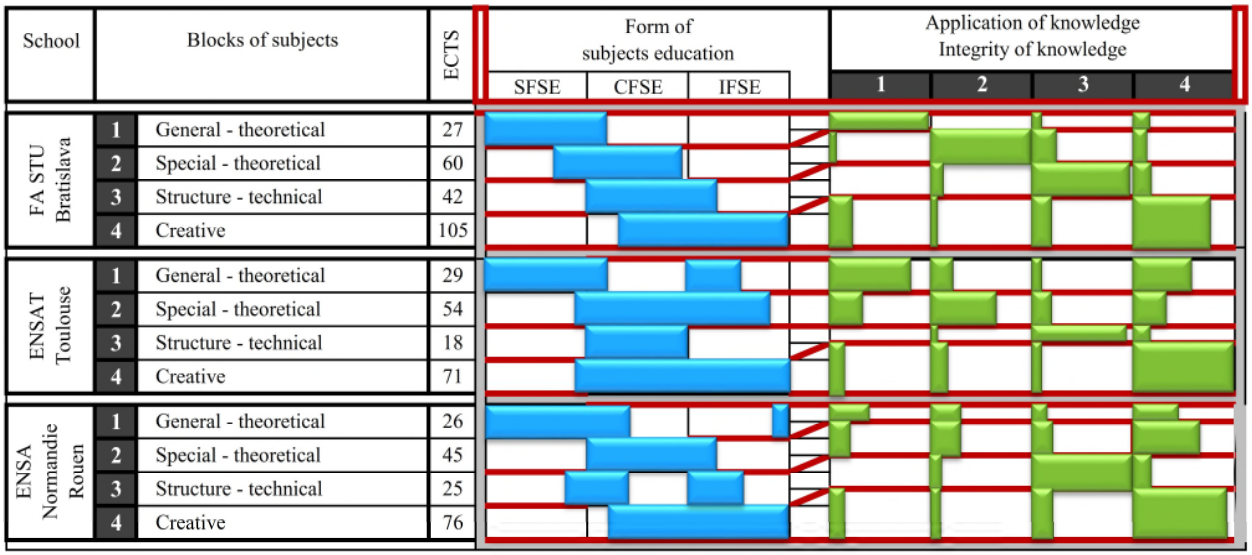

Figure 3: Comparative model of education at three schools of architecture. Four blocks of subjects and an indication of the most important application of knowledge for other subjects.

Based on the results of the research of the comparison of education at the given schools, it can be stated that the REA schools compared apply very different methodological concepts of education. The effort is mutually enriching in the REA association. Based on the results of comparison, it can be stated that in the area of education there are three methodological models applied (Figure 3):

- methodological model of education of the 1st type - SFSE (segregated form of subject education);
- methodological model of education of the 2nd type - IFSE (integrated form of subject education);
- methodological model of education of the 3rd type - CFSE (combined form of subject education).

Model of Education of the 1st Type: Characteristics

The educational model of this type is characteristic of schools with a higher number of students. It can be supposed that teaching is organisationally easier, from the view of time and efficiency. It is a formal type of model and presumes a strong personality at the head of a subject. The content will reflect the complexity of the subject. There is a *diagonal trend* of an increasing level of integration from general subjects to subjects of atelier design to subjects of a creative character. This is a segregated, non-inclusive model of architectonic education based on an additive accumulation of knowledge from individual subjects *related to each other*. It is a classical model, where stress is put on the teaching and the acqusition of knowledge.

The model involves a low number of atelier subjects. It involves a level of conceptual application of design subjects, mainly from the subjects of the first and second group (Figure 2). This model requires a distinct co-ordination as guarantor of the study programme or an institutional co-ordination body. An unanswered question is the level of sustainability of this model, given the recent trend of a decreasing number of students. A response may arrest the level by maintaining the educational traditions. The FA-STU Bratislava mostly involves this type of education, even though recently, it also has been toying with the third model.

The advantages of the model are:

- guarantors have responsibility for the subjects chosen for teaching;
- the possibility of a deeper presentation of topical problems and knowledge in individual subjects;
- autonomy in the teaching of the subject.

The disadvantages of the model are:

- fractured teaching, through time and personal demands;
- note the statement of Vlado Burjan of the Comenius Institute in Bratislava, which is titled: *Artificial and unsuitable division of study into subjects is the sin of a school.*

Model of Education of the 2nd Type: Characteristics

An educational model of this type is characteristic of schools with a lower number of students. However, this statement is not axiomatic. It can be applied well with a lower but constant number of teachers, but does not reflect the full complexity of study content. It is a tailormade model for topical areas of design that are partially supported by multidisciplinary education. Integration is the essence of the model. Stress is put on subjects of design (ateliers) and not on partial results and procedures. Specific technical content of study is a system of units of ateliers, with basic principles from supportive disciplines. The model is characteristic of a high level of content compatibility with atelier education. It requires a lower level of institutional co-ordination of study and opens a space for individuality and more liberal teaching.

An example of this model is presented in Cracow University of Technology. It presents a teaching strategy consisting of implementing technical subjects in a curriculum and accepting an integrated mode of teaching. More technical subjects are involved in the interdisciplinary course, *An Integrated design*, and co-operation is the most important feature of the curriculum [15].

An integrated model is represented in the REA net mainly by French schools. The integrated model of architectonic education is based on a topically organised system of teaching in terms of solved problems in the atelier topic. The system itself is created by internal and inclusive educational relationships. It could be likened to the famous model of education based on the principles of constructivism, which started to develop at the end of the last century.

The advantages of the model are:

- content flexibility in education;
- rationality in personal organisation;
- time and content integration of study for both students and teachers.

The disadvantages of the model are:

- a low level of content complexity of knowledge presentation in the study programme;
- higher demands for the co-ordination and organisation of study, if there is a larger numbers of students.

Model of Education of the 3rd Type: Characteristics

The third type is seen as the ideal hybrid of the educational systems. The combination provides flexibility of content, as well as adequate block-subject teaching. It provides a level of individuality in the pedagogical process and, last but not least, it is also a model which has the flexibility to respond to trends, dynamics and has the potential for internationalisation. As well, it supports the application of tasks from practice. The type of task suitable for application in this pedagogical process fulfils the requirements of topicality, and provides a bridge between the theoretical and practice. The connection of teaching and research to the work place is one of its most important aspects [16].

The advantages of this model include:

- flexibility;
- rationality;
- topicality;
- pedagogical and organisational compromise.

The disadvantages of the model include:

- a more complicated organisation of the teaching;
- a lower level of reflection in the number of students in the year (see Figure 4).

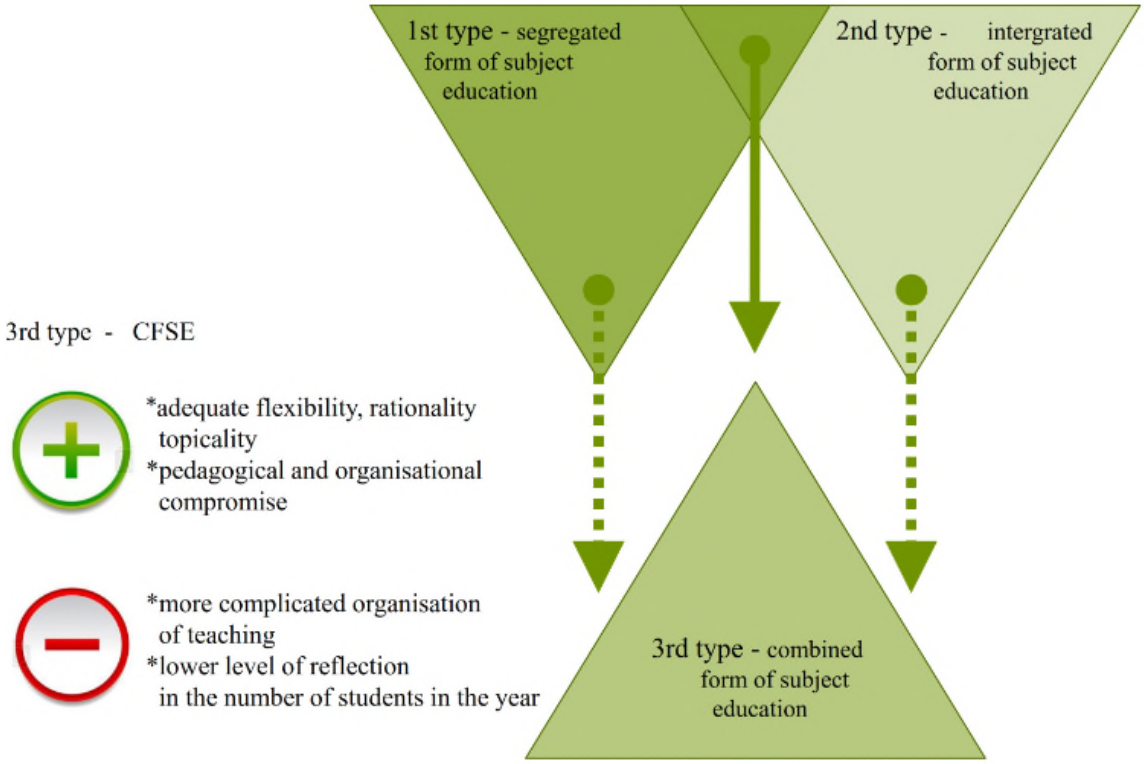

Figure 4: Combination of the three educational models.

CONCLUSIONS

The question of comparing the educational methodologies at individual schools may be viewed as not essential. But inspiration is important in education including architecture, which only strengthens the aims of this study. Looking for the best methods including from one's own teaching enables the development and improvement of education. It is an inspiration recognised by Steven Jobs who opined that he and his team would *expose [themselves] to the best things that humans have done, and then try to incorporate them into something unique of their own* [17].

For a thorough paradigmatic change, personal change also is needed because the beliefs of the supporters of the previous models are often non-flexible. A new paradigm is acquired only very slowly, partially or not at all. The physicist Max Planck showed that *…a new scientific truth does not win by persuading its objectors to open their eyes, but because its objectors will leave and a new generation will grow up which will accept this truth* [18].

Comparison in education brings new and innovative models, which may not have features of a breakthrough. Their application is mostly simple, it is usually time-consuming and fully accepted only after demonstrating results in education. Or it will reflect the thought of American engineer, professor and management expert William Edwards Deming: *We do not have to change, survival is not compulsory* [19].

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