



Professional Development in the Educational Context - From Insecurity to Research Competence: Empowering Educators Through Research

Original research article

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Abstract

The research, Experiences and Challenges in Implementing Action Research in Preschool Education, was conducted to analyze educators' knowledge of research methods, to identify factors that influence their application, and to consider the possibilities of professional development and improving pedagogical practice. The results reveal challenges, awareness of research benefits, and motivation of employees for their application. Obstacles that arise during implementation relate to organizational issues, difficulty applying individualized approaches, inflexibility, and lack of institutional support. A negative trend is observed: as uncertainty increases, the level of perceived competence decreases. Spearman's rank correlation and Kruskal-Wallis test confirm the negative relationship between uncertainty in applying research methods and the perception of their competence, and the analysis found that educators with higher self-assessed competence are more likely to implement research. The results indicate the need for systematic professional support to strengthen the identity of educators as reflective practitioners and researchers of practice.

Keywords: foresight methods, institutional support, motivation of employees, professional development, research competencies

Research methods offer a wide range of advantages for encouraging positive changes in the field of education by directing human activity towards the development of

new skills and, at the same time, moving it away from the mere acquisition of factual knowledge (Dubovicki and Beara, 2021). The need to introduce changes in education

directs us to the future (Petrovic-Soco, 2009). By planning the next steps and anticipating challenges, an opportunity for adaptation is obtained, and a solution to the problem is found in a shorter way (Dubovicki, 2017). However, the focus of education research is rarely directed towards the future because it is still oriented towards phenomena from the past or present, although the specificity of the time in which we live requires an approach to forecasting and planning for the future (Dubovicki et al., 2018). It is necessary to emphasize that in pedagogy, research problems, due to their holistic nature, are not subject to the presentation of exclusively statistical results, but also require the use of qualitative data (Sekulic-Majurec, 2007). Foresight methods that offer the possibility of researching problems in education are Delphi, the focus group method, the wheel of the future method, the sixth sense method, the backcasting method, the forecasting method, the trend analysis method, and the technological development forecasting method (Dubovicki, 2017). The first accepted method, which is by definition, focused on future research, is the Delphi method, which aims to connect the assumptions of experts and, based on them, predict the future development of a certain phenomenon. In pedagogical research, it involves the implementation of a scientific procedure with a defined structure, which allows the integration of expert knowledge on the research problem and offers the possibility of discussion, reflection, and future assessment (Viskovic, 2016; Ristovska et al., 2025). The implementation of the Delphi method includes several phases that are most often carried out in three or four rounds (Suzic, 2012; Helmer, 1983).

The Sixth Sense method is based on intuition, knowledge associated with creative insights that are the result of the thinking activities of the right side of the brain (Vrcelj and Musanovic, 2001), and creativity, which is closely related to divergent thinking (Dubovicki, 2017). This method is most often used in parascientific research, and its application is especially common in discontinuous foresight research, where the researcher's intuition offers the possibility

of predicting and connecting previously unavailable data.

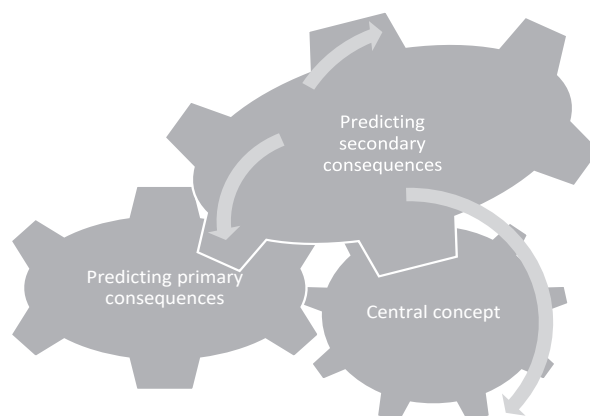
The focus group method is used to approach a research problem through conversations between 6-12 participants selected according to pre-set criteria (who share similar characteristics or experiences). A moderator supports the interaction, and their attitudes, experiences, personal beliefs, ideas, and opinions are collected (Skoko & Benkovic, 2009).

The informal atmosphere encourages participants to express their personal attitudes and opinions without restrictions, which creates a synergistic effect that facilitates the collection of a large amount of information (Milas, 2009; König and Zedler, 2001). It is a qualitative form of research that aims to achieve in-depth discussion, recognizable by the dynamics and interaction of the participants (Dzogovic and Bajrami, 2023; Skoko and Benkovic, 2009). The multiple benefits of applying this method are reflected in exploratory and pilot studies, and the use of video allows for the evaluation of both verbal and non-verbal components.

The foresight trend analysis method is the only one that is more commonly encountered as a research method in education. It allows for the prediction of trends based on collected data from the past, including causes, influences, and consequences. Trend analysis includes research procedures such as the assessment of influential variables and the analysis of the foundations of the phenomenon being examined (Vrcelj and Musanovic, 2001). This method can be both quantitative and qualitative in nature, and the advantages of its application in the field of pedagogy are reflected in the aim of predicting the outcome of research into current educational phenomena. The Futures Wheel method is intended for a smaller number of participants and aims to project the outcomes of new trends through two rounds of implementation (Dubovicki, 2017). The process resembles a brainstorming session in which the projected event is placed in the center, after which the participants write down their considerations, placing them in wheels intended for predicting primary effects.

Figure 1.

Schematic Representation of the Future Wheel Method



Source: Dubovicki, S. (2017). Futuroloske metode istrazivanja [Futuristic Research Methods]. In S. Opic, B. Bognar, and S. Ratkovic (Eds.), Novi pristupi metodologiji istrazivanja odgoja (p. 210). University of Zagreb.

The procedure shown in Figure 1 is repeated two to three times. It consists of removing unrealistic considerations and elaborating on the remaining ones through a joint discussion that leads to secondary predictions of consequences. The backward planning method and the planning method are guided by the principle of taking responsibility in the present for the benefits that the future brings. The image of the desired future influences the choices and behavior of the individual in the present and directly shapes the ways of its realization. The backcasting method has as its starting point a prediction of the desired future from which it moves backward, thereby determining the steps that precede the achievement of a predetermined goal (Dubovicki, 2017), and is suitable for application to long-term complex problems because its purpose is to direct and identify critical segments of challenges that may arise in the future (Vrcelj and Musanovic 2001).

The useful method is the Polak game, in which participants are assigned to one of four quadrants, arranged according to an imaginary 2x2 matrix representing the dimensions: existential pessimism, existential optimism, optimism of influence possibilities, and pessimism of influence possibilities. These factors offer the fundamental logic, moral basis, power of attraction, and

predisposition for any imagined image of the future (Hayward & Candy, 2017).

Reflecting on the optimal research methods in preschool educational institutions, Sekulic-Majurec (2007) states that it is desirable to combine quantitative and qualitative approaches, with methods such as case studies, qualitative content analysis, ethnographic, and action research, enabling greater success in individual work and solving specific educational problems. Given that an educational institution is a self-organizing community whose culture is manifested in collaborative relationships (Milat, 2005) and continuous changes and learning (Vujicic, 2011), the need for change requires the introduction of foresight research methods that require the active participation of all educators.

The above deserves research because independent research work as a professional tool in the teaching profession has been neglected, even though autonomy gives teachers the freedom to create their own practice, thereby participating in the creation of the entire educational context, which is confirmed by research conducted in Italian preschool institutions (Vandenbroeck & Lazzari, 2014). In order to improve educational practice that starts from the individual, it is necessary to become aware of the importance of self-evaluation, because

critical observation of one's own actions can shed light on the problems that the educator encounters in their work. Noticing the problem is the beginning of creating the need for self-reflection, a specific research approach, and the application of an appropriate research method that enables the increase of professional skills. The aforementioned approach also has a social dimension that is focused on development, and as a result of research, ideas are obtained, and at the same time, activities are adapted to needs (Spasic & Maksimovic, 2023). In addition, the segments on which motivation depends are the theoretical knowledge that the educator acquires during their studies, the practical skills they acquire during their work, and personal affinities for additional training and work on improving their own competencies (Sagud, 2011).

Lack of knowledge leads to a feeling of insecurity, which results in avoiding facing problems in educational practice. On the other hand, self-confidence and self-trust are prerequisites for creating an atmosphere conducive to introducing the necessary changes (Vujicic, 2011). Therefore, the professional development of educators, along with self-initiated professional development and education, should be based on systematic and continuous improvement of competencies and directed towards individual and collective micro-research of educational practice. The implementation of foresight research creates an environment that encourages teamwork and openness towards constructive and critical examination of one's own practice and the practice of colleagues. Research requires the cooperation of all employees and the willingness to analyze achieved successes, but also failures, which most practitioners are not ready for, and which results in a lack of research motivation (Jukic, 2010). According to Kero (2022), research can encourage the development of mutual respect, tolerance, and acceptance of diversity, and thus implicitly create a path for the development of one's own competencies.

Methods

The research, *Experiences and Challenges in Implementing Action Research in Preschool Education*, was conducted to analyze educators' knowledge of research methods, to identify factors that influence

their application, and to consider the possibilities of professional development in the context of improving pedagogical practice. The following hypotheses were set: H1: The level of knowledge and competence of educators is related to the frequency of application of educational research in practical work.

H2: The level of uncertainty of educators is negatively related to the perception of their own knowledge and competence for implementing educational research.

For the research, a questionnaire on the topic of Experiences and Challenges in Implementing Action Research in Preschool Education was developed, consisting of 32 questions through which quantitative data were collected, and two open-ended questions.

At the beginning of the questionnaire, there are questions focused on demographic characteristics (gender, work experience, type of education, and size of the municipality/city of the preschool institution).

Furthermore, there are questions related to the number of children in educational groups and a question about the level of experience in using technology. The second part of the questionnaire refers to experiences with challenges in implementing action research in preschool education. Based on the statements made, the respondents expressed their opinion on the level of agreement using a five-point Likert scale (1 - I completely disagree, 2 - I disagree, 3 - I neither agree nor disagree, 4 - I agree, 5 - I completely agree). The respondents were offered two open-ended questions in which they were allowed to express their own opinion.

The study, held from February to May 2025, involved 101 preschool teachers from Croatia. A request for permission to participate was sent to the principals of educational institutions, and 13 consents for its implementation were received. The questionnaire was created in the Microsoft Forms application and distributed to teachers via email and virtual communication groups. Participants were clearly informed about the objectives, and research ethics based on the principles of voluntariness and anonymity were fully respected during the study (Pavlovic & Stanojevic, 2020).

The limitations of the study are reflected in the short response collection period and the small sample of respondents, and the

importance of applying longitudinal designs in educational analyses should also be taken into account (Barbarovic, 2019). Before conducting the main analysis, preparatory procedures were carried out, which included variable coding, checking for missing data, identifying outliers, and estimating the distribution of variables.

Results

The dispersion of data around the arithmetic mean was shown by the standard deviation (Muzic, 2004), and the Kolmogorov-Smirnov and Shapiro-Wilk tests were used to check the normality of the distribution as a prerequisite for the correct selection of statistical processing methods in social research (Opic, 2011). The analyses were based on non-parametric methods characterized by significant robustness, which is why they can be applied to small samples (Marusteri & Bacarea, 2010). This was followed by an exploratory multidimensional factor analysis conducted by Varimax rotation, which summarized a larger number of interdependent variables into four common factors that represent their connection according to which they are applicable to identify invisible dimensions (Zivadinovic, 2004). As a measure for assessing the reliability of the internal consistency of the scales, the Cronbach Alpha coefficient was used (Rajh, 2009).

The Spearman coefficient shows the correlation that represents the agreement of data groups in order to show the degree of connection between the studied phenomena (Udovicic et al., 2007), and the Kruskal-Wallis test was used to detect statistically significant differences between the studied groups. It is also necessary to emphasize the redundancy in the answers to open questions, which is often present and can lead to an overload of the statistical analysis (Hercigonja-Szekeres et al., 2012).

The majority of the respondents were women (97.0%), which is in line with the gender structure of employees in the early and preschool education sector. The largest share of respondents is in the age group of 31 to 40 years (36.6%), and the smallest share is in the age group of 50 to 65 years (16.8%). The analysis of educational qualifications showed that more respondents had a university degree (53.5%) than did not

have a university degree (46.5%). The largest share of educators (25.7%) has 11 to 20 years of experience, which indicates a significant share of professional staff. The largest share works with a group of 10 to 15 children (38.6%), while only 4% of educators work with a group of fewer than 10 children. The majority regularly (39.6%) or occasionally (53.5%) use technology in the educational process, 5% use it never, while 2% of respondents took a neutral position.

Descriptive data on the items that respondents had the opportunity to respond to on a Likert scale, from 1 (strongly disagree) to 5 (strongly agree), showed that a significant number of educators (57.4%) recognize the importance of action research in their own practice, the application of which gives them the role of reflective practitioners and thus directly contributes to the quality of educational work.

The analysis of the statement focused on knowledge of research methods showed that 35.6% of respondents believe that they have extensive knowledge, while 30.7% of educators expressed a completely neutral attitude, which is a predictor of self-assessment of uncertainty. The above data also indicate the need for additional improvement of competencies in the area of research methods. Furthermore, 41.6% of educators state that they are familiar with the positive effects of applying research methods in kindergartens, while a large number of educators maintain a neutral attitude (32.7%).

When expressing their opinions on studying preschool education, respondents are not sure about their theoretical knowledge of research methods (36.6%) or do not believe it (34.7%). Despite previously expressing knowledge about the positive effects of applying research methods, only a third of educators apply them in their work (34.7%), and an equal share is not sure (33.7%).

By investigating the obstacles that may arise in the practice of educational work, the thesis that educators do not have enough time in their daily work is fully confirmed, as 65.4% of educators agree with the stated statement. Although the problem of lack of time is evident (62.4%), they state that they fully support the initiative of professional associates or colleagues to include research methods in their own practice. Despite positive opinions about the presence

of support from the educational institution for participation in additional professional development, a large proportion of educators (42.6%) still state that they have not participated in professional development on topics in the field of research methods, and the high standard deviation (1.16) indicates variability. A significant number of educators (61.4%) recognize the value of applying action research as a tool for improving their own competencies. Accordingly, the majority of respondents (64.4%) show interest in participating in research projects involving preschool children.

Analysis of Open Questions

Respondents' responses to the open question "Please share your experiences, opinions, and observations about the challenges of conducting action research in preschool education" can be classified into two categories: advantages and challenges. Educators recognize the advantages of conducting action research in educational work, citing its benefits through the possibility of additional reflection and improvement of practice, and they encourage cooperation and joint action through ethical considerations aimed at changes in the educational institution. They state that research can serve as a suitable tool for providing a different perspective to children with internalized behaviors and for offering deeper insight into specific individual problems, especially when it comes to shy, timid, and educationally neglected children. One of the frequently mentioned advantages of conducting research is the cooperation between educators, parents, and the entire professional team, which is of particular importance in working with children with developmental disabilities, as also highlighted in the research conducted by Dumancic & Milkovic (2024).

Most educators cite organizational conditions and lack of time as obstacles, while at the same time emphasizing the lack of resources and expectations that educators are obliged to personally finance the costs associated with the purchase of materials and resources for work and the printing of additional documentation related to the implementation of research. Furthermore, the activities they must carry out are often

imposed, which is why there is no space and time for reflection and systematic planning of research projects that would be focused on the target educational group. In open-ended responses, respondents also confirm the previously obtained result, which refers to high motivation to conduct research. A larger number of children in a group negatively affects the organizational skills of educators, reduces the quality of work, hinders an individualized approach, and significantly hampers motivation to undertake additional activities, including research.

Respondents point out the lack of institutional support and incentives from experts who should assume the role of initiators, and state the need for greater engagement of a quality professional team that would motivate educators to implement foresight methods and guide them through the research process in the form of moderation and support. In addition to the need for high-quality professional support, the respondents point out the lack of motivation of employees and non-cooperation among colleagues, as well as the experience of resistance and inflexibility, which confirms that the lack of professional competence and knowledge of research methods leads to insecurity and resistance among educators toward conducting research. Respondents cite as a challenge the lack of professional education and the presence of strict ethical regulations when conducting research, as well as frequent changes in regulations that limit the implementation of research activities.

Exploratory Factor Analysis (EFA)

The suitability of the data set for factor analysis was checked using the KMO (Kaiser-Meyer-Olkin) test, which shows how well the correlation matrices are suitable for factorization (Opic, 2011), and the obtained value of 0.770 confirms the positive suitability of the sample for factor analysis. Bartlett's criterion is used to assess factor extraction, with certain given parameters (Opic, 2012), and the results of Bartlett's test of sphericity are also statistically significant $\chi^2(253)=1137.121$; $p<0.001$ and confirm the presence of sufficiently high correlations between variables to continue the analysis, as shown in Table 1.

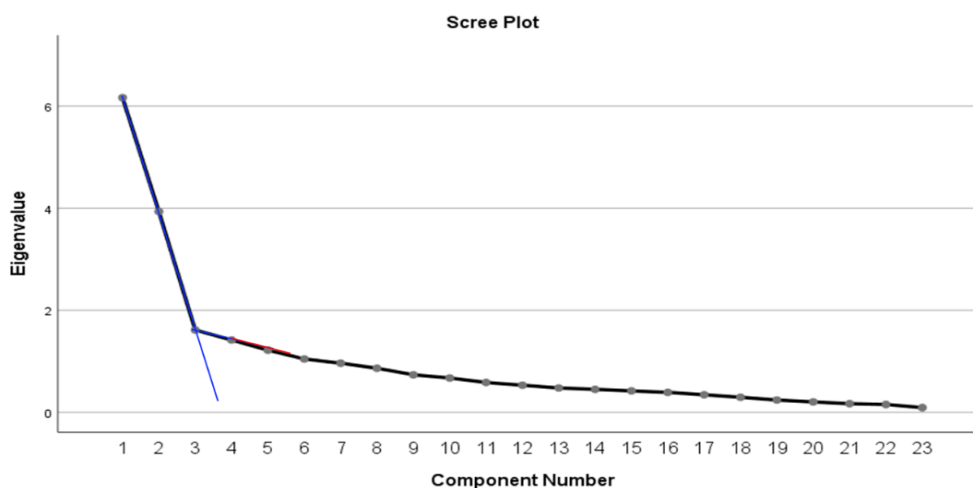
Table 1.
KMO and Bartlett's Test of Suitability for Factor Analysis

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.770
Bartlett's Test of Sphericity	
Approximate Chi-Square	1137.121
Degrees of Freedom	253
Significance (p-value)	0.000

For factor extraction, the method of principal components analysis (PCA) with Varimax rotation is used, the main goal of which is parsimony (Opic, 2012) to achieve the principle of simple structure and simplify the factors in the matrix. The basic criterion for factor extraction was an eigenvalue

greater than 1.0, and six factors containing 66.95% of the total variance were extracted. After rotation, the total explanatory variables are for Factor 1 (16.94%), Factor 2 (15.05%), Factor 3 (13.82%), and Factor 4 (7.99%), giving a total percentage of 53.80%.

Figure 2.
Scree Plot of Eigenvalues



Based on the scree graph (Figure 2), a fracture is observed after the third factor, which represents the point after which the eigenvalues decrease. In this case, the fourth factor was also taken into account, because loadings above 0.60 are very strong and desirable for theoretical interpretation (Opic, 2012). According to Zivadinovic (2004), the loadings are part of the factor structure matrix, which represents the correlation coefficients of the studied factors and variables, and also indicates the importance of each variable for each factor. Based on the obtained rotated factor loadings shown in Table 2, four components were identified.

Factor 1: Attitude about one's own knowledge, competence, and prerequisites for implementing research methods contains 7 items: P8, P9, P10, P11, P12, inversely, P23, P24; factor loadings range from 0.576 to 0.759, with a negative loading for the uncertainty item P12: 0.662.

Factor 2: The attitude about the benefits of conducting action research on the professional development of educators includes items P28 - P31 and P29 and P30, having loadings greater than 0.84, which indicates a strong homogeneous structure.

Factor 3: Institutional support for the implementation of research methods in the

practice of educators with the aim of self-reflection on work includes P19, P21, P25, P26, and P27, with loadings from 0.642 to 0.725.

Factor 4: Perception of the benefits of research methods and their application in educational practice includes items P13, P14, and P15 with very strong loadings (P15:

0.762; P14: 0.684).

Exploratory factor analysis showed that the instrument contains a satisfactory factor structure with clearly differentiated dimensions that are theoretically consistent with previous research and assumptions, and the obtained results provide a valid basis for further inferential analyses.

Table 2.

Rotated Component Matrix (Varimax Rotation)

	Statement	Component 1	2	3	4	5	6
8	You believe you have extensive knowledge of research methods that can be used in work at a kindergarten.	0.759					
23	You believe you are fully competent to conduct action research in your own work.	0.751					
9	You are familiar with the positive effects of conducting research in kindergartens.	0.707					
12	You feel insecure in applying research methods.	-0.662					
10	Preschool education studies provide a solid theoretical foundation in research methods.	0.642					
24	You are satisfied with the level of knowledge about the benefits of conducting action research in kindergartens.	0.616	0.625				
11	You have used research methods in your own work.	0.576					
30	Action research has a direct impact on the professional development of educators.		0.869				
26	Action research serves educators as a tool to raise their own competencies and should therefore be used in educational practice.		0.848				
28	In your institution, educational research projects include children of preschool age.		0.830				
31	Through action research in your own practice, you gain the role of a reflective practitioner, directly contributing to the quality of educational work.		0.785				
25	You conduct action research in your own work to improve your own pedagogical practice.		0.725				
27	There are clear guidelines and protocols for conducting research in your institution.		0.658				
19	You have participated in professional development (courses, workshops, seminars, expert meetings) on research and research methods in kindergartens.		0.656				
21	In your educational practice, you use self-reflection for the purpose of improving your own work.		0.648				
16	Your institution supports and encourages conducting action research to create a culture of lifelong learning and research.		0.642				
15	You are motivated to implement new research findings in your professional work.			0.762			
6	You believe that research can help in solving problems occurring in your educational institution.			0.684			
7	Research results help to better adapt the educational process to children's needs.			0.568			
17	You regularly initiate collaboration with colleagues in including research methods in educational practice.				0.724		
5	Research methods require more time than is available.				0.646		
18	Your institution supports educators' interest in additional professional training.					0.838	
22	You have sufficient material and resources to conduct research in your daily practice.						0.525

Note: Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 8 iterations.

Reliability Levels of Variables

To ensure the validity and reliability of the measurement instrument, an internal consistency analysis was conducted using the Cronbach’s alpha coefficient, which allows

an assessment of how closely the items within the scale are related and the extent to which they consistently measure the same psychological construct (Rajh, 2009).

Table 3.

Scale Reliability Levels (Cronbach’s Alpha Coefficient)

Measure	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N (Number of Items)
Factor 1	0.810	0.810	5
Factor 2	0.899	0.900	4
Factor 3	0.720	0.718	4
Factor 4	0.710	0.712	3

The results show that Factor 1 - Attitude toward one’s own knowledge, competences, and prerequisites for implementing research methods has a coefficient $\alpha = 0.810$, which indicates high reliability and good internal consistency. Factor 2 - Attitude toward the benefits of implementing action research on the professional development of educators also shows very high reliability with a value of $\alpha = 0.899$, which is on the verge of excellent internal consistency. Factor 3 - Institutional support for implementing research methods in the practice of educators, with the aim of self-reflection on work, has a coefficient $\alpha = 0.720$, which is considered satisfactory for research purposes, and Factor 4 - Perception of the benefits of research methods and their application in educational practice, with a value of $\alpha = 0.710$, is also within acceptable limits.

Hypothesis testing

H1: A higher level of knowledge and competence for the implementation of research methods statistically significantly predicts the frequency of application of action research in practice. Spearman’s rank correlation and the Kruskal-Wallis test were used to test the first hypothesis. The results of the Spearman correlation (table 4) show a moderate and positive relationship between the perception of one’s own research competence (F1) and the frequency of application of action research (P25) with a rho coefficient of 0.604 and a significance of $p < 0.001$, which indicates that with the increase in the perception of competence, the application of research methods also increases. According to the aforementioned guidelines for interpreting correlation coefficients, values between 0.50 and 0.69 indicate moderate to high association, which in this case supports the hypothesis.

Table 4.

H1 – Spearman’s Correlation

Variable	Factor 1 – Attitude towards own knowledge, competence, and prerequisites for implementing research methods h	P25. You apply action research in your own work to improve your educational practice.
Spearman's rho	1.000	0.604**
p-value	-	0.000
N	101	101
	0.604**	1.000
p-value	0.000	-
N	101	101

**Correlation is significant at the 0.01 level (2-tailed test).

The Kruskal-Wallis test result (Table 5) also shows a statistically significant difference between the groups of participants divided according to their responses to P25. The H value of 37.716, with a significance

level of $p < 0.001$, indicates the existence of differences in the mean ranks of Factor 1 (F1) between the different levels of research implementation.

Table 5.

Results of the Kruskal-Wallis Test

Statistical Test	Factor 1 – Attitude towards own knowledge, competence, and prerequisites for implementing research methods
Kruskal-Wallis Statistic	37.716
Degrees of Freedom	4
Significance (p-value)	0.000

a. Kruskal-Wallis Test

b. Grouping variable: P25. You apply action research in your own work to improve your educational practice.

Additional insight into the direction and intensity of differences between groups is presented in Table 6, which contains the

mean ranks of Factor 1 (F1) by response group on P25.

Table 6.

Factor F1 Ranks According to Responses to P25

P25. You apply action research in your own work to improve your educational practice.	N	Mean Rank
Strongly disagree	6	32.58
Disagree	27	30.30
Neither agree nor disagree	33	49.71
Agree	32	71.08
Strongly agree	3	74.17
Total	101	

The results support hypothesis H1 and indicate that perceptions of competence and knowledge are key to encouraging the practical application of research methods in preschool institutions. The combination of Spearman's correlation and the Kruskal-Wallis test provides consistent evidence in support of hypothesis H1. Participants who apply research more often also have a higher level of perceived competence and knowledge about research methods. H2: A higher level of uncertainty in the application of research methods (P12) is negatively related to the perception of one's own knowledge and competence in the implementation of research methods (F1). To test this hypothesis, Spearman's correlation

and the Kruskal-Wallis test were conducted, which enabled testing the relationship between the assessment of one's own competence (F1) and the level of expressed uncertainty in the application of research methods (P12), which was measured by an ordinal scale with five levels of agreement. The results of Spearman's correlation (Table 7) indicate a statistically significant negative correlation between the variable P12 and Factor 1 (F1), with a correlation coefficient of $\rho -0.447$, $p < 0.001$. As the level of expressed uncertainty increases, the perception of one's own competence and knowledge for implementing research methods decreases.

Table 7.*Factor F1 Ranks According to Responses to P25*

Variable	Factor 1 – Attitude towards own knowledge, competence, and prerequisites for implementing research methods h	P12. You feel insecure in applying research methods in your practice
Spearman's rho	1.000	-0.447**
p-value	—	0.000
N	101	101
	-0.447**	1.000
p-value	0.000	—
N	101	101

**Correlation is statistically significant at the 0.01 level (2-tailed).

The Kruskal-Wallis test also revealed that there are statistically significant differences in the values of Factor 1 (F1) between groups that differ in the degree of agreement with statement P12 (Table 8).

The test value is $H = 21.178$, $p < 0.001$, which confirms that the difference in the perception of knowledge and competence is present depending on the level of expressed uncertainty (Petz 2007; Rajh 2009).

Table 8.*Factor F1 Ranks According to Responses to P25*

Statistical Test	Factor 1 – Attitude towards own knowledge, competence, and prerequisites for implementing research methods h
Kruskal-Wallis Statistic	21.178
Degrees of Freedom	4
Significance (p-value)	0.000

a. *Kruskal-Wallis Test*

b. *Grouping variable: P12. You feel insecure in applying research methods in your practice.*

An overview of the average ranks by group (Table 9) shows that the highest value of the Factor 1 (F1) was recorded among those who declared that they 'strongly disagree' with the statement that they feel unsafe (average rank 78.44), while it is the

lowest among those who declared that they 'completely agree' (average rank 23.63). The mentioned progressive difference clearly confirms the negative trend: the more pronounced the uncertainty, the lower the perception of knowledge and competence.

Table 9.*Factor F1 Ranks According to Responses to P12*

P12. You feel insecure in applying research methods in your practice.	N	Mean Rank
Strongly disagree	8	78.44
Disagree	28	61.30
Neither agree nor disagree	40	47.71
Agree	21	38.29
Strongly agree	4	23.63
Total	101	

H between expressed uncertainty in the application of research methods (P12) and the perception of one's own knowledge, competencies, and prerequisites for their application (Factor 1, F1) confirmed hypothesis H2, which means that participants who feel more uncertain in the application of research methods simultaneously express a lower level of self-assessed knowledge and competence. The above results indicate the need for additional professional development and support for educators in order to strengthen their self-confidence in implementing research activities in preschool institutions.

Discussion

The study aimed to examine educators' perceptions and beliefs about their own research competencies and to identify factors that influence their application of research methods in educational practice. Both hypotheses were confirmed, and based on the results of exploratory factor analysis (EFA), four latent factors were identified:

1. Attitude towards one's own knowledge, competencies, and prerequisites for conducting research
2. Attitude towards the benefits of action research for professional development
3. Institutional support for research activities
4. Perception of the usefulness of research methods in everyday practice.

The reliability of the mentioned factors was confirmed by satisfactory values of Cronbach's Alpha coefficients, with all key factors (F1–F4) having $\alpha \geq 0.710$, indicating good internal consistency of the scales.

Descriptive analysis indicated a dominant positive opinion, with a pronounced tendency to use research methods, but also visible differences among the respondents. Correlational and inferential analyses additionally revealed statistically significant associations between key variables. In accordance with hypothesis H2, it was concluded that people with a higher self-assessment of research competence more often apply action research in practice, which was confirmed by a positive Spearman correlation ($\rho = 0.604$; $p < 0.001$) and significant results of the Kruskal-Wallis test. It can be concluded that it will be easier to get involved in the implementation of foresight research.

The results indicated the important influence of individual perceptions of competencies on motivation and actual application of research methods, and the need for more significant systematic support from institutions. Problems that have also been mentioned in related research (Dumancic and Milkovic, 2024) were also highlighted, and relate to the difficulty of an individualized approach, lack of necessary resources, insufficient cooperation, and inflexibility.

The confirmation of the hypotheses shows that teachers with greater knowledge and less uncertainty are more inclined to apply educational research in practice, thereby improving the quality of teaching. The above leads to recommendations for strengthening the support and training of teachers to reduce uncertainty and increase the use of action research in the educational process. The introduction of targeted professional development and the creation of a stimulating organizational context would further strengthen the professional identity of educators as reflective practitioners and researchers of their own practice. By investigating the level of knowledge of educators about the types of research methods that can be used in work in educational institutions, it can be concluded that it is currently insufficient. The lack of knowledge consequently leads to insecurity and requires the need to increase professional competencies, but despite this, educators continue to show motivation to conduct research and participate in training. It is important to emphasize that educators show significant awareness of the benefits of research methods on the quality of work and the development of the culture of preschool institutions, but they face challenges that prevent them from implementing them. Despite the strong statistical significance of the results obtained, it is necessary to emphasize the limitations of the research, which are reflected in the size and geographical scope of the sample, the relatively short time of data collection, and the potential subjectivity of the respondents. Therefore, for future research, it is recommended to expand the sample, include qualitative methods, and take a longitudinal approach. Future researchers should use the results obtained from this research to identify areas where it is necessary to strengthen the competencies of educators and reduce

uncertainty, and to improve the integration of action research into educational practice.

Conclusion

The research *Experiences and Challenges in Implementing Action Research in Preschool Education* demonstrates awareness of the benefits of conducting research and indicates significant motivation of educators to apply action and futures-oriented research. On the other hand, it also raises awareness of their rare implementation due to obstacles that have confirmed the need for introducing systematic changes in the early and preschool education system and strengthening institutional support for educators. However, the experiences of educators show that research is an applicable and effective tool for individualizing work with children with developmental disabilities and as a tool for approaching children with internalized behaviors.

It has been confirmed that there is a lack of education in the field of research methods in education and that there is insufficient institutional support. Based on educators' perceptions of this lack, it can be assumed that this would be an incentive for a more intensive introduction of action and foresight research into educational work. The professional team, which every preschool institution should have, should take on the role of motivator and continuous support for educators, providing them with incentives for professional development and upgrading of competencies.

By actively participating in research, the educator assumes the specific role of a practitioner who, by reflecting on their own practice, investigates a particular problem and thus encourages the development of professional competencies, contributing to the growth of the educational institution. More frequent implementation of research would enable a better understanding of practice, the discovery of individual differences and specific needs, which form the basis for well-considered action in all developmental areas.

References

- Barbarovic, T. (2019). Suvremeni modeli i pristupi analizi podataka u obrazovnim istrazivanjima [Contemporary research designs and data analysis techniques in educational research]. *Odgojno-obrazovne teme*, 2(3–4), 205–226. <https://hrcak.srce.hr/232096>
- Dubovicki, S. (2017). Futuroloske metode istrazivanja [Futuristic research methods]. In S. Opic, B. Bogar, & S. Ratkovic (Eds.), *Novi pristupi metodologiji istrazivanja odgoja* (pp. 203–222). University of Zagreb.
- Dubovicki, S., Mlinarevic, V., & Velki, T. (2018). Istrazivacki pristupi i metodoloski okviri u istrazivanjima buducih ucitelja [Research approaches and methodological framework in the research of future teachers]. *Nova prisutnost*, 16(3), 595–611. <https://doi.org/10.31192/np.16.3.11>
- Dumancic, D., & Milkovic, J. (2024). Analiza stavova i potreba nastavnika engleskog jezika u procesu poucavanja ucenika s teskocama [Analyzing English language teachers' attitudes and needs related to teaching students with special educational needs]. *Journal of the Faculty of Humanities and Social Sciences in Split*, 17, 13–40. <https://doi.org/10.38003/zrffs.17.1>
- Dzogovic, S. A., & Bajrami, V. (2023). Qualitative research methods in science and higher education. *Human Research in Rehabilitation*, 13(1), 156–166. <https://doi.org/10.21554/hrr.042318>
- Hayward, P., & Candy, S. (2017). The Polak game, or: Where do you stand? *Journal of Futures Studies*, 22(2), 5–14. [https://doi.org/10.6531/JFS.2017.22\(2\).A5](https://doi.org/10.6531/JFS.2017.22(2).A5)
- Helmer, O. (1983). *Looking forward: A guide to futures research*. SAGE.
- Hercigonja-Szekeres, M., Sikirica, N., & Popovic, I. (2012). *Statisticka analiza tekstnih podataka [Statistical analysis of textual data]*. In *medias res*, 1(1), 79–91. <https://hrcak.srce.hr/114415>
- Jukic, T. (2010). Akcijska istrazivanja na razini odgojno-obrazovne ustanove [Action research in educational institutions]. *Skolski vjesnik*, 59(3), 363–372. <https://hrcak.srce.hr/82383>
- Kero, A. (2022). Participativno akcijsko istrazivanje u skoli – upotreba metode photovoice [Participatory action research in school – use of the photovoice method]. *Educational Issues*, 5(1), 81–105. <https://doi.org/10.53577/oot.5.1.5>

- König, E., & Zedler, P. (2001). *Teorije znanosti o odgoju [Theories of the science of education]*. Zagreb: Educa.
- Marusteri, M., & Bacarea, V. (2010). Comparing groups for statistical differences: How to choose the right statistical test? *Biochemia Medica*, 20(1), 15–32. <https://doi.org/10.11613/BM.2010.004>
- Milas, G. (2009). *Istrazivacke metode u psihologiji i drugim društvenim znanostima [Research methods in psychology and other social sciences]*. Jastrebarsko: Naklada Slap.
- Milat, J. (2005). *Osnove metodologije istraživanja [Fundamentals of research methodology]*. Zagreb: Skolska knjiga.
- Muzic, V. (2004). *Uvod u metodologiju istraživanja odgoja i obrazovanja [Introduction to research methodology in education]*. Zagreb: Educa.
- Opic, S. (2011). Testiranje normalnosti distribucije u istraživanjima odgoja i obrazovanja [Distribution normality testing in the studies of education and upbringing]. *Skolski vjesnik*, 60(2), 181–197. <https://hrcak.srce.hr/82182>
- Opic, S. (2012). Neke dvojbe u primjeni faktorske analize u području istraživanja odgoja i obrazovanja (pedagogiji) [Some doubts about the use of factor analysis in the field of research education (Pedagogy)]. *Skolski vjesnik*, 61(4), 481–496. <https://hrcak.srce.hr/94781>
- Pavlovic, N., & Stanojevic, M. (2020). *Znanstvena istraživanja jezika i prevodenja [Scientific research on language and translation]*. Faculty of Humanities and Social Sciences, University of Zagreb. <https://doi.org/10.17234/9789531759014>
- Petrovic-Soco, B. (2009). *Mijenjanje konteksta i odgojne prakse dječjih vrtica: akcijsko istraživanje s elementima etnografskog pristupa [Changing the context and educational practices of preschools: an action research study with elements of an ethnographic approach]*. Zagreb: Mali profesor.
- Petz, B. (2007). *Osnove statističke metode za nematematičare [Basics of statistical methods for non-mathematicians]*. Zagreb: Naklada Slap.
- Rajh, E. (2009). Development of measurement scales for assessing specific elements of the services marketing mix. *Econviews – Review of Contemporary Business, Entrepreneurship and Economic Issues*, 22(2), 340–350. <https://doaj.org/article/7ca33da861894ba4820506273eff8a9f>
- Ristovska, L., Jachova, Z., Kovacevic, J., & Hasanbegovic, H. (2025). Audiologic assessment of preschool children with hearing loss in a secondary health care setting. *Human Research in Rehabilitation*, 15(2), 517–528. <https://doi.org/10.21554/hrr.092521>
- Sekulic-Majurec, A. (2007). The end of the war of pedagogical research paradigms. *Educational Research*, 4(2), 203–214. <https://hrcak.srce.hr/clanak/174815>
- Skoko, B. & Benkovic, V. (2009). Znanstvena metoda fokus grupa – mogućnosti i načini primjene [Scientific method of focus groups – possibilities and ways of application]. *Croatian Political Science Review*, 46(3), 217–236. <https://hrcak.srce.hr/50954>
- Spasic, B. & Maksimovic, J. (2023). Uloga akcijskog istraživanja u povećanju motivacije nastavnika – reflektivnih praktičara za profesionalno usavršavanje [Role of action research in increasing the motivation of teachers – reflective practitioners for professional development]. *Life and School*, 69(2), 109–122. <https://doi.org/10.32903/zs.69.2.7>
- Suzic, N. (2012). *Futurologija u pedagoskim i socijalnim naukama [Futurology in pedagogical and social sciences]*. Banja Luka: EKTOS. <https://pub.unibl.org/slat/item/50005>
- Sagud, M. (2011). Inicijalno obrazovanje odgojitelja i profesionalni razvoj [Initial education and professional development of pre-school teachers]. *Pedagogical Research*, 8(2), 259–269. <https://hrcak.srce.hr/clanak/172482>
- Udovicic, M., Bazdaric, K., Bilic-Zulle, L., & Petroveci, M. (2007). What should be known when calculating the correlation coefficient? *Biochemia Medica*. 17(1), 1–138. <https://hrcak.srce.hr/clanak/19717>
- Vandenbroeck, M., & Lazzari, A. (2014). Accessibility of early childhood education and care: A state of affairs. *European Early Childhood Education Research Journal*, 22(3), 327–335. <https://doi.org/10.1080/1350293X.2014.912895>
- Viskovic, I. (2016). Mogućnosti primjene Delfi metode u pedagojskim istraživanjima. [The possibilities of application of the Delphi method in pedagogical research]. *Napredak*, 157(1–2), 187–204. <https://hrcak.srce.hr/177230>
- Vrcelj, S., & Musanovic, M. (2001). *Prema pedagoskoj futurologiji (Skola budućnosti). [According to pedagogical futurology (The*

- school of the future*]. Rijeka: Croatian Pedagogical-Literary Assembly. <https://www.croris.hr/crosbi/publikacija/knjiga/1465>
- Vujicic, L. (2011). Kultura vrtica – sustav koji se kontinuirano mijenja i uci [Nursery school culture – a continually changing and learning system]. *Pedagogical research*, 8(2), 231–238. <https://hrcak.srce.hr/clanak/172476>
- Zivadinovic, K. (2004). Utvrdivanje osnovnih karakteristika proizvoda primjenom faktorske analize [Defining the basic product attributes using the factor analysis]. *Economic Review*, 55(111–12), 95–96. <https://hrcak.srce.hr/clanak/24758>