

## Anatomy Teaching – Application of Innovation Methods in Higher Education

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*It is our duty to do something more to rouse the interest to science in young people, not only to stimulate them for professional scientific work but also to make them informed citizens [1].*

Dr Philippe Busquin  
*European Commissioner for Research*

As a fundamental science, Human anatomy represents an important part of the scientific basis of medicine. It is a fundamental medical subject that requires a prolonged study, and huge terminology knowledge, which consists of an essential knowledge perimeter: terminology training; an interdisciplinarity; a suggestiveness; and specific inventory. The use of innovative didactical methods, such as discussion in small groups, didactical and role-playing games, phantoms practical education, multimedia education etc. in Faculty of Medicine of Sofia University "St. Kliment Ohridski" is presented. The innovative techniques, consisting of development and application of new pedagogical methods include new teaching technologies for education optimization, increase in effectiveness and motivation of the students. Creating a motivation for enhancing the effectiveness in the teaching process results in an increased scientific interest and creates a novel view of the medical education.

*Key words:* human anatomy teaching, innovation methods, inquiry, medical education.

### Topical Issues

A globalization in medicine and a tendency of integration of fundamental and clinical science and practice are observed lately [2]. A tendency of application of innovative educational methods as problem based education, as well as an education in small groups, distant education, continuing education through whole life etc., is recommended [2-4].

As a fundamental science, human anatomy represents an important part of the scientific basis of medicine. Topical issues regarding innovations in teaching medicine and in attaining knowledge depends on developing a system of effective teaching and education methods. That requires the learner to be placed in the middle of this process and change in teaching and education by introducing innovations to be made.

Team working requires an interdisciplinarity, high level training, and introduction of virtual training methods. By using effective didactic technologies the combined work of teachers and students enhances motivation, rouses interest for science and creates a new vision of the education as a whole. According to the specific educational benefits, modern innovation methods, like discussion in small group, didactic and role-playing games, phantoms practical education, a virtual teaching, etc. are used.

The innovations evaluate the ability of the student to analyze all factors maintaining the learning process. By introducing and experimenting with new didactic technologies, the teacher is aiming at more flexible management of educational process. It can be achieved by significant improvement of all participants in this process roles and functions.

## Results and Discussion

Human anatomy is a fundamental medical subject that requires prolonged study, and terminology knowledge, which consists of:

- essential knowledge perimeter;
- terminology training;
- interdisciplinarity;
- suggestiveness;
- specific inventory.

Specific characteristics of anatomy teaching:

1. Information repeatedness is the most burdening without correlating with the segmentation and the levels of the results obtained.
2. The levels of the results obtained are always lower than expected even though consistent motivation efforts.
3. The visual associativeness creates achievement increase capabilities.
4. Lack of motivation may create a sense of dissatisfaction and worsen the results, so that they will not depict the efforts made and the teaching approach.

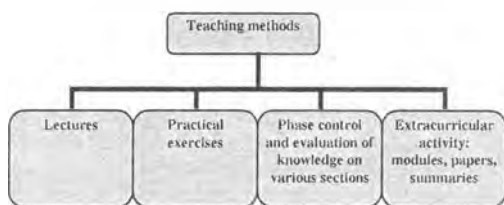


Fig. 1

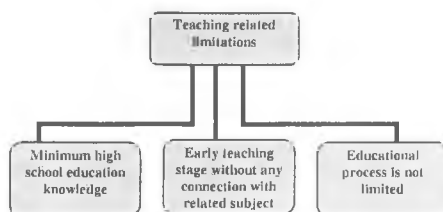


Fig. 2

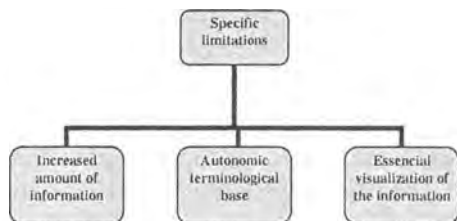


Fig. 3

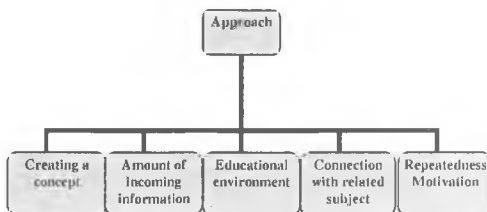


Fig. 4



Fig. 5

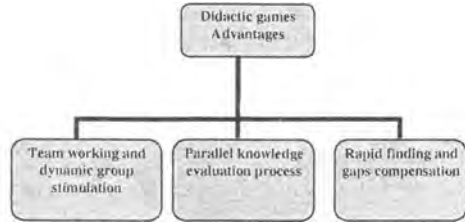


Fig. 6

Did the subject "Human anatomy" represent an interest for you before the beginning of your education?

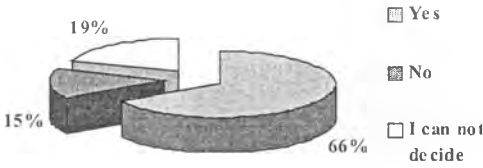


Fig. 7

Would you join in extracurriculum activities such as student science groups, experimental research etc., during your studies?

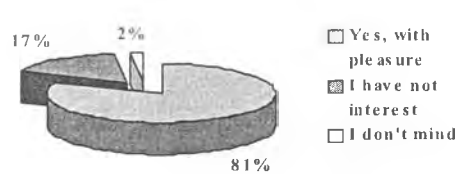


Fig. 8

For getting basic anatomy knowledge classical forms of teaching including lectures, practical exercises, phase control and evaluation of knowledge on various sections, and extracurricular activity, like modules, papers, and summaries are used (Fig. 1). However, the increase in amount of information as well as the need for an enhancement of students' motivation requires new didactical teaching methods. Due to the early stage of anatomy training during medical education, there are also some teaching related limitations (Fig. 2). Along with this, there are some specific limitations (Fig. 3).

The successful learning of anatomy science involves full analysis of some important education factors and requirements (Fig. 4).

According to the specific teaching goals, the use of innovative didactical methods such as discussion in small groups, didactical and role-playing games, phantoms practical education, multimedia and virtual education etc. (Fig. 5) leads to numerous advantages in learning (Fig. 6).

The object of the present study is an anonymous inquiry on first course students in the Faculty of Medicine of Sofia University "St. Kliment Ohridski". The questions of the inquiry are attributed to the results from innovative methods application. The motivation level and the effectiveness of human anatomy teaching are evaluated. Part of the questions is illustrated on diagrams (students' answers are presented in percents):

1. Did the subject "Human anatomy" represent an interest for you before the beginning of your education? (Fig. 7);

2. Would you join in extracurriculum activities such as student science groups, experimental research etc., during your studies? (Fig. 8);

3. In your opinion were the innovative forms of education (didactical games, role-playing games etc.) beneficial or you prefer the classical methods of education? (Fig. 9);

4. Did the innovative method selected by us (didactical games with anatomic cards) return to your expectations in the learning process? (Fig. 10);

5. Did your interest in the subject "Human anatomy" increase after application of innovative methods of education? (Fig. 11);

6. What was the time past for the applied game? (Fig. 12).

In your opinion were the innovative forms of education (didactical games, role-playing games etc.) beneficial or you prefer the classical methods of education?

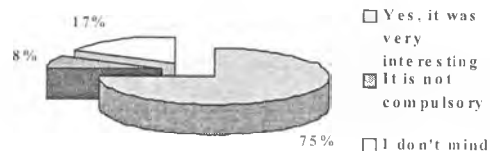


Fig. 9

Did the selected from us innovative method (didactic game with anatomical cards dominoes type) return to your expectations in the learning process?

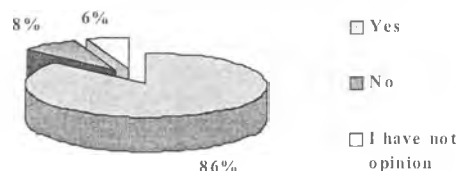


Fig. 10

Did your interest in the subject "Human anatomy" increase after application of innovative methods of education?

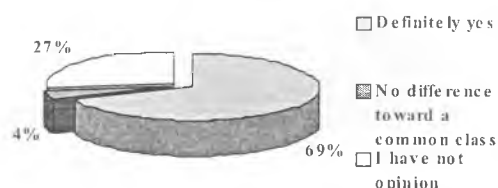


Fig. 11

What was the time past for the applied game?



Fig. 12

The inquiry shows that the application of didactic games in the anatomy education:

- creates favorable teaching environment;
- assists for more pleasant and effective teaching;
- enhances students' willingness and motivation for active participation in teaching process;
  - stimulates students' personal activity, as well as their ambitions for learning and presentation;
  - stimulates the students to look for original and irregular decisions for the different situations;
  - has an emotional effect;
  - stimulates the thinking process;
  - leads to a formation of long lasting interest and high motivation in the student and subsequently, to high quality of the education.

## Conclusion

Creating a motivation for higher effectiveness due to application of innovation approach supposes an increased scientific interest and creates a novel view of the education process for the students in the Faculty of Medicine of Sofia University "St. Kliment Ohridski" during human anatomy teaching. The innovative techniques, consisting of development and application of new pedagogical methods include new teaching technologies for education optimization, gives an untraditional approach for evaluating the learning process. This allows a rapid finding and gaps compensation, and assists for education optimization and effectiveness. This leads to better and long lasting learning of the teaching material.

## References

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