

INSTRUMENT OF COORDINATION OF SOCIAL GROUPS FOR EFFECTIVENESS INCREASE IN SMART EDUCATION' PARADIGM

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Abstract: When an enrollee becomes a student he gets into a new social group which is more educated and highly-cognitive than the one that he had at school. But as soon as he became a member of a more cognitive group This paper deals with the questions of practical realization of coordination of social groups for the increasing of the level of their education. The prototype of mobile application was developed under the concept of smart education.

Keywords: highly-cognitive environment, lowly-cognitive environment, cross-platform application, educational environment.

Introduction

Didactic Constructivity is an education method which allows, with up-to-date means, to draw an individual “educational trajectory” or an “individual road map” for any student. It is obvious, that in this definition the most important part is education method. In broader sense, educational method is the ability of an educator or of android (electronic) systems to react and predict (forestall) the reactions of both students and their closer (micro-) and further (macro-) environments during the education communication. Individualization in the educational process consists in building up personal learning programs. Every educational institution should move to implementing personal educational programs, which would include, beside learning activities, every student’s personal parameters. Individualization means that a student is an active chooser of their own learning content [1],[2].

Highly and lowly cognitive small groups

Considering a big group of people of a defined society it can be mentioned that the society is divided into highly-cognitive groups and lowly-cognitive groups. When getting into the environment of highly-cognitive groups lowly-cognitive groups aim to socialize and find their place in the new environment with the help of getting new skills, knowledge and opportunities [3], [4], [5].

Such process occurs in the university environment. When an enrollee becomes a student he can often experience difficulties with some subjects of educational

program. It happens due to the fact that he moves from the lowly-cognitive environment into highly-cognitive. These two environments differ in the amount of information and knowledge they give to a student. And a new member of highly-cognitive environment needs help and opportunity to adapt himself in new conditions. Very often he cannot get this help from professors due to the fact that they do not speak the same language and do not understand each other correctly.

However, he can get this help from another source - tutors. Tutors are people who contribute to a more rapid adaptation of new members of society, people who are able to hand over their knowledge to the students using understandable language.

Smart tutor

The main functionality of support system of the mapping of personal study pathway in EEE from the perspectives of role model should include adaptation functions, such as [6], [7]: the functions for supporting student learning process in active electronic educational environment like mapping of personal study pathway including to support of the different level of selection (planning of the educational process according to the choice and execution and control of the strategy) and the functions of interactive support of tutor's work are tools for detection and construction of systematic linkages between courses and competencies and tools for monitoring space of the course that is manifested as a relation between actual knowledge and the results of didactic processing of such knowledge for a certain specialty, which are synchronized with the applied aspect (practical utility).

Spectrum of functions was realized in the prototype: the output of the timetable of additional classes, an output of information about the tutor, editing of the database of tutors, editing of the timetable database, news tape with the changes in timetable, a form for asking additional classes and the topics which were not understood.

Besides communicative functions an application has an analytic part. Based on the principle that the greatest number of students attend classes to analyze the topics which are the least understandable the conclusions can be made about the work efficiency of the tutor and about his competences in different fields.

This application is an analytic instrument not only for the research of the educational student environment but also for the research of the environment of teachers and tutors.

Environment research

One of the authors of this article, Sergey Filatov, is a tutor of additional classes of lineal algebra and analytics geometry for the freshmen in the university during the last two years (22 weeks). He made a research. The focus group was more than 150 students. Two strategies were chosen as strategies of training: a strategy of democratic training and a strategy of totalitaric training. This is due to the fact that lowly-cognitive groups are close to traditional society by their nature of perception. A form of government in such societies is close to dictatorship. People can not

be distanced from the influence of power, the society is strictly differentiated by social and class sign. In contrast speaking about progressive system there is a tendency toward democracy and saving of personal freedom, positioning of every group member as equal and social influence on power.

Table 1. Strategy of training

	Totalitarian strategy	Democratic strategy
Interaction	One-way	Two-way
Discussions character	Clarifying questions	Debates
Timetable	Lessons are assigned at the time appointed by the teacher	Lessons are appointed at the request of students
Plan of lessons	Made and published in advance	Is formed during the lesson.
Rules	Are published before the beginning of the training session in advance and require strict obedience	Are formed in process of classes taking into account individual features and context
Type of teacher	The image of severe, pedantic and arrogant man	The image of open, good-natured and devoted to his high ideals man
Type of the impact on the audience	Direct instructions for actions	A recommendation based on the experience with a sample
The formation of the cult of personality	Imposed by tutor and is supported during classes	Made by students and supported by tutor in the spare time
Spare time of tutor	All questions are analyzed at the set time	It is possible to address questions to tutor at any time

Table 2. The results of totalitarian and democratic strategies.

Parameters of strategy	Totalitarian	Democratic
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Number of people who came to the first lesson	Big	5
Behaviour	Responsible, with a few remarks, the silence was quickly restored	The remarks on discipline were made from the audience
Speed of learning	Fast	Slow
Problems with tasks with changed conditions	+	-
Necessity of reduction to common algorithms	+	-
Basic part and methodology	learned quickly	learned slower, required thorough analysis and understanding
Attitude to the subject	It is an obligatory subject	extracurricular event
Duration of contacts	short-run	long-run
After classes activities and joint leisure	-	+

Mixed strategies of training

The result of the research allowed to make an analysis of the educational environment.

The research showed too that in the early stages the classes need to be arranged according to the totalitarian strategy becoming more and more democratic. This is due to the fact that Group T (totalitarian) was educating quicker on the first stages learning template methods of solving while a lot of freedom was given to Group D (democratic) to express themselves and feel themselves with the interaction with the tutor.

It should be noticed that in any case the presence of a tutor and applying of one of the strategies conduces to the adaptation of the group while an old structure which excludes the tutor out of the educational environment turns out to be less effective. Such view has quantitative indexes which are average marks for the considered subject for the last 5 years.

Table 3. The progress of students of NRU HSE, business-informatics, subject - lineal algebra

	2010-2011 2nd half-year	2011- 2012	2012- 2013	2013- 2014 (Group D)	2014-2015 (Group T)
Annual average mark (1-10)	4,2	6,09	4,92	5,3	4,65
The number of students at the beginning of the year	152	114	144	221	188
The number of unsatis- factory final marks	77	25	59	40	13
Students that stably vis- it additional classes (60% from the overall amount of classes)	0	10	24	32	45
The number of "10" for the subject	0	0	0	3	0
The number of unsatis- factory final marks from all the marks, %	50	21	40	18	6

The analysis also shows that in spite of big number of unsatisfactory marks Group D has indexes of absolute maximum compared to Group T which has a lower rate of number of incompletes, A strategy of gradual weakening of control is also acceptable despite the fact that weekly analysis of audience figured out than Group T had become more inclined to asking questions and trying to find the truth rather than Group D. At a certain stage no discussions about the taught course were required for the latter. In Group T a serious discontent began to rise due to the fact that a level of cognitive skills of respondents had increased, they began to better understand the material, questions which had to be clarified appeared from them but there were answer. In contrast Group D had higher level of discontent at the beginning when the material did not have clear borders and required permanent clarification.

Conclusion

To sum up there is a way to socialize lowly-cognitive groups in the conditions of highly-cognitive environment: tutors who are often just more successful mem-

bers of lowly-cognitive groups. These tutors can help their group to develop the level of their cognition. This is proved by some examples of informal institutions of additional education in the university environment.

This paper shows that foregoing theory was realized in practice - mobile cross-platform application for additional courses. The application allows to automate relationships between tutors and students. Designing a smart environment is, first of all, based on adapting and filtering the educational environment to fit a student's cultural-cognitive and competence profile. Thus, we can see, that on the 1st level it is essential to develop cultural intellect of the participants of educational communication. The 2nd level involves designing the EEE, with its own cultural intellect and capable of presenting knowledge according to a competence profile. The 3rd level means composing an adaptive - in some cases invariable - educational content (courses' semantic maps, minimal thesauri for disciplines). The researches showed that mixed strategy is optimal for the increasing of common educational level. It allows to improve general level of students education (Group T) forming flexible thinking to allow them to achieve exceptional results.

Based on the behavior of the groups for communication between students and tutors was developed a special application which not only performs a function of notification about the classes but also is a powerful analytic instrument for defining general background of classes efficiency of tutors and a level of teaching of professors of the university.

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