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Research competence, action-research and ongoing teacher training

Competencia investigadora, investigación-acción y formación permanente del profesorado

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Abstract

This article examines the impact of a continuing education seminar on Formative and Shared Evaluation (F&SA) on the research competence through the implementation of Action Research (A-R) cycles to promote educational innovation. This study is based on qualitative methodology that analyses of meetings and reports made by teachers. The results show that the seminar facilitated the transformation of the participants' educational practices, promoting significant changes in their attitudes and approaches to evaluation. In addition, it helped to develop aspects of their research competence and to generate positive perceptions about the importance of researching their own educational practice and the value of discussion and reflection. The A-R cycles, reflection and discussion helped to overcome challenges such as a lack of knowledge of F&SA practices and resistance to change. The seminar proved to be an effective space for generating transformative practices, fostering teachers' research competence and addressing emerging obstacles. It seems relevant to develop initiatives that promote the research competence of teachers linked to processes of lifelong learning and educational innovation, which contribute to quality education.

Keywords: research competence, lifelong learning, educational research, methodological training, educational professional, reflective practice.

Resumen

Este artículo examina el impacto de un seminario de formación permanente en Evaluación Formativa y Compartida (EFyC) en la competencia investigadora del profesorado, mediante la implementación de ciclos de Investigación-Acción (I-A) para promover la innovación educativa. Este estudio se basa en una metodología cualitativa que analiza actas de reuniones y los informes realizados por el profesorado. Los resultados muestran que el seminario facilitó la transformación de las prácticas educativas de los participantes, promoviendo cambios significativos en sus actitudes y enfoques hacia la evaluación. Además, ayudó a desarrollar aspectos de su competencia investigadora y a generar percepciones positivas sobre la importancia de investigar su propia práctica educativa y el valor del debate y la reflexión. Los ciclos de I-A, la reflexión y el debate ayudaron a superar desafíos como el desconocimiento de las prácticas de EFyC y las resistencias al cambio. El seminario demostró ser un espacio efectivo para generar prácticas transformadoras, fomentando la competencia investigadora de los docentes y abordando los obstáculos emergentes. Parece relevante desarrollar iniciativas que fomenten la competencia investigadora del profesorado ligada a procesos de formación permanente e innovación educativa, que contribuyan a una educación de calidad.

Palabras clave: competencia investigadora, formación permanente, investigación educativa, formación metodológica, profesionales de la educación, práctica reflexiva.

1. Introduction

Current education is under constant review to adapt to changing social needs (Paniagua et al., 2017). This process of renewal needs to redirect education towards more transparent and higher quality practices.

Within this context, research competence is essential to address the challenges of current education. Research competence involves the activation of skills for inquiry and critical analysis, and the ability to rigorously apply the scientific method in the educational field to achieve improved educational quality (Ain et al., 2019; Bates & Sangra, 2021; Cobos et al., 2016; Sánchez-Santamaría, 2013).

In this sense, strengthening research competence not only promotes educational excellence, but also drives change and continuous improvement in the school environment. As Andreu and Labrador (2011) point out, research in education not only drives the progress of student learning, but it is also essential for the teacher professional development (Latorre, 2003). Educational research must be based on scientific evidence, as emphasized by Imbernon (2019), to ensure its reliability and its positive impact on educational innovation.

1.1 The importance of continuing teacher training

Educational improvement can be promoted through the development of the Permanent Teacher Training (PTT), an indispensable condition for teaching tasks (Domínguez & Vázquez, 2015; Imbernón, 2017; Pérez-Granados, 2018; Souto-Seijo et al., 2020). This is what Stenhouse (1984) considers, when proposing the concept of research professor, understanding that this concept implies a critical and systematic disposition towards the educational practice itself, which has materialized through the PTT. This commitment to teaching and constant inquiry is reflected in training processes that encourage reflection, the raising of questions and the search for solutions to real challenges in the classroom (Marcelo & Vaillant, 2009; Margalef, 2005). As pedagogical knowledge is constantly evolving, PTT becomes essential to keep teachers updated and ensure the quality of their practice (Souto-Seijo et al., 2020).

PTT can be considered as the continuous learning process that helps teachers to access and effectively use new pedagogical knowledge that they can apply in their daily practice, because it promotes professional development, continuous improvement in teachers and, consequently, a positive effect on student outcomes (Kennedy, 2004). Kenedy (2014) considers that PTT generates transformative professional learning, as it is a process that produces change in teachers through teaching to think, reason and reflect.

Teachers can change their perspectives through their own research processes on their practice, to make decisions based on new knowledge (epistemological, sociolinguistic and psychological). In this way, the impact of the PTT will not be reproductive, but will be transformative and will affect educational communities (Kennedy, 2014); starting from the reflective learning itself, in which teachers will improve their practice as a result of the resolution of a problem or concern (Nieto, 2000). Consequently, the transformative approach of PTT can have a ripple effect, positively affecting the educational communities, from small changes that are made in each classroom. In this way, through these small changes, educational communities would be transformed through the collaborative effort that supports the transformative practice (Kennedy, 2004).

1.2 Action-research as a proposal for Lifelong Teacher Training

As pointed out so far, PTT stands out as a crucial process for continuous improvement in the educational field, where research is essential for this commitment. Research in education not only generates changes and new knowledge, but also promotes advances in student learning and in the professional development of teachers. According to Whitehead (1989), research is presented as a form of living educational theory, by constantly questioning which aspects of teaching practice can be improved.

Latorre (2003) highlights research as an essential element in the professional development of teachers, since the teaching profession requires a constant adaptation to social and educational changes. Through research, teachers acquire new knowledge that allows them to improve their teaching practice, thus contributing to professional self-development,

practical improvement, the educational institution and social conditions in general. This research process also encourages reflection on professional identity, which promotes self-criticism and reflective analysis of one's own practice.

Action Research (A-R) stands out as an effective model to develop educational research and promote the professional development of teachers. In this approach, the teacher assumes the role of researcher and uses the classroom as his/her study space, encouraging reflection and critical analysis of educational events to improve one's own teaching practice, professional skills and curriculum application. Imbernon (2019) points out that through the PTT and A-R, teachers can develop pedagogical knowledge from their experience in educational institutions. The A-R integrates within the models of PTT that prioritize research, offering an effective methodology for both research and teacher training.

1.3 Relevance of Formative and Shared Evaluation in the improvement of teaching practice

It is important to note that PTT activities can be generated when working with curricular elements (Moore, 2020). In this study we work through the Formative and Shared Evaluation (F&SA). F&SA is defined by López-Pastor (2009) as an educational evaluation system that promotes three types of improvements: student learning, teaching quality and the teaching-learning process carried out; evaluative processes in which the student actively participates.

Some authors (Domínguez & Vázquez, 2015; Imbernón, 2017; Pérez-Granados, 2018; Souto-Seijo et al., 2020), indicate that PTT is an essential component to effectively integrate new methodologies in the classroom; in this case, it would be about F&Sa systems at all educational levels. Research by Barrientos et al. (2019), Hortigüela-Alcalá et al. (2015), Molina and López-Pastor (2019) and Pascual-Arias et al. (2022) reveal that teachers acquire skills related to F&SA both during their initial training and through the PTT. This formative approach, especially in the context of PTT, provides educators with the necessary tools to engage students in meaningful and formative assessment processes.

Adopting A-R as the usual methodology of work and PTT helps teachers who are trying to

develop F&SA systems in their classrooms, especially when it comes to finding strategies to address the specific challenges that arise in these educational innovation processes (Herrero et al., 2021; López-Pastor et al., 2011, 2016; Pascual-Arias et al., 2022; Pascual-Arias et al., 2023; Pedraza & López-Pastor, 2015). Through these dynamics of A-R teachers have the opportunity to develop research skills.

Studies suggest that PTT can be a suitable space to develop a deep understanding of the principles and practices of F&SA, as well as to acquire skills that allow teachers to apply these concepts effectively in their specific educational context (Barrientos et al., 2019; Herrero et al., 2021; Molina & López-Pastor, 2019).

In this sense, the PTT can play a fundamental role in the training of committed and thoughtful teachers, able to adapt and respond effectively to the changing needs of their students and society in general.

Therefore, there seems to be little research that relates the dynamics of PTT based on spirals and cycles of A-R with the development of research competences in the teaching staff, specifically in the topic of F&SA. This study can help to deepen this topic.

Therefore, it will be investigated to what extent an interlevel seminar of A-R, working on the application of F&SA systems in educational practice, helps participating teachers to develop research skills, as well as check what benefits it can generate in the professional development of teachers.

To this end, the following Research Questions (PIs) are presented:

PI.1. How has the PTT seminar and the A-R cycles focused on the F&SA influenced the development of the research competence of the participating teachers?

PI.2. What are the main challenges identified by the seminar participants in relation to the development of their research skills and how are these challenges addressed?

2. Methodology

Using a qualitative methodology based on documentary analysis (Bowen, 2009) and reports, this study focuses on the impact of the permanent teacher training seminar on F&SA and the research competence that is developed through it. Documentary

analysis is a technique that allows examining and understanding documents to contextualize and deepen on the research (Bowen, 2009). Although it is not a case study in the most rigorous sense, the depth and detail of the analysis allow to obtain a comprehensive understanding of the situation studied, exploring a real and specific context (Álvarez & San Fabián, 2012). This methodological approach allows to describe, document and interpret the investigated environment, generating concrete observations that facilitate more general and significant conclusions (Yin, 2018; Simons, 2011; Stake, 2010).

2.1 Participants

The participants of the case study are 25 teachers of all educational stages (from Early Childhood Education to University Education), belonging to an interlevel seminar of PTT on F&SA that is conducted in a Faculty of Spanish Education. These teachers carry out cycles of A-R to practice their research and educational innovations on F&SA, which allows them to advance their knowledge and practice from the level of previous experience that each one has.

2.2 Data collection techniques

Different tools have been used to obtain data:

A-R seminar meeting minutes: these are documents that collect all the information discussed during the seminar sessions, including: (a) the list of participants present at each meeting; (b) the questions raised around the implementa-

- tion of the F&SA and the cycles of A-R in the classroom; (c) the debates and concerns about the F&SA and A-R processes carried out, both based on previous readings and comments from the attendees. The corresponding records have been analyzed from the 2017-2018 academic year to the 2022-2023 academic year, for a total of 50 minutes of seminar meeting.
- Good practice reports: these are documents prepared by the participants of the F&SA seminar; they reflect their experience in implementing this approach in the classroom through A-R cycles, as well as the results obtained in the each school year. These reports consist of two parts: (a) the planning of the F&SA system to be implemented; (b) recording of the actions carried out, observations, results obtained and proposals for their improvement. A total of 62 good practice reports have been collected.

2.2 Data analysis techniques

A content analysis approach has been used to analyze the data obtained from the data collection techniques, which allows to examine the content of the reports and minutes to identify patterns, recurring themes and relevant aspects related to the subject studied. This thematic analysis process has served to categorize and organize the information collected into a system of categories and subcategories, also considering the research questions (Table 1).

Table 1. System of categories and subcategories and their relationship to the research questions

Research Questions	Categories	Sub-categories of analysis
Pl.1. How has the PTT seminar and the A-R cycles focused on the F&SA influenced the development of the re- search competence of the participating teachers?	1. Influence of the seminar and the A-R on the development of its research competence and on its own practice	1.1. Influence of A-R cycles on the teaching practice and research competence.1.2. Seminar factors that promote the development of the research competence.
Pl.2. What are the main challenges identified by the seminar participants in relation to the development of their research skills and how are these challenges addressed?	2. Challenges of participants in relation to the development of research competence and strategies to address them.	2.1. Identified challenges affecting the investigative competence of participants.2.2. Strategies to address identified challenges.

2.3 Ethical-methodological issues

Regarding the ethical and methodological issues of the research, measures were taken to guarantee the confidentiality and anonymity of the study participants and ethical principles of integrity have been respected, avoiding any form of manipulation or harm to the participants. In addition, a reflexive and critical stance has been maintained throughout the research process, recognizing possible biases and prejudices that could influence the perception of the data (Bisquerra, 2004). These ethical and methodological considerations were critical to ensure the validity and reliability of the findings, as well as to protect the rights and well-being of participants involved in the research.

3. Results

The results have been organized around the category system created. Therefore, first, the results are presented on the category called: "influence of the seminar and the A-R in the development of its research competence and in its own practice". Below are the results of the category: "Participants' challenges in relation to developing research competence and strategies to address them".

3.1 Promoting the participation of teachers in the research of their own educational practice

The results of this first category are subdivided into two main aspects, according to the proposed subcategories: (1.1.) Influence of A-R cycles on teaching practice and research competence; (1.2.) Seminar factors that promote the development of research competence.

The Lifelong Learning Seminar focused on the F&SA appears to be an appropriate space to encourage the active participation of teachers in the research of their own educational practice, especially with regard to the implementation of F&SA systems. Throughout the seminar sessions, participants proactively engaged in discussions and reflections on F&SA practices in their classrooms.

This commitment and positive attitude in the participants of the seminar towards educational research is also observed in the minutes of the seminar, since their active participation towards research is evidenced in the meetings.

Regarding the influence of the A-R cycles on teaching practice in their research competence, the teachers pointed out that it has allowed them to improve their research competence and acquire a deeper understanding of the challenges and opportunities that were emerging through their own research. In addition, a progressive change in positive attitudes towards F&SA and research was observed, going from a lack of knowledge about both processes in some participants, to having a greater awareness about the importance of investigating their own educational practice to improve it through A-R cycles. The A-R cycles implemented at the F&SA seminar played a crucial role in the development of the research competence of the participating teachers. Throughout these cycles, teachers were immersed in a continuous process of reflection and action, which allowed them to systematically and rigorously investigate their own educational practice.

The difference between the first and second trimesters is the progression that students have shown both in their involvement in the F&SA and in their learning. It is considered that this progression is mainly thanks to the Action-Research cycles developed as a teacher. (Minutes 8, 2017/2018)

One of the main contributions of the A-R cycles was the promotion of a culture of critical reflection among teachers. By having to question and deeply analyze their pedagogical methods and approaches, participants were able to identify areas for improvement and develop effective strategies to address the challenges they faced in the classroom, especially in the field of F&SA. However, many of them reflect that having questioned their evaluation practices towards the implementation of the F&SA required questioning the rest of methodological aspects of their educational practice. This capacity for self-assessment and self-reflection is a fundamental aspect of research competence, as it allows teachers to critically evaluate their own performance and continuously look for ways to improve.

It emphasizes that, if necessary, it has used instruments to monitor the Research-Action system to improve both in the current course, and to make changes for the next course. (Act 8, 2021/2022)

In addition, the A-R cycles provided teachers the opportunity to apply in a practical way the concepts and tools learned during the seminar. This direct connection between theory and practice strengthened the understanding of the principles of F&SA and allowed teachers to develop practical skills to carry out educational research in their own contexts.

It is pointed out that being able to share experiences at different educational stages brings important learning and aspects that can be adapted to the educational stage. As for the theoretical review, the fact of having a theoretical base and being able to deepen in practice about it has provided a lot of information; and it is considered as a very positive aspect. (Act 8, 2020/2021)

Another important aspect was the collaboration and knowledge exchange between teachers during the A-R cycles. By working in collaborative teams, participants were able to benefit from the diverse experiences and perspectives present in the group, which enriched the research process and facilitated the discovery of innovative solutions to educational problems. This collaboration not only strengthened the individual research competence of teachers, but also fostered a sense of group and mutual support in the seminar.

Teacher1 points out that if we reflect on any aspect of our educational practice, it does not make sense to attend the seminar, since it is necessary that we reach a collective analysis within the A-R process focusing on the three points that the F&SA aims to improve. Teacher2 says that we can share what happens to each of us in the classroom regarding F&SA and encourage collaborative learning of A-R. Teacher3 points out that this is the idea. (Minutes 2, 2020/2021)

Regarding subcategory 1.2, the data analyzed show that the involvement in the seminar promoted the development of the research competence of teachers and their active commitment to the educational research process for different reasons:

 Participants acquired conceptual and methodological tools through the literature review and discussion of practical experiences to address more effectively the challenges they face in their classrooms.

- The debates that took place around the importance of investigating the educational practice promoted a culture of research within the group, from a reflexive and critical approach.
- The presentation of practical experiences and feedback among the participants enriched the collective learning process. In this way they were able to gain different perspectives on the common challenges they face in their respective educational contexts. This horizontal collaboration facilitated the exchange of good practices and the identification of effective strategies to improve F&SA teaching and processes through research.
- The atmosphere of trust and mutual respect at the seminar allowed participants to express their concerns openly and to receive constructive guidance and feedback from other teachers.
- The structure of the seminar, which included practical activities and guided reflection exercises, motivated teachers to apply the concepts and tools learned in their own classrooms. The direct connection between theory and practice facilitated the transfer of knowledge and skills, allowing participants to experience first-hand the impact of educational research on their daily work.

Below are some of the quotes that show the results found:

Teacher1 points out that it is very enriching to have a working group with all academic levels and the learning has been very good (...) Teacher3 affirms that the positive part of the seminar is the enrichment of the participation of all. (Minutes 8, 2019/2020)

Teacher1 points out that it is interesting for each person to tell their practice (...) Teacher2 defends that the seminar works very well and enriches a lot to all who participate in it. (Act 8, 2021/2022)

She emphasizes the importance of working with the action research instrument to continue improving this process and her teaching skills. (Act 8, 2021/2022)

He mentions that the seminar has been good for him this year, especially the implementation of the research-action data collection tool. (Act 8, 2021/2022)

3.2 Challenges of seminar participants in relation to the development of research competence and strategies to address them

The results of this second category are subdivided into two subcategories: (2.1) Identified challenges affecting the research competence of participants; (2.2) Strategies to address identified challenges.

To give a more complete explanation, it has been decided to relate both categories through table 2, to explain each challenge found along with their strategy to face it. Seminar participants identified a number of challenges in relation to the development of their research competence. To overcome these obstacles and challenges, teachers implemented strategies that are set out in Table 2 and detailed below.

Table 2. Challenges observed for developing research competence and strategies implemented to solve them

Challenges encountered for the development of research competence	Strategies put in place to address them
Inexperience in educational research processes and	Introductory sessions about the theoretical and practical foundations of A-R.
ignorance of the A-R as a research process.	Step-by-step guided practices by seminar coordinators.
	Tracking of A-R cycles through record sheets for further analysis.
	Group support from the seminar teachers.
Increase in workload	Logical planning of the times destined to the A-R.
	Flexibility in the time planning.

One of the most significant challenges identified by the seminar participants was inexperience in educational research, especially regarding the lack of knowledge of A-R systems. Many teachers expressed feeling inexperienced in this regard, especially as they had no previous experience in this type of research methodology. Lack of familiarity with the principles and procedures of A-R was perceived as a major barrier.

The participant says that is not very clear about the concept of action research and is not aware of whether he applies it or not, but he considers that despite having been doing F&SA processes for a short time, he has realized that he is able to adapt the process to his own progress. (Act 8, 2020/2021)

To address this challenge, various strategies were implemented aimed at providing participants with the tools and support needed to engage in A-R processes. Introductory sessions were held on the theoretical foundations of action research, where key concepts were explained and concrete examples of how to apply this methodology in the educational context were presented. In addition, guided practices were developed, where teachers could conduct the A-R under the supervision of the coordinators of the seminar.

One of the proposals for improvement that were pointed out at the end of the previous course was to start this course with a basic training on Research-Action, since there is a certain degree of ignorance among the participants of the seminar. Many of them implement it, but they do not systematize it due to ignorance of the process. It is therefore agreed that this training will be provided to all participants for the next meeting. (Minutes 1, 2021/2022)

The last obstacle highlighted by the seminar participants is the increase in workload due to the implementation of A-R cycles. The integration of both processes requires additional time to plan and develop.

To solve this problem, different solutions were proposed: (a) group support by the teachers of the seminar to carry out the A-R processes; (b) planning in a logical way the times specifically destined for developing of A-R cycles from month to month; (c) the teachers were advised to be flexible in their time planning. However, the most experienced teachers in A-R pointed out that this workload decreases as the teaching experience in these practices increases.

Teacher1 points out that it also seems important to focus on the topics on which you should reflect in a group, to have more group support and generate

more collective knowledge (...) points out that he believes that what is important is the analysis done in the seminar, and that this analysis is about common data, even if it is in different contexts. (Minutes 2, 2020/2021)

4. Discussion and conclusions

Regarding the first research question: How has the PTT seminar and the A-R cycles focused on the F&SA influenced the development of the research competence of the participating teachers? The results show that the seminar teachers are actively involved in the research and improvement of their own practice. Throughout the course of the seminar, participants proactively engaged in discussions and reflections on F&SA practices in their classrooms. This finding is in line with the idea that the PTT is essential for the professional development of teachers (Domínguez & Vázquez, 2015; Imbernón, 2017). According to Kennedy (2004, 2014), this continuous training fosters the critical and systematic disposition towards the educational practice itself, which materializes through active participation in training processes that promote reflection and self-criticism.

The results seem to show that the systematic realization of cycles of A-R on their own practice helps to develop their research competence and improve their educational practice. This fact is related to the importance of A-R as a PTT proposal (Kennedy, 2004, 2014; Whitehead, 1989). Through the A-R, the teacher assumes the role of researcher and uses the classroom as his/her space of study, encouraging reflection and critical analysis of what happens in the classroom to improve the learning of students and the teaching practice itself (Imbernon, 2019; Latorre, 2003). Likewise, a positive change in attitudes towards research was observed, going from a lack of knowledge about both processes in some participants, to having a greater awareness about the importance of investigating their own educational practice to improve it through A-R cycles.

The A-R cycles implemented at the seminar played a crucial role in the development of the research competence of the participating teachers. One of the main contributions of the A-R cycles was the promotion of a culture of critical reflection among teachers, which aligns with the idea that

research in education promotes the professional development of teachers and contributes to practical and institutional improvement (Latorre, 2003). In addition, the A-R cycles provided teachers the opportunity to apply in a practical way the concepts and tools learned during the seminar. This direct connection between theory and practice strengthened the understanding of the principles of F&SA and allowed teachers to develop practical skills to carry out educational research in their own contexts. By adopting A-R as the usual methodology of work and PTT, teachers can develop research skills that allow them to address specific challenges and find strategies to innovate in education, as in this case through F&SA (López-Pastor et al., 2011; Herrero et al., 2021; Pascual-Arias et al., 2023).

Another important aspect was the collaboration and knowledge exchange between teachers during the A-R cycles. This collaboration not only strengthened the individual research competence of teachers, but also fostered a sense of group and mutual support within the seminar, as has also occurred in similar experiences (Marcelo & Vaillant, 2009; Pascual-Arias et al., 2022).

Regarding the second research question: What are the main challenges identified by the seminar participants in relation to the development of their research competences and how are these challenges addressed? The results show that one of the most significant challenges was the inexperience in educational research, especially in relation to the principles and procedures of the A-R. This finding is in line with the importance of strengthening the research competence of teachers to address current educational challenges (Bates & Sagra, 2021; Cobos et al., 2016). To address this challenge, various strategies were implemented, such as introductory sessions on the foundations and procedures, and guided practices, which coincides with the idea that the PTT is essential to effectively access and use new pedagogical knowledge (Kennedy, 2004, 2014).

The last obstacle highlighted by the seminar participants is the increase in workload due to the implementation of A-R cycles. This challenge reflects the need to approach PTT as a guarantee of improvement and not as an additional workload (Domínguez & Vázquez, 2015; Imbernón, 2017; Souto-Seijo et al., 2020). To solve this problem, different solutions were proposed: group support to carry out the A-R

processes; sequenced and guided planning of the A-R cycles from month to month and flexibility in time planning.

The following conclusions stand out: (a) the PTT seminar and the A-R cycles focused on F&SA seem to have positively influenced the development of the research competence of the participating teachers, through their active participation and the acquisition of conceptual and methodological tools to address the challenges of their classrooms; (b) a series of challenges have been identified in relation to the development of the research competence; however, effective strategies were implemented to address them in the meetings held and through the group support of the rest of colleagues.

This article can provide a deeper understanding of how PTT and A-R cycles focused on problems of educational practice, or methodological aspects can strengthen the research competence of teachers, in addition to enhancing the professional development of teachers.

As for the limitations of the study, it could be the low number of participants, as well as the limitation of the studied context, since only a single PTT seminar has been studied. However, we consider that the results found are valid because they demonstrate the reality of this context.

In the future, it could be studied whether these same results can be extrapolated to other PTT seminars, as well as continue to investigate these approaches in educational practice in the long term, focusing on specific topics that can solve the needs of the different educational realities of the participating teachers. It could also be studied how research competence has a positive impact on student learning at different educational stages, all this could be done in future research covering a greater number of contexts in which these practices are carried out.

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