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THE METHODS OF USING INTERACTIVE TECHNOLOGIES DURING TEACHING FOUNDATIONS OF SCIENTIFIC RESEARCH AT HIGHER EDUCATIONAL ESTABLISHMENTS

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ABSTRACT

Unpreparedness and the absence of motivational interest to science from students of educational level «Bachelor» causes the problem of low scientific activeness at the following educational levels and leads to violating the standards of academic etiquette, unconscious using the ways of plagiarism in scientific texts. The aim of the scientific activities of students mastering economic specialties; specifying the lesson model of specialized course, which envisages studying the fundamentals and methodology of scientific research. The research was made by using the methods of testing, questioning, observing, and pedagogical experiment, the participants of which were the students of higher educational levels «Bachelor» (fourth-year students – 43 persons) and «Master» (first-year students – 53 persons, second-year students – 38 persons) of specialty 071 «Accounting and taxation» at State Agrarian and Engineering University in Podilya and Poltava State Agrarian Academy.



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The scientific novelty of using teaching methods is in adapting the traditional course «Foundations of scientific research» to the corresponding educational program (in this case the field of knowledge 07 «Economics and entrepreneurship», specialty - 071 «Accounting and Taxation», the course «Methodology of scientific research in accounting»). The author's approach is based on uniting students' academic work with individual research and envisages the using of interactive training methods, such as discussion; interactive dialogue 'human-computer»; situation analysis; the method of «incident»; business play. The presented lesson model on the topic «Linking and reviewing the text of the scientific-research task» with using the methods of situation analysis and business play enables to solve the following study aims: developing analytical thinking and skills of self-analysis; consolidating practical skills of work with information; broadening communicative competence; raising the motivation to work and scientific-research activities. The effectiveness of the described pedagogical experiment is confirmed by positive dynamics of structural changes as to disclosing the scientific potential and corresponding growth of the number of actual approbations of the research results obtained by the students at State Agrarian and Engineering University in Podilya and Poltava State Agrarian Academy.

Keywords: methods of teaching; student's scientific activity; methodology of scientific research; lesson model; interactive dialogue

1. INTRODUCTION

The requirements to scientific activity of the youth oriented at obtaining new knowledge and practical implementation of their research results are getting higher in educational sphere of Ukraine each year. Scientific-practical, scientific-production, All-Ukrainian, inter-university, international, and other scientific events are held by educational establishments, research centres, public unions, funds, and other institutions. The participation of students in such events is an important component of the image policy of higher educational establishment and department as a structural unit of faculty.

The degree of scientific maturity of the main students' body majoring in economics at the educational level «Bachelor» in the institutions of higher learning of Ukraine, as a rule, remains not undisclosed. It explains the existence of the problem



of academic plagiarism and also the paradox of 'not understanding and recognizing» the necessity of conducting scientific activity at higher educational levels (KANTSEDAL, 2014). Such facts are more than once actualized in papers of Ukrainian specialists – practicing pedagogues, and are confirmed by more than ten-year experience of adapting the methods of teaching fundamentals of scientific research by the group of authors at the Faculty of accounting and finance of Poltava State Agrarian Academy.

The aim of the research is systematization of educational and practical approaches to activation of scientific activity of the students of economic specialties, specifying the model of the special course lesson, which envisages studying fundamentals and methodology of scientific research by using interactive technologies.

The following tasks were determined according to the aim:

- 1) to elucidate the preconditions of activating students' scientific activity at «Bachelor» educational level, substantiate the necessity and expediency of such activity;
- 2) to specify the components of students' motivation mechanism in scientific research in accounting and specify the reasons, which weaken the interest of the student youth to science;
- 3) to determine the content component of the system of elements of activating students' scientific activity;
- 4) to concretize the organizational and educational component of the lesson model «Methodology of scientific research in accounting» with using interactive technologies;
- 5) to determine the effectiveness of using interactive technologies in the used lesson model and study course on the whole by having the growth of scientific results in economic students' papers (publications and approbation of students' scientific research).

2. THEORETICAL INSIGHTS REVIEW AND METHODOLOGY

2.1. Literature review

The problem of students' low scientific activeness is typical not only for Ukraine, but also for a number of European countries and the countries of the former



Soviet Union. The Russian scholar Martyushev (2015) distinguishes it as one of the most important pedagogical and psychological problems of the federal higher school.

The analysis of statistics during the period of 1999-2003 (the later papers of this author prove, that the tendency remains) demonstrates, that together with increasing the number of students in Russian educational establishments, their participation in scientific work permanently decreases. For example, the percentage of students actively engaged in research in 1999 was 6,3%, and in 2003 it was only 1,4% of the total number, thus, it decreased by 4,5 times. Such data actualize serious structural changes in the work of university scientific departments as to popularizing and motivating scientific activity among young people.

In the opinion of Lozynska (2016), in order to stimulate scientific activity of students during their studying at present, it is necessary to change from informational forms and methods of training to active ones, to look for the opportunities of combining theoretical knowledge of students and their practical needs.

Discussions, thematic investigations, trainings, role and business plays, design activities, the development of critical thinking, brainstorming are the most justified interactive training technologies in pedagogical practice. Besides, these technologies can include the elements of social-psychological training, psychological tasks, communicative exercises, tasks for mastering tolerant interaction, group creative events, which help not only to get new knowledge, but also assist in the formation of professional skills, social sensitivity, taking into account the alternative models of thinking.

Attracting passive students to using interactive inter-active educational methods and technologies is possible by their integration in students' life. The collective of the British university Harper Adams guided by Haroing Mu (2015) practically implemented the project, in which mobile devices were integrated with the systems of clickers for studying with improved functions. The program, that was used and determined as a very useful instrument of interactive learning, is called «Kahoot». The course «Economics» is successfully taught to the students of other professions within the special mobile application in the form of play competitions.

The main direction of further improving such pedagogical approaches is

widening the spectrum of using interactive methods of teaching (KOKNOVA, 2017). Training activity based on game has a great potential for developing professional communicative competence of students mastering different specialties at higher educational establishments. It unites the following three components: game (stimulate emotional relaxation and provoke the participant to demonstrate his (her) ambitions, express his (her) own thought, and inspire to creative interaction); educational (enrich knowledge, skills, and experience), and professional (model various professional situations from practice).

Trubitsyna (2016) considers, that the level of visualizing the research of students-economists can be raised by using the method of projects. It always presupposes individual work of students (individual research, work in pairs or group), which ensures planned generation of productive ideas.

Haines (1992) distinguishes four types of projects: 1. Informational and scientific-research projects including such kinds of work, as reports, displays. 2. Projects-investigations, which comprise interviews, resumes, etc. 3. Production projects envisage working with radio, TV, preparing videos, newspapers. 4. Organizational projects (or projects of productivity) are connected with staging plays, dramas, concerts, public performances.

Scientific papers of Ukrainian scholars dealing with the improvement of teaching methods and raising the productivity of students' knowledge, in the first turn, actualize the questions of introducing innovations, communicative technologies, and interactive methods of teaching. It concerns both educational process on the whole and separate fields of knowledge, in particular, training specialists of economics.

Romaniuk considers the technology of distance learning as an indispensable component of innovative processes, analysing this technology in two aspects – as a pedagogical innovation and as a form of interactive learning, which ensures comfortable conditions of personality oriented approach in education (ROMANIUK, 2015). In this context the above mentioned author proposes to use «Informational model of teaching accounting courses» and enumerates the list of requirements to it, however he neither discloses the way of structuring, nor the mechanism of practical implementing such systemic innovation.

Mazur (2014) considers the technology of distance learning the most promising communicative education means, oriented at self-education, establishing logical interconnection between the elements of knowledge and independent solving of the set tasks with further implementation of this knowledge in real conditions.

Moskaliuk and Chernetska (2014) while determining the directions of improving the system of teaching accounting courses in economic educational establishments concentrate on innovation-oriented professional training. Moreover, lecturer's activity must be aimed at activating independent cognitive work of students, which necessarily includes combining academic work with students' scientific research, in particular, participating in scientific conferences and writing research papers.

Underlining the importance of the motivational component of students' learning-cognitive activity Moskaliuk and Chernetska (2014) prefer active training methods, such as work in small groups, business play, case-method, training, problem situations, and cognitive tasks. The authors stress, that the methods mentioned above are used in the teaching and learning process for training specialists at accounting-economic faculty of Odesa National Economic University and have a positive effect.

The results of analysing the opportunities of interactive technologies in professional formation of future economists is systematized in the paper by Matukova (2012), who stresses on the necessity of working through the mechanisms which allow to activate the student in the educational process. Being the adherent of the idea of introducing interactive learning, Matukova (2012) notes its negative sides, which include:

- 1) the necessity to spend much time on the preparation of means for interactive learning;
- 2) insufficient number of manuals with the forms of interactive learning for various special courses at higher educational establishments;
- 3) insufficient level of teachers' preparation as to possessing special methods and means for practical implementation of interactive learning methods.

It should be noted, that the enumerated statements characterize to negative sides of interactive studying. These negative sides of its introducing (or not

introducing) are mainly formed under the influence of human factor (especially of lecturer as a subject of pedagogical process).

On the whole, evaluating positively the scientific papers of Ukrainian and foreign authors as to the methods of using interactive technologies, a number of features should be mentioned, that, which require critical comprehending and additional disclosing:

- 1) at present the topicality of using innovations in education does not need excessive proving at the theoretical level, because it has been evident for a long time. In this connection, not the scientific papers, which stress on the importance of innovative and interactive methods of learning, should be considered the most valuable, but those papers, which disclose the ways of their using;
- 2) in disclosing the questions of teaching methods the results, containing the description of real experience and author's solution concerning adapting innovative teaching methods, introducing definite interactive methods, proving and demonstrating positive effect of their using, have the greatest scientific importance;
- 3) before choosing and introducing interactive methods of learning in teaching a definite course, it is necessary to investigate positive and negative factors influencing students' motivation in mastering by them of the given course. It will assist in further constructing the corresponding models of lessons, the practical implementation of which will help to eliminate negative factors and achieve positive effect.

Thus, solving the problems of improving teaching methods in educational process must be accompanied by describing real models of the corresponding lessons, and also making concrete the corresponding methods from the viewpoint of the practical usage in such models, which will enable to evaluate critically the obtained results by the broad scientific community and, in case of their recognition, will assist in spreading positive experience in educational process.

2.2. Methodology and data

2.2.1. Apparatus and materials

The methodological foundation of the paper is theoretical basis in



fundamentals and methodology of scientific research, fundamental papers of Ukrainian and foreign authors as to progressive methods of teaching, innovative educational interactive technologies, which determine the main elements of conducting scientific-pedagogical activity in higher educational establishments.

The following empirical methods of investigation were used: testing, questioning, observation, and pedagogical experiment.

In order to determine the effectiveness of using the suggested pedagogical methods the assumption was made in the form of scientific hypothesis, that it is necessary to use interactive lesson models to obtain the growth of students' scientific results.

2.2.2. Participants

To check the correctness of the introduced hypothesis the experiment was organized and conducted, the participants of it were the students of «Bachelor» (43 persons) and «Master» (91 persons) educational levels mastering «Accounting and taxation» at Poltava State Agrarian Academy and State Agrarian and Engineering University in Podilya. The research was made by using experimental plan of hour series (the comparison of results received before and after the experimental influence on each group by using repeated measuring, which allows to control separate threats of internal validity).

2.2.3. Procedure

Scientific work is difficult, and it is one of the manifestations of person's self-actualization. Readiness to scientific work requires high concentration, purposefulness, persistence, and consistency from the subject of scientific activity. If a student is the subject of scientific activity, it is necessary to work off complex mechanism at the level of higher educational establishment. This mechanism comprises obtaining basic knowledge in fundamentals of scientific research; familiarizing with the specifics and methodology of scientific activity in the corresponding field of knowledge (specialty); investigating motivational factors of students' scientific activity and the procedures of revealing scientific potential; the ways of implementing the achieved scientific results.

In foreign specialized editions, the discussion as to the processes of attracting students to scientific work is developing in the direction of suggesting early

diagnostics of their scientific potential. For example, Chun-Yen-Tsai (2018) suggested the model SSIs-Online-Argumentation Pattern (SOAP) for developing pedagogical strategy, which helps students to participate in on-line determining of their scientific competence and choosing the directions of its further raising. According to this strategy the experiment was held, the participants of which were 127 senior class pupils and 68 students. The results of the experiment revealed the obvious statistically measurable growth of skills in scientific work in the experimental group of SOAP students, in particular, for the constructs of «revealing scientific problems» and «using scientific proofs», which substantiates promising directions of building students' scientific education.

Sikura (2017) also supports the position of preventive analysis of students' capabilities to scientific work. The group of authors, Sikura, Plishko and Baliuk (2017) developed methodical bases of introducing the mechanism of selecting Master course students for research activity, and also the ways of raising their motivational interest in it. The development of the methods of previous revealing talented students-researchers is understood by the authors as the formalization of such analysis through developing special program products, which will decrease the level of human factor influence on the subjectivity of estimating students' potential.

To concentrate on motivational factors of scientific activity, at first negative factors, which decrease the interest of student youth to science, were analysed (KANTSEDAL, 2014). Questioning of «Bachelor» level students (the fourth year of studying – 43 persons), «Master» level (the first year of studying – 53 persons, the second year – 38 persons) of specialty 071 «Accounting and taxation» revealed the following number of reasons, which were ranged according to the level of their spreading in answers at the stage of results' statistical processing:

- 1) insufficient being informed as to organization, order, procedure aspects, and positive consequences of scientific activity;
- 2) insufficient level of self-organization;
- 3) unwillingness to spend personal time;
- 4) additional material spending, connected with conducting scientific activity (from searching information to approbation);
- 5) the absence of financial stimuli at early stages of scientific activity.

To overcome such negative factors, of course, it is possible to use the

classical scheme of punishment and praise. However, at the level of higher educational establishment it is necessary to organize work directed at «awakening» students' interest to scientific activity.

If we consider the need of individual in scientific activities from the viewpoint of the hierarchy of human needs of Abraham Maslow, the given kind of activity is «on the top of pyramid». According to Maslow's theory, in order to have higher (spiritual needs), first of all, a person must be satisfied in basic needs (food, water, and sleep; the need in safety, etc.) (PETERSON, 2016).

Large-scale research of Maslow needs' hierarchy (in particular, investigations of Prof. Ed Diner) gave the grounds for the conclusions, that the needs illustrated by the famous «pyramid» are universal, however, the order in which they are fulfilled, can be inconsistent. That is, the person can demonstrate a high level of self-actualization and social connections even when his (her) basic physiological needs and safety needs are not completely satisfied (KANTSEDAL, 2014).

We consider, that one of the most effective methods of attracting a large number of students to scientific work is introducing the elements of scientific research while they do individual scientific-research tasks, course and qualification (diploma) papers. With this purpose, the course «Methodology of scientific research in accounting» is included in study plans of Bachelor training in specialty «Accounting and taxation» at Poltava State Agrarian Academy. In fact, this course substituted the traditional and typical course at higher educational establishments of Ukraine «Foundations of scientific research», and unlike the latter, it includes not only obtaining universal knowledge, but also its practical integration with qualification competences of the future specialist – Bachelor in accounting and taxation.

The aim of the course «Methodology of scientific research in accounting» is activating students' scientific activity, assisting and raising the effectiveness young researchers' activity, who set scientific tasks to themselves.

This course is oriented at generating the following skills: 1) to use the methods of critical evaluation of scientific papers in practice; 2) to use the elements of scientific research while preparing individual tasks, presentations, theses, and articles; 3) to implement in practice the ways of approbating and introducing the results of scientific research.



Thus, the first motivational factor for the student mastering «Accounting and taxation» at State Agrarian and Engineering University in Podilya, Poltava State Agrarian Academy in being engaged in scientific activity is stipulated by the necessity to perform the study plan – to master the course «Methodology of scientific research in accounting» and receiving the final mark (punishment); the second one is raising students' self-evaluation in their understanding the notion and procedural aspects of conducting scientific activity (competence); the third one is the probability of receiving material benefit from their own scientific activity in the form of scholarships and prizes (praise); the fourth one is the opportunity to communicate with progressively thinking young scholars, scientific elite, business elite (broadening relations); the fifth one is creating the image of young scientist (the opportunity to receive Diploma with honors and recommendations to continue studying at higher educational levels – Master course, post-graduate course).

3. RESULTS AND DISCUSSION

With the aim of activating students' scientific work at the faculty of Accounting and finance of Poltava State Agrarian Academy interactive learning technologies were integrated in the teaching methods of the course «Methodology of scientific research in accounting». Such modelling envisages clear singling out, first of all, of organizational and educational lesson components.

Organizational aspects of teaching methods of the course «Methodology of scientific research in accounting» include:

- 1) Theoretical (lecture) course in fundamentals of scientific research in accounting.
- 2) Choosing the theme of scientific-experimental task, which is approved by the leading lecturer (the repetition of the same theme of scientific-experimental task in one group is not allowed).
- 3) Searching information, accumulating and processing literary material.
- 4) Arranging the text, explanatory note, and getting up properly the scientific-experimental task.
- 5) Drawing up presentation, defending and approbation of the results of scientific-experimental task (publishing scientific theses in the materials of conferences or scientific article in collections of scientific papers of young scholars).

The methodical aspects of conducting scientific research while doing

individual tasks in the course comprise: 1. Concretization of the subject and object of scientific research corresponding to the approved theme. 2. Making the table of working through literary sources on the theme of research. 3. The analysis of cognitive apparatus concerning the theme of research. 4. The analysis of legal and regulatory framework of the object of research. 5. Familiarizing with the main principles of structuring, composing, and reviewing scientific text. 6. Familiarizing with the procedure of approbation of the scientific-experimental task results.

With the aim of attracting all the students to the cognitive process, while constructing the lesson model of the course «Methodology of scientific research in accounting», the following interactive methods are used: discussion, interactive dialogue «human-computer»: situation analysis; the method of «incident»; business play.

The «discussion» method. At the initial stages of work with students, it is expedient to conduct questioning with the aim of determining the potential of the future researcher, the directions of improving and developing his (her) personality.

In the process of mastering the course «Methodology of scientific research in accounting» the authors' variant of questioning «The potential of accountant-researcher», which envisages evaluating according to 100-point scale, is used. The obtained results are the basis for students' self-analysis, resulting in the discussion «I am a future researcher».

The filled in questionnaire is student's property, it is neither collected with the aim of confidentiality, nor evaluated and analysed by the teacher. The analysis of the questionnaire data is made in the classroom in the form of interactive dialogue and discussion. The received statistical data are systematized and accumulated with the aim of further analysing the dynamics of scientific knowledge growth of the corresponding students' body, the results of which will be presented below.

The conditions of achieving positive results greatly depend on the cooperation of the student with his (her) scientific advisor. In this connection, the important events are organizing and conducting the discussions on the topics: «The components of scientist's culture: spiritual-national; moral-legal; psychological-aesthetical; professional», «The main requirements to scientific advisors», «The criteria of choosing scientific advisor», questioning or essay on the topic «The

portrait of the best scientific advisor». All this will assist in preparing and choosing scientific advisor for organizing cooperation according to the direction of research in future.

The need to use interactive dialogue «human-computer» is stipulated by the content of practical tasks, by which it is envisaged to work through the material in the form of recommended tables. The forms of these tables and methodical instructions as to their filling in are disclosed in corresponding manuals, by which the study process in the course «Methodology of scientific research in accounting» is ensured (KANTSEDAL, 2015).

The correct filling in of the suggested tables enables the student at the final stage to formulate the text of explanatory note and presentation concerning the given scientific task without any additional effort.

At the same time, the process of searching information for completing such tasks requires constant interactive dialogue «human-computer»: monitoring of scientific papers in the chosen theme in open scientific-metrical bases; monitoring of the legislative changes, checking up legal validity of the corresponding legal documents, by which the accounting of the investigated object is regulated, and so on.

Situational analysis comprises deep and detailed research of real or imitated situation within the theme, chosen by the investigator.

In particular, at final stages of studying the course «Methodology of scientific research in accounting», during conducting practical lesson in the classroom, the situation of urgent necessity of preparing the presentation covering the investigated theme based on previously collected and worked through material is imitated. The presentation is made according to the given oriented example (pattern). This example (pattern) provided that all the previous tasks were fulfilled, simplifies preparing the presentation to simple linking. The task is composed in such a way, that finally the student has the opportunity to conduct critical analysis of his previously done work, to reveal drawbacks, defects, «weak points» of his (her) own research.

Business play is used while doing the task, which envisages familiarizing with procedure aspects of reviewing scientific publication. It is organized by dividing

students in small groups – «laboratories engaged in reviewing», and the result of their work is to be the review on the theses (article) of real participants of the play from other groups.

The model of the lesson using the methods of situational analysis and business play is presented on Graph 1.

Doing the task is divided into several stages:

THEME: Linking and reviewing the text of scientific-research task

The aim of the lesson: practical using of the main ways of constructing and linking the text, approbation of the procedure of reviewing the text.

Material support: file-store of student's conducted practical tasks and independent work, methodical instructions, review form.

LESSON CONTENT:

I. Introductory (organizational) part.

1. Informing the theme and aim of the lesson. Motivation of learning activity.
2. Revealing the students' readiness to the lesson (checking up whether they have the file of material support with previously done tasks).

II. The main part.

1. Announcing the conditions: Situation 1. Based on the material of previously done tasks, to link the scientific text in theses according to the given pattern for urgent presenting in «the department of reviewing». The oriented number of participants – 20 (all the present students are involved).
2. Revealing by the teacher the state of finalizing scientific theses and selecting the materials for reviewing. The oriented number of selected materials for reviewing – 4-6 (depending on the quality of the performed task).
3. Dividing the students into small groups - «reviewing departments», announcing the terms of the business play: Situation 2. To review collectively the scientific text according to the given example (review form). Particular condition – the author, whose text is reviewed, is in another group.

III. The conclusion part

Generalizing and systematizing of the obtained results: 1) revealing and systematizing of drawbacks in the scientific text; 2) determining the directions of improving the work in preparation of author's texts by the students.

IV. Home-task (task for independent work).

To eliminate the drawbacks, revealed as a result of self-analysis and compose Explanatory note to scientific-research task according to the following plan:

1. The description of the most important results of scientific papers according to the theme of research.
 2. The analysis of the notional apparatus as to the theme of research.
 3. Legal and regulatory framework of accounting and control of the investigated object.
 4. The description of problem questions concerning of the investigated object accounting. These questions are covered in periodical professional publications for practical use.
- The directions of improving accounting and control of the investigated object.

**Source: Methodical instructions for independent work: p. 28-31 (KANTSEDAL, 2014).*

Graph 1: The model of practical lesson with using the methods of situational analysis and business play

The method of «incident» envisages analysing the situation as a result of which academic plagiarism was revealed. As a rule, students work in pairs. To enliven the student group, the conventional distribution of roles is possible: «author» and «opponent». During the lesson, the set of corresponding material support,

including articles by different authors from periodicals, having the signs of plagiarism, is used.

Stage 1. Revealing and identifying the variety of academic plagiarism in the given texts according to the following signs: 1) reproduction by copying and announcing the paper, written by another author (authors), as one's own; 2) copying the text fragments (either a phrase or several sentences) word for word without proper reference; 3) making insignificant changes in copied material of another author or authors (changing sentences, the order of words in them, etc.) without proper reference; 4) paraphrasing – retelling in one's own words of somebody's else thoughts, ideas, or text.

Stage 2. Proving the fact of academic plagiarism by «the author» on the one side and protecting the right on the author's text by «the opponent».

Stage 3. Discussing and formulating collective conclusions and suggestions as to preventing the cases of academic plagiarism for ensuring the quality of education.

Using the method of «incident» in the given case assists in understanding ethical rules and regulations as to not accepting academic plagiarism by the students; stressing on the principles of independent work over various written tasks, correct using information from other sources and avoiding plagiarism while working at creative tasks.

3.1. Experimental testing of the effectiveness of the suggested method

The implementation of the results of students' scientific research at Poltava State Agrarian Academy is achieved by approbation: public presentations at scientific conferences, preparation and publication of presentations' theses, articles, etc.

The main precondition of the preparation of published approbations is investigating important events in the corresponding field of scientific research according to the suggested form of informational table with the following data: the name and status of scientific event (international, All-Ukrainian, inter-university, university, Internet), place and date of conducting, the form of presenting scientific results, deadline dates of sending materials, participation fee, determining scientific directions by the section names.

While preparing students' scientific theses (or articles) as a form of fixing author's research priorities in open publications, it is necessary to concentrate the attention of students on the following important moments: structuring scientific text corresponding to the given parameters; formulating the title of theses (article); being ready to review and approbation.

The effectiveness of using interactive technologies in teaching the course «Methodology of scientific research in accounting» is confirmed by the growth of the number of scientific papers – students' approbations, which is proved statistically by quantitative indices in yearly reports of the Accounting Department, Accounting and Taxation Department at Poltava State Agrarian Academy and State Agrarian and Engineering University in Podilya. The data of quantitative processing of the results of evaluating students' scientific potential before and after completing the course «Methodology of scientific research in accounting», based on the questioning mentioned above, is given in table 1.

Table 1: The influence of experimental work with using interactive learning technologies on the indices of students' scientific potential at State Agrarian and Engineering University in Podilya, Poltava State Agrarian Academy in 2017-2018 academic year

Levels	Evaluation range according to 100-point scale of points	Groups of respondents of specialty «Accounting and taxation»								
		«Bachelor» level, the fourth-year of studying (43 persons)			«Master» level, the first year of studying (53 persons)			«Master» level, the second year of studying (38 persons)		
		section 1, %	section 2, %	deviation (+,-)	section 1, %	section 2, %	deviation (+,-)	section 1, %	section 2, %	deviation (+,-)
low	0-49	53	21	-33	23	15	-8	18	13	-5
sufficient	50-69	21	49	+28	43	45	+2	37	42	+5
high	70-100	26	30	+5	34	40	+6	45	45	-

The interpretation of evaluation relative quantities in Table 1 definitely testifies to the growth of students' scientific potential as a result of using interactive technologies in mastering the course «Methodology of scientific research in accounting» The indices of decreasing the percentage of students, having a low scientific level and their transition to the groups of medium-level and even high potential are the extreme indices of changes.

4. CONCLUSIONS

At the stage of investigating preconditions of activating scientific activity of the students of economics in higher educational establishments of Ukraine, it was established, that the degree of scientific maturity of the main students' contingent of

«Bachelor» educational level, as a rule, remains not disclosed, because of the absence of the organized system of scientific activity in educational establishment. Unpreparedness and the absence of motivational interest to science leads to the problem of low scientific activity at the next levels, violation of the rules of academic etiquette, unconscious use of the methods with the signs of plagiarism in scientific texts.

These reasons stipulate the need of improving the existing methods of scientific-research activity and introducing interactive technologies, which can develop the corresponding knowledge and skills of students.

As a result of the conducted questioning, the main reasons of weakening student youth's interest to science are the following: insufficient information as to the organization, order, procedure aspects, and positive consequences of scientific activity; insufficient level of self-organization; unwillingness to spend personal time; additional material spending, connected with conducting scientific activity; the absence of financial incentives at early stages of scientific activity.

The motivational factors of activating students' science at State Agrarian and Engineering University in Podilya and Poltava State Agrarian Academy are the following ones: the necessity to fulfil the study plan (master the study course «Methodology of scientific research in accounting» and get the final mark); raising students' self-estimation in their understanding the notion and procedure aspects of conducting scientific activity; the probability to receive material benefits from one's own scientific activity (scholarships, prizes, grants); broadening the relations and creating the image of «young researcher».

The content component of the system of activating students' scientific activity must include the following interconnected and mutually supplementing elements:

- 1) informative (is implemented by making public the important information about the events in the scientific world and letting it know to a great number of users)
- 2) learning (is implemented by including in study plans the courses, which envisage the mastering the fundamentals of scientific literacy with simultaneous and gradual transition to individual scientific-research tasks in specialty, corresponding to the profile of studying);

- 3) educative (is fulfilled by organizing thematic curator hours, trainings, oriented at raising the level of personality's self-organization, self-identification in doing creative tasks;
- 4) initiative (is realized by organizing scientific study groups, open scientific events in the format of «scientific picnics», assisting in activating process-content motives of scientific creative work).

In the course of elucidating practical approaches to implementing interactive technologies in the system of students' scientific activity while studying the course «Methodology of scientific research in accounting», the model of the lesson «Linking and reviewing the text of scientific-experimental task» was presented, which envisages using the methods of situational analysis, business play, and enables to solve the following study aims: the development of analytical thinking and the skills of self-analysis; consolidation of practical skills of work with information; broadening communicative competence; raising motivation to studies and scientific-research activity.

The effectiveness of the pedagogical experiment, described above, is confirmed by the growth of the number of official approbations of scientific research results, achieved by the students of State Agrarian and Engineering University in Podilya and Poltava State Agrarian Academy (according to yearly reports of the Accounting Department and Accounting and Taxation Department) and positive dynamics of structural changes as to the level of scientific potential of the investigated number of respondents, who participated in the pedagogical experiment (percentage growth of persons having average and high level of scientific potential).

The authors' experience testifies: teaching the fundamentals of scientific research in higher educational establishments will be effective, only when this process will be applied. Thus, the novelty of the suggested pedagogical methods consists in adapting the traditional course «Fundamentals of scientific research» to the corresponding field of knowledge and specialty mastered by the student (in this case it is the field of knowledge 07 «Economics and entrepreneurship», specialty – 071 «Accounting and Taxation», the course – «Methodology of scientific research in accounting»).

The real practice of using interactive learning technologies (interactive dialogue

«human-computer», business play, situational analysis, the method of «incident») suggested in the models of lessons, assists in attracting students to scientific work, confirms raising the level of their scientific literacy, and also assists in generating positive image and raising rating indices of higher educational establishment.

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