Methodology to Study Teacher Agency: A Systematic Review of the Literature

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Abstract: Teacher agency is a set of actions that a teacher takes beyond what is generally expected of them. The concept merits examination, as agency can bolster teachers' ability to set and achieve professional development goals. To better understand how to study, and use, this relatively new concept in the academic literature, a systematic review of 164 publications written by researchers from 41 countries was conducted in order to document the research approaches used to study teacher agency, the participants whose agency was documented in a school setting, the methodology used and the type of analysis performed. The study found that teacher agency has been documented qualitatively in the form of case studies comprising interviews of a small number of individuals, with no consensus in terms of interview protocol. In most cases, the results are analyzed using emergent coding. The way that agency is documented varies but is most often underpinned by an ecological approach.

Keywords: *Professional development, systematic review, teacher education research methodology, teacher research, teacher agency.*

Introduction

Teachers perform a wide range of duties in the course of their work. While some tasks are more routine, others require them to solve ill-defined problems and to perform tasks that are considered complex, indeterminate, non-routinizable, imperfectly predictable, non-decomposable into additive elements, and that require the use of a wide range of resources and a demonstration of independence in a real-world scenario (Spiro & DeSchryver, 2009).

In order to perform at work, teachers are encouraged to individually and collectively engage in professional development to support their capacity to respond creatively to contextual needs rather than standardize classroom activity (Albion & Tondeur, 2018). From a sociocultural perspective, agency gives people the ability to set the terms and conditions of their own learning (Lantolf & Pavlenko, 2001). In concrete terms, teachers invest their time and energy, take charge of their learning, and use the resources and tools they need in a given context (Mandeville, 2001).

Some attention has been paid to teacher agency in the recent literature. Further examination is merited to better understand the concept of agency and how it should be documented. This will make it easier to understand its role in particular contexts, including social and cultural contexts, given that each individual is part of an evolving system within a sociocultural environment made up of other individuals (Dussarps, 2014). As the concept gains traction in the next few years, the way it is documented in the literature should also be examined so that it can be more effectively recognized and supported.

Literature Review

Many authors have taken an interest in agency over the past three decades. Bandura (2001) generally defines agency as an intentional act whose key feature is the "power to originate actions for given purposes" (p. 6). For Ahearn (2001), agency is "the socioculturally mediated capacity to act" (p. 112). Engeström and Sannino (2010), meanwhile, draw on the work of Vygotsky (1997) to define agency as a person's "capacity to change the world and his or her own behavior" (p. 5).

Authors focusing specifically on teacher agency build on the definition first proposed by Emirbayer and Mische (1998): "the temporally constructed engagement by actors of different structural environments—the temporal-relational

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contexts of action—which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations" (p. 970). Biesta and Tedder (2007) use this definition to draw a connection between agency and learning and propose an ecological perspective of agency, in which "agency [is] to be conceived as something that is achieved, rather than possessed, through the active engagement of individuals with aspects of their contexts-for-action" (p. 132). These definitions have also been heavily used in empirical studies of teacher agency (Deschênes & Parent, submitted).

Teacher agency is therefore considered to be a set of actions that a teacher takes beyond what is generally expected of them; these actions are driven by an intention and take into account the social, cultural and historical context in which teachers practice, in interaction with their environment (Deschênes & Parent, submitted). Teacher agency has been studied in a variety of contexts. For example, some authors have focused on agency in relation to professional development (Impedovo, 2020), professional learning (Lai et al., 2016) and the construction of professional identity (Lasky, 2005). Others have focused on teacher agency with respect to the work they do with and for students (planning, executing, evaluating, etc.), often in connection with the implementation of curriculum or policy reform (Fu & Clarke, 2019).

Teacher agency is part of a complex system shaped by the structural and cultural features of school (Datnow et al., 2002). It therefore cannot be separated from its context and environmental influences (Adebayo, 2019) and it is so embedded in the teacher's activities that it is expressed in the absence of explicit reflection (Martin, 2004), which exacerbates the empirical challenge of locating, comparing and predicting the relationship between different kinds of agentic processes and the structure in which actions are carried out (Emirbayer & Mische, 1998).

Research Questions

While there seems to be a general agreement that agency needs to be studied (Bartell et al., 2019; Biesta et al., 2015; Pantić, 2017a), there is less consensus on how to study it. Some authors, such as Ahearn (2001) and Oliveira (2012), suggest that an individual's agency should be recognized rather than measured. Others, like Pantić (2017a), suggest that mixed-method, longitudinal studies of teacher agency should be used to understand the contextual complexity of the site under study. It appears that empirical research on teacher agency up to this point has been small-scale, focusing on particular practices in specific contexts (Pantić, 2017a), which makes it difficult to generalize the results of these studies (Adebayo, 2019). Alkire (2005) provides a list of select quantitative methods used to measure agency and describes the shortcomings of these methods. The method used by Schwartz (1992), for example, somewhat conflates the ideas of agency and independence. The method used by Welzel and Inglehart (2005) focuses on agency with respect to public space only, as it was created in order to study how changes in individual aspirations relate to democratization processes, while Alkire describes the method used by Ryff (1989) as culturally biased and difficult to adopt in other contexts.

Given the lack of consensus on how agency should be studied, we saw the need for a comprehensive, systematic analysis of the literature that exists on teacher agency. The academic literature on this topic, although relatively recent, is rich and abundant. This literature review narrows its focus to the way teacher agency is studied, specifically the methodological considerations identified in the literature. Our aim is to answer the following questions:

RQ1: What research approaches were used in the studies?

RQ2: Who were the participants in the studies?

RQ3: How were the data collected?

RQ4: How were the data analyzed?

Methodology

Research Design

To answer the four research questions, we conducted a systematic review of the literature, defined as "a review of existing research using explicit, accountable rigorous research methods" (Gough et al., 2017, p. 2). The parameters of this methodology are set out in the following sections.

Criteria for Inclusion

In order to be included in this systematic literature review, an article had to be published in either English or French in a peer-reviewed journal and present the results of an empirical study focusing on teacher agency.

Search Strategy

The references were retrieved from three databases: Academic Search Premier, Education Source, and ERIC. Our search queries, which were validated by an academic librarian in the education sciences, use free-text terms in five fields, since there is no thesaurus providing a controlled vocabulary that can be used to identify the concept of teacher agency. The

references in Education Source and Academic Search Premier were retrieved on August 1, 2021, using the following search query: TI "teacher* agency" OR AB "teacher* agency" OR DE "teacher* agency*" OR SU "teacher* agency*" OR MH "teacher* agency*". A similar query was used to search in ERIC, except the MH field was replaced with KW, as ERIC does not have an MH field. A total of 1,146 references were retrieved: 289 from ERIC, 532 from Education Source, and 325 from Academic Search Premier.

Analytical Process

These 1,146 references were imported into a web application designed to facilitate the systematic review process (Rayyan: https://www.rayyan.ai/) in order to remove duplicates (n=524). The titles and abstracts of the remaining references (n=622) were screened to determine which should be included in the study. Ten percent of the articles were assessed for interrater reliability between the two authors, and a high level of agreement was found, with a Cohen's kappa coefficient of 0.84 (Cohen, 1960; McHugh, 2012). We excluded 328 articles during the title and abstract analysis: 8 articles were written in a language other than English or French, 254 articles did not focus on teacher agency, and 66 articles did not present the results of an empirical study. The 294 remaining articles were then imported into a qualitative analysis program (NVivo) where a full-text analysis was performed. In addition to the inclusion criteria set out earlier, at this stage we required the articles to include a definition of teacher agency, so we could be sure that the article detailed a study on the research topic, and to answer all of our research questions. We excluded 28 full-text articles that were not focused on teacher agency, 20 that did not present an empirical study, 62 that did not include a definition of teacher agency, 18 that did not answer all four research questions, and 2 that were errata for articles that had been excluded. In the last step, a spreadsheet program (Excel) was used to aggregate and process the data collected from the 164 articles selected for the systematic literature review. Figure 1 provides a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow chart of the process.
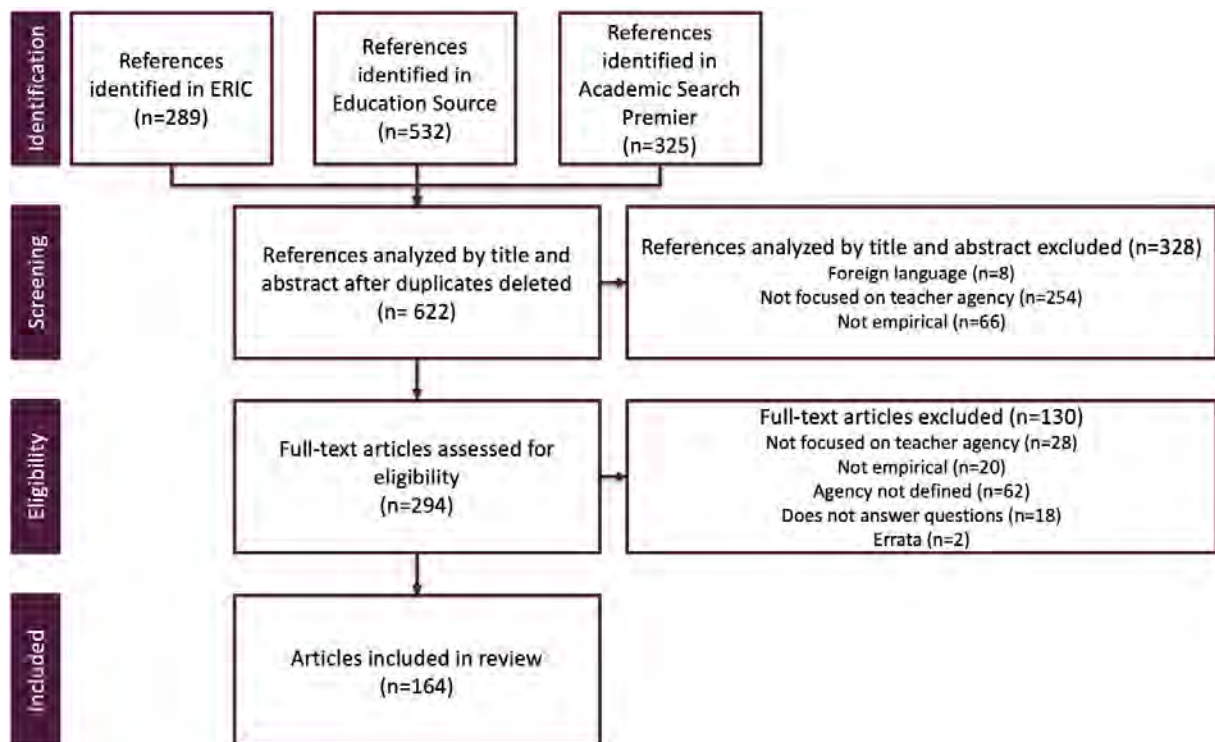

Figure 1. PRISMA Flow Chart of the Study Selection Process

Results

In the following sections, we will first describe the selected articles, then provide the answers to the four research questions: the research approaches used in the selected studies, the participants in the studies, and the methods of data collection and analysis.

Description of Selected Articles

This section will provide a description of the selected articles, including publication year, language and source database.

The publication of articles that fall within the parameters of our review appears to be on the rise (Figure 2). It should be noted that the 27 articles written in 2021 account for only the articles that were published and indexed in the databases as at August 1, 2021; it is safe to assume that the number of articles increased as the year progressed.
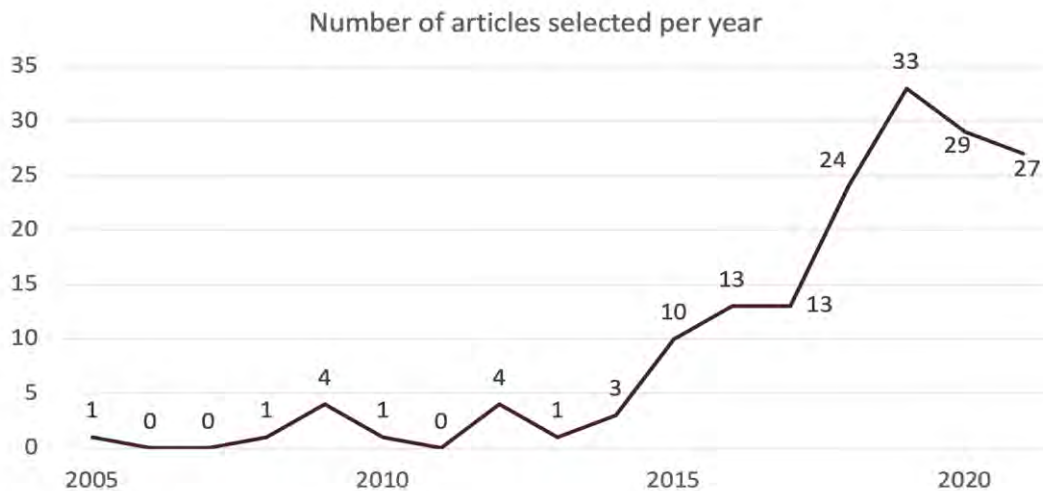

Figure 2. Number of Articles in the Text Corpus on Teacher Agency Selected per Year (n=164)

The articles were published by authors from 41 countries. Figure 3 shows the geographic map of the authors' university affiliation who published articles according to the parameters of our review.

Figure 3. Geographic Map of the Authors' University Affiliation who Published Articles in the Text Corpus

Figure 4 shows that almost all of the articles (98.8%, n=162) were written in English, while only two articles were in French (1.2%).
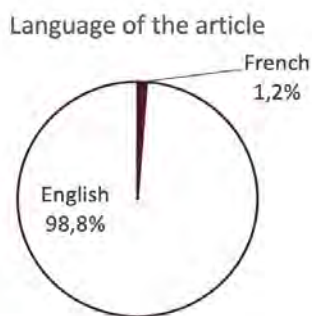

Figure 4. Language of the Articles in the Text Corpus on Teacher Agency (n=164)

Figure 5 provides a breakdown of the articles by the database(s) in which they were found. Given that 31.1% (n=51) of the references were found in only one database, we believe that it was appropriate to look for the academic literature on teacher agency in three databases.
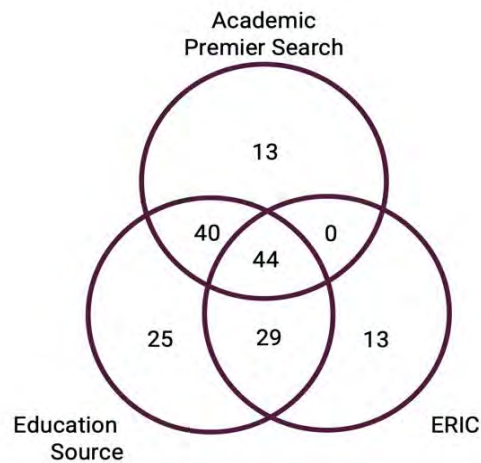

Figure 5. Breakdown of Articles in the Text Corpus on Teacher Agency, by the Database(s) in Which They Were Found

Research Approaches

To analyze the research approaches used, we read through the selected articles for the terms "quantitative," "qualitative" and "mixed," as well as more specific terms such as "case study" and "correlational study." In 142 of the articles (86.6%), this information was explicitly stated. In the 22 other articles (13.4%), this information was not overtly apparent, but the research approach could be deduced based on the methodology. In our initial analysis, we found that most of the studies used a qualitative approach, as Figure 6 illustrates.
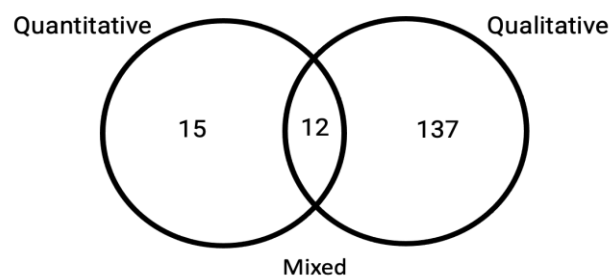

Figure 6. Research Approach Used in the Articles in the Text Corpus on Teacher Agency

Of the studies that used a qualitative approach (n=137; 83.5%), 36 articles (26.3% of the qualitative studies) did not provide further details about the type of approach used. Of the articles that did provide this level of detail, the case study was the most frequently used method (n=66; 40.2% of the qualitative studies), and 13 were multiple-case studies (9.5% of the qualitative studies). The other methods used are ethnography (n=12), narrative research (n=8), action research (n=6), phenomenology (n=4), grounded theory (n=3) and collaborative research (n=2).

Of the studies that used a mixed-method design (n=12; 7.3%), the majority (n=7) used a sequential explanatory design. With this type of design, the research is conducted in two phases: in the first phase, the quantitative data is collected, and in the second, qualitative data is collected to help explain some of the data or findings (Creswell et al., 2003). Three studies used mixed-method concurrent nested designs, in which [Translation] "qualitative and quantitative data are collected simultaneously" (Briand & Larivière, 2014, p. 629). One single study used a sequential exploratory design, in which a quantitative phase is conducted to test or generalize the findings of the first qualitative phase (Creswell et al., 2003). Another study had a sequential transformative design, in which [Translation] "qualitative and quantitative analysis methods are used in service of an ideology of engaged research, action research or participatory research" (Briand & Larivière, 2014, p. 633).

Participants

In our analysis of the participants from whom data were collected in the reviewed studies, we found that the participants held a variety of roles in their workplace. Not surprisingly, 98.8% of the studies involved teachers (n=162). Most of the studies focused on practicing teachers (n=138; 85.2% of the studies involving teachers), while nearly seven

times fewer studies focused on pre-service teachers (n=19). Five studies looked at both pre-service and in-service teachers. In five cases, the studies also involved teacher educators. In two articles, the authors speak about their own experience as teachers: the autoethnographic study by Teruya (2021) and the duoethnographic study by Banegas and Gerlach (2021). In one study, the participants were graduate students working as teaching assistants (Christiansen et al., 2018). Only two studies did not involve teachers; one was conducted with two school principals (Hanaya et al., 2020) and the other with five students (Bhowmik, 2020).

In many studies, data were collected from individuals who are not teachers: members of management (n=11), policymakers (n=8), students (n=5), educational consultants (n=4) and special education teachers (n=2). The following roles were held by participants in only one study: community stakeholders and university researchers (Severance et al., 2016), teachers' association executives (Adebayo, 2019), a consultant (Shaari, 2020), a school administrator and a guidance counsellor (Bonner et al., 2020). It should be noted that in 14.6% of the studies (n=24), data were collected from people in a variety of positions. Two studies went so far as to collect data from five different groups of people (Adebayo, 2019; Bonner et al., 2020).

The studies in the articles we analyzed had an average of 125 participants. Breaking the results down by research approach will put this number into perspective. Between 80 and 2,549 individuals participated in the studies that used a quantitative approach, with an average of 1,048 participants. The studies that used a qualitative approach looked at agency in between 1 and 143 people, averaging 13 participants. It bears noting that 40.1% of the qualitative studies involved three or fewer participants. Studies with a mixed-method design collected data from an average of 255 people, ranging from 14 to 886 individuals. This number is impacted by the quantitative part of the mixed-method sequential designs, which had an average of 223 participants (between 14 and 886 people), whereas 23 people on average (between 3 and 85 people) took part in the qualitative component of the mixed-method studies.

Methods of Data Collection

In our analysis, we identified the following methods of data collection used by the researchers studying teacher agency, which will be discussed in further detail below: interviews, observation, questionnaires, document review, field notes, reflective journals (including narratives), focus groups, workshops and student work. Three other methods were used, but only in one or two studies: mapping of participants' social networks, used in two studies (Anderson, 2010; Biesta et al., 2017); pre-tests and post-tests, used in one study (Ahn et al., 2021); and the use of electrodes to measure heart rate (Donker et al., 2020). Figure 7 shows how frequently each of the methods of data collection were used.

Methods of data collection used

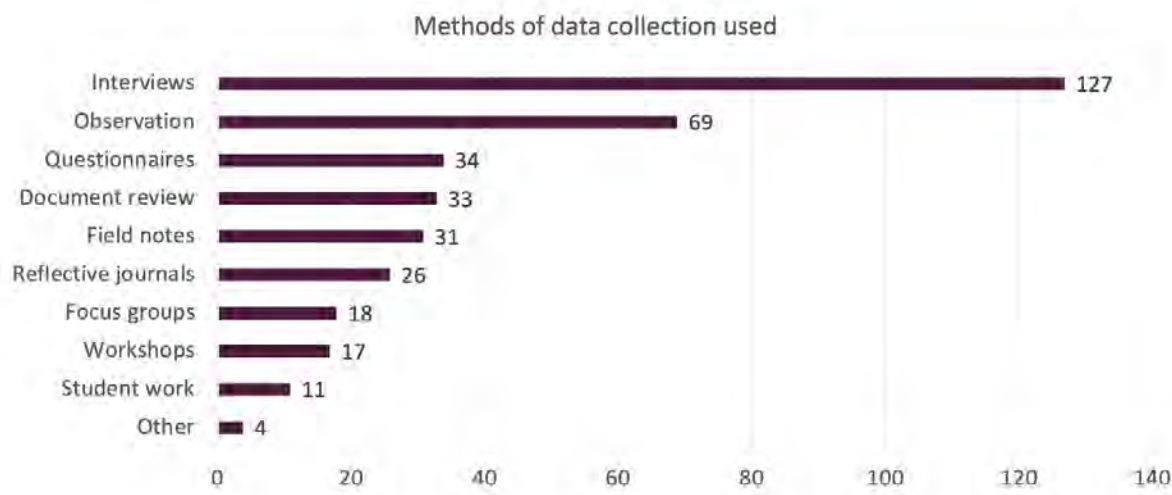| Method	Count
Interviews	127
Observation	69
Questionnaires	34
Document review	33
Field notes	31
Reflective journals	26
Focus groups	18
Workshops	17
Student work	11
Other	4

Figure 7. Methods of Data Collection Used in the Articles in the Text Corpus on Teacher Agency

To better understand these data in context, it is helpful to examine the data in terms of the research approach used. Table 1 sets out the methods of data collection used within the scope of each research approach.

Table 1. Methods of Data Collection Used in the Articles in the Text Corpus on Teacher Agency, by Research Approach

Method	Quantitative	Mixed	Qualitative	Total
Interviews	0	8	119	127
Observation	3	2	64	69
Questionnaires	15	10	9	34
Document review	0	2	31	33
Field notes	0	0	31	31
Reflective journals	1	0	25	26
Focus groups	0	3	15	18
Workshops	0	1	16	17
Student work	0	0	11	11
Other	1	1	2	4

Some of the methods used in the quantitative studies may come as a surprise, such as observation. In two articles (Donker et al., 2020, 2021), the observations were made by observers moving a joystick along two axes (agency and communion). The joystick's position was saved two times per second. In the other study, where classroom observation was employed as part of a quantitative design (Malmberg & Hagger, 2009), the authors used the Classroom Assessment Scoring System (CLASS) instrument, which lists several items that are rated on a scale from one to seven. Reflective journaling was also used in this study. In these three articles, the data were processed quantitatively.

Figure 8 shows the number of different data collection methods used in the articles in the corpus. In 60.4% of cases, data were collected using a combination of several methods. On average, each study used two to three methods of data collection.
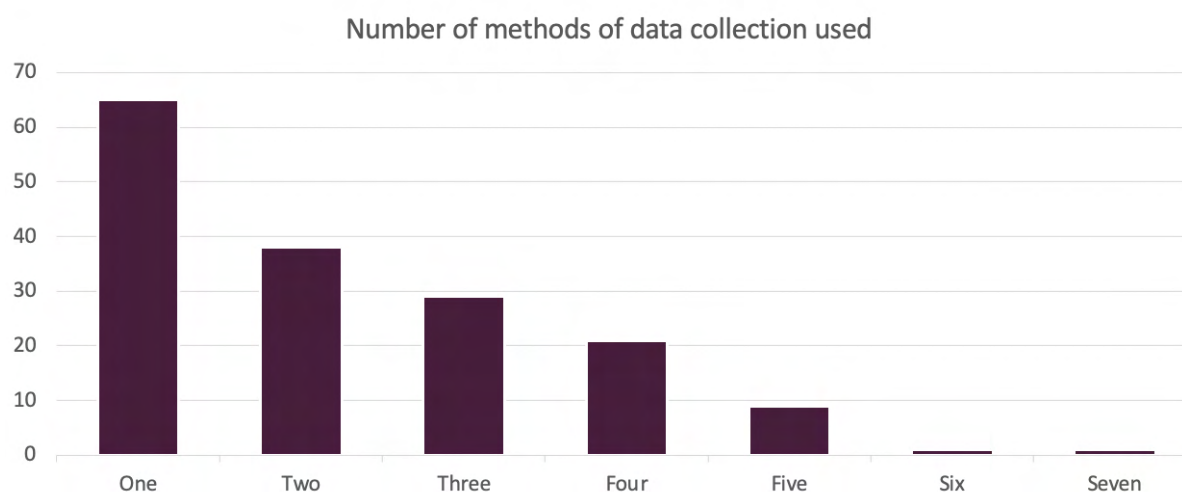

Figure 8. Number of Combined Methods of Data Collection Used in the Articles in the Text Corpus on Teacher Agency

The following subsections provide more detail about the most frequently used methods and some select examples of how they were employed by the researchers.

Interviews

Interviewing was the most common method of data collection, used in 127 articles (77.4%). When the type of interview was specified, as it was in the majority of the articles (n=91; 71.7% of the interview-based studies), semi-structured interviews were the most common (n=85; 66.9% of the interview-based studies), while unstructured interviews were used in four cases and structured interviews were used in two cases. Of the 127 articles in which interviews were used, just over one third (n=46; 36.2% of the interview-based studies) did not provide details about the questions that were asked. In 57 cases (44.9% of the interview-based studies), the subjects broached in the interviews were provided, and in 12 other cases, some sample questions were provided, leaving 12 articles that provided a full interview protocol.

Of these 12 interview protocols, the term "agency" is explicitly used in only one. Butler et al. (2015) interviewed the participants in two rounds to study agency in a community of inquiry. In the first interview, participants were asked questions about their goals, how they had been working with the community, what they were learning, the resources they used, and so on. In the second interview, three questions were added: 1) How was engagement in cycles of inquiry shaping their practice and professional learning? 2) What was the role of data and assessments in shaping inquiry and practice? 3) How were agency and accountability implicated in the initiative?

Oolbekkink-Marchand et al. (2017) mention the concept of agency in the interview protocol provided to interviewers but do not use the term in the questions for participants. After the first question, which aims to identify times when the participant showed agency inside and outside the classroom, the interviewer asked the participant to elaborate on these occurrences by identify their motivations and describing their relationships with their students and colleagues. The idea of agency was also implied without being mentioned in the questions in the study by Vaughn (2013), which focused on how teachers implement their vision, the situations in which they have had to be adaptive, and how they negotiate constraints in their school context.

Lastly, the interview protocols in other articles had questions about characteristics of agency (Bandura, 2001), including questions about participants' motivations and intentions (Min et al., 2021), self-regulation and the hurdles they have had to overcome (Balgopal, 2020; Wang et al., 2021). As well, Buchanan (2015) inquired about ways that participants demonstrate agency, such as whether they are part of a community of practice.

Observation

Observation was used in 69 studies (42.1%). The observations took place in different settings, and in some cases, participant observation was used. The most common setting for observation was a classroom or a laboratory, which was part of the data collection strategy for 51 studies (73.9% of the observational studies). In a smaller number of studies, researchers observed informal interactions, including teacher staff meetings (n=14; 20.3% of the observational studies) and other activities having to do with the practice of teaching, such as lesson planning, or the student community, such as graduation (n=11; 15.9% of the observational studies), and some mentioned observing email exchanges (n=17; 24.6% of the observational studies). In three cases, observations were conducted within the framework of quantitative research (Donker et al., 2020, 2021; Malmberg & Hagger, 2009).

Questionnaires

The 34 articles (20.7%) reporting on studies that used questionnaires as a method of data collection break down as follows: 15 (44.1% of the questionnaire-based studies) developed their own questionnaires, 6 adapted a pre-existing questionnaire to meet their needs, 4 combined aspects from multiple questionnaires, 3 used a pre-existing questionnaire, and 6 did not provide information about the questionnaire used.

Of the studies that adopted a pre-existing questionnaire wholesale, Bellibaş et al. (2020) and Tayag and Ayuyao (2020) used the "Teacher Agency scale" that was developed by Liu et al. (2016) based on two scales developed by Peng et al. (2006) and Shen (2015). Malmberg and Hagger (2009), meanwhile, used a questionnaire developed by Malmberg et al. (2004).

For the adapted questionnaires, Yılmaz Yakışık et al. (2019) modified the questionnaire on teachers' sense of professional agency developed by Pietarinen et al. (2016) so it would apply to student teachers, creating what they called the "Teacher Trainees' Sense of Professional Agency in Practicum" questionnaire. The other adapted questionnaires did not specifically focus on agency. This was the case for Lasky (2005), who adapted a questionnaire about teacher collegiality, school leadership and material support, and for Pantić (2017b), who adapted a questionnaire about relationships with colleagues, management, other professionals and parents. Meanwhile, Donker et al. (2020) and Donker et al. (2021) adapted questionnaires about emotions, and Jones and Charteris (2017) adapted a questionnaire about teachers' sense of efficacy.

In some studies where multiple questionnaires were combined into one, none of these questionnaires were directly focused on teacher agency. For example, the four questionnaires that Hadar and Benish-Weisman (2019) merged together were the "General Self-Efficacy Scale", the "Proactive Personality Scale", the "Work Regulatory Focus Scale" and the "Portrait Values Questionnaire". Others used a combination of questionnaires that included an assessment of agency, such as when Leite et al. (2020) used the "Teacher's Professional Agency in the Classroom" scale and the "Classroom Boundary Crossing" scale. Hallinger et al. (2019) and Piyaman et al. (2017) combined items relating to teacher agency developed by Shen (2015) and Peng et al. (2006) with other questionnaires.

Lastly, of the 15 studies that developed their own questionnaires to meet their needs, few provided all of the questions that they used. For example, Deed et al. (2014) developed a short questionnaire in which participants were asked to identify problems they had encountered and explain how they mitigated these issues. Liu et al. (2016) developed a questionnaire, provided as an appendix to their article, that includes several items: the ones grouped under "Teacher Agency" are professional learning effectiveness, teaching effectiveness, optimism and teacher engagement. Wang et al. (2017) also shared their questionnaire, and six of the items were about teacher agency: "1. I actively negotiate with leaders at various levels to support my LRC [Learning in Regular Classrooms] practices; 2. I actively seek help and advice from teachers in special schools; 3. I establish connections with professionals to get advice and service (e.g. medical and speech therapy); 4. I use resource rooms to help students with disabilities; 5. I negotiate with communities to support my LRC practices; 6. I acquire useful equipment to support my LRC practices." Finally, Leijen et al. (2021) created a questionnaire based on three dimensions of agency: the iterational dimension, informed by the past, the

projective dimension, informed by the future, and the practical-evaluative dimension, informed by the present (Emirbayer & Mische, 1998).

Document Review

Of the 33 studies (20.1%) that used documents as a data source, 12 used instructional materials such as lesson plans and class handouts. The same percentage of studies used official program documents such as curricula and national policies. Other types of documents were used in 11 cases: teacher staff meeting agendas, school and community event announcements, academic articles published by the participant, professional development materials for teachers, cover letters, and more. In four cases, the authors did not specify the kinds of documents used.

Reflective Journals

Reflective journaling was used as a method of data collection in 26 articles (15.9%). The reflective journals were kept by in-service teachers in fifteen of those articles, by pre-service teachers in nine, by both in-service and pre-service teachers in one, and by teacher educators in one. The reflective journal entries varied in length and frequency: for example, some participants wrote 400 to 500 words once every three months (Hiver & Whitehead, 2018), some wrote longer entries of 1,000 to 2,500 words (Bamber et al., 2019), and some wrote in their journals after every classroom observation session (Ruan et al., 2020). Participants in one study wrote in their journals twice, one month and three months after attending a conference (Salter & Tett, 2021). In studies involving pre-service teachers required to keep a reflective journal for their course, the frequency of entries varied from five over the course of the semester (Kayi-Aydar, 2015) to once a week for either 10 weeks (Chaaban & Sawalhi, 2020) or 12 weeks (Martin & Carter, 2015).

In many cases, participants were given prompts to guide their writing. For example, Hiver and Whitehead (2018) made statements such as "Please describe your major values or guiding principles in your teaching" and asked questions such as "How do you see, feel, and think about yourself as a teacher?" Pantić (2021) had participants answer three questions: "WHAT kind of a difference teachers tried to make," "WHO were the people they sought to involve and how," and "WHY they did or did not manage to make a difference." Ruan et al. (2020) asked participants to write about their beliefs and practices as they relate to agency, and Salter and Tett (2021) had participants describe their feelings about the conference they attended and their perceptions of how it changed their professional practice. A narrative approach was used in five cases, including Liu et al. (2020), and in another case an autobiographical approach was used (Ramírez & González, 2012). Lastly, in the study by Severance et al. (2016), participants were encouraged to write freely in their reflective journals.

Focus Groups

While the one-on-one interviews in the studies in our corpus were relatively well described, the descriptions of focus groups (sometimes referred to as group interviews) were more superficial. Of the eighteen articles (11.0%) that used focus groups, only six specified that the interviews were semi-structured. As for the discussions in these focus groups, eight articles mentioned which topics were covered, only one listed all of the questions that were asked, and another shared some of the questions used. The articles in which focus group questions were shared included the study by Rostami and Yousefi (2020), in which a few questions directly touched on agency, such as "To what degree do you find that the principals have contributed to developing your professional agency?" and "To what degree do you find that school practice has contributed to developing your professional agency?" (p. 6).

Workshops

In the 17 studies (10.4%) that used workshops to collect data, most of the workshops were directly related to teacher professional development (n=13). This includes training workshops (Baker-Doyle & Gustavson, 2016; Ching, 2020; Lockton et al., 2020), professional development meetings (Shelton & Melchior, 2021; Wagner et al., 2019; Wang et al., 2021), seminars (Johnson, 2008; Rivera Maulucci et al., 2015), feedback workshops (Lopes Cardozo, 2015) and "unconferences" or "Edcamps" (Good et al., 2017).

Four studies (2.4%) collected data during co-construction workshops. For example, Deschênes and Laferrière (2019) used the Future Workshop format to co-design a digital platform, while Severance et al. (2016) used the Change Laboratory workshop format for curricular co-design. Ahn et al. (2021), meanwhile, engaged participants in the collaborative co-construction of data visualizations.

Student Work

Few articles (6.7%) chronicled studies in which student work was used as a data source. This includes the studies in which pre-service teachers kept journals, as discussed earlier. In four articles, other kinds of student work were used, such as portfolios (Ilieva & Ravindran, 2018) and research work (Rathgeber & Mantie, 2019). In some cases (n=7), it was work by the participants' own students that was used to source data, such as portfolios (Baker-Doyle & Gustavson, 2016) and written assignments (Bhowmik, 2020).

Methods of Data Analysis

The types of analysis methods used in the quantitative studies or in the quantitative part of the mixed-method studies (n=27) were descriptive (n=17), correlation (n=7), multivariate (n=7) and inferential (n=5). In some cases, a combination of these analysis methods was used.

For the qualitative analyses and the qualitative parts of mixed-method studies (n=149), most authors (n=93; 62.4% of the qualitative analyses) used what is known as emergent coding. In 32 articles (21.5% of the qualitative analyses), an established framework was used for thematic or content analysis. These frameworks include the ecological model of agency introduced by Biesta and Tedder (2006, 2007) and developed further by Priestley et al. (2015), which was used by Andrée and Hansson (2021), Kontovourki et al. (2018) and Oolbekkink-Marchand et al. (2017). As well, the chordal triad of agency proposed by Emirbayer and Mische (1998), which inspired the ecological model, was used in the articles by Gallagher and Farley (2019) and Damşa et al. (2021). Lastly, others like Severance et al. (2016) and Pantić (2021) used the activity theory (Engeström, 1987, 2001; Engeström et al., 2014) to analyze their collected data.

Discussion

The four questions that guided this systematic review of the literature on teacher agency revealed a set of patterns in terms of methodology. The results show that research on teacher agency has been largely qualitative and the case study has been the most frequently used method. This conclusion is consistent with the observations made by Hadar and Benish-Weisman (2019), who designed a quantitative study to help offset the imbalance in the research approaches. Although the most popular method is not necessarily the best one, when studying teacher agency, a qualitative or mixed-method approach seems to be the appropriate choice for observing such a complex phenomenon. It also provides a way to look at agency that takes into account the social, cultural and historical context in which teachers practice, in interaction with their environment, which may be more difficult to consider in a quantitative design.

With respect to the participants, it is not surprising that almost all of the studies involved collecting data from teachers. A study in which data are not collected from teachers may be more interested in studying their empowerment than their agency. For example, Hanaya et al. (2020) studied the way teacher agency is either enabled or constrained by interviewing members of management at two schools. Their focus was less on teacher agency and more on how education policies related to school safety affect what teachers are able to do. Furthermore, our systematic review found that involving participants who hold different roles within a school is, to a certain degree, consistent with the ecological understanding of agency that takes into account the social, cultural and historical context in which teachers practice.

In terms of the number of participants, our findings are consistent with the observations made by Pantić (2017a), who describes the existing empirical research on teacher agency as being small-scale. More than two thirds of the articles in our corpus described studies of 20 or fewer participants, and more than one third of the studies involved five or fewer participants.

The data collection methods chosen are consistent with the ecological approach to agency. We noted a trend toward the use of a variety of data collection methods to gather rich data and in some cases triangulate the data. However, the complementary nature of the methods is not always explicitly described in each article's methodology section. Having more details about the methodology would have made it easier to understand the logic behind the author's decisions and filled in certain blind spots.

Oftentimes, the articles provided only some of the data collected for large-scale projects, which makes it impossible to assess the richness of data that were collected using a combination of methods. This was the case for the article by Cloonan et al. (2019), which zeroed in exclusively on the qualitative data aspect of a larger project. As well, studies such as those by Anderson (2010), Baker-Doyle and Gustavson (2016) and Feryok (2012) filtered out data by focusing on only some of the participants in a larger-scale study. Meanwhile, the article by Gibbs (2020) presented a selection of data that were collected during a two-year period within the scope of a five-year longitudinal study.

While our findings indicate that interviews are a widely used method of collecting data in studies of teacher agency, no clear pattern emerged as to the interview protocols used. We also found a lack of consensus about the kinds of questions included in questionnaires, as many authors used a combination of questionnaires about topics *related* to agency. This observation is not surprising given that the concept of agency is still poorly defined in the education sciences (Clarke et al., 2016).

Conclusion

As we have seen, while it appears to be an increasingly prominent topic of focus in the literature, the concept of agency has not been fully established. Our study will help develop a better understanding of both the concept and how it is documented. We were able to provide a rather comprehensive picture of how agency has been documented based on the level of detail and transparency of the methodology sections of the 164 articles we read. In our research, we found that teacher agency has mostly been documented qualitatively in the form of case studies comprising interviews of a

small number of individuals, with no consensus in terms of interview protocol. In most cases, the results are analyzed using emergent coding. The way that agency is documented varies but is most often underpinned by an ecological approach.

The variety of participants in the studies and the analyses reviewed and, above all, the range of research approaches and data collection tools support the hypothesis that agency, and the way it is recognized, cannot be separated from its context and environmental influences (Adebayo, 2019) and is so embedded in the teacher's activities that it is expressed in the absence of explicit reflection (Martin, 2004). The diversity of the initiatives documented does not preclude the idea that agency should be recognized rather than measured (Ahearn, 2001; Oliveira, 2012).

Recommendations

Further research on the documentation of teacher agency will be conducted in the coming years, and another systematic review will likely be called for in a few years' time. We can therefore only encourage researchers to be attentive to transparency in their data collection and analysis, in order to ensure that future systematic reviews like this one can provide the most accurate picture possible.

Limitations

This systematic review is subject to the usual limitations of the method: we may have missed articles that met our selection criteria but were not indexed in the databases we selected, and the corpus of identified articles may have been biased since it excludes articles that do not contain descriptors relating to teacher agency. To mitigate these limitations, we searched in three databases, and we used several iterations of the search queries, which we had validated by an academic librarian in the education sciences. As well, it might have been germane to further investigate certain issues of methodology, including the submission of questionnaires (paper versus online, for example) and the scales chosen for the items. We also could have processed the results by teaching level instead of grouping all of the teachers together.

Authorship Contribution Statement

Deschênes: Conceptualization, design, data acquisition, analysis, writing. Parent: Conceptualization, analysis, critical revision of manuscript.

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