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Subject Pedagogy Research Methodologies: Analysis of Academic Journal Articles Published by Affiliates of Japan Consortium of Subject Pedagogy Associations

Noriko Kishi and Takaharu Yamamoto***

Abstract

This study aimed to clarify issues in subject pedagogy research by examining changes in research methods over time, with a focus on articles published in academic association journals. To identify the research methods used, we extracted data from articles published by academic associations within the Consortium for Subject Pedagogy. Using a common subject framework to classify research methods, we examined the methodologies through data analysis and a literature review. The results showed that (1) research methods varied by subject, and classifications that were valid in one subject society were not optimal for others; (2) theoretical-philosophical research has been common in mathematics but less so in social studies, geography, and home economics; (3) practical-development and empirical-experiential research have been common across subjects; (4) critical inquiry is an important step beyond traditional approaches; (5) individualistic and traditional-technical approaches are important in subject pedagogy, and recognition of their significance remains a future challenge.

Keywords

subject pedagogy, methodology, research methods, interrelationships

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1 Introduction

Regarding the research methods used in Japanese subject pedagogy, Matsumura (1986) identified ten areas, associated with teaching content and methods to the subject's essence, significance, purpose, and goals. Furthermore, he also classified research methods into five categories, namely philosophical-principled, historical, comparative educational (or international comparative), experimental-empirical, and practical, and proposed classifying research in combination with the aforementioned ten research areas.

The Bulletin of Japanese Curriculum Research and Development (BJCRD) published review articles on research trends and prospects for education in each subject area during the period 2002–2008. Matsuura and Kadoya (2004) summarized the trends in science education per *BJCRD* articles into four categories: subject division, fundamentals, purpose/content, and method/practice. These review articles varied in terms of the subjects analyzed, the research methods classified, and the methods discussed, revealing each subject's characteristics (Koyama, 2005; Yamamoto, 2003).

Matsuura (2015, p. 105) applied Matsumura's (1986) classification to *BJCRD* research articles without imposing subject-specific limitations. The methods initially identified were mainly philosophical-principled (the necessity of teaching subjects, and curriculum issues) and experimental-empirical (the effectiveness of teaching methods and textbook surveys). By the mid-2010s, the popularity of the former had decreased, whereas that of the latter had increased significantly. Since then, few studies have pursued comprehensive examinations on the research methods in subject pedagogy.

The Handbook of Subject Pedagogy Research (Japan Curriculum Research and Development Association, 2017) has proposed methodologies for subject pedagogy research. However, it lacked a thorough preliminary discussion and a common language among authors, raising the question: What theories, concepts, and methodologies are applicable in subject pedagogy? The Japan Consortium for Subject Pedagogy Associations (JCoSPA) initiated joint research initiative to address this issue. In FY2023, following a terminology study in FY2022, results showed that research focused on methodological trends, including knowledge justification, peer review, and research ethics.

This study focused on articles published in various associations' academic journals as justifications for knowledge in each subject. We aimed to capture the methodologies used in research articles on each subject and clarify issues related to subject pedagogy from the viewpoint of changes in research methods over time.

2 Methods

2.1 Data and Material Collection Procedures

First, we applied algorithms to mechanically extract research articles published by 14 JCoSPA members in academic journals between January 2010 and August 2023. Since each academic society has published different types of articles, including peer-reviewed articles, and a number of other publications, the minimum condition for extraction was that peer-reviewed articles had been published in the last 5 years. The abstracts were analyzed to identify the

research methods, and the research purpose, methods, and data, which were then organized into tables.¹

2.2 Classification Framework and Examination Process

Regarding the classification criteria, with reference to the framework previous studies have organized, trends in research methods for several subjects were shared at study meetings, and classifiable criteria common to all subjects were discussed.² Specifically, based on the classification items applicable to social studies pedagogy methodologies, as shown in Table 1 (Kusahara, Mizoguchi, & Kuwabara, 2015), and those the *Journal of Science Education in Japan* established to identify trends, as shown in Table 2 (Araya et al., 2024), we examined whether peer-reviewed articles on subject pedagogy research other than social studies and science could be aggregated.

Due to the differences in the number of journals, articles, and formats, members of the JCoSPA research committee from each association selected this study's target data. We analyzed the data in Table 3; however, the extraction period and methodologies were not fully standardized. To address these limitations, we conducted a literature review of independent articles from various associations.

3 Results and Discussion

3.1 Survey of Articles Published in JCoSPA-Affiliated Associations' Journals

Regarding our inquiry about the possibility of classifying each subject's research methods using a common framework, Table 3 presents the results we obtained for five subject pedagogy areas: social studies, geography, mathematics, home economics, and the Japanese language.

3.1.1 Social Studies and Geography Education Research Methods

Table 4 shows the results for the *Journal of Educational Research on Social Studies (JERSS)* using the classification of social studies pedagogical methodologies. Regarding research categories, there has been little normative-principled research, and all the studies referred to cases outside of Japan. In practical-developmental research, most studies were conducted through practical implementation. Empirical-experiential research featured the largest number of cases, with 12, five of which overlapped with four practical-developmental research cases and one normative-principled research case. Regarding detailed methods, developmental-practical research (2.2) and qualitative research (3.2) were the most common types.

In *JERSS*, practical-developmental research included understanding social studies goals, updating educational content, and revising methods based on children's needs. For example, Matsunami (2021) incorporated a cost-benefit analysis from the field of economics into elementary school civics education to address the limitation of civic learning to the belief that "the wishes of the people are accepted and realized through the political process" (p. 23).

Regarding trends over time, normative-principled research decreased, whereas that of empirical-experiential and practical-developmental research increased. However, practical-

developmental research also became more quasi-experimental and overlapped with empirical-experiential research more frequently.

The tendency observed in *The New Geography* was similar to that exhibited by *JERSS*; there was little normative-principled research, all articles were classified as comparative research (1.1), and the detailed classification showed more developmental-practical research (2.2) and qualitative research (3.2; Table 5).

For *The New Geography*, a detailed classification and cross-tabulation of each paper's object and analytical methods were conducted. Many articles focused on learners, teachers, and teaching materials/textbooks, which are the three elements of a lesson. Table 6 shows the analytical method combinations. Geography education included unique methods such as cognitive research on children's spatial cognition, spatial analysis, landscape photograph description, and handwritten map surveys, which are not found in other social studies fields.

Distinct research methods specific to geography education have been established. *The New Geography* has published five types of peer-reviewed articles that demonstrate influence from their academic discipline in terms of format, content, and argumentation. Many of these articles provide detailed explanations of specific facts and circumstances underlying data interpretation. Some articles emphasize the geographical research structure and assert its value as teaching material in their conclusions.

Subject pedagogy is closely tied to educational practice and is used to meet teachers' needs. The research methods employed in social studies and geography education demonstrate that the pedagogical approaches of these subjects are shaped by the methodologies of their respective academic disciplines.

3.1.2 Mathematics Education Research Methods

Table 7 confirms the applicability of the classification used for science and social studies education methodologies to articles on mathematics education. The classification system was divided into three categories used in science education: theoretical-philosophical research, quasi-experimental design in quantitative research (3.2), and the hermeneutical-phenomenological approach in qualitative research (3.7). When the same classification system was applied to social studies pedagogy methodologies, several cases of practical-developmental research were observed, but many had to be classified as "others". Hence, the characteristics of mathematical pedagogical research were not apparent, and changes in trends were difficult to read, even when viewed over time.

Regarding mathematics education, a quasi-experimental design (3.2) in the science education classification system included comparisons between experimental and control groups, comparisons based on pre- and post-surveys, questionnaires, and survey questions. Use of the comparative educational approach in qualitative research (3.6), quantitative research using codes/data and comparisons of textbooks in Japan, and hermeneutical-phenomenological approaches using speech and written texts (3.7) including protocol analysis of classroom practices, interview surveys, and descriptive analysis of performance tasks were observed.

We compared science, social studies, and mathematics research methodologies using science and social studies education classification frameworks. However, capturing the unique methods used in mathematics education research remained challenging. Prominent

mathematics studies have focused on children's thinking, cognition, and development, such as understanding linear functions, concept formation in probability, and dynamic views of geometric figures.

The findings suggest adding a fourth category, descriptive-phenomenological research, to social studies pedagogy, with a focus on children's cognitive development. The science education classification system must be reorganized to facilitate broader applications. We created a new framework with two axes, namely purpose and method, with the classification items organized accordingly. This framework aided the identification of specific characteristics of mathematics research and helped with distinguishing quantitative, qualitative, descriptive/phenomenological, and practical-developmental studies, many of which involve examination from theoretical and philosophical perspectives (Table 8).

3.1.3 Home Economics Education Research Methods

Research articles on home economics education were categorized as science and social studies education (Table 9). Under the science education classification, few peer-reviewed articles in the *Journal of the Japan Association of Home Economics Education* were theoretical-philosophical research. These articles were supplemented by special papers authored by conference presentation speakers with non-refereed contributors. Most quantitative research was categorized as quasi-experimental design (3.2), and some qualitative research was identified as entailing a hermeneutical-phenomenological (3.7) or comparative educational (3.6) approach (3.7), or as "others" (3.8).

The humanities and social sciences (1.4) classification was changed to home economics (1.4) in the social studies category, to which articles about rethinking food groups and self-reliance belonged. Some lesson developments and practical studies were noted, and all the 22 articles under developmental and practical research (2.2) reported combining empirical-experiential research methods. Of these, quantitative (3.1) and qualitative (3.2) research was the most common.

Examples of articles with elements of practical-developmental and empirical-experiential research are Ishijima (2020, p. 24), who implemented a high school lesson aimed at encouraging food loss reduction behavior and demonstrated its educational effects using a questionnaire, and Kobayashi, Nagata, and Suzuki (2022, p. 275), who interviewed teachers about their experiences and evaluated their responses to inform efforts to promote the theme of food during disasters.

In the *Journal of Home Economics Education*, from the mid-1980s to the 1990s, the two main categories were questionnaire survey and literature review. However, since the 2000s, the proportions of lesson study and research using qualitative methods have increased alongside the frequent use of questionnaire methods (The Japan Association of Home Economics Education, 1997, 2007, 2017). Examining articles from the last six years using the science and social studies classification framework confirmed the trend from the 2000s onwards. In home economics education, much lesson study was analyzed from various perspectives using practical-developmental and empirical methods.

3.1.4 Examination of Japanese Language, Mathematics, and Home Economics Education Articles Using a Two-Axis Classification Framework

We examined articles published in *The Teaching of the Japanese Language and Literature* using the social studies and science education classification system along the two axes of purpose and method (Table 10).

The results for Japanese language education contrasted with the classification items reflected in some articles included in the mathematics pedagogy analysis, as shown in Table 8. Theoretical-philosophical and practical-developmental research peaked (Figure 1). Among the items in the descriptive-phenomenological research category, Japanese language education articles frequently reported the use of literature survey-based historical research. In the same descriptive-phenomenological category, mathematics education research emerged as unique given its tendency towards theoretical-philosophical exploration.

Because many studies used mixed research methods, as evidenced by the home economics education articles, tabulating them by purpose and method was challenging. However, overlaying volume zones based on the aggregation trends shown in Table 9 revealed a commonality: Studies that analyzed lessons, discourse, and description for practical-developmental and empirical-experiential research purposes have been prevalent in Japanese language, home economics, and mathematics education.

3.2 Subject Pedagogy Research Methods in Japan: Trends Over Time in Academic Society Members' Methodologies

In the above discussion, we pointed out that since 2000, (1) usage of experimental and empirical methods has increased and the popularity of philosophical and principled research has decreased; (2) the popularity of qualitative research has increased; and (3) descriptive and phenomenological, cognitive, and learner research has also been more frequently conducted. In the next section, we consider current trends in the research methods academic society members have reported in journal articles and results, with a focus on physical education, Japanese language, and moral education, based on the contents the consortium's research promotion committee have released since August 2023.

3.2.1 Research Methodologies Seen in the Journal of Physical Education in the Period 2013-2023

A review of the articles published in *Japan Journal for the Pedagogy of Physical Education* over the past decade revealed the adoption of five contents and three methods. Although identifying methodological trends was impossible, specific issues emerged, such as the limitations of target lessons, exploratory research questions, reliance on theories, data collection and analysis methods, performance tasks and evaluation criteria, and lesson models as the basis for lesson planning. This section considers the question Eto and Kakazu (2019) raised regarding physical education teacher education research.

Eto and Kakazu (2019) presented four analytical frameworks for physical education teacher education research, based on Tinning (2006, p. 376): behavioristic, individualistic, traditional-technical, and critical inquiry. Those scholars identified two directions: (1) behaviorism, which is oriented towards "science that demonstrates what is better" based on objective facts and the paradigms of empirical analysis and natural science, and individualistic, which clarifies the

“significance of subjectivity” based on multiple facts and relies on hermeneutic and phenomenological paradigms, as well as (2) critical inquiry, which refers to socially constructed social inequality, power, and pressure, with a reliance on the paradigm of action research, case studies, feminism, and poststructuralism. Physical education teacher education is also characterized by a traditional-technical orientation, the applicability of which is not limited to physical education teachers. In fact, the traditional-technical orientation should be incorporated into research in all subject areas.

3.2.2 Japanese Language Education Research Methodology

We examined Japanese language research methodologies with reference to three volumes of *The Handbook of Research on Teaching Literacy in Japan*, which contain research reviews by the Japanese Teaching Society of Japan (JTSJ). We found that teacher education research and learner research have increased as of 2000. Based on a detailed review of learner research since 2010 (Fujimori, 2023), we found that qualitative research has increased significantly, interpretive analysis of primary sources has become mainstream (and common in physical education), and diversity-conscious learner research has gained popularity since around 2010. Additionally, attempts to expand the content of Japanese language education across subjects have been observed.

“The Development of Research Methods for Japanese Language Education”, a report on JTSJ's research project, summarizes the results of discussions about research methods for Japanese language education. The discussions involved researchers specialized in psychology, cultural anthropology, sociology, and educational technology.

For example, the cultural anthropologist Minoura (2015) discussed three humanities and social sciences research approaches: logical positivist, interpretive, and critical. She argued that, in cultural anthropology, constructivism has become mainstream since the mid-1980s debate on what constitutes facts in fieldwork. In one of her proposals, Minoura (2015) specifically introduced fieldwork into a Japanese language education lesson study.

Over the past 20 years, the number of academic journal articles reporting on studies that adopted an interpretive or critical approach has increased. The key challenge is how to analyze the data obtained through fieldwork. For example, grade, student age, teacher involvement, classroom characteristics, and lesson attributes should be considered when analyzing classroom learners' development through behavior.

3.2.3 Methodologies for Moral Education and Research

Survey results have pointed out that moral education literature has fluctuated in tandem with the trend of treating morality as a subject. Additionally, due to the peculiarities of moral education, few studies have focused solely on moral science as a (special) subject. Many studies have addressed moral education-related teaching materials and lesson practices, as well as practical development and proposals. Evidently, linkage with theoretical research has been weak, and there has been little discussion about the educational content of other subjects based on academic truthfulness. Since policy determines the content of moral studies, few studies have discussed moral education content.

Although several published books have explained moral education content, these results highlight the difficulty of identifying the methodological characteristics of moral studies.

Nonetheless, the following points emerged: misalignment between goals and evaluations, the peculiarity of the content (items), the challenges of dealing with values, and the problem posed by the fact that moral education became a subject only recently.

4 Challenges in Subject Pedagogy Methodology

By examining the academic journal articles of the five subject associations and focusing on the classification framework, we confirmed that the classification items that were effective for one association were not necessarily suitable for other subjects. This is because, as the analysis of geography education journals suggests, each subject has its own unique research methods aligned with the content. By comparing and examining the classifications proposed by other academic associations, we could identify the characteristics of the research methods that are common to each subject of pedagogical research and whether they are used in combination. Further examination of the framework that crosses research objectives and methods may be necessary in the future, as it can capture common trends in each subject.

Additionally, the literature review emphasized the importance of teacher education research and learner research in recent years, indicating an upward trend in research activities within these domains. The importance of “critical inquiry” and “critical approaches” was highlighted, which go beyond the “logical positivist approach” and “interpretive approach” employed in feedback and empirical research. Examining the significance of research approaches with “individualistic” and “traditional/technical” orientations is also a unique issue in the field of subject pedagogy research. Furthermore, the potential for cross-curricular development of subject content is suggested.

Finally, we propose six issues that must be addressed to promote research into subject pedagogy methodology in the future: 1) Verification of quantitative and qualitative research; 2) Establishing a new research methodology for educational practice grounded on reflective thinking; 3) Relevance of teacher education and research to learners; 4) Exploration of the potential for new historical and comparative research; 5) Further exploration of the essence of subjects; and 6) Need for loose coordination of subjects.

4.1 Increased Experimental, Empirical, and Practical Research and Verification of Quantitative and Qualitative Research

Minoura (2015) describes the transition from a logical positivist approach to an interpretive and critical approach in pedagogical research. In pedagogical research, many qualitative studies on lessons have adopted an interpretive approach. However, an increasing number of studies are now adopting critical approaches to lesson study and learner research. This is because lesson and learner studies require a detailed examination of what is happening in the classroom, considering the goals, content, and methods of each subject area. These areas must be further developed to examine classroom events in detail.

Eto and Kakazu (2019) advocate for critical inquiry. In their analytical framework, the traditional-technical orientation (which clarifies what exists in the field rather than in theory and relies on a simple descriptive modeling paradigm) is considered an important basic methodology for qualitative research in subject pedagogy research.

4.2 *Establishment of New Research Methodologies for Considering Educational Practices Based on Reflective Thinking*

As reported in section 3.3., the prevalence of practical-developmental and experimental-empirical research of lessons and teaching material, and combined research can be similarly pointed out in the research of other subjects.

According to Miyamoto (2017), conducting practical training in the field of education, reconstructing theories based on awareness gained through reflection, and constructing new practical theories constitute the main focus of research and education at the Graduate School of Teacher Education. Therefore, clarifying the essence of practical training and reflection, which are valued in this field, is important to subject pedagogy research methodology. Furthermore, research procedures play an essential role in the development of educational practice and curriculum pedagogy.

4.3 *Establishment of Procedures for Teacher Education Research and Learner Research in Subject Areas*

Buckelew and Ewing (2019) argued for the importance of the teacher-researcher inquiry stance in action research as a teacher education method. They defined “action research” as “inquiry [in] a reciprocal and ongoing process” (i.e., exploration as a mutually beneficial and continuous process). Action research is limited to an interpretive approach from the teacher's perspective which may usurp the learner's thinking practice. Rather, it is precisely because they emphasize the participatory aspect that they argue for exploring publication in action research as a reciprocal and ongoing process. This also leads to proposing an appropriate place for the practical research narrative, such as academic conferences, fellow teachers, students, and oneself.

This is similar to the reflective consciousness of cultural anthropology, where “the structure that clearly distinguishes between the speaker and the listener is the structure of imperialist knowledge itself” (Ota, 2001, p. 195). Achieving teacher education and learner research that transcend this structure is a major goal. Saito et al. (2024) responded to this issue in the context of practical research on self-study.

4.4 *Exploring New Directions in Historical and Comparative Research on Subject Pedagogy*

Historical comparative research is not insignificant, depending on the subject. Rather, developing historical comparative research based on a subject's content and methods and its actual situation is essential. Furthermore, exploring the relationship between the history of general subject pedagogy (the history of facts, individuals, and problems) and the individual history of subject pedagogy (the history that describes and examines the practices of individual educators) is equally crucial. Individual histories of subject pedagogies and research are necessary to secure an object and understand the subject pedagogy culture in the context of the era's “mentalité” (the commonplace way of thinking in an era).

Additionally, as a new research direction, historical research that examines diachronic intake and negotiation, such as Kurokawa (2016), has elucidated the origin and transmission of the Japanese language textbook teaching material *Sannen Toge (Three Years Hill)* through a

review of related Korean and Japanese literature. Comparative subject pedagogy research conducted jointly by researchers and their collaborators has been noted, such as Nakai and Dymoke (2019), Katsuta and Sawada (2021), and Katsuta (2022).

4.5 Continuing Activities to Explore the “Why”, “What” and “How” Regarding Subjects

Masaki (2023) highlighted the importance of collaboration between English and Japanese language education and explored the connection and collaboration between English and Japanese language departments. This study underscores the significance of connecting as a subject pedagogy. Collaboration fosters an internal dialogue, which causes a change in each person's attitude. However, collaboration also creates struggles between learners and teachers. According to Masaki (2023), it similarly causes difficulties for researchers involved in educational practice. Notably, something is generated through the back-and-forth movement.

4.6 Subject Pedagogy as an Assembly in Which Subjects Are Flexibly Related with Interinfluences

Subjects are interconnected. Arthur Applebee, an American literacy pedagogue, once said:

Interconnectedness is an important feature of effective curriculum and instruction at virtually every level, from the coherence and interconnectedness of classroom discussion on a particular day to connections across school experiences and between school and home, to the interweaving of reading, writing, and discussion throughout a unit, to the exploration of key concepts and questions over the course of a semester or year. (2002, p. 32)

If subject pedagogy is the foundation of an effective curriculum and adequate instruction, then coherence and interconnectedness must be considered a fundamental feature of this science. This feature may be problematic within the curriculum or across different subjects. Therefore, creating interconnectedness among subjects and further developing flexibly related subject pedagogy to foster interinfluences as a basis for dialogue and connection among learners, teachers, and learning content are important to allow for the exploration of interrelationships. Advancing educational activities is the most important endeavor.

Therefore, the dialogue must continue, and the task of exploring the dialogical relationships between subject pedagogies and constructing a dialogical academic discipline of subject pedagogy must be performed. This approach will make subject pedagogy research a mutually beneficial and continuous process. Exploring the learner–subject interconnectedness is important in all subjects as a subject pedagogy methodology. Curriculum is a gift of dialogue, nurtured in the relationships among learners, teachers, and learning materials.

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Notes

1. This study referenced the work of JCoSPA's research promotion committee members from the 14 academic associations listed below. However, the views expressed are those of the authors and do not represent the positions of the associations.

List of the Member Associations of JCoSPA (2024)

Japan Society of English Language Education
Japanese Educational Research Association for the Social Studies
Japanese Teaching Society of Japan
Japan Music Education Society
the Japan Association of Home Economics Education
Japan Association for the Study of School Music Education Practice
The Japanese Society for Environmental Education
Japan Curriculum Research and Development Association
Japanese Association for the Social Studies
Japan Society of Mathematics Education
Japan Society for the Pedagogy of Physical Education
The Geographic Education Society of Japan
Japan Society for Moral Education
Japanese Association of Art Education

2. From August 2023 to February 2024, six study meetings were held, during which committee members analyzed ten organizations, most of which belong to the consortium's academic associations. An interim report on academic journal methodologies was presented at the consortium symposium on March 10, 2024, and this paper is based on that report.

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Table 1: Classification of Social Studies Education Methodologies. Kusahara, K., et al. (2015). Handbook of research in social studies pedagogy. Meiji Tosho.

1 Normative-principled research	1.1. Comparative (international)
	1.2. History
	1.3. (General) Pedagogy and psychology
	1.4. Humanities / Social sciences (philosophy, history, geography, etc.)
2 Practical-developmental research	2.1. Developmental research
	2.2. Developmental and practical research
3 Empirical-experiential research	3.1. Quantitative research
	3.2. Qualitative research
	3.3. Historical research
	3.4. Comparative research

Table 2: Categories proposed by Araya et al. (2023) in Journal of Science Education in Japan. Araya, K., et al. (2023) Research trends in themes and methods of *Journal of Science Education in Japan* in 1977-2020. *Journal of Science Education in Japan*, 47(4), 426, Table 2 (translation by author)

1 Theoretical-philosophical research		
2 Empirical research (natural)		
3 Empirical Research (humanity and society)	Quantitative research	3.1. Experimental design
		3.2. Quasi-experimental design
		3.3. Observation design
		3.4. Others (quantitative)
	Qualitative research	3.5. Historical approach
		3.6. Comparative educational approach
		3.7. Hermeneutical-phenomenological approach
		3.8. Others (qualitative)

Table 3: List of Journals and Number of Articles Surveyed.

Associations	Academic Journals	Targeted years	N
Japanese Educational Research Association for the Social Studies	<i>Journal of Educational Research on Social Studies</i>	2019-2023	21
The Geographic Education Society of Japan	<i>The New Geography: Japanese Journal of Geography and Education</i>	2013~2022	56
Japan Academic Society of Mathematics Education	<i>Journal of JASME: Research in Mathematics Education</i>	1981-2020	84
The Japan Association of Home Economics Education	<i>Journal of the Japan Association of Home Economics Education</i>	(1987-2016)* 2017-2023	87
Japanese Teaching Society of Japan	<i>Teaching of the Japanese Language and Literature</i>	(1980-2022)* 2017-2023	67
Japan Society for the Pedagogy of Physical Education	<i>Japan Journal for the Pedagogy of Physical Education</i>	2019-2023	25
Japan Society for Moral Education	**papers about moral education returned in a search of CiNii Articles	2000~2021	-

Note: * Based on reviewed literature of the association's journal.

** The society does not have a peer-reviewed journal.

Table 4: Research Methods from Articles in Journal of Educational Research on Social Studies Captured Using the Social Studies Pedagogy Methodology Classification

Multiple categories applicable. $N = 21$

Categories	Sub-categories	N
1 Normative-principled research	1.1. Comparative (international)	4
	1.2. History	0
	1.3. (General) Pedagogy and psychology	0
	1.4. Humanities/Social sciences (philosophy, history, geography, etc.)	0
2 Practical-developmental research	2.1. Developmental research	2
	2.2. Developmental-practical research	8
3 Empirical-experiential research	3.1. Quantitative research	2
	3.2. Qualitative research	7
	3.3. Historical research	1
	3.4. Comparative research	2

Table 5: Research Methods for Articles in *The New Geography* by Classification of Methodology in Social Studies Pedagogy (*partially modified)

N=56

Categories	Sub-categories	N
1 Normative-principled research	1.1. Comparative (international)	9
	1.2. History	0
	1.3. (General) Pedagogy and Psychology	0
	1.4. Humanities/Social Sciences (Philosophy, History, Geography, etc.)	0
2 Practical-developmental research	2.1. Developmental research	9
	2.2. Developmental-practical research	14
3 Empirical-experiential research	3.1. Quantitative research	3
	3.2. Qualitative research	15
	3.3. Historical research	3
	3.4. Comparative research	0
	3.5. Mixed method research*	3

Table 6: Cross Tabulation of Analytical Methods and Sub-categories in *The New Geography*

Sub-categories Methods of analysis	1.1 Comp arativ e	2.1 Devel opme ntal	2.2 Devel op- practi cal	3.1 Quant itativ e	3.2 Qualit ative	3.3 Histor ical	3.5 Mixed	Total
M-GTA					1			1
Spatial analysis		4						4
Language description method using landscape photographs					2			2
Handwritten map survey					2		1	3
Simple aggregation		1		2				3
Simple aggregation, Content analysis			2				1	3
Extracted child analysis					1			1
Content analysis	6	3	11		1			21
Content analysis, Simple aggregation, Extracted child analysis			1					1
Content analysis, Historical research					2			2
Literature study				1				1
Literature study, Content analysis	2							2
Historical research						3		3
Others	1	1			6		1	9
Total	9	9	14	3	15	3	3	56

Table 7: Research Methods in Articles in the *Journal of JASME: Research in Mathematics Education* Captured Using Science and Social Studies Education Methodology Classification (*partially revised)

N = 84

Categories				1981 - 1990	1991 - 2000	2001 - 2010	2011 - 2020
Categories in science education	1 Theoretical-philosophical research			7	15	8	11
	2 Empirical research (natural)						
	3 Empirical research (humanity and society)	Quantitative research	3.1. Experimental design				
			3.2. Quasi-experimental design	3	10	12	1
			3.3. Observation design				
			3.4. Others (quantitative)				1
		Qualitative research	3.5. Historical approach				
			3.6. Comparative educational approach				
			3.7. Hermeneutical-phenomenological approach	1	5	6	4
3.8. Others (qualitative)							
Categories in social studies education	1 Normative-principled research		1.1. Comparative (international)		1		
			1.2. History				
			1.3. (General) Pedagogy and psychology				
			1.4. Humanities/Social sciences (philosophy, history, geography, etc.)				
	2 Practical-developmental research		2.1. Developmental research	1	3	3	4
			2.2. Developmental and practical research	1	1	5	3
			2.3. Others*		1		1
	3 Empirical-experiential research		3.1. Quantitative research			1	
			3.2. Qualitative research			1	
			3.3. Historical research				
			3.4. Comparative research				
	4 Others*			9	24	16	9

Table 8: Research Methods in Articles in the *Journal of JASME: Research in Mathematics Education* Captured Using a Two-Axis Classification Framework Involving Methods and Purposes

N = 84

			Purpose			
			Normative - principled research	Practical- develop- mental research	Empirical- experiential research	Descriptive- phenomeno- logical research
Method	Theoretical-philosophical research			10		33
	Empirical research (Natural)					
	Quantitative research	Experimental-control design				3
		Pre- and post-survey		1		2
		Textbook comparison		1		
		International comparison				1
		Observation/survey		1	1	16
		Others				1
	Qualitative research	Historical approach				
		Comparative approach		7	1	3
		Lesson analysis	1	1		3
		Discourse analysis		2		
		Description analysis				
		Others				

Table 9: Research Methods in Articles in *Journal of the Japan Association of Home Economics Education* Captured Using Science and Social Studies Education Methodology Classification (*partially revised)

Multiple categories applicable. *N* = 87

Categories				<i>N</i>
Categories in science education	1 Theoretical-philosophical research			1
	2 Empirical research (natural)			0
	3 Empirical research (humanity and society)	Quantitative research	3.1. Experimental design	4
			3.2. Quasi-experimental design	44
			3.3. Observation design	4
			3.4. Others (quantitative)	3
		Qualitative research	3.5. Historical approach	5
			3.6. Comparative educational approach	8
			3.7. Hermeneutical-phenomenological approach	10
			3.8. Others (qualitative)	9
Categories in social studies education	1 Normative-principled research	1.1. Comparative (international)		1
		1.2. History		2
		1.3. (General) Pedagogy and psychology		4
		1.4. Home economics*		6
	2 Practical-developmental research	2.1. Developmental research		4
		2.2. Developmental and practical research		22
	3 Empirical-experiential research	3.1. Quantitative research		47
		3.2. Qualitative research		35
		3.3. Historical research		5
		3.4. Comparative research		5

Table 10: Research Methods in Articles in *Teaching of Japanese Language and Literature* Captured Using a Two-Axis Classification Framework Involving Methods and Purposes.

N = 67

			Purpose			
			Normative -principled research	Practical- develop- mental research	Empirical- experiential research	Descriptive- phenomeno- logical research
Method	Theoretical-philosophical research		2	5	1	(1)
	Empirical research (natural)					
	Empirical research (humanity and society)	Quantitative research	Experimental-control design			
			Pre- and post-survey			
			Textbook comparison			1
			International comparison			1
			Observation/survey	1	2	
			Others			
	Empirical research (humanity and society)	Qualitative research	Historical approach	1	(1)	17
			Comparative approach			6
			Lesson analysis	1	10	8
			Discourse analysis		4	
			Description analysis		4	1
			Others			

Note: () Indicates that a paper has elements of mixed research.

			Purpose			
			Normative-principled research	Practical-development al research	Empirical-experiential research	Descriptive-phenomenol ogical research
Mathematics Japanese Home economics						
Method	Theoretical-philosophical research					
	Empirical research (natural)					
	Empirical research (humanity and society)	Experimental-control design				
		Pre- and post-survey				
		Textbook comparison				
		International comparison				
		Observation/survey				
		Others				
	Qualitative research	Historical approach				
		Comparative approach				
		Lesson analysis				
		Discourse analysis				
		Description analysis				
		Others				

Fig. 1: Trends in Research Methods Seen in Three Subject Articles, Captured Using a Two-Axis Classification Framework Involving Methods and Purposes



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