

face" education costs 30 thousand dollars, while the price for distance learning is 2 thousand dollars. This fact emphasizes the role of a teacher in shaping future graduate's personality. It is no coincidence that leading universities are hunting for the teachers who are popular among young people.

The positive effect of a teacher is rather essential as it helps to shape professional consciousness of a specialist who is now of great demand.

The foregoing leads us to the conclusion that it is essential to:

- make the borderline between such two terms as competency and competence;

- distinguish in engineering programs practical/instrumental competence;
- introduce "commitment to quality" as an obligatory competence;
- apply the elements of the active specialization acquisition system (SASA) in education process.

The study presents the examples of competence models development for bachelor's and master's programs. It also proposes the methods to plot the competence "tree" and compile the competence "passport".

The current study has revealed the need to revise the education process in order to ensure high quality of engineering training and effective development of graduates' competences.

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Measures Contributing to Publishing Activity of Faculty Members

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Today, publishing activity is one of the priority indicators in department faculty activity. In all international ratings the significant share of the integral indicator (from 30 to 50 %) ranking universities in their positions accounts for the evaluation of research activity performance. It is worth noting that most of department members of Russian universities face a number of challenges in developing their publication career due to insufficient level of foreign language and information technologies knowledge. The article presents the actions that should be taken in order to stimulate publishing activity of faculty members and increase their citation index.

Key words: publishing career, publishing activity, article, citation index, h-index, stimulation of publishing activity.

THE BACKGROUND

At present academic teaching staff (ATS) is the most valuable asset of any university as the efficiency of academic performance depends directly on its qualification, quality, and proficiency which is closely connected with university competitiveness [1, 10].

As is known, one of the key indicators of university performance is its teaching staff's publishing activity. Publishing activity is a result of an author's or a team's research activity or some corporate author's research activity realized in the form of research publication, for example, a research paper, article in a multi-author collection, report in scientific conference proceedings, an author's or multi-author book, research report [6]. In some cases, publication is a mandatory requirement, for instance, when applying for research grants or research fellowship, rewarding academic degrees and titles, certifications, as well as election of winners in various contests for proficiency [11].

In addition, in some educational and research institutions a number of positions require some publications as

a crucial indicator of staff's rating score or performance evaluation. In present condition, the presence of submitted articles is not enough – career of any teacher or researcher depends also on their ability to publish their research results in the leading peer-reviewed journals included in the international Web of Science and Scopus databases [9, 11].

Not only teaching staff is interested in regular publications, but also institution authorities, since the number of publications is a key indicator in an institution accreditation for research activity, its rating evaluation among other educational institutions, tender application for research projects, and in some other cases [8].

It should be noted that, in spite of significance of the given indicator in a university teachers' performance, there is a lack of articles in the leading domestic journals dealing with the problem of teachers' publishing career development. The given aspect is consistently considered in the articles by P.G. Arefiev [5, 6].

QUALITY OF RESEARCH ARTICLES

One of the main laws of research activity formulated by Robert Merton and



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stated the “publish or perish” principle manifests itself everywhere and results in the situation when researchers are involved in a true publication race spending tons of paper and set “records” in the number of research articles [11]. In this case their quality is reduced in the pursuit of quantity of articles. However, it is the quality of articles, not their quantity, which is the indicator of a researcher’s portfolio.

A researcher’s articles that are in demand and cited among the scientific community constitute the basis for calculation of integral indicator of research activity, i.e. **citation index**. First of all, specialized periodicals are interested in high quality of the published articles, as the value of a journal **impact-factor** which defines its status and popularity among the scientific community depends on the number of references to the articles published in it [9].

As is known, in all international ratings the significant share of the integral indicator (from 30 to 50 %) ranking universities in their positions accounts for the evaluation of research activity performance in the form of research articles published in the leading peer-reviewed journals [5]. Besides, one needs to have high rate of citation for those articles, i.e. considerable share of a university in the international rating is acquired by both performance and quality of research, namely, publishing activity of its teaching staff.

To reach the higher score and be included in the international ratings is only possible due to the significant number of frequently cited articles and high-quality research product. There is a strict review system in the high-rating editions, so, second-hand articles or, all the more, plagiarism cannot be published here.

Hence, one of the major problems of modern Russian universities is an increase in research, which means publishing activity, i.e. increase in the number of works published in leading research periodicals, as well as increase in their citations [5, 12]. The Russian Index of Scientific Citation (RISC) is a basic information database for

research data of the majority of Russian universities. The following indicators are used to analyze the publishing activity [4]:

- efficiency – the general number of published articles;
- quality of an article – the general number of references per one publication;
- performance – Hirsch’s index (h-index).

To achieve the international level, take a reputable place in the educational market the Russian universities have to intensify their research activity and increase the quality of research product [5]. Among the priority measures contributing to knowledge and scientific resource capitalization one can distinguish the following:

- development of strategy in promoting the university research products at the national and international levels;
- design of the program for increasing the university publishing activity including forms of merits for actively publishing employees;
- selection of leading journals where the teaching staff’s research results are recommended to be published.

To perform these tasks there must be qualified personnel with the appropriate competencies, namely [6]:

- a good command of Foreign language at the level sufficient for communication and writing research articles and reports;
- skills in working with electronic resources and experience in arrangement and management of personal knowledge. To have the staff of such a level, it is necessary to perform long-term and systematic work.

In the absence of such personnel it is appropriate to hold trainings and seminars for the teaching staff to upgrade their qualification. In particular, one needs to organize the upgrade course for research activity managers, research and teaching staff, library workers to develop

information competencies as well as to teach them to efficiently search for and work with electronic information and analyze personal research results and the university outcomes in general.

Institution and publishing activity management is a complex and multi-aspect process. Therefore, one can solve the problems concerned with the growth of research activity performance only in systematic aspect. Separate, spontaneous measures without a system can only result in insignificant and short-term effect. Hence, the system of measures should be focused on development of performance reproduction that would guarantee a steady growth of university indicators.

To provide systematic organization, it is necessary for a university to have qualified research staff. University can maintain high publishing performance by introducing innovation which is closely connected with science and research development. The development of highly qualified research staff is possible by means of upgrading its qualification and acquiring “competences of wide application” [8].

ARTICLES AS A BASIC FORM OF SCIENTIFIC PUBLICATION

Scientific publications – abstracts, articles, monographs, methodical manuals – are the basic results and one of the crucial conditions for research activity performance. Publications are referred to those internationally recognized indicators that evaluate a university teacher’s research performance. Judging by the RISC data, high publishing activity of university ATS does not always increase its citation index proportionally [7]. This fact shows that many publications are likely to contain information irrelevant to anybody, without any research novelty, or, perhaps, the articles are published in proceedings, which present no interest for scientific community.

The advance in science is known to be based on exchange of information. In this case a publication is a reliable indicator of research product quality expressed in

knowledge units [11]. The first and simplest approach to evaluate research outcomes was the general number of the works published, but, unfortunately, this number cannot be a measure of knowledge quality which it contains. Many proceedings are not housed even in university libraries and not enjoyed by large readership. Notwithstanding, the given approach still remains the most common one for evaluation of a researcher’s, team’s, or laboratory’s potential [7].

A researcher’s career is strongly influenced by the number of his/her publications. The scientific community believes that the list of publications proves a researcher’s performance. In this case it implies that all of them are of high quality. To increase the reliability of this premise to some extent, the list is often divided into “articles in the peer-reviewed journals”, “ordered works”, “proceedings”, and other categories [8].

It should be stated that the bulk of presently published articles is just modification of previously written papers or devoted to the analysis of existing theories [11]. However, the key task of research journals is to promote the original ideas. The journal has to be involved in promotion of new ideas, but not in publishing article, where some known ideas are specified or some insignificant transformations are introduced into the initial concept. Such articles just demonstrate the fact that they do not always contain the original conclusions, but, virtually, can present the comments on other researches’ work. As a rule, “the life time” of a journal article equals 10 years, whereas “the life time” of a monograph is usually limited to two years.

Creative articles of “scientific masterpieces” origin form the level of international achievements and **demonstrate the research potential of an institution, presence of infrastructure and staff capable of making discoveries and breakthroughs at the international level** [13]. The fact that the articles immediately attracting attention of scientific readership

are affiliated to a definite institution reveals that it has **creative staff capable of developing and implementing the "breakthrough" ideas**. The articles of "medium international level" demonstrate **the general high level of the institution research, progressive research advance and recognized research leaders inside the organization – independent promising researchers and research teams**.

There are different forms of presenting research in the form of abstract, conference reports, proceedings, articles, reviews, and monograph, however, the most common and representative one among the scientific publications is article. The other forms of publications are either distinguished by large volume (monograph), therefore, rarely published or are not informative enough such as abstracts or proceedings [8]. Articles presenting analytical evaluation or review of existing approaches to the solution of a definite research and/or practical problem are also quite acceptable for the research journal structure.

INFORMATION SKILLS NECESSARY FOR A MODERN AUTHOR

To correspond to the contemporary research level, teachers, researchers, post-graduates, and doctoral students are to acquire new information competences connected with searching techniques and processing of relevant and retrospective publications on a selected research topic as well as production, promotion, and evaluation technologies of research results. To estimate the quality of new knowledge reproduction, it is necessary to process a significant volume of previously published information. Modern researcher has to develop a capacity of navigating in the cyberspace of one's research sphere, be able to efficiently search for and process research information [5].

It should be noted that in all international and national citation databases the same condition is formulated for the authors: different versions of an author's surname spelling can cause the development of several profiles of one and the same author

which would include his/her articles, if the surname coincides with that of the profile. Therefore, all research citation databases have opened special interfaces for the authors – author's profiles [6]. The key problem of author's profile is to provide an opportunity for the author to edit the data on his/her publications. The author can see the whole list of his/her works identified by the system under his/her name, point out different versions of his surname to the system, and include those publications that are not automatically included in the list.

To track the publishing indicators – the number of published works, citations, Hirsch's index and other parameters, the author should know and be able to work with the tools of monitoring and outcome evaluation of his/her research activity.

The most efficient way of increasing citation is to intensify a university's research activity. But when solving the problem of citation one can face some tactic errors made by both authors themselves and universities in this sphere the correction of which would allow for a university to improve its scientometrical indicators.

The open databases of many universities show that most of ATS, among whom there are Dissertation council members including even Dissertation council chairmen who are to define "a research image of university", is not registered in RISC and does not publish anything for years. Moreover, they have 1, 2 or 3 h-index that is appropriate only for early career scientist [7].

To improve the situation in citation index and university rating, it is necessary to change the authors' tactics, for example, to take a number of measures [6]:

- first of all, it is necessary to register every publishing researcher and teacher in RISC;
- authors registered in RISC have to carefully consider their list of publications.

RISC includes all publications with some delay. Usually, when author often publishes his/her works, each author has more publications than he/she has in RISC,

[7]. It is quite possible for the authors, who now have "zero" publication in RISC, to have them actually be issued, but they are not included or shown in RISC. In fact, RISC registration on the same day improves the scientometrical citation indicators of both author and university. It is conditioned by the fact that the initial data of publication are not always precisely written when registered the materials in RISC. There can be a mistake in an author's surname or initials, article title etc. In this case, publications are included in the category of "unattached" ones or attached to another author with similar surname or initials.

To prevent this, every author should regularly track the registration of his/her publications, add the missing ones, and correct the mistakes. Such work with his/her personal data in RISC allows the author to specify and improve his/her scientometrical indicators [7].

A screenshot of his/her personal webpage of the official RISC site can serve as a documentary evidence of an author's publishing activity reflecting it fairly in all indicators and in aspects.

International publishing activity reflects the level of national science development in comparison with other countries, especially in the sphere of fundamental research where other results but publications are not expected. Publishing activity management is a rather complex, multi-factor problem which cannot be solved only by administrative methods or resolutions. In this case a systematic approach is applicable as it takes into account many aspects and the result can be achieved by the integrated systematic work, the effect of which is usually long-term.

High research outcomes, particularly, in the forms of publications, can result in sharp increase in university indicators. It depends on the developed research base of an institution, efficiency of research work or, in other words, availability of previously performed research, i.e. **the level of research fund development**.

THE ACADEMIC WRITING UPGRADE COURSE

As is known, rather a limited number of specialists know foreign language professionally, i.e. at the level of free reading of original sources. Therefore, the level of submitting articles in foreign scientific periodicals in Russia is still extremely low. The number of Russian authors who can write research publications including articles in English is even lower [6].

To increase the quality of educational programs and ATS publishing activity, it is necessary to solve the problem of language competence. For this purpose most of Russian university ATS should have an access to the appropriate full-text and bibliographic databases, electronic libraries and achieves of the leading foreign and domestic editions to learn the latest achievements in the world and national science and upgrade their competencies in accordance with the present state of knowledge [4, 5].

To overcome the obstacle and increase university publishing efficiency, one should organize a center of specialized language training in universities. In this center ATS is to develop skills required for writing articles and other types of publications in foreign language to publish them in the international research journals taking into account specific nature of research sphere and definite scientific journals. In addition to specialized language training, the potential authors are to be taught in selection and evaluation techniques of the journals, where they are going to be published. Hence, the problems of upgrading courses and growth of university ATS language competence can be solved.

It is of interest that in Great Britain there was an experiment in teaching upgrading in the sphere of information technologies that revealed the so-called **"the lost research generation"**, which was referred to the university researchers and teachers of older generation poorly informed about the perspectives and merits of information

competences, skills in searching for and working with on-line information sources, i.e. ignoring their competitive advantages as teachers of the new research generation [6]. In Russia, "the lost research generation" includes not only university ATS and researchers of older than 60, but also significant number of younger specialists. It is explained by the fact that those researchers do not search for scientific articles in the Internet, but use only printed editions. Moreover, the opponents of electronic journals and books often read only those editions where their articles are published. For example, "Bulletin" of the university can be a basic source for their reading.

CITATION

The value of research is known to be defined by its results, the relevance of which depends on its demand and "surplus" value obtained. The demand and value, in their turn, are influenced by the sources where the research results have been published as well as how the results have been cited by the research community [13].

The key criterion for evaluation of research relevance, efficiency, and performance is citation, i.e. the number of references, which have been cited in the articles in the given research sphere published during a definite data selection period [9]. Frequent publication citation shows the relevance of performed research and its recognition by the research readership. In fact, this factor is a performance indicator [4].

Citation index demonstrates the number of references to a researcher's articles in publications of other researchers. This feature is sure not to be an absolute indicator due to various objective and subjective reasons, but the index is accepted in all European and American universities as one of the most important factors influencing the results of competitive selection for university teaching vacancies. Citation index of a researcher or university witnesses, at least, two factors.

First, it reflects the relevance and value

of the performed research in the spheres, where definite experts or research teams are involved. If a researcher publishes a large number of articles, which are not cited, it, as a rule, means either low research level or lack of research community's interest in the discussed problem. Second, to some extent citation index reflects the rate of research community's recognition of a definite researcher's contribution to this or that scientific problem solution, serves as an evidence of researcher's work priority and relevance. The general citation index can add a significant value if authors publish great number of articles, though not so often cited [12].

In addition, it is noteworthy that due to the capacity of modern information technologies citation index is an ever-improving technique of quality evaluation of the published research results. High citation index indicates that new information in published articles is in demand by the scientific community.

In this case, in spite of being ever-improving (for example, h-index, and journal impact-factor), citation indexes, have some "innate" drawbacks [8]:

- the relevance of published results cannot always be accepted and correctly evaluated by the scientific community;
- scientists can quickly adapt to the system by using self-citation or mutual citation;
- citations do not always mean a positive estimation of publication. The article can be cited to criticize it or point out an error.

For example, researcher publishing his/her scientific results in English has much more possibilities to be cited than publishing them in Russian. But if a publication is focused, first of all, on the Russian readership, it is preferable to publish it in Russian.

Using citation indexes it is suggested that the higher the quality, relevance, and importance of a definite publication, the oftener it will be cited in the scientific

literature. The presence of researchers having high citation index in a university demonstrates **high efficiency and performance** of university research activity in general. High citation indexes are sure to be evidence of researcher's active work, but the values of his/her results for science and technology can be determined by indexes only approximately. It is particularly difficult to apply them for comparing researchers' results working in different branches of science or in sufficiently different conditions. The range of numerical index values significantly differ when using different systems and for different disciplines.

It can be underlined that straightforward application of indicators for making management decisions, especially those connected with finance or personnel would inevitably result in decreasing personnel motivation and using indirect means. It is no longer in doubt that the citation indexes of the Russian universities striving to be placed in the top 100 world leading universities will grow in the nearest years, but it is not due to research activity intensification, but because of increased attention to this problem and ever-growing pressure of university rectorate [12]. It is not bad, of course, since this process will promote, to some extent, the Russian scientific prestige at the international level and desire of the university researchers to position themselves among the foreign colleagues.

It should be noted that low and low-quality citation is a chronic disease of Russian researchers, who do not possess skills in proper presentation of their research results in the attractive and beneficial form to promote themselves and their research results [5]. Russian researchers often publish their works in the low-ranked domestic and foreign journals, when the quality of the editions do not promote, but sometimes prevent from recognition of their credibility among the specialists [6]. Therefore, the articles of Russian authors often remain unrecognized

and unexploited in comparison with high-quality foreign scientific periodicals and, hence, are condemned to be low cited and underestimated. Therefore, it is not quite appropriate for the author to submit articles in the journals of low level as the list of the researcher's work should include publications in highly ranked journals.

To achieve the maximum citation level is not a simple and short-term problem. There are some cases when article can be numerously cited during a short period of time if it deals with extremely urgent for the given discipline topic [12]. However, high citation cannot be of long-term, and such a work will be often cited at most.

The typical Russian authors' mistakes include their making the same references that have already been used by the previous researchers, i.e. make reference to the reference. In this case they do not cite some other significant work and often do not consider in detail the articles which they refer to in their publication or make general conclusion about the work based on just an abstract, especially if the article is published in foreign language.

I know from my personal experience that many university teachers rarely refer to modern books and articles from the current issues of the foreign journals. It suggests **the absence of ATS's citing culture** and high concentration of authors on themselves. Hence, the number of articles in domestic journals exceeds significantly the number of foreign ones, especially in the editions with high impact-factor.

To increase the citation index in universities, one should track the references to its ATS working in the same research sphere more thoroughly. In many publications there are often not enough references to the experts' works on the considered problems, which can be used to track **the state of problems and the results achieved**. Absence of sufficient citations can give rise to the idea of the author's superficial research and does not give possibility to track sources, history, and perspectives of the research problem

solution.

The current state is partially explained by the simple reasons:

- insufficient level of most researchers' and teachers' foreign language knowledge;
- lack of competence in using Internet resources;
- absence of many leading foreign journals in the libraries or their arrival with considerable delay.

Every researcher is sure to have a complete list of personal publications published within the whole period of his/her research activity both in the country and abroad in the database. Besides, there should be complete data on the authors of the most significant publications in their research institutions that are the development centers of the given research sphere. The researcher should keep in touch with current publications as well as know whether similar articles or articles on closely related topics have been published.

It is necessary to pay attention to the issue date. If sources cited by an author are of 50 years old, it would be difficult to submit his/her article, as the problem he/she considers is not perspective [11]. The authors' failure of finding sufficient sources to be included in the references demonstrates the fact that they do not follow the tendencies in development of research problem in the sources. In case if other researchers are not interested in the given problem, it is unlikely to be a perspective area.

THE NECESSITY TO DEVELOP THE PUBLISHING CAREER OF UNIVERSITY ATS

It is known that it is rather difficult to submit an article in the international highly-ranked journal that has index in the international bibliographical databases such as Web of Science or Scopus, if an author does not have any experience in submitting articles to some Russian journal, i.e. to be successful in the research at the international level there should be definite author's career tested in the Russian

journals [4]. It is impossible to write an article even of "a middle international level" without publishing experience in the Russian periodicals [13].

Decision about submission should be taken solely by authors taking into account the ideas contained in the article. Preparation of research article should be based on authors' desire to bring the results of the performed research to wide research community, demonstrate his/her competence and proficiency and gain the colleagues' recognition. Thanks to publishing the research results an author or a team secures the priority for the discovery of new properties or regularities, solution of research problem or development of new technology. Publications lay the ground for cooperation and communication among the scientists [9].

At the start of writing research article a researcher has to follow a number of rules that allow him to provide high quality of his work to be accepted in a definite scientific edition and, will further be in demand, i.e. read and cited by the research community. The first thing a researcher should think of is whether he/she should publish his/her results. For this purpose he/she has to answer the following questions [11]:

- is there enough facts on the research problem to gain the interest of professional readership as a result of publishing the article;
- to what extent do the materials and methods, obtained results, and drawn conclusions correspond to the set goals and objectives;
- to what extent are sampling, processing and analysis methods used in the research appropriate, whether the conclusions correspond to the results obtained.

If the author can make a reliable conclusion about sufficient quality and volume of collected data, about the relevance of the tasks set, methods used and results or conclusions obtained, he/she may start writing a research article.

To effectively communicate his/

her publications and develop personal publishing career an author is to have a clear idea of modern scientific communication system, defining his/her own place in this system. **A researcher is to know where, what, and how it is advantageous for him/her to submit**, for example, personal research article – in the Russian journal or participate in writing multi-author monograph or allow the article for free access in the Internet.

Young teachers have to be explained that they are to enhance their professional competency, be inspired by development and realization of successful personal publishing career. In fact, list of publications is a cumulative base for author's achievements that can be efficiently developed all his professional life long. The publication list demonstrates clearly whether the author has achieved significant results in his/her career or not.

Certainly, university teacher is to be an expert in his/her research area as well as possess definite skills i.e. be familiar with current literature, competence in the sphere of management of personal knowledge, project, and time and know at least one of the foreign languages at the level sufficient for communication with foreign colleagues in real and virtual research environment as well as writing publication in foreign language [6].

Hence, ideally any university teacher has firstly to be a **researcher in the subject area that he/she teaches** [1]. One needs to understand that **without science there cannot be education capable of contributing to economic modernization** [1, 3]. Therefore, the necessary conditions for development of research in university should be maintained.

At the moment, the crucial problem of any university is that of selection and estimation of ATS performance [10]. It is not enough to estimate the teaching staff in terms of the general number of Doctors and Candidates. It is important to connect this indicator with their work results, i.e. place stricter requirements to ATS at

vacant position competition. It is hard to accept that **today more than 30 % of the Russian university ATS do not meet even the lowest requirements** [1]. First of all, one should start with department heads, deans, vice-rectors, and rectors, each of whom, particularly, **a department head is to be a research leader, a head of academic-research center for the research team.**

At present the following fact is obvious: it is a teacher who is a university key player due to his/her competencies, professional knowledge, and commitment to teaching university graduates, which is the main result of university performance. New challenges faced by the Russian universities require efforts from not only university authorities, but also every teacher. It is quite obvious that it is time to estimate every teacher's performance. It is easier and simpler to estimate a teacher's job in terms of the rating [14]. Undoubtedly, university ATS rating should be developed according to international criteria, otherwise, the idea is lost and integration of Russian higher education into the world education environment is complicated.

It should be noted that not all ATS welcome the introduction of such indicators of teacher's research performance accepted in the world, as citation index, h-index, journal impact-factor, publications in peer-reviewed highly-ranked journals into rating. Many prudent and experienced teachers have no idea of the reasons for not including the articles submitted in the local research journals or handbooks in the efficiency criteria.

Hence, the rating evaluation system of ATS outcomes becomes a necessary tool for not only more equitable payroll distribution, but also increasing the performance of every university. In this condition rectorate is to demonstrate its achievements by their own example. In case of their absence it is rather difficult to motivate the staff to perform large-scale work. High personal indicators lay the foundation for the rectorate to require the same efficiency and responsibility from the

staff in the sphere of research activity. In fact, rating indicators are a base to answer the question – is it necessary to support employees who do not seek for self-development and are passive in research and publishing activity? [14].

To increase teachers' proficiency, one should develop a special development and support program for the university research schools. The program has to provide the enhancement of material resources of departments and laboratories, send teachers to training in leading research centers of the country and world, and provide the possibility to communicate with leading specialist in definite research spheres [2].

The basic source of necessary skills, additional to the main teacher's activity and advisory for successful self-development as a modern researcher, is to be the upgrading program. To what extent these additional competencies are significant for a researcher can be demonstrated by the experience of Great Britain, where scientists have raised the problem of training highly-qualified staff for British science [4].

For this purpose the system of upgrading and additional education was developed. It is based on refreshing or selective post-graduate courses realized in every university or additional courses for teachers and researchers. When making their careers teachers and researchers are to provide upgrade certificates and acquire additional "skills of wide application" [6].

Hence, one can make an unequivocal conclusion: the contemporary realities make universities evaluated thoroughly the outcomes of every teacher's job and his/her contribution to the university rating [9]. Doing so, the rectorate has to plan in detail ATS publishing career. Let us give the examples from the personal experience. When interviewing new teacher, after his/her application for a position with the documents confirming academic degree and titles, there comes consideration of publication list and if there are not highly-ranked articles in the list, hence, an applicant cannot arrange his

career, is not able to perform large-scale projects at the federal level. In this case it is no hope for possibility of the teacher's professional growth. There always appear a great deal of questions on why people do not want to develop their career, the success of which is directly connected with the level of remuneration, especially today, when there are no requirements for belonging to a party, when the rectorate of all universities is interested in growth of personal research indicators of all ATS. It is not clear why an employee does not promote his/her personal career, why he/she is satisfied with his/her being a senior teacher for 30 years. Why not to try once in a life to develop a manual of federal level, receive expert assessment, i.e. confirm his/her teaching competence in the subjects taught from the independent experts. Presence of such a teacher in the study room cannot motivate students to perform research activity as he/she cannot develop a student's intellectual potential.

There are some Doctors of Science in our university who publish low-ranked articles and do not feel any shame when they read lectures for the first-year-Bachelor-students and flatly deny working at graduate department, the graduates of which they are themselves, i.e. teach major at the graduate department, supervise graduate paper, and they are constantly complaining about large number of hours. They are often members of Dissertation council, and rectorate has to "provide" them with publications in the journals from Higher Attestation Commission list by means of including their names in articles of other post-graduates; they do not feel uncomfortable to include these articles in their publication list. It is necessary for such Doctors to create intolerable condition in the university with regular reports, when indicators of every teacher are submitted for common discussion. Unfortunately, there are Doctors of Science in our university without any independent research or relevant publication in the peer-reviewed journals.

Obviously that scientific and technical expertise and skills in the sphere of the subjects taught characterizing the teacher's scientific qualification are to be at the high level [1]. To maintain their competence, teachers are to upgrade and enhance their knowledge, enable their professional growth. In this case every teacher is to have a clear idea of how his/her subject contribute to a graduate's competence development.

Thus, implementation of the new education standards requires the university teaching elite – experts ready to work in the new condition, capable of using up-to-date technologies and taking responsibilities for the learning outcomes. It is well known that decrease in ATS professional level could result in irreversible effects and overall degradation of education system in universities that is quite unacceptable [2]. To maintain the necessary level of ATS professional training, one should manage the teacher's career that consists of two directions – research and academic-methodical. The preference is sure to be given to training of teaching staff in research direction as the ideal is the education based on science [1, 4].

PROMOTION OF PUBLISHING ACTIVITY

It is known that high research level of ATS activity is to be considered as one of the priority challenges, tackling of which is a base of the university rating. Therefore, much attention should be paid to the analysis of the problem and arrange some actions contributing to its solution in practice [2].

To solve the problem mentioned above means to take a set of simple and understandable measures promoting efficient research in university. The key result is submission of a research article. Therefore, it is necessary to take into account the number and quality of publications and take measures in authors' material incentive. Rectorate is to develop clear criteria of publication evaluation and exclude the articles published in the non-

peer-reviewed journals from the report.

The most time-efficient measure is authors' motivation due to payments for their article publication in journals [5]. In this case it is initiated by the authorities, but the decision depends on the author. There are some bases for such decision. The main reason consists in the fact that the number of authors who regularly submit papers in the foreign highly-ranked journals is much less than that of authors who work in the Russian institutions of science and education and submit their papers in the national journals included in RISC.

It appears that there is authors' potential in the universities, but one needs to promote teachers' publishing activity in a proper way. Certainly, one can only make ATS write articles, but the effect would be better if there would be a limited combination of administrative measures with the motivating system [10]. The given combination can work with much greater effect, if an author is additionally paid 100-150 thousand roubles for one article published in the highly-ranked foreign journal that is included in the international bibliographical databases Web of Science and Scopus. It would rather inspire him/her to more efficient publishing work.

But it is not necessary to reward the author only by bonuses and payments; one can encourage publishing activity in another way [14]. For example, to pay for active author's participation in the leading international profile conference. The author gets moral satisfaction and has a chance to enhance research credibility in the international research community, establish working contacts as well as find potential co-authors. Or, for example, an intensely publishing teacher can be appointed for the industry or state awards or honorary title that would assist in receiving "Veteran of Labour" title, i.e. to apply moral incentive.

Awarding and incentives do not always produce a sufficient effect, but only under the condition that qualification level of the awarded employees allows for the

expected outcomes. In this case, using awarding system, it is necessary to intensify the publishing process among those who

are capable of writing articles in the highly-ranked journals promoting the university rating [7].

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Introduction of Modern Teaching Technologies in to "Metrology, Standardization and Certification" Curriculum

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The main trend of Higher Engineering Education is the use of interactive teaching technologies. Precisely, introduction of such educational games as business games, case-studies, etc. into the curriculum of "Metrology, Standardization and Certification" which is basically regarded as practice-oriented course allows educators to make teaching more interactive. The article examines the ways to use various interactive teaching technologies within the above course, the examples being provided.

Key words: standardization, metrology, certification, interactive teaching, business game, case-method, game teaching methods.

Modern educational technologies aimed to assist teaching are becoming more and more popular. It is explained by the fact that compared to the traditional teaching methods modern or innovative ones allow educators to ensure high quality of education.

Being regarded as a type of interactive teaching method, a business game is proved to be one of the most effective modern educational technologies. Business games can be easily used not only as a part of educational process itself, but also as core elements of challenging situation modeling to provoke students to find an appropriate solution.

Basically, business games are intended to place students into a real-world environment by replicating future workplace setting and decision-making process. This helps students gain clear vision of their future profession and develop systems thinking that is of great importance in any activity.

The interactive character of business games is due to the fact that participants cooperate throughout the whole game making various decisions, analyzing the actions that have been taken and discussing the obtained results. Therefore, business

games foster students' communicative skills, unveil their leadership potential [1, p. 144-146].

The positive aspects of using interactive teaching methods are as follows: the growing interest in education in general and imitating problems, in particular; efficiency of education as it is based on the definite real-world examples; development of specific thinking; systematic approach to solving problems [2, p. 12-13].

Being interdisciplinary and of universally applied character, the course "Standardization, Metrology, and Certification" is a part of most engineering bachelor's degree programs. It is focused on practical application of the fundamental principles of such subjects as mathematics, mathematical statistics, physics, economics, legal theory, etc. in metrological support and technical regulation. The core of learning process consists of acquiring practical knowledge in legislation system, nominative documents, and basic sciences.

There are certain difficulties in organizing practical classes within this course. When traditional or passive teaching style is used ("authoritative"), practical classes are designed so that an educator simply explains the legislation



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