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International Journal of Recent Advances in Multidisciplinary Research Vol. 05, Issue 05, pp.3849-3852, May, 2018

# **RESEARCH ARTICLE**

# BALL-RATING SYSTEM FOR INCREASING THE EFFECTIVENESS OF THE EDUCATIONAL PROCESS

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### ARTICLE INFO

## ABSTRACT

*Article History:* Received 14<sup>th</sup> February, 2018 Received in revised form 27<sup>th</sup> March, 2018 Accepted 24<sup>th</sup> April, 2018 Published online 30<sup>th</sup> May, 2018

### Keywords:

Information systems, Educational process, Information society, Computer technologies.

# INTRODUCTION

Modern information technologies find the most diverse application in various subject areas of human activity (Software & Systems Software products and systems, 2014 and Peter Mell, 2016). Education is such a field of human activity where the most advanced should be used: - the latest achievements of science and technology, both in the humanities and in natural disciplines and spheres of human activity (https://vk.com and Ivanchenko, 2014). Information systems, computer technologies, social networks have recently covered many aspects of the life of civil society and offer new perspectives and opportunities for people. In education, distance technologies have recently begun to be used, gaming methods have helped to increase the interest of students and students to study, etc (Gaming As A Service, 2016). In the Graduate School of Press and Media Industry over the past few years, the information system, known as the "matrix," has been successfully applied. The main goals and tasks that this information system solves: (Allen, 2012 and http://cmnews.ru/ 2014/08/08/istoriya-razvitiya-kompyuternyx-igr/).

- Increased interest in the learning process by both students and teachers;
- Motivation of students to monitor academic progress during the academic semester;
- Increase of control over students' progress on the part of teachers, department and dean's office;
- The validity of assessments of students' knowledge during the intermediate control of academic performance during the semester;

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The development of information technology offers many innovative methods that promote the development of educational technologies. Smart students use these technologies for their own purposes. Visiting classes, from the point of view of students, can easily be replaced using remote computer technology. However, experience shows that the presence in the class is a positive factor for improving the quality of the learning material. The offered by us ball-rating system, gives an opportunity to increase students' interest in attendance at training sessions and promotes their direct participation in classes within the walls of the university

- The reasonableness of assessments of students 'knowledge during the final control of students' knowledge at the end of the semester;
- Verification of students' knowledge of compliance with the declared competencies in the funds of evaluation tools developed by the teachers of the department in accordance with the curricula of the academic disciplines;
- The reasonableness of the assessments in the testing of students for the correspondence of residual knowledge to the declared competencies during the accreditation procedure of the university or institute.

The main interfaces shown in the figures show the capabilities of the MATRIX IC.Work with the system begins with the login to the system. Teacher for work in the "Matrix" must register in the department of information systems of the University and get a login and password for logging in (authorization process). After entering the system, the teacher enters the menu shown in figure 1. For the teacher and students, it is important to assess the knowledge with the help of a rating-rating system. As we have said above, all student work and students' knowledge are evaluated at all stages of the educational process: attending lectures, working during practical and laboratory classes, performing independent works and projects, etc. An important stage is the control points for certain sections of the discipline, which represent an intermediate certification. Figure 2 shows the menu, which shows all the disciplines and groups in which the teacher is conducting the lessons. Each discipline is associated with a particular group or groups. After entering this menu, there is an immediate opportunity to enter information on a group of students on the days when one or another type of training took place.

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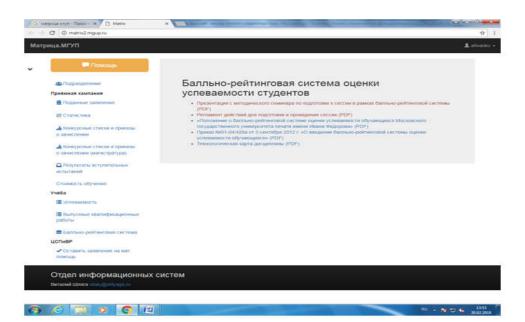


Figure 1. Menu "matrix"

| C @ matrix2.mgup.ru/shidy/disciplin                                    | 103   |  |                         |  |  |  |
|--|-------|--|-------------------------|--|--|--|
| рица.МГУП  |       |  | 1 albear                |  |  |  |
| Помощи   | Ба    | лльно-рейтинговая система  |                         |  |  |  |
| di Domazinieren  | + 0   | обавить дисциплину   |                         |  |  |  |
| Приемная хампания  |       |  |                         |  |  |  |
| Pagamente assesses   | Texy  | uper fice  |                         |  |  |  |
| ИГ Статистика  | Дисц  | иплины текущего семестра   |                         |  |  |  |
| <ul> <li>Конкурстия списки и приказы</li> <li>о заучистични</li> </ul> | 29167 | АДМИНИСТРИРОВАНИЕ ИНФОРМ СИСТЕМ  | 🛙 бнести данные         |  |  |  |
| А Конкурсные списки и приказы  |       | ДцисБ-4-1, 2017/2018 учебный год, осенний семестр  |                         |  |  |  |
| о зачислении (магистратура)  |       | Ведущий преподаватель: Иванько Александр Федорович   | <b>С</b> Редактировать  |  |  |  |
| Persentation accommension  | 29000 | Архитектура информационных систем  | Bierc Te garment        |  |  |  |
| ercmantareak or cynerconsertate  |       | ДцжсБ-2-1, 2017/2018 учебный год, осенный семестр  |                         |  |  |  |
| Стонысть обучения  |       | Ведущий преподаватель: Иванько Александр Федорович   | С Редактировать         |  |  |  |
| Учеба  | 20999 | Архитектура информационных систем  | Внести данные           |  |  |  |
| I Stomanworth  |       | ДЦисБ-2-2, 2017/2018 учебный год, осенний семестр  | the count of particular |  |  |  |
|  |       | Ведущий преподаватель. Иванько Александр Федорович   | С Редактировать         |  |  |  |
| Перетусяные казляфикационные<br>работы                                 | 29003 | Архитектура информационных систем  |                         |  |  |  |
| Валлино рейтинговая система  |       | Динсб-2-3, 2017/2018 учебный год, осенний семестр  | 🖬 Внести данные         |  |  |  |
| ЦСПиВР   |       | Ведущий преподаватель: Иванько Александр Федорович   | С Редактировать         |  |  |  |
| <ul> <li>Оставить завручние на мат.</li> </ul>                         |       |  |                         |  |  |  |
| nowciza  | 29017 | Вычислительные машины, системы и сети  | 🗊 Внести данные         |  |  |  |
|  |       | ДЦатБ-3-1, 2017/2018 учебный год, осенний семестр<br>Ведуций прегодаватель. Иванью Александр бедорович | G Pegastyposats         |  |  |  |
|  |       | orth the dependence assessed and phones.   | С недактировать         |  |  |  |
|  | 29018 | Информационные технологии и управление качеством   | П Внести данные         |  |  |  |
|  |       | ДТукб-3-1, 2017/2018 учебный год, осенний семестр  |                         |  |  |  |

### Figure 2. The rating system

| C @ matrix2.mgup.nu/itudy/discipline                                  | s/29000/ctv | ckpowte          |   |  |         |
|---|-------------|------------------|---|--|---------|
| ица.МГУП  |             |                  |   |  | 1 aller |
| Помощь  | Ар          | хитек            | тура информационных систе   | ем дцисБ-2-1                             |         |
| -25 Подразделение   | 10110       | MALINO BORM (DVC | getzenam 😸 Pachecanne 🖸 Pegarhijosatu gecuntorej 🔺 Ctygentur                      | · O Marine                               | -006    |
| Приёмная кампания   |             | Дата             | Тип занятия   |  | _       |
| 🗎 Поданные заявляние  | 250465      | 06.09.2017       | В Праклическое (лабораторное) занятне   | И внести результаты                      |         |
| HI Craractura   | 250455      | 07.09.2017       | CP Resupers   | Внести результать:                       |         |
| <ul> <li>Конкурсные сляски и прекази</li> <li>в зачислинии</li> </ul> | 250405      | 14.09.2017       | Ω Леция   | <ul> <li>Bisectal petyristana</li> </ul> |         |
| Конкурсные слиски и присазы<br>о занистични (малистратура)            | 255345      | 19:09:2017       | В Практическое (пабораторное) занятие   | Инести результаты                        |         |
| 🗖 Результаты вступительных  | 250477      | 28.09.2017       | Классификация Информационных систем   | Brechi petyristans                       |         |
| остыстаний<br>Станолость обучения                                     | 250455      | 05.10.2017       | Ω Designs   | Biecta provintana                        |         |
| Y185a   | 255471      | 11.10.2017       | В Практическое (лабораторное) занятие   | / Breche petymetana                      |         |
| III >сонванность  |             |                  |   | · more in persistantia                   | -       |
| Выпускные квалификационные работы                                     | 255485      | 12.10.2017       | Ω-lieuµs  | <ul> <li>Внести результаты</li> </ul>    |         |
| Паллию рейтичновая система  | 250477      | 25.10.2017       | Практическое (лабораторное) занятие   | Внести результаты                        |         |
| цспивр  | 250460      | 26.10.2017       | O /Teoquei  | 🖌 Внести результаты                      |         |
| <ul> <li>Оставить заявление на мат<br/>номощь</li> </ul>              | 250478      | 25.10.2017       | <ul> <li>Характеристики и параметры элементов инфомационных<br/>систем</li> </ul> | <ul> <li>Внести результаты</li> </ul>    |         |
|   | 250461      | 02.11.2017       | Ω Tecapes   | Внести результаты                        |         |
|   | 255473      | GE 11 2017       | Практическое (лабораторное) занятие   | Внести результаты                        |         |
|   | the second  | 09.11.2017       | 0.000   | Внести результаты                        | (7337)  |

Figure 3. Form for entering the results of students' work for all types of activities

| TPI | ица.МГУП   |                                  |  |  |  |  | 2. attvanko      |  |  |
|-----|--|----------------------------------|--|--|--|--|------------------|--|--|
|     | Поданные заявления   | систем                           |  | 1 A  | S.   | 2 N  |                  |  |  |
|     | 4If Статистика   | 12 Назад но в                    | сем занятили   |  |  |  |                  |  |  |
|     | <ul> <li>Конкурсные списки и приказы</li> <li>о зечисления</li> </ul>  |                                  |  |  | Budepurte chain Custo                                    |  | ности результаты |  |  |
|     | <ul> <li>Конкурсные списки и приказы<br/>о зачислении (малистритуря)</li> </ul>                                |                                  | Группа   | ДцисБ-2-1  |  |  |                  |  |  |
|     | Результаты вступительных<br>испытаений   |                                  | Дисциплина   | Архитектура информационны  | х систем   |  |                  |  |  |
|     | Стоимость обучения   |                                  | Дата занятия   | 26 октября 2017  |  |  |                  |  |  |
| 13  | Учеба  |                                  |  |  |  |  |                  |  |  |
|     | I VEDEBBEMOCTI-  |                                  | Тип занятия  | Контрольная точка «Характер  | истны и параметры эпеме                                  | нтов инфомационных сис   | C.T.dt#d.w       |  |  |
|     | 🔳 выпусяные взалификационные   |                                  | Минимум  | 11   |  |  |                  |  |  |
|     | работы   |                                  |  |  |  |  |                  |  |  |
| ľ   | работы   |                                  | Максимум   | 20   |  |  |                  |  |  |
|     | a deservation and a second | 27063                            | Максимум<br>Бирина Анастас   |  | 14 kc 20   | Редактировать  |                  |  |  |
|     | 🚔 Баллыкі-рейтинговая система  | 27063                            | 2  | ия Витальевна  | 14 in 20<br>16 m 20                                      | Редактировать<br>Редактировать                                   |                  |  |  |
|     | <ul> <li>Баллыно-рейтиятовая система</li> <li>ЦСПиВР</li> <li>Оставить заяаление на мат.</li> </ul>            |                                  | Бирина Анастас   | ия Витальевна<br>ий Максимович   |  |  |                  |  |  |
|     | <ul> <li>Баллыно-рейтиятовая система</li> <li>ЦСПиВР</li> <li>Оставить заяаление на мат.</li> </ul>            | 27558                            | Бирина Анастас<br>Вопосарь Джитр   | ня Витальевна<br>ий Максимович<br>в Серхеевна  | 15 mm 20   | Редактировать  |                  |  |  |
|     | <ul> <li>Баллыно-рейтиятовая система</li> <li>ЦСПиВР</li> <li>Оставить заяаление на мат.</li> </ul>            | 27558<br>27548                   | Бирина Анастасі<br>Вопосарь Дмитр<br>Гуплева Виктори                                     | ия Витальевна<br>на Максимович<br>п Сергеелия<br>п                                       | 10 mm 20   | Редактировать<br>Редактировать                                   |                  |  |  |
|     | <ul> <li>Баллыно-рейтиятовая система</li> <li>ЦСПиВР</li> <li>Оставить заяаление на мат.</li> </ul>            | 27558<br>27548<br>27546          | Бирина Анастасл<br>Вопосарь Джитр<br>Гуллева Виктори<br>Деревялия Паве<br>Журавлев Влади | ия Витальевна<br>на Максимович<br>п Сергеелия<br>п                                       | 10 mm 20<br>10 mm 20<br>11 mm 20                         | Редактировать<br>Редактировать<br>Редактировать                  |                  |  |  |
|     | <ul> <li>Баллыно-рейтиятовая система</li> <li>ЦСПиВР</li> <li>Оставить заяаление на мат.</li> </ul>            | 27558<br>27548<br>27546<br>27550 | Бирина Анастасл<br>Вопосарь Джитр<br>Гуллева Виктори<br>Деревялия Паве<br>Журавлев Влади | ня Витальёвна<br>на Максимович<br>п Серхевна<br>п<br>панр Борисович<br>ита Александрович | 107 eer 20.<br>107 eer 20.<br>117 eer 20.<br>116 eer 20. | Редактировать<br>Редактировать<br>Редактировать<br>Редактировать |                  |  |  |

Figure 4. Results of intermediate certification (control point No. 4.)

| G (sergende orgin - Renner 2 1 ) 🗅 Mathie | - × (10           | L   |               |                   |                  |               |
|---|-------------------|---|---------------|-------------------|------------------|---------------|
| ← C @ matrix2.mgup.ru/study/group/        | 057/progress/deco | pine/29007/term+18year+2017   |               |                   |                  | 4             |
| Матрица.МГУП                              |                   |   |               |                   |                  | S. Internet   |
|   |                   |   |               |                   |                  |               |
| •   |                   | с экзанена, заданный преподавалелен. 5<br>и расчете ипотовой оценки по дисциплини |               | а формула         |                  |               |
|   | 3                 | 0 A Balva sa coverty o 58 A Balva sa s  | n.samen       |                   |                  |               |
|   |                   |   | Нужно набраты | на резамени и бал | лах (по данным н | a 21.02.2018j |
|   |                   | Hwa   | Отлично       | Хорошо            | Удовл.           | Неуд.         |
|   | 27522             | Цагаронцанили София Георгинана  | 85 900        | 55 84             | -                | 0 54          |
|   | 27545             | Смирнова Мария Алексеевна   | 85 100        | 55 - 84           | -                | 054           |
|   | 27365             | Солдатенков Максии Игоревич   | 87 100        | 57 96             | 55 - 56          | 054           |
|   | 27537             | Сокольникае Данила Александрович  | 91-100        | 0t 90             | 55 - 60          | 054           |
|   | 27528             | Мурдацева Наденда Ильдаровна  | 91-100        | 6190              | 55 - 60          | 054           |
|   | 27542             | Русин Тимофей Андреевич   | 97 - 100      | $67 \sim 96$      | 55 - 66          | 054           |
|   | 37548             | Путяева Виктория Сергоевна  | 97            | 67 - 96           | 00 - 66          | 0 ~~ 54       |
|   | 27563             | Бирина Анастасия Витальевна   | 99 100        | 69 - 96           | 55 - 60          | 054           |
|   | 27558             | Bonocapa Daverpeik Maxoneosev   | 100 - 100     | 70 - 99           | 55-69            | 0-54          |

Figure 5. Progress in the discipline "IP Architecture" of the group DTSISB 2-1

| 🔓 seronal ann - Roice - 🛪 📋 Mario | */                       |   |               |                   |                     |               |         |
|-----------------------------------|--------------------------|---|---------------|-------------------|---------------------|---------------|---------|
| ← C © matrix2.mgup.ru/study/pro-  | iji/9057/jirograsi_18kii | pine/29000/term+1dgear=2017   |               |                   |                     |               | ☆       |
| Матрица.МГУП                      |                          |   |               |                   |                     |               | Laborio |
|                                   |                          |   |               |                   |                     |               |         |
| ^                                 |                          | с экзамена, заданный преподавалетем. 5<br>и расчете апотовой сценки по дисцеплини |               | 48 (DRDMytta      |                     |               |         |
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|                                   |                          |   | Нужно набрать | на экзамене в бал | лах (по данным н    | a 21.02.2018) |         |
|                                   |                          | Hun   | Отлично       | Xopowe            | Удовл.              | Неуд.         |         |
|                                   | 27522                    | Цагареншанты София Георгиевна   | 85-100        | 55 - 64           | -                   | 0 - 54        |         |
|                                   | 27545                    | Смирнова Мария Алексеевна   | 85-100        | 55 — 84           | -                   | 0-54          |         |
|                                   | 27365                    | Согдатение Максим Игоревич  | 87 - 100      | 67 — 86           | 55-56               | 0-54          |         |
|                                   | 27537                    | Сокольников Данила Александрович  | 91 - 100      | 61 - 90           | $55 \rightarrow 60$ | 0-54          |         |
|                                   | 27528                    | Мурдашела Надежда Ильдаровна  | 91 - 100      | 61 - 90           | 55 - 60             | 0-54          |         |
|                                   | 27542                    | Русни Тимофей Андреланч   | 97 — 100      | 67 — 96           | $55 \rightarrow 66$ | 0-54          |         |
|                                   | 27548                    | Гулнева Виктория Сертневна  | 97 - 100      | 67 - 96           | $35 \rightarrow 66$ | 0-54          |         |
|                                   | 27560                    | Бирина Акастасия Витальевна   | 99 - 100      | 69 — 90           | 55 68               | 0-54          |         |
|                                   | 27558                    | Вопосарь Динтрий Маконитенч   | 100 100       | 70 - 99           | $55 \rightarrow 60$ | 0-54          |         |

Figure No. 6. Statement of achievement with the recommended estimates

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At any time during the semester, the student can see the result of his work in the matrix (Figure 4). At the end of the semester, the resultant student progress sheet appears on the discipline: figure 5., which shows how many points each student has scored during the semester. In figure № 6. A list with recommended grades for all students who were admitted before the exam is shown. From this list it can be seen that some students have already scored such a number of points, which corresponds to an excellent rating and such students can be boldly posed as "automatic", because the result of their work during the semester, intermediate certifications convincingly show their conscientious work and quite worthy knowledge. Figure № 3 shows that all types of classes are taken into account: lectures, practical classes, laboratory works and control points for certain sections of the academic discipline. Presence and work on lectures are counted as "wasnebyl"; work in practical classes is taken into account on a five-point system of assessments, intermediate certification (control points) is taken into account on the scored points from 11-satisfactory. up to 20-excellent. As a result, during the academic semester, the student picks up a certain number of points. For admission to the exam, you need to score 55 points. The maximum score (100 points) can be typed by the student himself or received on the exam, taking into account the points that the teacher can put during the exam.

### Conclusion

Experience in operating the matrix information system shows that both students and teachers positively assessed the introduction of this information system in the educational process. Students have the opportunity in real time to observe their progress in learning and draw the appropriate conclusions. For teachers, working with this information system is an additional burden and it takes time to enter data, to account for the work of students at all stages of the learning process. However, we state that the introduction of this information system or similar motivates students to actively work at all stages of the educational process. As a result, students take exams in disciplines, where this system is introduced to higher grades and this improves the quality of training and promotes mastering all the declared competencies.

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