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Seeking and Shaping Students' Research Effectiveness

Audronė Poškienė

Kaunas University of Technology
Donelaičio 73, LT-44239 Kaunas, Lithuania

Abstract

This article presents some general reflections on possible ways of increasing students' research effectiveness. The problem of promoting and increasing students' research effectiveness is one of the issues in any organization of higher education. The article seeks to find answers to the questions, how and why the academic community should stimulate both teachers' and students' research, re-examining and re-appraising all possibilities to make research, learning and teaching a holy alliance. The model of an effective research organization should be the basis for implementing research quality, appropriateness, incentive, planning and other aspects. The role of cohesive research teams and innovative leaders who contribute to the research vision evaluated in the model and considered as an element of the research effectiveness. The interviewed students revealed the need for research education where research effectiveness is only one of the elements of the whole research process.

***Keywords*: input, output, research effectiveness and efficiency, research process, research vision, individual and team work.**

Introduction

There is a continued acceptance of research as an essential element in the mission of higher education, because no system of higher education can fulfil its mission and be viable ally to society in general unless part of its teaching personnel, students' body and its organizational units carry out research (Vessuri, 1998). Being a careful study of a certain area in order to discover new facts or information, students' research embodies the realization of a fully educated personality ready to live and function in a supercomplex world. Thus not only institutions but also students have the right to expect that they and their lecturers are to be engaged in research (Barnett, 2000).

Research is an integral part of academic culture and a very important stimulus for personal development, cooperation and interrelationship. According to Quick (1997), within most disciplines and sciences, research has come to mean a careful, systematic, patient study and investigation in an area of knowledge in order to discover or establish facts, laws or principles. The possibility to acquire research experience at the university is a challenge and a value of higher education that ensures development through mutual investigation, sharing of ideas and feedback in different systems (teacher ↔ teacher, student ↔ teacher, student ↔ student). The changes going on in the education system, the requirement for innovations and new knowledge lead the academic community along the path of a scientific research.

In order to move away from the word 'research' practitioners prefer to use the terms 'investigative practice', 'exploratory learning', 'reflective practice' because they disclose the essence of the research process in a better way. There is a direct link between effective learning and research. In both cases students approach a new problem with an existing set of cognitive structures and, through insight, logical thinking and various forms of hypothesis testing, call upon prior experiences that they have had and cognitive structures they possess to come to a solution (Brown, 1987). Thus, effective research may lead to effective learning, efficient parity relations, discourse cognition and vice versa. The multi-layered problem promotes several questions – how to make students become active, motivated participants in the research process and how is it possible to incorporate all stages of research into the learning/teaching process? The problem leads towards the aim of the article: to reveal the possibilities of engaging students into research on the basis of mutual gain for teachers and students or, in other words, to reveal students' research effectiveness as a promotion of new knowledge and quality of studies. The article addresses several tasks:

- to define and model students' research effectiveness;
- to determine an individual and team levels in research;
- to define the role of innovative research leaders and the vision of research;
- to investigate and analyse students' viewpoint about research effectiveness.

A systemic analysis of research literature, a questionnaire and structured interview were chosen for the initial stage of the investigation. The list of questions in the questionnaire and the interview were adapted from Cameron and Whetten's (1993).

Modelling students' research effectiveness

The concepts of 'effectiveness' and 'efficiency' are closely related to 'inputs' and 'outputs'. Inputs in educational institutions include students with given characteristics and financial as well as material aids. Outputs concern students' attainment at the end of learning and teaching.

Scheerens and Bosker (1997) note that 'the transformation process or throughput within a school can be understood as all the instruction methods, curriculum choices and organizational preconditions which make it possible for pupils to acquire knowledge'.

Following these assumptions, input and output factors in students' research process may be presented (Table 1).

'Research effectiveness' may be defined as the extent to which the desired level of investigation output is achieved. Distinctions may be made between 'technical effectiveness' and 'social effectiveness'. 'Technical effectiveness' makes influence on the following aspects:

- the general level of present studies;
- learning strategies;
- skills obtained;
- attitude to theory and practice;
- further research experiences at higher levels of studies (Master and Doctor degree).

'Social effectiveness' is related to:

- individual development;
- social mobility;
- work productivity.

The value of students' research inputs and outputs can be expressed in terms of non-monetary (teacher's support, supervision of student's activity, research methods, special scientific literature) and the cheapest possible monetary expenses made by personal will (buying paper, making copies, etc.). The problem of defining or measuring the desired research output and outcome is rather complicated. Having described technical and social aspects of effectiveness, it is possible to elaborate the model of some kind of students' research effectiveness (Table 2). The main focus of the article is students' research effectiveness, so its main elements are put into a structure keeping in mind students' theoretical preparation for the research, the criterion of effectiveness which helps the students and teachers to get through the research stages.

Table 1

The factors influencing students' research effectiveness

Input	Process	Output	Outcome
Students' and consultants' efforts	Research methods, procedures	Research results, conclusions, reports	Use in graduation projects, term papers, etc.

Table 2

Research effectiveness model

Theoretical background	Effectiveness criterion	Level of research effectiveness	Main areas of attention
Theoretical research principles	Adaptability	Level of studies (Bachelor, Master, Doctor studies)	Input and output determinant
Human relations approach (communicative approach)	Engagement	Group + individual	Interdependence
Goals	Responsiveness	Team	Motivation

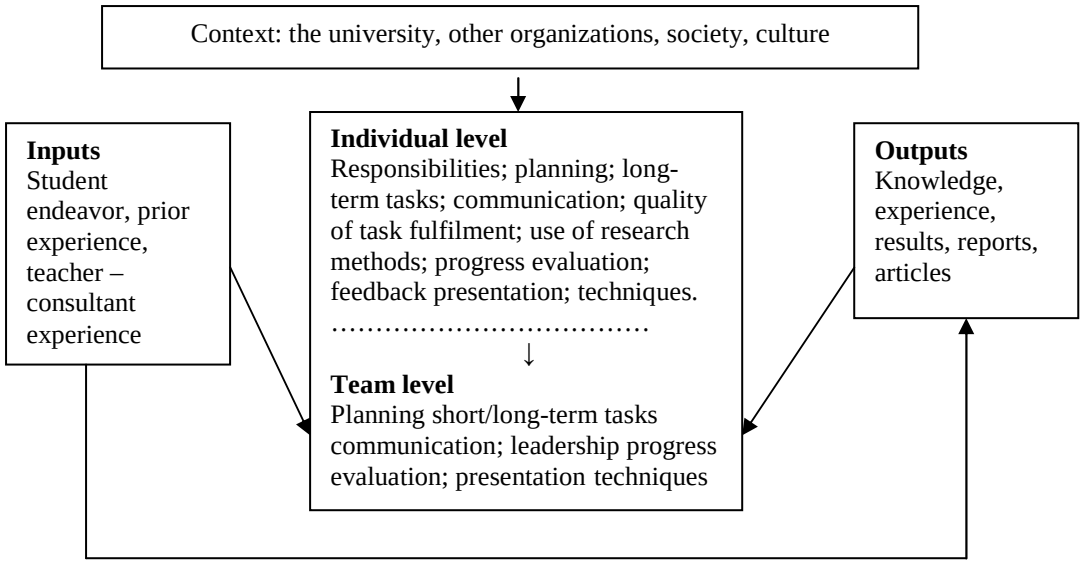

Figure 1. An integrated model of team research

The choice of the theoretical background predetermines other elements of the model. Human relations approach cannot take adaptability criterion and choose motivation as an area of attention. If to follow the logics, in any other area of activity such a combination of elements is possible; keeping in mind that this is the research effectiveness model, the logics should be followed. The model may be supplemented with additional elements.

Any model usually specifies or visualizes complex phenomena in a simplified reduced manner, i.e. it is described in terms of a set of units (facts, concepts, variables) and a system of relationships among these units. Therefore, the modelling approach to students' research effectiveness aims to clarify the core elements and relationships in the research process.

Having studied schooling effectiveness models (Creemers, 1994; Scheerens, 1993), it is possible to distinguish four levels in the research model:

- the level of an individual student;
- the team level;
- professionals who are in direct interaction with students;
- the above-school level (university community, other organizations).

Using Scheerens' (1993) integrated model of school effectiveness, a version of integrated team research effectiveness model could be presented (Figure 1).

The individual and team level might be considered to be the *model of effective research* organization including the following aspects:

Quality: opportunity to gain new knowledge, information and experience, planning abilities develop communication capabilities, feedback provision, presentation techniques, etc.

Appropriateness: the difficulty level of the research, its relevance to the students' level of studies, possibility to gear research tasks to individual prior attainment levels.

Incentive: motivation to gain knowledge.

Planning: learning to plan short and long-term tasks, coordinate activities, structure research time and make use consultations.

Students' research and its effectiveness are both a subject of scientific inquiry and an applied field of educational interest. The case of inquiry into the determinants of research effectiveness, i.e. input-output, or input-process-output studies are of the utmost importance and interest. However, the use of research effect concept should be purposeful because when using value-added measures, different aspects can be taken into account. When looking at the type of covariates used, four different approaches can be distinguished, which are called 'gross research effects' (Scheerens and Bosker, 1997). The value of gross research effect lies in the use of a chosen standard, which helps to judge whether the research, on average, has been performed above or below the standard.

The second research effect is based on unpredicted student achievement. A lot of variables (student aptitude, age, gender, prior experience and other variables) have a strong relationship with achievement in research. The third effect can be seen as a specific case of the second research effect. It is based on learning and knowledge gain. The fourth effect in the research achievement that has not been planned, foreseen or predicted (unpredicted knowledge and result gain).

The concept of research effectiveness may be divided, according to a very general framework, into a domain of effects and a domain of causes or means, and these domains may be differentiated (Scheerens and Bosker, 1997). Such a broad perspective is needed to obtain some picture of research effectiveness.

In any aspect of effectiveness goals are seen as the major defining characteristic of effectiveness concept itself. In fact, the question of whether a research team and the supervisor choose the 'right' goals and objectives is a fundamental issue that proceeds further activities and success. Both the aspect of doing the right thing and the aspect of doing things right are of the utmost importance. Further options of choice with respect to goals are as follows:

- various priorities in further specification of the overall goals;
- the stages of goal attainment;
- the differentiation of tasks;
- equal sharing of tasks among the members of the research team;
- adoption of acceptable managerial structure and principles.

Principles of students' research effectiveness could be constructed adopting the experience of multilevel models in education and social research as well as statistical models (Goldstein, 1987; 1997).

Communication and cooperation among the members of the research team can be seen as the result of the coordination of the actions taken by the leader and predetermined by a collective structure of the group. A research team becomes a small 'learning organization' fostering integration, communication and cooperation.

Research team cohesion

Students' research can be focused on exploring various potentials at the individual, group or organizational level, some linguistic aspects, social contexts, etc. Dubrin (1984), Hackman (1987), Robinson and Stern (1997), Savanevičienė and Šilingienė (2005) hold that more innovative ideas occur within research teams than in an individual investigation process. Flynn and Chatman (2004) write about four norms increasing the quality of research teams: (a) vision; (b) participative safety; (c) task orientation; (d) multidimentional support. Group efforts lead to higher effectiveness than would be possible by individuals working alone. Baršauskienė and Janulevičiūtė (1999), Savanevičienė and Šilingienė (2005) stress the importance of effective team management in creating a well-organized group activity producing synergy effect. However, Dubrin (1984) warns that sometimes group effort can produce potential hazards, including shirking of individual responsibility, conformity to mediocre activity, groupthink in which the group loses its powers of critical analysis, and imprudent risk taking. These fears may be overcome by an effective supervision and team leadership.

Team activity values are developed within the group from the interaction of interior and exterior factors. Interior factors include team organization, personal membership characteristics, aspirations, etc. Exterior factors are the objects to be investigated, supervisors, theories, and others. Consistent and relatively stable interpersonal relations are developed into common attitudes, beliefs, sense of belongingness and some kind of team moral yielding shared team values. Specific team values steam from supervision policy, team leadership style, personal and academic culture, ability to communicate and formal or informal intra and inter-team communication.

Whenever the values and norms of the research team are concerned, mention should be made of a moral factor. Moral is the contribution that team members or the whole team as a small system render while helping others, practicing courtesy in any activity directed towards common aims (Organ, 1997). Moral is a group phenomenon, a state of its enthusiasm to realize team, group or organization objectives (Hershey, 1985).

Research team cohesion may be defined as the degree to which members of the team are attracted to each other in fulfilling the main tasks. Cohesion and specific norms contribute to further improvement of research quality, value, conclusions and other aspects resulting in favourable creative climate and a steady stream of creative ideas.

The assumptions that team or group cohesion might discourage personal creativity are not substantiated. There is a number of norms associated with cohesiveness that are necessary to promote effective group performance. Members of the research team who strongly agree and care about common objectives and communication norms generate more will to actively participate in investigation procedures than those who agree less and/or care less about such norms (Flynn and Chatman, 2004).

With reference to the priorities given to certain group values, academic culture itself obliges students to cherish and to keep to certain norms and values (objective truth, rationality, critical thinking, and new post-material values, such as independence, multiculturalism, tolerance, self-trust). Furthermore, the very idea of education is a value playing a determining role in the definition of common democratic societal values (McLaughlin, 1997).

The members of the research team create some kind of team ideology that becomes the essential agent in the whole process of investigation. This collectivistic orientation is rather effective in generating ideas and achieving expected results, as well as it does not suffer serious conflicts. Certain degrees of conflicts or disagreements may be even useful at a specific stage of research. According to Triandis (1995), collectivistic aspirations promote harmonious relationship among team members.

Table 3

Individual research intelligence

Capabilities	Specifications
Perception	The ability to make observations and conclusions.
Information processing	The ability to collect, manipulate and transform information.
Memory	The ability to accept, fix and store information.
Learning	The ability to develop new research knowledge and skills, as well as to learn from one's own and other's experience.
Behaviour	The ability to state realistic goals, to plan, o gain meaningful results and to behave flexibly at all stages of research.

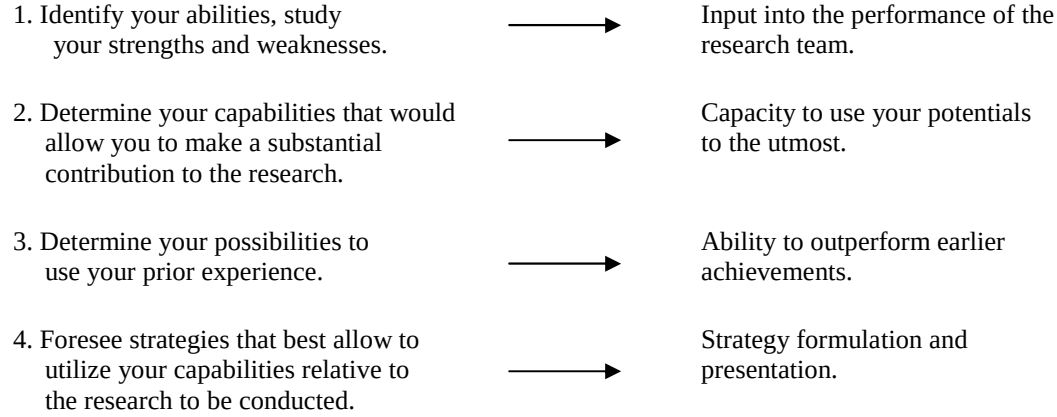

Figure 2. The resource-based model for evaluating individual abilities and responsibilities in research

Core ideology:	Envisioned future:
• Core purpose	• Research results
• Core values	• Research implementation

Figure 3. Articulation of a vision

The role of individuals in research teams. A research team consists of a wide network of relationship among individuals who regard themselves as belonging to that long-term or short-term structure, ensuring task-oriented activity, special supervision, authority and personal responsibilities. These relationships are purposefully directed towards the achievement of research objectives, towards maintaining it as a special unit.

Individuals in research teams are the agents who ensure strategic flexibility and ability to fulfil tasks and seek definite results. They stimulate the team to perform effectively and efficiently as well as implement the strategies needed to sustain creative ideas and apply various approaches to the research conducted. Each person in the research team possesses different potentials and develops unique capabilities. A research capability might be considered to be the capacity to perform exploratory tasks or to act in an integrative manner. Core research competencies are the interior potentials and capabilities that serve as a source of advance in investigation.

The components of individual research intelligence may be seen in Table 3 that presents research capabilities and their specification. Both individual and research team intelligence deal with research knowledge management. It is the capacity of an individual or a team to plan, use experience, gather information, introduce innovations, draw conclusions, generate new knowledge, act effectively, etc.

It is impossible for an individual or a team to become an intelligent agent without learning to investigate. A learning researcher or research team have their distinct systems of exploring phenomena in order to achieve planned results and to use them in various spheres (studies, communication, interchange).

Using the resource-based model presented by Hitt, Ireland and Hoskisson (2005), it is expedient to determine the role and responsibilities of an individual in the research team (Figure 2).

An individual can use reflective method for self-study in order to actualize the research goals and match the team work. The model reveals the overlap of the individual, leaders and group features.

Innovative research leaders. Cohesive research teams create inventive leaders and vice versa. Team leaders are usually chosen by the members of the team who are better informed about the leader's personal characteristics, quality principles, required leadership features, strong feedback senses, discourse cognition abilities, clear vision of the results, etc.

Different research tasks require various leadership behaviours in initiating, energizing and suggesting new ways for decision-making. Effective strategic leaders are able to make decisions that lead to efficient use of ideas, dynamic flows of information as well as flexible strategies. Thus, an inventive and analytical mind, honesty, common sense, creative thinking as well as an intelligent use of the team cohesiveness and individual creativity are the prerequisites to a student's success as a strategic leader of the research team.

A very important role in developing research leaders is played by their ability and flexibility to use the Internet information that has become a driving force in strategic thinking, research vision and intent. Even though the Internet shapes human relationships, its importance should not be overestimated. Human relationships constitute a complex, even super-complex, relationship network where any change can be readily passed over to the whole team. A research team is a rather small system. However, the relationships of its members become interwoven and interdependent just from the very beginning of investigation activities. Harmonization of the performance of this system is very much dependent on leadership whose aim is to purposefully move towards the achievement of the team's objectives, towards maintaining it as a special academic unit, and fulfilling certain sets of needs (task needs, team needs, individual needs) that ensure research success and quality. Individual or personal needs should be of the utmost importance for the leader and supervisor because each member of the team wants to be valued, worshiped, attended, recognized. It is the leader's task to balance interior and exterior relationships among the agents of the performance (Barvydienė and Kasiulis, 2001).

The effect of research vision. Researchers who enjoy enduring success enjoy research values and core purposes that remain fixed while their investigation strategies and practices become oriented towards the main objective and the means of achieving it most effectively. They perceive the difference between what should not be changed during the whole process of exploration and what should be open for change. This rare ability to manage continuity and change during research – requiring a consciously practice discipline – is closely linked to the ability to develop a research vision. A vision provides guidance about what aspects to preserve and what actions to stimulate. However, according to Collins and Porras (2004), 'vision' has become one of the most overused and least understood words in the language, conjuring up different images for different people: deeply held values, outstanding achievement, societal bonds, exhilarating goals, motivating forces.

In the case of students' rather temporal research, a well-conceived vision might consist of two major components: core purpose (ideology) and envisioned future (results). The core purpose defines why the research has been started. The envisioned future is what is aspired to achieve, create, conclude – something that will require efforts and effective activity. Core tasks and core values provide the glue that holds individual or research team

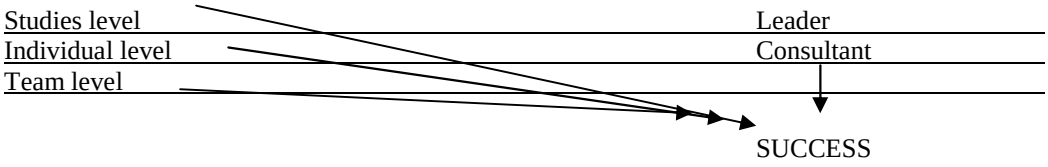

Figure 4. Factors of success in students' research

oriented to envisioned future. The articulation of research vision is presented in Figure 4.

Core purpose should not be confused with specific research goals or strategies, which can change in the course of investigation. The same may be said about research ideology and the concept of competence. 'Core competence' is a strategic concept that defines individual or team capabilities – what each researcher or the whole team are good at. Competences should be well aligned with research ideology. However, they are not the same thing.

Students' research takes a rather limited period of time. Therefore, the concept 'core' is very important. If the research team leader, consultant or some individuals are not sure about the core ideology, they should look for a general consensus and feel free to change anything that is not part of the ideology. If it is not core, it is up for change (Collins and Porras, 2004).

The second component of the research and any other vision framework is envisioned future. The concept 'envisioned future' is somehow paradoxical. On the one hand, it conveys concreteness – visible and real research results. On the other hand, it involves hopes, aspirations, dynamic, the latter providing the favourable context for realizing vision and mission, i.e. the extent to which individuals participate in the research, take responsibility, communicate, share ideas, etc.

All the factors influencing students' research success could be presented in the following scheme (Figure 4).

However, students' research effectiveness and success are more complex phenomena than it may seem. This process is influenced by a lot of interior and exterior factors, and the questions 'does it work?' and the more interesting question 'why does it work?' are likely to remain the main issues in education (Poškienė, 1997; 2002).

The individual intelligence, the team cohesion and a creative leader should be the main elements in reaching core purpose of the research and sustaining the core values. The elements may diverse depending on scientific traditions of an organization. Students' involvement into a research is rather short (because of the limited study period), so the means of teaching them the investigation skills and giving systemic view of knowledge should be effective and efficient.

Investigating students' research effectiveness

One of the most important things in this article is the model of research effectiveness which includes the role of a team, an individual and a leader. In order to investigate the meaning and understanding of research effectiveness, 24 Bachelor students (4th year) and 12 Master students (1 and 2 year) of the faculty of Humanities (KTU) and 6 Doctoral students of Vilnius University are questioned. Two methods of research are used: a questionnaire (for Bachelor and Master students) and a structured interview (for Doctoral students). The respondents are chosen purposefully. One of the conditions for selecting the respondents is their engagement in a bigger or smaller research project together with their teacher/-s.

The production or returns of research activity can be measured by the amount of students' research production (published articles), the use of the results in graduation and other projects or even the grades achieved by students-researchers. The interviews with the students of Master and Doctoral studies show that 87.5 percent of the respondents stress the importance of their prior Bachelor level experience in research activities. The peculiarity concerning research effectiveness is defined in the empirical research. In most cases it is a relative concept depending on variance in attainment levels.

Constructing effective research model, it is relevant to use Cameron and Whetten's (1993) checklist determining organization-effectiveness model. The questions are adapted to the aspect of research. This is only the initial list of questions which may be expanded. They are open and each of them requires a rather deep explanation.

Question 1: From what perspective is effectiveness to be judged? Organization effectiveness as well as research effectiveness is not always self-evident. 82 percent of Bachelor students and 56 percent of Master students are sure that research effectiveness is judged by the results and its further application. The rest of the respondents mentions sharing knowledge and gaining new knowledge. This may be explained by the incorporated role of the research into the studying process. All doctoral students stress the importance and number of publications and participation at conferences.

Question 2: Which area of research may be the most effective? This is the issue of agreement based on observation, prior experience and investigation. The majority of all the students mention the importance of the application of the research method. The answers vary only on the individual choice of the method in a particular research. All Doctoral students emphasized the choice of triangulation (qualitative+quantitative) method. They consider it to be the higher level of any research.

Question 3: At which level of studies is effectiveness analysed? The level of studies predetermines research possibilities, choice of research areas, its scope, etc. It is rather unexpected but the effectiveness as a phenomenon is not analysed by students. The departments of study programs should think of the possible ways and time to

incorporate the issue of the research effectiveness into the education process.

Question 4: How is effectiveness defined in terms of time? The factors, which play the role are (a) the frequency with which effectiveness is determined (in every stage of the research or at the end of it), and (b) the specific aspects that make influence (When is a research held? Does it require extra time for gaining new skills?). Only 4 Master and 3 Doctoral students mention the interdependence between time and research effectiveness: time between obtaining the results and their application in practice (or publication) should be as short as possible.

Question 5: What sort of data (results) are to be used to manifest effectiveness? The respondents stress the importance of objective data and data obtained with the help of convergence of quantitative and qualitative research methods. The respondents think that the data should be useful for future applications.

Question 6: What are the factors that have influence on research? One of these factors is research team cohesion, but students do not mention this factor. The individual input, the theoretical and practical preparation and a 'good' research instrument are considered to be the most influential factors. 3 Master's and 8 Bachelor's students think that a leader, in this case a teacher, plays the main role in a research. He(she) motivates, directs, inspires and helps a student in any stage of an investigation. The Doctoral students believe in the status and position of their leading professors.

The task of the questionnaire is not to evaluate the research effectiveness, but to reveal students' understanding about this specific phenomenon and clearing up the obstacles of students' motivated involvement into a research process. Students believe that the effectiveness and efficiency of any research project still belongs on a teacher's (leader's) qualification and competencies, and sometimes a team work can be an obstacle for reaching core purpose. In order to make the research effective the academic community should think of the possibilities in incorporating research or its elements into the education process.

Conclusions

The model of the research effectiveness reveals the interdependence of all the elements: the theoretical background, the criterion of the effectiveness, the level of the effectiveness and main areas of attention.

The research effectiveness can be evaluated from the perspective of individual intelligence, team cohesion and creative leader. Harmonization of relationships within a research team in order to satisfy the interests of all individuals carrying out research is a continuous and multidimensional process that depends on supervision and leadership abilities and style.

All research stages can be incorporated into the study process in order to promote new knowledge, motivation and parity relations between students and teachers.

The ability to follow a core purpose and core values can lead towards effectiveness and efficiency of a research. The core competence is one of a student's purpose to achieve and a teacher's means to structure the research.

Research effectiveness may be described as the effectiveness of an investigation process, as a way of acquiring knowledge and as an educational factor.

Students' understanding of research effectiveness depends upon teacher's competencies and the application of research results.

References

1. Barnett, R. (2000). *Realizing the University in Age of Supercomplexity.* Buckingham: SRHE and OUP.
2. Baršauskienė, V. ir Janulevičiūtė, B. (1999). *Žmogiškieji santykiai.* Kaunas: Technologija.
3. Barvydienė, V. ir Kasiulis, J. (2001). *Vadovavimo psichologija.* Kaunas: Technologija.
4. Brown, H.D. (1987). *Principles of Language Learning and Teaching* (2nd ed.). NY: Prentice Hall Regents.
5. Cameron, K.S. & Whetten, D.A. (1993). (Eds.). *Organizational effectiveness: A comperison of multiple models.* NY: Academic Press.
6. Collins, J. & Porras, J.I. (2004). Building Your Company's Vision. In M.L. Tushman, Ph. Anderson. (Eds.). *Managing Strategic Innovation and Change.* Oxford: Oxford University Press.
7. Creemers, B.P.M. (1994). *The Effective Classroom.* London: Cassell.
8. Dubrin, A.J. (1984). *Human Relations. A Job Oriented Approach.* Reston, Virginia: Reston Publishing Company, Inc.
9. Flynn, F.J. & Chatman, J.A. (2004). Strong Cultures and Innovation. In M.L. Tushman, Ph. Anderson. (Eds.). *Managing Strategic Innovation and Change.* Oxford: Oxford University Press.
10. Goldstein, H. (1987). *Multilevel models in Educational and social research.* London: Charles Griffin & Co.
11. Goldstein, H. (1997). *Multilevel statistical models.* London: Edward Arnold.
12. Hackman, J.R. (1987). The design of Work Teams. In J. Lorch. (Eds.). *Handbook of organizational Behavior.* NY: Prentice-Hall.
13. Hershey, R. (1985). *Organizational Morale.* WY: King Points Press.
14. Hitt, M.A., Ireland, R.D. & Hoskisson, R.E. (2005). *Strategic Management.* USA: Thomson, South Western.
15. McLaughlin, T.H. (1997). *Šiuolaikinė ugdymo filosofija: demokratiškumas, vertybės, įvairovė.* Kaunas: Technologija.
16. Organ, D.W. (1997). Toward an Explication of 'Morale': In search of the m Factor. In C.L. Cooper, S.E. Jackson. *Creating Tomorrow's Organizations.* London: John Wiley & Sons Ltd.
17. Poškienė, A. (1997). *Studentų mokslinės veiklos konsultavimas.* Konferencijos pranešimo medžiaga „Studijos aukštojoje mokykloje". Kaunas: Technologija.
18. Poškienė, A. (2002). Critical Pedagogy and Language Learning/Teaching in the Context of the University Change. In P. Jucevičienė, G. Merkys, G.B. Reinert. (Eds.). *Towards the Learning Society.* Frankfurt am Main: Peter Lang.
19. Quick, J.C. (1997). Ideographic Research in Organizational Behaviour. In C.L. Cooper, S.E. Jackson. (Eds.). *Creating Tomorrow's Organizations.* London: John Wiley and sons Ltd.
20. Robinson, A.G. & Stern, S. (1997). *Corporate Creativity: How Innovation and Improvement Actually Happen.* San Francisco: Berrett-Koehler.
21. Savanevičienė, A. ir Šilingienė, V. (2005). *Darbas grupėse.* Kaunas: Technologija.
22. Scheerens, J. & Bosker, R.J. (1997). *The Foundations of Educational Effectiveness.* Oxford: Pergamon.
23. Scheerens, J. (1993). Basic School effectiveness research: Items for a research agenda. *School effectiveness and School Improvement,* 4.
24. Triandis, H.C. (1995). *Individualism and Collectivism.* Boulder, CO: Westview Press.
25. Vessuri, H. (1998). The Pertinence of Higher Education in a Changing World. *Prospects,* 28, 3.

A. Poškienė

Studentų mokslinių tyrimų efektyvumo siekimas ir modeliavimas

Santrauka

Mokslininkai gerai žinomą žodį *tyrimas* kartais keičia kitais žodžiais - ieškojimų praktika, tiriamasis mokymasis, refleksinė praktika. Šiuos terminus jungia efektyvaus mokymosi ir mokymo taktikų pasirinkimas. Visais atvejais studentai susiduria su problemos formulavimu, loginiu ir kritiniu mąstymu, hipotezių kėlimu ir jų sprendimo būdų paieška (Brown, 1987).

Efektyvus tyrimas gali nulemti efektyvaus mokymosi, produktyvių paritetinių santykių bei specifinio diskurso pažinimo poreikį ir atvirkščiai. Daugiasluoksnė problema iškelia keletą probleminių klausimų: kaip įgalinti studentus būti aktyviais ir motyvuotais tyrimo proceso dalyviais; kaip pasiekti, kad visos tyrimo proceso stadijos harmoningai įsilietų į visų lygių edukacinį procesą.

Moksliniai tyrimai yra aukštojo mokslo misijos dalis ir šiandien niekam nekyla abejonių, kad akademinės bendruomenės nariai turi dalyvauti jos vykdyme ir būti patikimais visuomenės sąjungininkais (Vessuri, 1998). Studijos ir tyrimai ne tik įgalina studentus surasti naujos informacijos ir faktų, bet ir skatina jų asmenybės vystymąsi. Akademinės organizacijos ir studentai tikisi, kad paskaitos bus paremtos moksliniais tyrimais (Barnett, 2000).

Daugelyje mokslo sričių moksliniai tyrimai yra atidžių, sisteminių ir kantrių ieškojimų būdas sukurti naujas žinias, teorijas ir principus. Pokyčiai vykstantys aukštajame moksle, inovacijų skatinimas ir naujų žinių poreikis verčia akademinę bendruomenę eiti mokslinių tyrimų keliu. Kyla klausimas, kaip į mokslinius tyrimus įtraukti visų lygių studentus ir padaryti taip, kad tyrimų rezultatai ir jų taikymas būtų abiejų – studentų ir dėstytojų – laimėjimas.

Veiksmingumo ir produktyvumo sąvokos yra glaudžiai susiję su sąnaudomis ir išeiga (rezultatu). Sąnaudos edukacinėse institucijose yra studentai, finansinės ir materialinės priemonės. Išeiga ar rezultatai – tai studentų pasiekimai atskiruose tyrimo proceso etapuose bei tyrimo rezultatai. Visos šios tyrimo sudedamosios turėtų būti įvertinamos efektyvumo požiūriu.

Tyrimo efektyvumą galima apibrėžti kaip tam tikrą ribą, kuri parodo mokslinių tyrimų siekiamo ar trokštamo lygio išeigą (rezultatus). Galima išskirti dvi tyrimo efektyvumo sudedamąsias: techninį ir socialinį efektyvumą. Techninį efektyvumą sudaro bendras studijų lygis, mokymosi strategijos, įgyti įgūdžiai, požiūris į teoriją ir praktiką bei tolimesnė tyrimo patirtis aukštesnėse studijų pakopose. Socialinis efektyvumas – tai individualus vystymasis, socialinis mobilumas, darbo produktyvumas (Scheerens ir Bosker, 1997).

Apibrėžus techninį ir socialinį efektyvumą, galima sudaryti struktūrišką mokslinių tyrimų efektyvumo modelį, kuris atskleistų priklausomybę tarp teorinio pasiruošimo, efektyvumo kriterijaus, tyrimo lygio efektyvumo ir pagrindinių domėjimosi sričių. Modelis laipsniškai pereina nuo vieno efektyvumo lygio prie kito. Jame atsispindi individo prisitaikymas prie pradinių tyrimo sąlygų ir sąnaudų bei išeigos įvertinimas. Modelis įvertina grupės ir komandos vaidmenis tyrime, kurie skirtinguose tyrimo etapuose gali akcentuoti abipusę priklausomybę tarp narių arba atsakomybę ir motyvaciją siekiant bendrų tikslų.

Tyrimo efektyvumo modelis neįvertina tyrimo tikslo ir pagrindinių vertybių, kurios turi būti tyrimo vizijos pagrindu, tačiau ateityje modelis gali būti papildytas ar modifikuotas įtraukiant ir kitas tyrimo sudedamąsias.

Straipsnio esmė yra siekis paaiškinti ir sudaryti tyrimo efektyvumo modelį, kuris galėtų daryti tiesioginę įtaką tyrimo produktyvumui, todėl anketos ir struktūrizuotos interviu metodų taikymas, remiantis Cameron ir Whetteh (1993) klausimynu, yra tik bandymas priartėti prie tyrimo efektyvumo reiškinio suvokimo ir reikšmės.

Tyrimas buvo atliktas tikslingai pasirenkant respondentus, kurie kartu su savo dėstytojais dalyvavo mažesniame ar didesniame mokslinio tyrimo projekte. Tyrimo imtis buvo 24 bakalauro studijų, 12 magistro studijų studentai. Interviu dalyvavo 6 doktorantūros studijų studentai. Toks pasirinkimas buvo tikslinis, nes tyrimo pradinė vizija buvo išsiaiškinti nuomones, požiūrius ir suvokimą apie tyrimo efektyvumą.

Apklausos raštu ir interviu rezultatai atskleidė, kad studentai mokslinio tyrimo procesą suvokia atsietai nuo tyrimo efektyvumo, nors pastarojo svarbą teoriškai supranta. Tyrimo efektyvumą dažnai sieja su dėstytojo statusu, kompetencija ir būsimomis publikacijomis mokslo žurnaluose.

Apibendrinant galima teigti, kad siekiant mokslinių tyrimų ir naujų žinių sklaidos, tyrimo procesas, visi jo vykdymo etapai turėtų būti harmoningai suderinami ir įtraukiami į edukacinį procesą. Nuoseklus mokslinių tyrimų procesas gali pakeisti akademinių paritetinių (dėstytojų ir studentų) santykių kokybę.

Raktiniai žodžiai: tyrimo efektyvumas, tyrimo procesas, tyrimo produktyvumas, tyrimo vizija, individualus ir komandinis darbas, moksliniai tyrimai.

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