REIRE Revista d'Innovació i Recerca en Educació
Institut de Desenvolupament Professional UNIVERSITAT DE BARCELONA

ISSN: 2013-2255

Interest of non-university teachers in educational research projects

Bartolomé Pizà-Mir [a b]
Universidad Pontificia Comillas, Spain. https://orcid.org/0000-0001-7140-8933

Beatriz Moreno-Vecino [a]
Universidad Pontificia Comillas, Spain. https://orcid.org/0000-0002-4583-8697

Maria Ventura Monserrat-Monserrat [a]
Universidad Pontificia Comillas, Spain. https://orcid.org/0000-0003-3649-3030

[a] i-DEA. Investigación Didáctica y Estudios curriculares Avanzados. CESAG Centro de Enseñanza Superior Alberta Giménez. Calle Costa de Saragossa, 16, 07013, Palma, Balearic Islands, Spain.
[b] Corresponding author: bpiza@comillas.edu

Research article. Received: 29/03/2023. Revised: 20/04/2023. Accepted: 26/04/2023. Advanced pub.: 07/06/2023. Published: 03/07/2023.

Abstract

INTRODUCTION. Educational research is a source of proven information and evidence for improving classroom teaching. The theoretical framework for this study is based on the concept of teacher motivation to engage in educational research.

METHOD. This study examined the levels of interest and participation in educational research of a sample of 429 teachers.

RESULTS. The results showed that there is a high correlation between all variables (participation, research competencies, motivation, and research knowledge) and three distinct teacher clusters/groups were determined. The first cluster was characterized by a high level of interest in research and active participation in research activities. The second cluster had a moderate level of interest and believed that research was positive and necessary but did not participate in research. Finally, the third cluster had no interest in research and did not participate in research activities.

DISCUSSION. These results have important implications for promoting research in the education field and suggest that efforts are needed to specifically engage the teachers who are currently not interested in research or are not involved in research activities.

Keywords

interest, motivation, educational research, non-university teacher.

Recommended reference

Pizà-Mir, B., Moreno-Vecino, B., & Monserrat-Monserrat, M. V. (2023). Interest of non-university teachers in educational research projects. *REIRE Revista d'Innovació i Recerca en Educació, 16*(2), 1-13. https://doi.org/10.1344/reire.42438

UNIVERSITAT DE BARCELONA

Títol (català)

Interès del professorat d'ensenyaments no universitaris en projectes de recerca educativa

Resum

INTRODUCCIÓ. La recerca educativa proporciona una font d'evidències per millorar l'ensenyament a l'aula. El marc teòric d'aquest estudi es basa en el concepte de motivació del professorat per participar en la recerca educativa.

MÈTODE. Aquest estudi va examinar el grau d'interès i participació en la recerca educativa entre una mostra de 429 docents.

RESULTATS. Els resultats van mostrar que hi havia una alta correlació entre totes les variables (participació, competències en recerca, motivació i coneixements de recerca) i que hi havia tres grups diferenciats de docents. El primer grup es caracteritzava per un grau elevat d'interès en la recerca i una participació activa en activitats de recerca; el segon grup tenia un grau moderat d'interès i creia que la recerca era positiva i necessària, però no participava en activitats de recerca, i el tercer grup no mostrava interès en la recerca ni participava en activitats de recerca.

DISCUSSIÓ. Aquests resultats tenen implicacions importants per a la promoció de la recerca en l'àmbit de l'educació i suggereixen que pot ser que calgui fer esforços específics per involucrar-hi els docents que actualment no estan interessats en la recerca o no participen en activitats de recerca.

Paraules clau

interès, motivació, recerca educativa, professorat no universitari

Título (castellano)

Interés del profesorado de enseñanzas no universitarias en proyectos de investigación educativa

Resumen

INTRODUCCIÓN. La investigación educativa proporciona una fuente de evidencias para mejorar la enseñanza en el aula. El marco teórico de este estudio se basa en el concepto de motivación del profesorado para participar en la investigación educativa.

MÉTODO. Este estudio examinó el grado de interés y participación en la investigación educativa en una muestra de 429 profesores.

RESULTADOS. Los resultados mostraron que existía una alta correlación entre todas las variables (participación, competencias en investigación, motivación y conocimientos sobre investigación) y que había tres grupos distintos de profesado. El primer grupo se caracterizaba por un alto nivel de interés en la investigación y una participación activa en las actividades de investigación. El segundo grupo tenía un nivel moderado de interés y creía que la investigación era positiva y necesaria, pero no participaba en investigaciones. Finalmente, el tercer grupo no mostraba ningún interés en la investigación y no participaba en las actividades de investigación.

DISCUSIÓN. Estos resultados tienen implicaciones importantes para la promoción de la investigación en el campo de la educación y sugieren que pueden ser necesarios esfuerzos específicos para involucrar al profesorado que actualmente no está interesado en la investigación o no participa en actividades de investigación.

Palabras clave

interés, motivación, investigación educativa, profesorado no universitario

1. Introduction

Educational research plays a central role in improving teaching and learning (Afdal & Spernes, 2018; Darling-Hammond, 2010; Fung, 2017). Research can inform and enhance classroom teaching by providing a source of evidence-based practices and policies (Shulman, 1986; Stappenbelt, 2013; Taylor, 2007; Wood, 2009). However, for research to have a meaningful impact, it must be conducted and used by teachers, who are the primary agents of education (Fullan, 2007). Despite this, there is little research into teacher participation and motivation in educational research (Vescio et al., 2008). This gap in the literature limits our understanding of how to promote teacher involvement in research (Borko, 2004) and how to ensure that research is used effectively in classrooms (Shavelson, 1996).

The purpose of this study was to examine teacher participation and motivation in educational research. The study aimed to identify the factors that influence teacher involvement in research (Guskey, 2002), as well as the barriers and challenges that prevent teachers from participating in research (Goe, 2002). The study findings provided important insights into how to promote teacher involvement in research (Schildkamp et al., 2010) and how to ensure that research is used effectively in classrooms (Fullan, 2007; Sousa et al., 2020).

The theoretical framework for this study is based on the concept of teacher motivation (Ames & Archer, 1988). Motivation refers to the forces that drive and sustain behaviour (Ryan & Deci, 2000), and is a key determinant of teacher participation in research (Guskey, 2002). Motivation is influenced by a combination of personal, social, and institutional factors (Deci & Ryan, 2002). Personal factors include intrinsic factors, such as personal interest and curiosity (Ames & Archer, 1988), as well as extrinsic factors, such as rewards and incentives (Deci & Ryan, 2002). Social factors include the influence of colleagues and mentors (Goe, 2002), as well as the social norms and values of the teaching profession (Good & Brophy, 1997). Institutional factors include the policies, practices, and resources of schools and districts (Fullan, 2007), which can either support or hinder teacher participation in research (Schildkamp et al., 2010).

1.1. Outcomes

The outcomes of this study are twofold. First, the study provides a better understanding of the factors that influence teacher participation and motivation in educational research (Guskey, 2002). This will enable policymakers and administrators to design interventions and policies (Fullan, 2007) that promote teacher involvement in research (Schildkamp et al., 2010). Second, the study identifies the barriers and challenges that prevent teachers from participating in research (Goe, 2002). This provides information for developing strategies to overcome these barriers (Schildkamp et al., 2010) and to support teacher involvement in research (Fullan, 2007).

In conclusion, the purpose of this study is to examine teacher participation and motivation in educational research. The study aims to identify the factors that influence teacher involvement in research (Guskey, 2002) and to understand the barriers and challenges that prevent teachers from participating in research (Goe, 2002). The research findings have important implications for policymakers (Fullan, 2007), administrators (Schildkamp et al., 2010), and teacher educators (Guskey, 2002), who are seeking to promote teacher involvement in research (Schildkamp et al., 2010) and to ensure that research is used effectively in classrooms (Fullan, 2007). By understanding the factors that influence teacher participation and motivation in research, we can design interventions and policies that support teacher involvement in research and ensure that research is used to inform and improve teaching and learning (Darling-Hammond, 2010).

2. Materials and Methods

The methodology for this study involves a questionnaire of a sample of teachers from diverse backgrounds and contexts. The questionnaire includes a series of questions designed to measure the personal, social, and institutional factors that influence teacher participation in research (Guskey, 2002), as well as the barriers and challenges that prevent teachers from participating in research (Goe, 2002). The questionnaire was administered online and was anonymous to encourage teachers to be honest and open in their responses (Sapsford, 2002).

2.1. Participants

The study sample consisted of N = 429 teachers from a variety of schools located in urban and rural areas. The participants were 38.68 years old (SD = 8.54) and 73.24% were female. They represented a range of grade levels, from early childhood education to high school, and taught a variety of subjects, including maths, science, language, arts, and social studies.

Participants were recruited through pamphlets and online advertisements, which were distributed to schools and teacher organizations in the area. Interested teachers were asked to complete an online consent form and provide basic demographic information.

2.2. Procedure

The study was conducted in schools located in urban, suburban, and rural areas. Data were collected during school hours over the course of three months. The study involved administering an ad-hoc questionnaire to the participants, which was completed online using a secure server and a computer-based platform. The questionnaire consisted of 13 questions related to the participants' involvement in and motivation for educational research. The questions were developed by the research team based on a literature review and a pilot study with a small sample of teachers.

2.3. Measures

The questionnaire included questions related to the participants' involvement in educational research projects. For example, participants were asked whether they had ever been part of an educational research project, and if so, how many times.

The questionnaire also included questions about the participants' motivation for participating in educational research. In addition to questions about participation and motivation, the questionnaire included questions about the participants' knowledge and skills related to educational research. For example, they were asked if they feel confident in their ability to design and conduct educational research.

Finally, the questionnaire included questions about the participants' availability for being involved in educational research. For example, they were asked if they feel capable of balancing participation in research with their other responsibilities, and if they have support from their colleagues and institution for participating in research.

Responses were given according to a Likert scale, as follows:

- *1: No; Yes (0-1)*
- *2: Personal interest; scientific and professional interest; both; none (1/2/3/0)*

- *3: Yes; yes, but I need more information; No; no, I'm not interested in it (1/2/3/4)*
- *4-13: Ranging from "strongly disagree" to "strongly agree" (1 to 5)*

The following are the questions in the questionnaire. They were divided into four categories: Participation (P - 4 questions), Motivation (M - 4 questions), Knowledge (K - 3 questions) and Skills (S - 2 questions).

1. *Do you regularly participate in educational research projects? (P1)*
2. *What are your main motivations for participating in educational research? (M1)*
3. *Do you feel that you have a good knowledge of educational research? (K1)*
4. *Do you feel comfortable using research techniques in your teaching practice? (S1)*
5. *Do you believe that participating in research is important for a teacher's professional development? (P2)*
6. *Do you consider that educational research has a positive impact on the quality of education? (P3)*
7. *Do you feel qualified to collaborate in research projects? (S2)*
8. *Are you interested in learning more about educational research? (K2)*
9. *Do you feel motivated to apply the results of research in your teaching practice? (M2)*
10. *Do you feel comfortable sharing your research results with other teachers? (P4)*
11. *Do you feel capable of formulating hypotheses and designing experiments in the education field? (S3)*
12. *Do you feel comfortable working in teams on educational research projects? (S4)*
13. *Do you feel motivated to seek out opportunities for participating in educational research? (M3)*

2.4. Data analysis

The data collected from the questionnaire were analysed using statistical software SPSS (SPSS, 2016) and Jamovi (Jamovi Project, 2022). The analysis examined the correlations between the variables of interest (such as personal factors, social factors, institutional factors, and barriers to participation) and teacher participation in research (Guskey, 2002). The analysis results were used to test the study hypotheses (Sapsford, 2002) and identify patterns and trends in the data (Creswell, 2009).

Data from the questionnaire were entered into a spreadsheet and checked for errors. Any missing or inconsistent data were flagged for further review. Once the data were cleaned and organized, they were ready for statistical analysis.

To begin, we calculated descriptive statistics for all the variables. This included calculating the mean, standard deviation, and mode for each variable. The mean and standard deviation were used to describe the central tendency and dispersion of the data, respectively.

Inferential statistics were conducted to test for relationships between variables. In addition to testing for differences between groups, the data were analysed to identify patterns and trends. For example, correlations were calculated to understand the relationship between different variables. If a strong correlation was found, it was further examined using regression analysis to understand the nature of the relationship and to predict future outcomes.

In parallel, the groups were described by applying cluster analysis and principal component analysis (PCA). Cluster analysis makes it possible to find common patterns among a set of subjects, and group them according to their similarity. Principal component analysis (PCA) can be used to identify which variables are the most representative and relevant for defining and classifying a group of subjects.

3. Results

A total of 429 teachers in Spain participated in the study. The response rate by females was 73.24%.

The study results suggest that there are significant differences in the levels of interest and participation in educational research among teachers. This has important implications for promoting research in the education field, as it suggests that targeted efforts may be needed to engage those teachers who are not currently interested in research or do not participate in research activities.

Table 1

Descriptive statistics of each question

	P1	P2	P3	P4	S1	S2	S3	S4	M1	M2	M3	K1	K2
Mean	0.0584	3.11	4.08	0.168	0.0584	0.234	0.234	0.0584	0.591	3.54	0.234	2.87	0.147
Mode	0.00	3.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	3.00	0.00
Standard deviation	0.235	0.823	0.795	0.704	0.235	0.424	0.424	0.235	1.10	1.00	0.424	0.847	0.355

The correlation matrix (Table 2) showed a very high correlation between all variables (P, S, M, and K). This indicates that there is a strong relationship between these variables and therefore, changes in one are likely to be accompanied by changes in the others.

Table 2

Correlation matrix

	P1	P2	P3	P4	S1	S2	S3	S4	M1	M2	M3	K1	K2
P1	—												
P2	.232***	—											
P3	.162***	.021	—										
P4	.960***	.217***	.159***	—									
S1	1***	.232***	.162***	.960***	—								
S2	.451***	.098*	.138**	.433***	.451***	—							
S3	.451***	.098*	.138**	.433***	.451***	1.000***	—						
S4	1***	.232***	.162***	.960***	1***	.451***	.451***	—					
M1	.456***	.098*	.132**	.440***	.456***	.976***	.976***	.456***	—				
M2	.204***	.058	.041	.206***	.204***	.435***	.435***	.204***	.419***	—			
M3	.451***	.098*	.138**	.433***	.451***	1***	1***	.451***	.976***	.435***	—		
K1	.474***	.139**	.106*	.453***	.474***	.770***	.770***	.474***	.762***	.392***	.770***	—	
K2	.600***	.159***	.082	.575***	.600***	.690***	.690***	.600***	.684***	.316***	.690***	.578***	—

Note. * p < .05, ** p < .01, *** p < .001

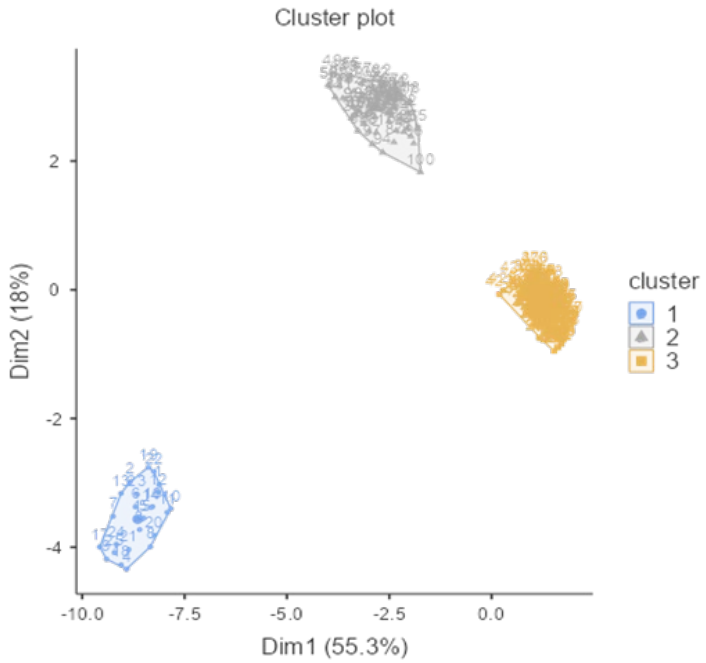
The multidimensional analysis showed that there were three distinct clusters/groups of teachers. The first group was characterized by a high level of interest in educational research and active participation in research activities. The second group had a moderate level of interest in research and a belief that it was positive and necessary, but did not participate, or very little, in research activities. The third and largest group had no interest in research and did not participate in research activities. Table 3 shows the distribution of these variables for each cluster/group.

Table 3
Cluster information

	Cluster No	P1	P2	P3	P4	S1	S2	S3	S4	M1	M2	M3	K1	K2
1	1.00	4.010	0.930	0.652	3.850	4.010	1.809	1.809	4.010	1.828	0.817	1.809	1.901	2.404
2	2.00	-0.249	-0.074	0.115	-0.239	-0.249	1.809	1.809	-0.249	1.743	0.777	1.809	1.224	0.863
3	3.00	-0.249	-0.054	-0.076	-0.239	-0.249	-0.552	-0.552	-0.249	-0.538	-0.240	-0.552	-0.425	-0.381

Figure 1 is a distribution plot of the sample, showing the distribution of teachers across the three clusters/groups. Figure 2 is a principal components analysis that illustrates the relationship between the level of interest in research and participation in research activities.

Figure 1
Multidimensional plot distribution

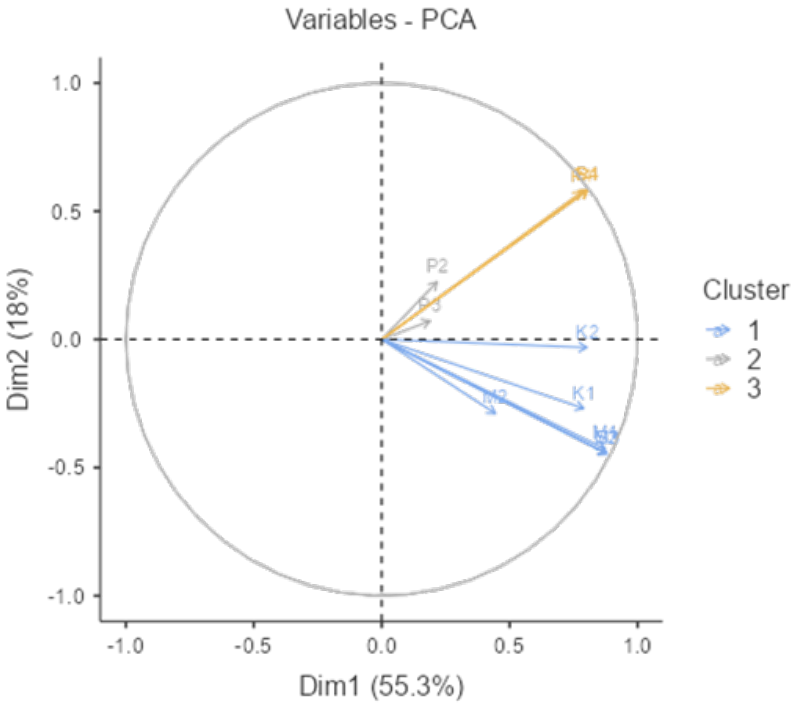


The clusters reflected in the principal components are as follows: for the first component, the variables used were M1, M2, K1, K2; for the second component, P2 and P3 were used; and for the third component, the remaining variables analysed were used.

The principal component analysis shows that the different clusters, in this case there are three, are reflected in accordance with the multidimensional analysis.

It could be interpreted that there are two differentiated groups of clusters: the first group contains cluster 1 (corresponding to teachers who participate in educational research activities), and the second group contains clusters 2 and 3 (corresponding to teachers who do not participate in educational research).

Figure 2
Principal component analysis



The two groups can be distinguished based on their interest and participation in research work. The second group is divided into two clusters, as the teachers differ in their levels of interest and willingness to participate in educational research activities. One of these clusters (cluster 3) has no interest in the benefits of educational research and is not willing to participate in these kinds of activities. However, within the other cluster (cluster 2), there are teachers who are interested in evidence-based teaching methodologies but do not participate in research activities due to lack of time or perceived skill gaps. Nonetheless, they acknowledge the importance of improving educational practice through research.

4. Discussion

The purpose of this study was to examine teacher participation and motivation in educational research. The findings reveal several key trends and patterns in the data, which have important implications for understanding and promoting teacher involvement in research.

The study findings provide important insights into the factors that influence teacher participation and motivation in educational research. The results support the hypothesis that personal factors, such as personal interest and curiosity (Ames & Archer, 1988), are positively correlated with teacher participation in research (Guskey, 2002). This is consistent with the self-determination theory (Ryan & Deci, 2000), which posits that intrinsic factors, such as personal interest and curiosity, are important determinants of motivation.

The study results showed that a relatively small percentage of teachers had participated in an educational research project. Specifically, only 5.8% of participants had been involved in one or more research projects. These

findings suggest that teacher participation in research is relatively low, and that it is necessary to understand the factors that influence teacher involvement.

The results also support the hypothesis that social factors, such as the influence of colleagues and mentors (Goe, 2002), are positively correlated with teacher participation in research (Guskey, 2002). This is consistent with the literature on professional learning communities (Vescio et al., 2008), which suggests that social interactions with colleagues and mentors can facilitate the acquisition and use of new knowledge and skills (Borko, 2004).

One key factor that emerged as a predictor of teacher participation was personal interest. Specifically, teachers who reported a high level of personal interest in research were more likely to have participated in research projects. This finding is consistent with previous research on teacher motivation that identified personal interest as an important driver of teacher engagement (Guilbert et al., 2016).

The results also support the hypothesis that institutional factors, such as policies, practices, and resources (Fullan, 2007), are positively correlated with teacher participation in research (Schildkamp et al., 2010). This is consistent with research on the impact of school and district policies on teacher learning (Good & Brophy, 1997; Guilbert et al., 2016). It is also consistent with the concept that supportive climates are necessary for teacher learning (Darling-Hammond, 2010).

In addition, the results support the hypothesis that barriers to teacher participation in research, such as time constraints and lack of support (Goe, 2002), are negatively correlated with teacher participation in research (Guskey, 2002). This is consistent with research on the barriers to teacher learning (Sapsford, 2002) and with the concept of unfriendly climates for teacher learning (Darling-Hammond, 2010).

Another factor that was found to be significantly correlated with teacher participation was professional development (Leite et al., 2023). Teachers who cited professional development as a primary motivator for participating in research were more likely to have participated in research projects. This finding suggests that teachers see research as a way to grow professionally and to improve their teaching practice.

In addition to personal interest and professional development, the study results showed that teachers' confidence in their research skills was positively correlated with participation in research. Teachers who felt confident in their ability to design and conduct research were more likely to have participated in research projects. This finding highlights the importance of providing teachers with opportunities to develop their research skills, which could lead to more involvement in research.

The findings of the current study are consistent with those of previous research on teacher participation in research. Previous studies have also identified personal interest and professional development as important motivators for teachers and teacher training students to become involved in educational research (Böttcher-Oschmann et al., 2021). Moreover, previous research has shown that teachers' confidence in their research skills is related to their participation in research (Sousa et al., 2020).

However, the current study adds to the literature by examining the relationship between these factors and teacher participation in a large sample of teachers from diverse backgrounds and contexts. The results provide a more detailed understanding of the factors that influence teacher participation in research and how these factors may differ across different groups of teachers.

It is important to recognize that teacher participation in research is not a one-size-fits-all proposal (Böttcher-Oschmann et al., 2021; McCartney et al., 2018; Obwegeser & Papadopoulos, 2016; Shulman, 1986). Different teachers have different motivations and needs (Guskey, 2002), and it is important to design interventions and

policies that are tailored to teachers' specific needs and interests (Goe, 2002). By understanding the factors that influence teacher participation and motivation in research, we can design interventions and policies that support teacher involvement in research and ensure that research is used to inform and improve teaching and learning (Darling-Hammond, 2010). First, the results suggest that personal and professional factors are key drivers of teacher participation in research. This means that policymakers and administrators who are seeking to promote teacher involvement in research should focus on strategies that address these factors. For example, they should aim to provide teachers with opportunities to develop their research skills and knowledge, promote the value of research for improving the teaching practice, and encourage more participation in research.

One potential intervention is to provide opportunities for teachers to participate in research projects that align with their personal interests and goals (Guskey, 2002). Teachers' motivation to participate could be increased if the research projects are relevant and meaningful to them (Ryan & Deci, 2000).

Another potential intervention is to provide support and resources for teachers who want to participate in research (Fullan, 2007). This might include providing specific time for teachers to conduct research, as well as giving access to research tools and equipment (Schildkamp et al., 2010). We can help teachers overcome barriers, such as time constraints and lack of support (Goe, 2002), by providing the necessary resources and assistance, and encouraging them to participate in research (Guskey, 2002).

4.1. Limitations

This study has several limitations. First, the teacher sample was self-selected and may not be representative of the broader population of teachers. Second, the data were collected using an online questionnaire, which may have resulted in bias due to nonresponse or response errors (Shavelson, 1996). Finally, the study was conducted in a single country and therefore it may not be possible to generalize it to other contexts.

4.2. Future research

Future research should aim to replicate this study in different countries and contexts to test the generalizability of the findings. Future research should also aim to explore the mechanisms by which personal, social, and institutional factors influence teacher participation and motivation in research, to better understand how to promote teacher involvement in research. Finally, future studies should aim to identify best practices for supporting teacher participation in research to guide the development of interventions and policies that support teacher involvement in research and ensure that research is used to inform and improve teaching and learning (Darling-Hammond, 2010).

5. Conclusions

In conclusion, this study provides valuable insights into teacher participation and motivation in educational research. The findings suggest that personal and professional factors are important drivers of teacher participation, and that increasing teachers' confidence in their research skills may encourage more involvement in research. However, the results also highlight the importance of addressing barriers to teacher participation, such as time constraints and lack of institutional support. Further research is needed to understand the factors that influence teacher participation and to identify ways to promote more widespread engagement in research.

Currently, there is a significant lack of participation and interest from non-university teachers in educational research projects. This lack of participation is a problem to be solved to improve educational practices and make progress in the field. Several specific actions can be taken to encourage more participation and interest from non-university teachers in educational research:

1. Promote the benefits of participating in educational research through targeted information campaigns. This could be carried out through targeted email campaigns or social media outreach to educators.
2. Offer training and resources to help educators develop the necessary skills and knowledge to participate in educational research projects. Workshops or online courses could be developed to help teachers understand the research process and how to participate in research studies.
3. Provide financial incentives or support for educators to participate in research projects. This could include grants or other financial incentives to provide educators with the time and resources needed to participate in research studies.
4. Develop partnerships with school districts and educational organizations to increase awareness and opportunities for teachers to participate in research projects. This could involve developing relationships with school administrators and other educators to increase awareness of research opportunities.
5. Encourage collaboration between university and non-university teachers to work on research projects together. This could involve creating joint research teams or providing support for educators to collaborate on research studies.
6. Develop clear guidelines and expectations for participating in educational research projects. This could involve developing standardized procedures for data collection and analysis, as well as developing clear expectations for teacher participation in research studies.

References

Afdal, H., & Spernes, K. (2018). Designing and redesigning research-based teacher education. *Teaching and Teacher Education*, *74*, 215-228. https://doi.org/gjw477

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology*, *80*(3), 260-267. https://doi.org/cdncw7

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, *33*(8), 3-15. https://doi.org/chx3zk

Böttcher-Oschmann, F., Groß Ophoff, J., & Thiel, F. (2021). Preparing teacher training students for evidence-based practice promoting students' research competencies in research-learning projects. *Frontiers in Education*, *6*, 1-11 (642107). https://doi.org/j7jm

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Sage Publications.

Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. University of Rochester Press.

Darling-Hammond, L. (2010). Teacher education and the American future. *Journal of Teacher Education*, *61*(1-2), 20-32. https://doi.org/cx8vzt

Fullan, M. (2007). *The new meaning of educational change* (4th ed.). Teachers College Press.

Fung, D. (2017). *A connected curriculum for higher education*. UCL Press. https://doi.org/j7jn

Goe, L. (2002). Helping teachers learn: Principles and practices for effective professional development. *Journal of Teacher Education*, *53*(3), 247-257.

Good, T. L., & Brophy, J. (1997). *Looking in classrooms* (8th ed.). Longman.

Guilbert, D., Lane, R., & Van Bergen, P. (2016). Understanding student engagement with research: A study of pre-service teachers' research perceptions, research experience, and motivation. *Asia-Pacific Journal of Teacher Education*, *44*(2), 172-187. https://doi.org/j7jp

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice*, *8*(3), 381-391. https://doi.org/fnm4h7

Jamovi Project. (2022). *Jamovi* (Version 2.3) [Computer Software]. https://www.jamovi.org

Leite, C., Marinho, P., & Sousa-Pereira, F. (2023). Perspectivas académicas del nexo enseñanza-investigación en la formación inicial del profesorado en Portugal. *Educación XX1*, *26*(1), 71-91. https://doi.org/j7jq

McCartney, E., Marwick, H., Hendry, G., & Ferguson, E. (2018). Eliciting student teacher's views on educational research to support practice in the modern diverse classroom: A workshop approach. *Higher Education Pedagogies*, *3*(1), 342-372. https://doi.org/j7jr

Obwegeser, N., & Papadopoulos, P. (2016). Integrating research and teaching in the IS classroom: Benefits for teachers and students. *Journal of Information Systems Education*, *27*(4), 249–258. https://bit.ly/3hHY80x

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68-78. https://doi.org/c48g8h

Sapsford, R. (2002). *Social research methods* (3rd ed.). Sage Publications.

Schildkamp, K., Kuiper, E., & Loughran, J. (2010). How do teachers use research evidence? A review of the literature. *Teaching and Teacher Education*, *26*(4), 1059-1069.

Shavelson, R. J. (1996). *Statistical reasoning for the behavioral sciences* (3rd ed.). Allyn & Bacon.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, *15*(2), 4-14. https://doi.org/bg52xz

Sousa, R., Lopes, A., & Boyd, P. (2020). Initial teacher education and the relationship with research: Student teachers' perspectives. *Studia Paedagogica*, *25*(2), 162-179. https://doi.org/j7js

SPSS. (2016). *IBM SPSS statistics for windows* (version 24.0). IBM Corp.

Stappenbelt, B. (2013). The effectiveness of the teaching-research nexus in facilitating student learning. *Engineering Education*, *8*(1), 111-121. https://doi.org/j7jt

Taylor, J. (2007). The teaching: research nexus: A model for institutional management. *Higher Education*, *54*, 867-884. https://doi.org/fqnfcd

Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education*, *24*(1), 80-91. https://doi.org/ftzxsm

Wood, D. (2009). Challenges to strengthening the teaching and research nexus in the first-year undergraduate curriculum. *The International Journal of Learning*, *15*(12), 111-120. https://doi.org/j7jv