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## Action research as part of the processes for assuring work quality in an educational institution

**Abstract:** In the article we present action research as a factor in the teacher's professional development and as part of processes for ensuring quality in education. Action research is characteristically performed by practitioners, in this case teachers, often with the help of the school counselling service and the mentor, and directly oriented towards an improvement in practice. In the article we analyse the main characteristics of action research and the model of teachers' professional development. We present the results of empirical research which were used to determine whether there are any evident differences between teachers who have experience in research and those without such experience in terms of their interest in participation in the research process and at which stage of professional development are those teachers who are most prepared to do research.

**Key words:** action research, teacher-researcher, teachers' professional development, quality in education

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## 1 Introduction

In Europe and other developed countries there have been ongoing processes which in the different school systems (USA, New Zealand, Sweden, Austria, the Netherlands, Scotland etc.)<sup>1</sup> emphasise the concept of quality in education whereby an individual education institution is defined as a key element of quality assurance.

Supposing that for assuring the quality of an individual school system one needs to focus on the quality of work of each specific educational institution (kindergarten, school, residence hall etc), then quality assurance must be systematically established at the national level with the concerted action of different institutions such as the Ministry of Education, public institutions which offer professional assistance to education institutions, the National Examinations Centre, the school inspection, the system of the constant professional training of teachers etc. In the last few years, some projects financed with European Union funds may also be included in this picture.

As far as the quality assurance of performance of the school system depends on work in an individual education institution, it is logical that countries have initiated the intensive promotion of the self-evaluation of school work as well as measures and processes which are performed autonomously and following the initiative of each individual school to ensure quality (cf. Bîrzea et al. 2005). External institutions retain their role of external assistance or providing counselling to schools. According to Medveš, the philosophy of quality assurance in the school has been establishing itself, developing and consolidating '... linearly proportionate with the concept of school autonomy. At the initial stages of public school development, school quality was entirely based on external, national school inspection. During the democratization process and strengthening of

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<sup>1</sup> MacBeath (1999). Schools must speak for themselves: The case for school self-evaluation; *Qualität in Schulen* (Q. I. S.) (2007); *How good is our school?* (2007); Bîrzea, Cecchini, Harrison, Krek, Spajić-Vrkaš (2005). Tool for the quality assurance of education for democratic citizenship in schools.

school autonomy, the concern for quality was increasingly transferred to school' (Medveš 2000, p. 10). The author also stresses that none of the modern initiatives has cancelled external mechanisms of control; however, connections are established between the concept of the external examination performed by the school inspection and the concept of self-evaluation performed by the school itself. In this context, the headteacher is becoming more responsible for the work and educational management of the school than the 'external' national school inspector (cf.: *ibid*, p. 11).

The headteacher's position is important since s/he manages the school's work and its autonomous ways of ensuring quality. It is a known fact that Slovenia has an established system of training for headteachers which educates (current and future) headteachers to perform specific headteacher tasks at the School for Headteachers<sup>2</sup> where they acquire knowledge especially in the management field. In the future it is hard to imagine quality school management if the headteacher is not trained to encourage the self-evaluation of work at school or kindergarten. Such self-evaluation is only a means to promote quality assurance and as such provide the required and suitably interpreted information which the teacher or school needs to improve the quality of their work.

Despite the headteacher's responsibility and the importance of the systemic quality assurance of work in schools and kindergartens for which the state is responsible, there is no need to prove that in the end the quality of education depends especially on the quality of each individual teacher's work and coherence in performance as well as on connecting the work of professional workers in the school.

For the teacher profession it is true that formal education provides fundamentals which have to be upgraded and complemented with permanent professional training. Teachers have to acquire knowledge, monitor and evaluate educational practices. Another important factor in encouraging the teacher's professional development is co-operation between faculties and schools. In this

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<sup>2</sup> The School for Headteachers started already at the end of the previous decade to perform the so-called project 'network of learning schools'. In a school which entered this project a team of professional workers was formed for the purpose to promote the implementation of changes. The purpose of the project was to prepare the school for changes and for solving problems. Such a school reaches in approximately six months the point where it defines its priorities and decides on the areas which are on the top of this priority list (e.g. the question of working with parents, schedule and subjects, home assignments etc.) Regardless of the problem the school chooses, the process established the culture of co-operation, other means of communication and dealing with problems which qualifies the school to function in a similar manner without external assistance. The National Education Institute of the Republic of Slovenia had developed a self-evaluation instrument of the school called 'Mirror' (Milekšič 1999). This is an instrument which analyses school work as a whole from the perspective of different subjects: teachers and school management, pupils and parents who are acquired on the basis in questionnaires prepared in advance. With it the school gets the opportunity to compare points of view from all three perspectives, the school can compare itself and accordingly increase the level of education and training work. At the end of the previous decade the Ministry of Education and Sports initiated a connection between all important institutions which have staff potentials for the development of the model and instruments for self-evaluation of work in an education institution. The objective was that participants in a kindergarten and school transform the observations into actions which provide quality (Pluško et al. 2001).

paper we present the project 'Partnership of the Faculties and Schools', research into educational practice, and the direct use of results in education and training through which we trained teachers for action research of actual educational practice with the purpose to improve the quality of lessons.

The idea of teachers studying educational practice was already discussed by Schön, especially in his works *The Reflective Practitioner: How Professionals Think in Action*, (1983), and *Educating the Reflective Practitioner*, (1991). According to him, practitioners have to: (1) participate in the study of their own practice; and (2) develop educational theories which reflect actual educational practice. The action research presented in the following section is an appropriate strategy for realising the mentioned objectives.

### *1.1 Definition of action research*

The idea of action research originates from the work of the social psychologist Lewin who described research as a set of steps in a spiral, each containing the planning, action and assessment of the achieved result. Lewin defined action research as applied research for dealing with the use of classic research plans, for example an experiment with comparable groups (Kemmis 1988). Although nowadays his research is classified between classic experiment and action research, Lewin categorised them as action studies as they comparably study the forms of social function and action. One of the pioneers of action research in the education field is Corey (1953), who was convinced that a personal involvement in studying one's own practice contributes more to improvements in the educational practice of an individual teacher than a report on what another teacher established about his or her work and what changes he or she implemented.

Different authors have provided different definitions of action research. Carr and Kemmis (1986: 118) defined action research as a 'form of self-reflecting enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out.'

Frost (2002: 25) defines action research as a systematic process of reflexion, studying and action; all the mentioned factors are performed by individuals in their everyday professional practice. According to Adam (1989: 33), action research is a 'research methodological strategy with which the researcher in cooperation with individuals or groups on research basis deals with social changes and innovations.' Bassey (1998: 93) defined action research in education as a form of research 'which teachers perform to acquire knowledge, study, and evaluate their work as well as implement changes to improve educational practice.' 'Action research supposes that a teacher is involved in studying lessons or own educational practice; the fundamental goal of action research is not to acquire general knowledge in education but to promote teachers' professional development' (Borg 1965: 313). According to Watts (1985: 118), action research is a process 'where participants systematically and in detail study own educational practice by using different research methods, techniques, and instruments.' The methodology of action research does not contain rigidly directed methodological

rules and is actually quite loose in its basis. It runs in spiralling circles between action and reflexion, offering enough space for the application of qualitative and quantitative procedures on all levels (Mažgon 2006). Action research is based on the following presumptions: teachers will best deal with problems they have created and engage themselves to solve them; teachers will be more effective as they will continually revise and evaluate their educational practice and test the effectiveness of selected teaching approaches; action research encourages teachers' professional development, team work, which in turn influences the connection between teachers and better educational atmosphere (Watts 1985: 118).

From all these definitions we may conclude that action research is performed by practitioners who try to find solutions to everyday problems in educational practice and try to find the means and methods to achieve lecture objectives and knowledge standards of students or an individual student. In the process of action research teacher-researchers acquire new knowledge and advance professionally.

### *1.2 Characteristics of action research*

In the next section we will analyse the fundamental characteristics of action research (cf. Carr and Kemmis 1986, Kemmis and McTaggart 1990, Fraenkel and Wallen 2006).

Action research in education is usually carried out by teachers (often with the help of the school counselling service and the mentor, usually from the faculty) who are directly involved in problems of their everyday education practice and are therefore personally interested in studying and reflecting a particular problem or situation in order to solve the problem and improve their educational practice. Action research is always based on specific everyday problems where there are possibilities for improvement and it thus avoids problems which cannot be influenced. For teachers who wish to perform action research it is considered that, besides their willingness and motivation to do research, they have the opportunity or professional autonomy to make the decisions necessary for research (e.g. implementing changes in the educational and training process) (cf. Fraenkel and Wallen 2006: 568). Since the objective of action research is to study a specific situation or improve specific conditions in this situation, action research is usually carried out in single school or department. Data obtained within one school cannot be generalised according to one single procedure as is typical of statistic generalisation based on a representative sample. Action research is about the transferability of conclusions analogically. With a proper description of an action research course, readers obtain a model of how participants studied a specific situation, solved dilemmas and improved conduct as well as circumstances. By taking into consideration the characteristics of their own situation, the reader can transfer the results of action research to educational practice and adopt them if possible as well as act accordingly or adjust to the characteristics of a specific situation. It is therefore important that the course of action research with achieved results is published and publicly accessible.

The school atmosphere is highly important for the conduct of action research. The school management and teachers, who evaluate teachers' research work

as one of the criteria for improving educational work and encouraging teacher-researchers in different ways to co-operate in their research work, are the most significant for quality action research. Besides the mentor, teachers who are not active participants of the study but are prepared to listen and co-operate with advice, dialogue, comments etc. proved to be very helpful to teachers involved in research work. It often happens that the teacher-researcher is not objective due to their need for change and can therefore create a too ambitious plan which simply cannot be carried out on account of the remaining teacher responsibilities. In such cases, it is desired that the teacher-researcher discusses their ideas with a trustworthy colleague who is capable of objective and critical judgment. In action research the researcher prepares a flexible research plan. The indicative plan of action research created by teacher-researcher at the beginning of the research process has to be updated throughout the entire research. The plan of the entire action research divides individual realisable action steps whereby each step is oriented towards activity with specific objectives. The number of action steps and their duration always depends on the specific research problem set by the researcher. With each step the researcher has to predict the means to observe and record effects at an individual stage of research. The evaluation is thus formative or up-to-date as well as summative or final. A formative evaluation with its observations enables the up-to-date assessment of activities and in-time measures to improve its quality. A summative evaluation is helpful in the final assessment of the final step as well as in decisions concerning the further course of the research process.

Although action research usually employs data collection techniques which were mainly developed within qualitative research<sup>3</sup> and gives individuals the opportunity to create a simple answer and express their opinion of the studied problem in their own manner (e.g. a questionnaire with open questions, essays, diary, non-standardised interview), researchers also use techniques typical of traditional empirical analytic or quantitative research<sup>4</sup> (e.g. examinations, psycho-

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<sup>3</sup> With the expression »qualitative research« we denote that kind of research where the basic empirical material, collected in the research process, consists of verbal descriptions or narratives. Further, the collected material is worked on and analysed in words without numerical operations (Mesec 1998). According to Creswell, qualitative research is a research process designed on a clear methodological tradition of research, where researchers build a complex, holistic framework so that they analyse narratives and observations, conducting the research work in the habitat (Creswell 1998, p. 15). Thus, in qualitative research the collected data are more in a verbal and picture form than in a numerical one. There is also a tendency towards an integral and in-depth comprehension of phenomena in as natural a setting as possible, as well as in the context of concrete circumstances (Mesec 1998). The researcher is directly included in the environment, which helps him observe the object of the research. In this context, the researcher should be aware of the fact that with his or her participation and the researched situation itself they influence the happening which they are observing. Further, to qualitative research, we also attach attributes such as phenomenological approach, the use of hermeneutical procedures of explanation, an orientation towards the process and the dynamic. Qualitative analysis is finalised by forming a grounded theory which reads as a narrative of a phenomenon which was the subject of the study.

<sup>4</sup> Quantitative research with its empirical analytical methodology and one-way or linear research process follows the example of natural sciences. The basis of quantitative research is the belief that there is a reality led by stable natural laws, independent of people and waiting to be discovered. Its

logical tests, questionnaires with open questions, grading scales, position scales, standardised interview, structural observation etc.). It is also sensible to employ triangulation within action research. According to an approved definition, triangulation means 'the use of different methods in studying a specific research problem' (Denzin 1978). In the social sciences triangulation has been used especially as a technique to check the validity of research observations. There was an established belief that research hypotheses can be confirmed or rejected only if we reached the same conclusions by means of different methods. Denzin (1978) expanded the definition of triangulation. In his opinion, the triangulation of methods is only one form of triangulation; another possibility is the triangulation of data sources, researchers and theories (also discussed by: Janesick 1998). Janesick (1998) added a fifth form of triangulation, i.e. the triangulation of scientific disciplines. Another established belief is that triangulation is not a technique of checking the validity of research findings, but it enables a better comprehension of the studied phenomenon. 'Triangulation is not a strategy of validity but rather its alternative. A combination of several methods, data sources, theoretical assumptions, and researchers in a single research provides a better comprehension of the studied problem – it is a strategy which increases the extent, depth, complexity .... of conclusions of each study' (Denzin and Lincoln 2005: 5).

## 2 Empirical Research

### 2.1 *Purpose and objectives of the study*

We will answer the following research questions:

(1) whether there are statistically significant differences regarding their willingness for further co-operation in research work among those teachers who have experience with research work and those without such experience; (2) whether there are statistically significant differences among teachers with and without experience regarding the stage of the research process at which they are prepared to participate; and (3) whether there are statistically significant differences regarding their willingness to further participate in research work among teachers who are at different stages of their professional development.

The data were obtained via empirical research performed within the project 'Partnership of the Faculties and Schools in 2006 and 2007: Teacher-researcher and inter-subject connection', which was enabled by the European Social Fund of the European Union and the Ministry of Education and Sport of the Republic of Slovenia, which co-financed it. Besides the Faculty of Education at the University of Ljubljana, 26 other partner institutions were included in the project. The idea of the project is to qualify teachers from partner institutions for action

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objective is to reach reliable, exact, precise, measurable, verifiable and objective observations which in the social sciences would have the same value as findings in natural sciences. The problem of research in quantitative research is handled part by part. We approach different aspects of the phenomenon and deal with individual variables but on a larger number of units, most frequently on a representative sample of a population, since our tendency is to generalise the established observations.

research. The goals of the project are: (1) to establish a web site for collecting and mediating information about needs and interests for researching educational practice together with defining existing problems in previous methods of teaching, and the formation of propositions for their bridging; (2) to deepen the collaboration between teachers and researchers, and the development of partner-like relations: researcher-teacher, with the purpose of productive and effective research into educational practice; (3) training teachers for the planning and execution of educational practice studies; (4) to develop a model of researching educational practice which would be oriented to inter-subject connections and to preparing teachers for the planning, execution and evaluation of inter-subject connections in schools.

## *2.2 Description of the sample*

Purpose sample was used in the research. 274 teachers, who teach at partner institutions, completed a questionnaire; 87.8 % women and 12.2 % men. A good half of the interviewed teachers (54.4 %) works at primary school, almost a quarter (23.3 %) works at secondary school. One tenth (14.1 %) of educational workers, who work at institutions for nursery education, and 5.2 % of those who work at other institutions (e.g. student's hostel, library, institution for children with special needs), also took part in the research. The average age of interviewed teachers is 40.87 (standard deviation is 7.74 years). In average they have 17.58 years of working experience (standard deviation is 8.93 years). About one half of the interviewed teachers (51.9 %) have a university degree, a quarter (25.2 %) of teachers have a higher education degree. One tenth of the interviewed educational workers (10.0 %) have high school education, about one tenth of educational workers (9.3 %) have a professional higher education degree. 3.7 % of the interviewed educational workers have a specialisation, Master's or doctoral degree.

## *2.3 Data-collecting procedure*

Data were collected in September 2006. Within the framework of the project we prepared a questionnaire where we monitored how research in schools is progressing. We also recorded the standpoints of educational workers on researching. On this basis we plan to form a proposal of the systematic, organisational and normative changes needed for the model of researching educational practice to begin living in practice.

The questionnaire is composed of four evaluation scales (reasons that influence the teachers' level of engagement in educational research, reasons which cause a gap between research institutions and school practice, factors that could contribute to the growth of teachers' research work, teachers' willingness to collaborate in individual phases of the research process), three semantic differentials (which characteristics the teachers ascribe to research, to an average teacher and an average researcher), a complex of questions where we determine teachers' opinions on how much they learned about research during their studies and in programmes of ongoing professional training; and a complex of questions where we try to determine some personal data of the respondents (gender, age,



work age, degree and education, faculty, professional title, type of institution where they work).

In this article we will only show the data collected with the evaluation scale about the teachers' willingness to collaborate in individual phases of the research process, and with some closed questions where we seek to determine teachers' opinions on how much they learned about research during their studies and programmes of ongoing professional training. On the basis of Cronbach's Alpha coefficient the evaluation scale achieves sufficient reliability ( $\alpha = 0.87$ ) and validity (with the first factor we explain 52.16% of the variance). Validity was further checked with the help of a factor analysis. According to the  $r_{tt} \geq \sqrt{h^2}$  law, the aforementioned part of the questionnaire achieves a good degree of validity ( $r_{tt} = 0.82$ ).

#### 2.4 Methodology

In the empirical research we employed a causal-nonexperimental method of educational research. The data from the questionnaires were processed using methods of descriptive and inferential statistics. The statistical procedures employed were: frequency distribution, central tendency (mean), dispersion (standard deviation),  $\chi^2$  – test of the hypothesis of independence, Levene's test for the homogeneity of variance (F-test), the T-test for an independent sample, factor analysis for testing validity (% of explained variance with the first factor) and reliability (% of explained variance with common factors) of the instrument and Cronbach's Alpha coefficient as a measure of instrument reliability. The data are represented in a tabular form.

### 3 Results and Discussion

#### 3.1 Importance of experience in research work for further research

We were interested in the extent to which experience in research work influences a teacher's interest in further research and used the sample of partner institutions to establish teachers' involvement in research activities up to now and their level of interest in research work in the future. It was explained to the respondents that research is the planned and systematic acquisition, analysis and interpretation of data for the purpose to contribute to the progress of professional understanding and educational practice. Among 274 interviewed teachers, almost one-half of them (48.2%) estimated that teachers sometimes do research. Two-fifths of the interviewed teachers (39.4%) answered that teachers rarely do research. Only one-tenth of the respondents answered that the teachers do research very frequently (0.4 %) or frequently (12.0 %). None of the teachers answered that teachers do not engage in research.

Next we asked the teachers if they had ever conducted a study or if they had participated in any kind of research work, and if they are prepared to participate in a study in the following school year.

About three-fifths of the respondent teachers (58.8%) answered that they alone had not carried out any research yet nor had they collaborated in research.

Two-fifths of the teachers (41.2%) answered that they had already carried out research or participated in it.<sup>5</sup> One-third of the interviewed teachers (37.2%) said they are prepared to participate in a study, one-fifth of them (22.6%) is not ready to participate in a study, while two-fifths of the interviewed teachers (40.1%) could not decide if they would or would not collaborate in research work. For further analysis and an increase in participation in research work it would be necessary to identify what motivated teachers who had already participated in research before, to start research, who motivated them, what encouraged them during the process, what limited them and where they encountered obstacles, what they experienced during the research process, and what the research has brought them.

Since positive experiences with a certain change are usually an important predictor of implementing particular changes, we were interested in whether there are any statistically significant differences regarding the teachers' willingness to participate in research among the teachers included in our study who have experience in research work and those who do not.

	Are you prepared to participate in research work in this school year?							
	da		ne		ne vem		skupaj	
	f	f %	f	f %	f	f %	f	f %
No. I do not have research work experience.	38	23.8	46	28.8	76	47.5	160	100.0
Total	102	37.5	62	22.8	108	39.7	272	100.0

Table 1: Answers from teachers with experience in research work and those without as to whether they are ready to participate in research work

Among the answers of the teachers who have research work experience and the teachers who do not have research work experience, there are statistically important differences in their willingness for further collaboration in research work ( $\chi^2 = 31.582$ ,  $df = 2$ ,  $P = 0.000$ ). More than half of the teachers (57.1%) who already had research work experience are prepared to collaborate in researches in the future. On the other hand, only a quarter of teachers (23.8%) who do not have research work experience yet are ready to collaborate in research work. Almost half the teachers who do not have research work experience (47.5%) cannot decide if they would or would not participate in research work. Only one-quarter

<sup>5</sup> Most teachers (18 or 41%) who said they had already conducted a study and provided a short description of the study had performed research work at the school where they were employed (e.g. eating habits of students, writing home assignments, pupils' workload, popularity of individual subjects, pupils' sport habits). A tenth of the teachers had participated in a study in co-operation with the National Education Institute of the Republic of Slovenia, the Education Institute or had conducted a study within their diploma paper. Two-tenths of the respondents said they had conducted a study in co-operation with a faculty and the Headteachers' Training Centre.

(28.6%) of the teachers who have research work experience remain neutral in their decision. While one-tenth (14.3%) of the teachers who have research work experience are ready to participate in research work, only a good quarter (28.8%) of the teachers who did not have research work experience are ready to participate in research work.

It can be concluded from the above figures that experience in research work does effect a teacher's willingness to also do research in the future. More teachers with experience in research work than those without (57.1% vs. 23.8%) are willing to conduct studies or participate in research work in the future. This is an important observation which needs to be taken into account when preparing study programmes for future teachers as well as for creating the programme of continuous professional training. If we wish to engage teachers to do research work, it is vital that already as students they develop a positive attitude to research and understand research as an important factor in a teacher's professional conduct and development. It is therefore essential for students to acquire knowledge in research (fundamental methodological knowledge and learn about basic statistical procedures which are used in education) and gain their first specific experience in research work. Students need the opportunity to use the theoretical knowledge in methodology, for example, when developing a specific instrument for data collection and planning own research. It is understandable that students are unable to conduct larger studies (e.g. on representative samples); for their training smaller studies are also useful since the sample is represented by their colleagues, for example. Students learn to define the study problem, create sensible study questions, search for the most appropriate ways to collect data to obtain answers to given study questions, develop the skill of creating instruments and the statistical processing of data as well as interpreting the obtained data which further encourages them to perform interdisciplinary research into individual topics. In the future teachers will thus learn about the applicability of statistics and methodology and already gain their first experience in research during their studies. Teachers need to have the possibility within their ongoing professional training to continuously update their knowledge in educational research. It can be expected that those teachers who will gain positive experience and basic competencies in research already during their studies will complete their knowledge during the process of continuous professional training.

In the following sections we have determined the stages of the research process where teachers are prepared to participate.

	$\bar{x}$ with experience	$\bar{x}$ without experience	t	df	sig
planning of research contents (what to research, goals of the research...)	3.86	3.52	2.978	270	0.003
methodological planning of the research (research plan, the sample, the data-collecting procedure...)	3.71	3.38	2.728	270	0.007
preparation of techniques and instruments for data-collecting	3.58	3.34	2.066	211.181	0.040
data-collecting	3.95	3.78	1.618	270	0.107
processing and interpretation of the results	3.70	3.38	2.672	270	0.008
writing of reports	3.45	3.00	3.648	217.259	0.000
acquainting interested public (other teachers, parents ...) with the results of the research	3.63	3.16	3.928	270	0.000
introducing the findings and improvements to school practice	4.11	3.86	2.172	270	0,031

Table 2: Stages of research work where teachers who have and those who do not have research work experience are prepared to participate

Teachers evaluated their willingness to participate in individual phases of the research process on a five-step grading scale. We established that teachers (regardless of their experience in research) are mostly prepared to participate in implementing observations and improvements in school practice ( $\bar{x} = 3.97$ ), which is understandable as teachers usually judge the value of research according to its 'applied value', i.e. the possibility to change and improve school practice. The purpose of each study is to solve the problem, which means changing practice in the widest sense possible. Next is the teachers' willingness to participate in data collection ( $\bar{x} = 3.84$ ). It needs to be stressed that the quantitative paradigm typically defines the role of the studied person, in our case teachers, as limited especially in the procedures of data acquisition and implementing changes in practice. In order to ensure the highest level of objectivity (as well as validity and reliability), a demand for separating the studied object from the studied subject is employed in quantitative research. This puts the researcher in charge of the research process whereas the studied person represents the source of information. It is typical of the qualitative paradigm that the researcher and those under research together formulate the studied situation which means that teachers are supposed to participate in planning, data collection, data processing, interpretation and informing the public about the study results.

An interesting fact is that teachers are largely prepared to participate in planning the content of a study – what to research, research objectives etc.

( $\bar{x} = 3.66$ ) than in the methodological planning of the study – the research plan, process of data collection etc. ( $\bar{x} = 3.51$ ). We can assume that content planning relates more to them since they have more knowledge in this field. Less interest in participation was expressed by teachers in data processing and interpretation ( $\bar{x} = 3.50$ ), informing the public about the research results and the preparation of techniques and instruments ( $\bar{x} = 3.36$ ). The teachers were the least interested in writing the research report ( $\bar{x} = 3.18$ ). Writing a research report, which requires an in-depth reflexion of the research problem, and informing the public with the results from the study are two factors which are not normally strictly bound to the teacher's everyday professional role but which significantly influence the teacher's professional development. According to Ebbutt (1985), the phase of writing a research report and presenting the results to the public, in addition to developing research questions and systematic data collection, is the main dividing line between the teacher – thinking practitioner and teacher – researcher. The teacher-researcher is expected to perform the entire research process, i.e. they will know how to form a research problem, analyse it in terms of research questions, hypothesise, create a plan for data collection and processing, know how to interpret the obtained data, and write a report on the course of the study.

Next we have examined whether teachers with experience in research statistically significantly differ and at which stages of the research process they are prepared to participate in comparison to teachers without such experience. By taking into account the assumption of the homogeneity of variance, the T-test for independent samples (see Table 2) has shown statistically significant differences between teachers with experience in research work and those without regarding their interest in participation in individual stages of the research process. Statistically significant differences were present in all phases of the research process, except in data collection, and teachers who had experience in research work are largely prepared to participate in all phases of the research process compared to teachers without experience in this field. Again we can say that collecting data is a step which is also present in 'traditional' or quantitative research and does not require much effort from the teacher and it is therefore understandable and expected that in this area there were no statistically significant differences among teachers with previous experience in research work and those without.

### *3.2 Action research in schools – an important factor in the teacher's professional development*

In action research both the final result and the research process is important. Throughout this process a teacher can improve his or her professional standpoint and teaching (e.g. determine which teaching methods are more appropriate for children with special needs, which strategies of applying discipline are more effective etc.), and acquire knowledge in research work. Action research trains teachers to perform independent studies, motivates them, and trains them to read and critically judge other studies dealing with similar issues. Teachers with experience in own research work are usually more qualified to transfer the findings of other studies into their own practice. Action research can thus be

defined as one of the important factors of a teacher's professional development. There are different definitions of a teacher's professional development. In this paper we have adopted the definition which explains the teacher's professional development as 'a process of significant and lifelong empirical learning in which teachers develop their own comprehensions, and are changing their teaching practice; it is the process which includes teachers' individual, professional and social dimension, and it is also teachers' progressing towards the direction of critical, independent, responsible decision-making and acting' (Valenčič Zuljan 2001, p. 131).

In the literature we can find many attempts at defining and changing a teacher's professional development. One of the first empirical attempts to define professional development is the three-stage model by Frances Fuller (Fuller, 1969). She connected teachers' professional development with a change in teachers' consideration of professional dilemmas and worries (Feiman-Nemser and Floden 1986; Veenman 1984). This development should progress from the survival stage – where the teacher is oriented especially to his or her own position and role – through the stage of experience and orientation in a teaching situation (mastery stage) to the last stage where the teacher's interest is oriented towards the influence his or her actions have on students.

Studies by Lanier, Adams, Hutchinson and Martray, and Adams and Martray (Veenman 1984), who monitored teachers in the first, third and fifth year of teaching, generally confirm Fuller's model. With increasing work experience, considering one's own role decreased, however, the teacher's consideration of the lessons themselves increased. An interesting observation of the abovementioned authors is that teachers' consideration of those professional tasks which are in any way connected with the question of discipline does not change with years of professional development but remains similar in all phases.

Fuller has modified her initial three-phase model and added an additional phase, which refers to students during their training at a faculty. It is typical for this period that students have a realistic perception of pupils, whereas they have an unreal image of the teacher's role and do fully not understand it.

In their later studies Fuller and Bown (Kagan 1992) emphasise that phases in the model of a teacher's professional development are not clear and isolated and define professional growth as 'constant, continuous teacher's self-confrontation' (Kagan 1992: 160). Despite all of this, there is still a tendency to develop a general model which does not take into account the context and conditions in which a teacher works (e.g. characteristics of the school atmosphere, the headteacher's management style).

Next we were interested in the teachers' attitudes to research work in different stages of professional development. As the criteria for determining the level of a teacher's professional development, we used their years of work experience. Although we are aware that the phases in the model of a teacher's professional development are not clear and isolated, the years of service are not the only criterion which effects the teacher's professional development in such a manner that all teachers do not reach the highest level of competence and that those teachers

who do reach it do not function in each situation and all areas of professional work at this level (cf. Berliner 1992), years of service seemed to be one of the most important factors directing a teacher's conduct and decisions in practice. The teachers were classified in four categories regarding their years of service: (1) first period – entering a profession or a newcomer teacher (1-3 years of work experience); (2) second period – professional stabilisation and consolidation or a beginner teacher (4-6 years of work experience); (3) third period – professional activity of an experienced teacher (7-18 years of work experience) and (4) fourth period – the stability phase or an expert teacher (above 18 years) (cf. Huberman 1992, Berliner 1992).

We seek to determine whether there are statistically significant differences among teachers who are at different stages of their professional development regarding their interest in participating in research work.

	yes		no		do not know		total	
	f	f %	f	f %	f	f %	f	f %
newcomer (1–3)	12	57.1	3	14.3	6	28.6	21	100.0
beginner (4–6)	6	28.6	5	23.8	10	47.6	21	100.0
experienced teacher (7–18)	39	47.0	12	14.5	32	38.6	83	100.0
expert(19–40)	41	29.5	39	28.1	59	42.4	139	100.0
total	98	37.1	59	22.3	107	40.5	264	100.0

Table 3: Answers from teachers with different years of service to the question regarding their willingness to participate in a study during this school year

The research has shown that teachers with a different period of work experience are statistically significantly different regarding their interest in research work ( $\chi^2 = 13.213$ ,  $g = 6$ ,  $P = 0.040$ ).

Teachers in the first period of professional development (teachers newcomers) and teachers in the third period of professional development (experienced teachers), i.e. teachers with the least work experience in education and those who have between 7 and 18 years of work experience, are the most prepared to do research.

More than half of the teachers (57.1%), who have up to three years of work experience (the first phase of the teacher's professional development) and almost half the teachers with 7 to 18 years of work experience (the third phase of the teacher's professional development) answered that they are prepared to participate in the study. Only a quarter of the teachers (28.6%) who have 4 to 6 years' work experience (the second phase of the teacher's professional development) and those (29.5%) with the most working experience, i.e. 19 years or more, (the fourth phase of a teacher's professional development) are prepared to participate in the study. More beginner teachers (47.6%) and teachers experts (42.4%) than teachers newcomers (28.6%) and experienced teachers (38.6%) said they are not prepared to participate in the study and could not decide whether to participate

in the study or not (47.6% of beginners, 42.4% of experts, 38.6% of experienced teachers and 28.6% of newcomers remained neutral in their decision). How can we interpret the above observations?

From the presented results it is evident that with the research process newcomer teachers, i.e. teachers in the first stage of their professional development with up to three years' work experience, are the most prepared to participate in the research process.<sup>6</sup> Teachers who enter the teaching profession and meet with class management for the first time are, according to studies of the teacher's professional development, typically oriented to their own position and role and deal with the question of 'professional survival'. They try to determine the parameter of school practice, define their own role in it, and predict and meet the expectations of others' (Veenman 1984, p. 143). Nevertheless, experience in research work acquired during studies at a faculty and by writing a diploma paper is obviously still 'live' enough for showing an interest in research in the first few years of teaching. After the reform of the previous higher education system to university education (1987–1988) or the reorganisation of the previous Academy of Education to the Faculty of Education (1990) all teachers are required to complete a four-year university study programme where they acquire knowledge in the fundamentals of educational methodology and statistics.<sup>7</sup> As already noted in 1994 by D. Piciga and C. Razdev{ek Pu~ko (1994: 49), teachers are more prepared to co-operate with researchers, participate in the execution of action researches and the implementation of research observations in practice. 'Teachers no longer have the impression of being in a subordinate position in their relationship with researchers and cooperation with researchers can be established on the basis of partner relationship' (ibid.). Next we will provide data on how teachers acquired knowledge in statistics and methodology and how they evaluate their knowledge in the mention field. More than two-thirds of interviewed teachers said that during their undergraduate studies they attended a lecture where they learned about statistics-related topics (67.9%) and methodology (69.0%). One-fifth of the interviewed teachers (20.5%) attended a training programme (seminar, workshop, lectures etc.) on research within their ongoing professional training. The interviewed teachers assessed their knowledge in statistics according to a five-step assessment scale with the average mark of 2.54 (standard deviation 1.03), their methodological knowledge with an average mark of 2.70 (standard deviation 1.09).

From these figures it is evident that teachers with 4 to 6 years' work experience (the second period of the teacher's professional development) have decided

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<sup>6</sup> We also checked the stages of the research process at which the teachers, who are in different phases of professional development, are prepared to participate. The results reveal that in all phases of the research process newcomer teachers (with up to three years' work experience) show the biggest level of interest in the participation in content planning, the collection of data, and the implementation of observations and improvements in school practice.

<sup>7</sup> Regarding this, we mention the data obtained by A. Drobnič Vidic (2003) in her study that show that 70% of students enrolled in the first year of study at the University of Ljubljana in the 2001/02 study year dealt with statistics.



to a smaller degree to participate in research work (only 28.6%). Other empirical studies also confirm the observation that after a while the initial excitement about innovation and researching one's own practice decreases over time. According to observations by Huberman (1992), Fessler, Unruh and Turner (Kremer Hayon 1991), Vonka and Schrasa (Razdevček Pučko 1990), in this period teachers become more self-confident, stick to a routine, and prefer traditional methods. They are less interested in research and even show a fear of it. They usually search for reasons in external factors.

In the third phase the teacher's interest is especially directed towards the level of the effect they have on their pupils. Fuller (1969, Feiman-Nemser and Floden 1986) believed that teachers in this phase mostly rely on their own capabilities and self-judgement of the situation. Unruh and Turner (Kremer Hayon 1991) are also of the opinion that in this period the teacher's maturity, confidence and tendency towards change is typical, which is also confirmed by the results of our study. Almost half of the interviewed teachers (47.0%) with 7 to 18 years of work experience is prepared to participate in the study. For teachers with 19 years' work experience or more the interest in research drastically decreases; less than a third is prepared to participate (29.5%).

#### 4 Conclusion

At the end of the 1980s and beginning of the 1990s the educational profession in Slovenia intensively started to show interest in action research. During this period, numerous public discussions and professional articles on action research appeared (e.g. Sagadin 1989, Marentič Požarnik 1993 a), consultation of the Association of Education Societies was organised with a publication following (Cerar, Marentič Požarnik 1990), while the translation of the planner for action research was published (Kemmis and McTaggart 1990). The first studies conducted in Slovenia were based solely or especially on action research.<sup>8</sup> Nowadays action research is one of the most common forms of research in education used by practitioners and dealt with by numerous experts.

Based on empirical research we have established that the experience gained by teachers with research work has an important statistical effect on further cooperation in research work. More than half of the teachers (57.1%) with experience in research are also prepared to participate in studies in the future while only a quarter of teachers (23.8%) with no experience are prepared to participate. Teachers with experience in research work and newcomer teachers with up to three years' work experience are more prepared to co-operate in all phases of the research process as teachers without experience. Motivating teachers for research is a complex 'project', its success is the responsibility of all institutions related

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<sup>8</sup> Especially action-oriented was the international study Environment and School Initiatives (Marentič Požarnik 1993 b), performed within the OECD/CERI in 23 countries and methodologically conducted by Prof. Elliot, one of the biggest experts in action research.

to the education of education workers: faculties which educate future education workers, education institutions where education workers are employed, and suitable national institutions (Ministry of Education and Sport of the Republic of Slovenia, Ministry of Higher Education, Science and Technology, the National Education Institute).

The observation about the importance of experience in research work for further research has to be considered when planning study programmes for future teachers. If we wish teachers to do research and adopt it as part of their profession, the faculties need to educate them already during their studies to practice research work and thus enable them to gain their first experience with specific research work. The studies should provide the possibility to acquire knowledge in methodology and statistics and apply it in practice, e.g. when developing a specific instrument for collecting data and planning a study. In Scandinavian counties, for example, the entire education of teachers is based on the belief that all teachers should be acquainted with the latest studies related to education, teaching and learning, learn to use the results of a study in practice sensibly, and be academically and professionally qualified for research. They believe that such knowledge enables the systematic planning of lessons, development of social and ethic dimensions of the education profession, and assume responsibility for more responsible positions in society (Niemi, Jakku-Sihvonen 2006). At the end of the study year the teachers need to have the opportunity to stay in contact with the research work (e.g. with seminars of ongoing professional training, different projects), continuously update their knowledge in this field since this is the only way for research to become part of their everyday practice. If teachers and school management support and promote research work at school and assistance in research is offered to teacher-researchers, the teachers will do research much more often.

The principals of education institutions should, together with the Ministry of Education and Sport, reconsider the financial and professional evaluation of teachers' research work. Since teachers also have to perform other activities in addition to their education commitments to accomplish the 40-hour working time, it would be possible for teachers who do research to recognise a certain number of working hours for their research activity.

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