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IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA: STUDY CONCURRENT TRANSFORMATIVE STRATEGY

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Abstract:

This study seeks to explore the governance of in-service training for Elementary School teachers so that they can be involved in various types, techniques, and materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The authors analysis the perspectives of various thinking frames, to obtain comprehensive results. The finding is that there is a group of elementary school teachers who have not received, have repeatedly received, and even more than 5 times received In-service training. The governance of in-service training in the form of a roadmap has the values of fairness, equity, and proportionality in distributing training services to elementary school teachers that are supported by a digital-based platform. Teachers can easily access, download, document, and use their track record to assess professionalism and become teachers leadership.

Keywords : governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Cihuy, 2019; Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Firdaus, 2016). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands (Arwildayanto & Sumar, 2018). Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivnikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020; Willingham, 2021). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014; Pangrazi & Beighle, 2019). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Indonesia, 2003).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakcı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

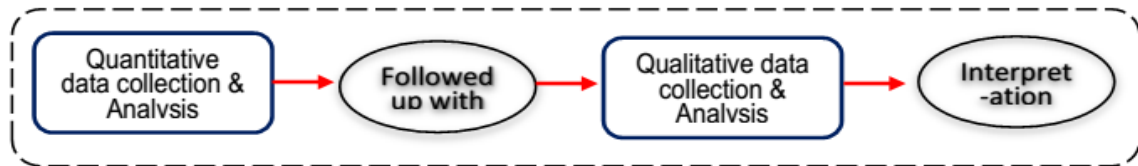


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016)

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1.

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

(Researchers, 2021)

Data collection techniques include questionnaires, tests, interviews, and document studies (Sileyew, 2019). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Stronge, 2018), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out

through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages., namely data collection, data condensation, data presentation and conclusion drawing or data verification (Saldana et al., 2014).

FINDINGS

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1) assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in table 2

Table 2 Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java & West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20.30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
Independent	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in figure 2.

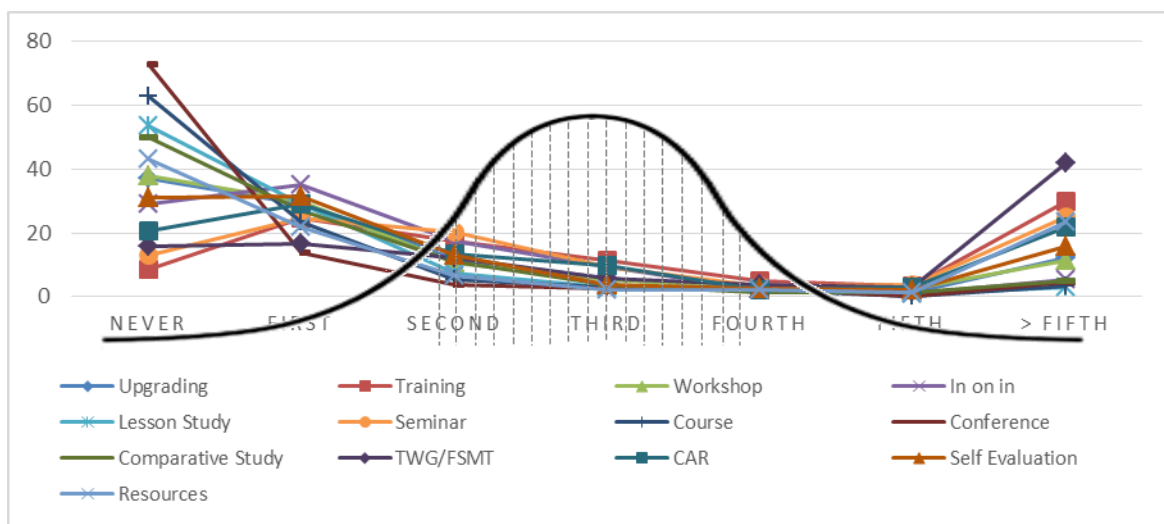


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021)

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28.22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38.12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in figure 3.

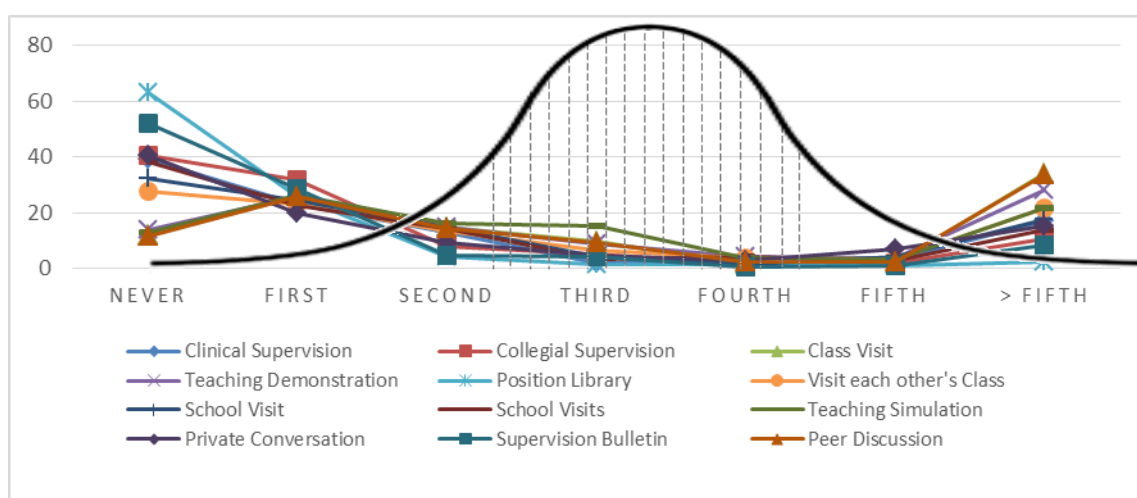


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in figure 4.

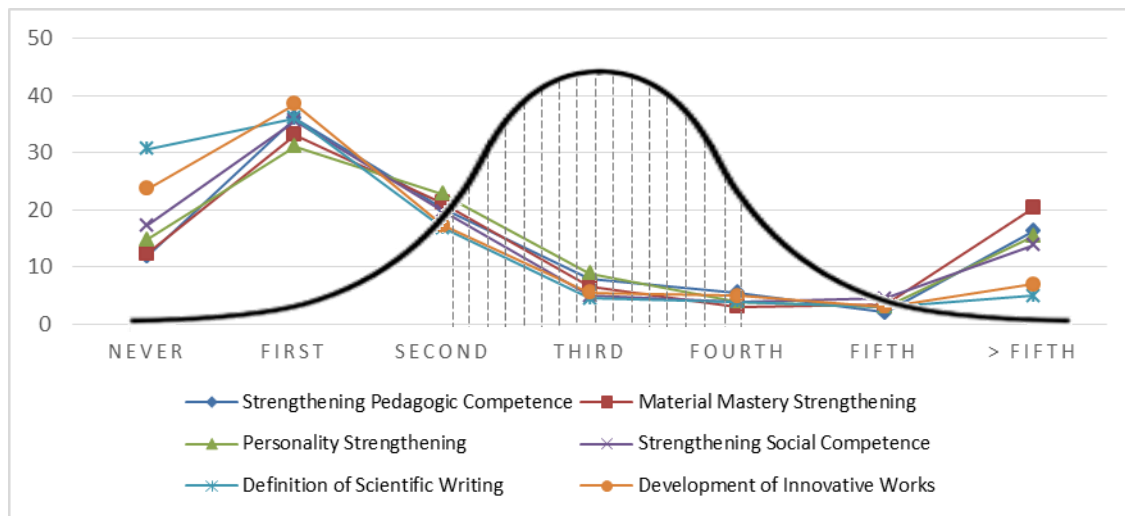


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST

simultaneously increases teachers' professional competence with a probability of $\text{sig } 0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST (IST) program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5 Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

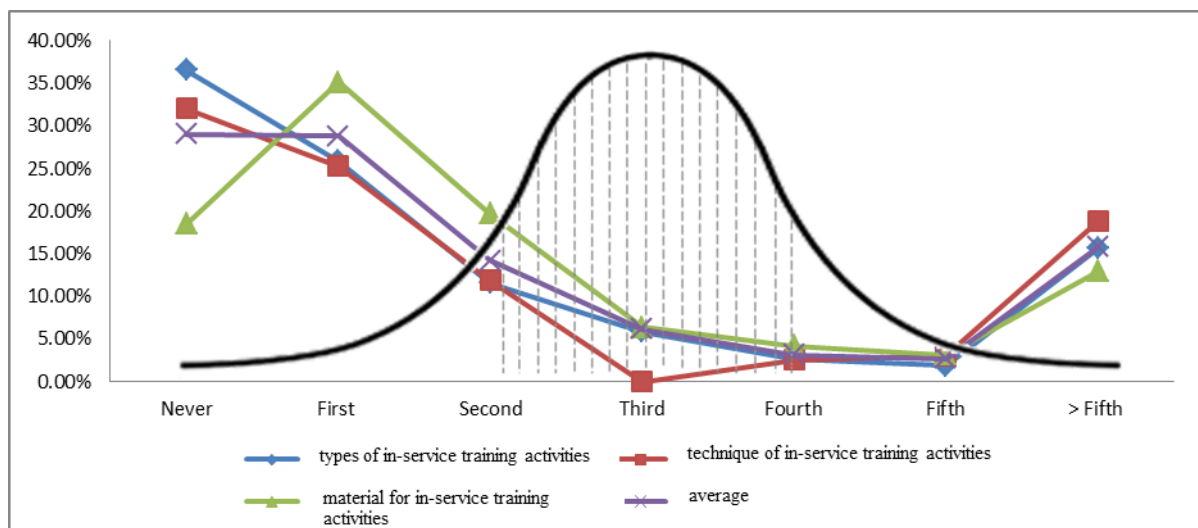


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers

who have not participated in the aforementioned activities can be reduced to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Danim, 2012). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Nikmah, 2019).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Sobri, 2013). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development or lecturer professional empowerment is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).


The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's

policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Kyriacou, 2018).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the techniqueclass visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant in IST (Nurhajati & Bachri, 2017). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in table 6.

Table 6 Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2nd	3rd	4th	5th	> 5th
Level 		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Exporer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources							✓
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial					✓		
	Entrepreneurship						✓	
	Supervision						✓	
	Social							

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work

units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

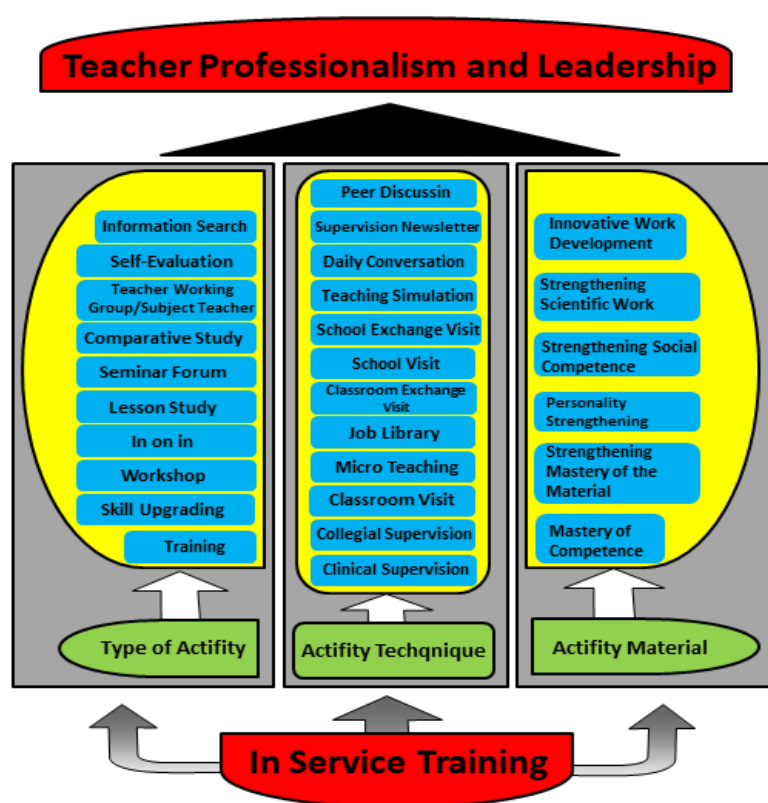


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsivities as school principals or leaders of colleagues at school.

Conclusion

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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2. Konfirmasi revisi artikel pertama 14 September 2022

IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA: STUDY CONCURRENT TRANSFORMATIVE STRATEGY

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Comment [L1]: More eye-catching title will be more interesting, and simple

Comment [L2]: follow templates

Abstract:

This study seeks to explore the governance of in-service training for Elementary School teachers so that they can be involved in various types, techniques, and materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The authors analyze the perspectives of various thinking frames, to obtain comprehensive results. The finding is that there is a group of elementary school teachers who have not received, have repeatedly received, and even more than 5 times received In-service training. The governance of in-service training in the form of a roadmap has the values of fairness, equity, and proportionality in distributing training services to elementary school teachers that are supported by a digital-based platform. Teachers can easily access, download, document, and use their track record to assess professionalism and become teachers leadership.

Keywords : governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Cihuy, 2019; Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Firdaus, 2016). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Comment [L3]: check the degree of similarity

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands (Arwildayanto & Sumar, 2018). Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various forms of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020; Willingham, 2021). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014; Pangrazi & Beighle, 2019). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Indonesia, 2003).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwan, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakçı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

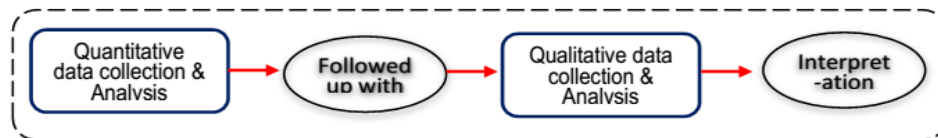


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1.

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

(Researchers, 2021)

Data collection techniques include questionnaires, tests, interviews, and document studies (Sileyew, 2019). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Stronge, 2018), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities,

training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages., namely data collection, data condensation, data presentation and conclusion drawing or data verification (Saldana et al., 2014).

FINDINGS

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1)assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in table 2

Table 2 Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java & West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20.30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
Independent	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in figure 2.

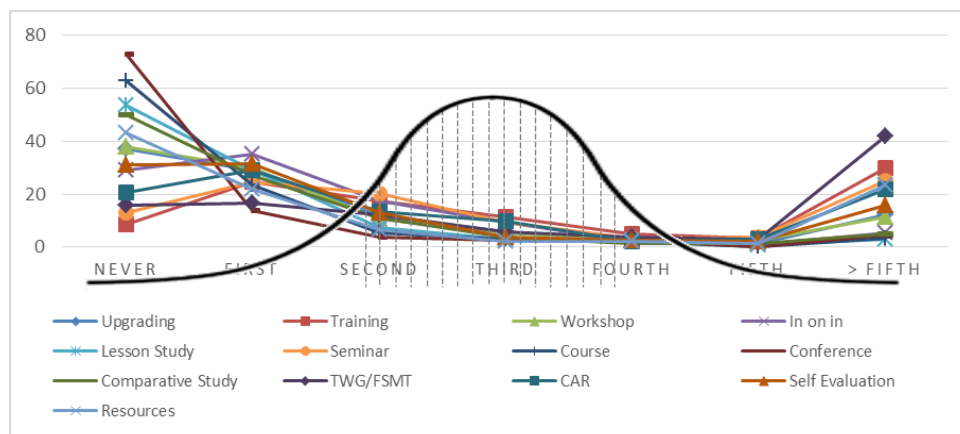


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an

interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021)

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28.22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38.12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in figure 3.

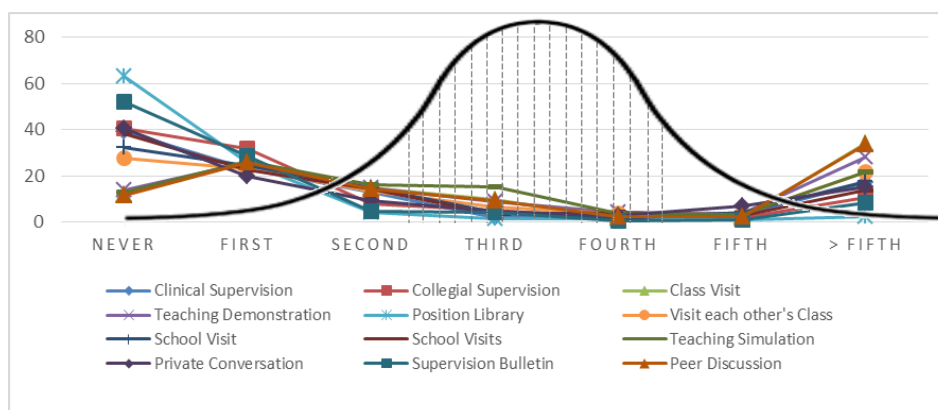


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20,30	7.92	5.45	1.98)	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in figure 4.

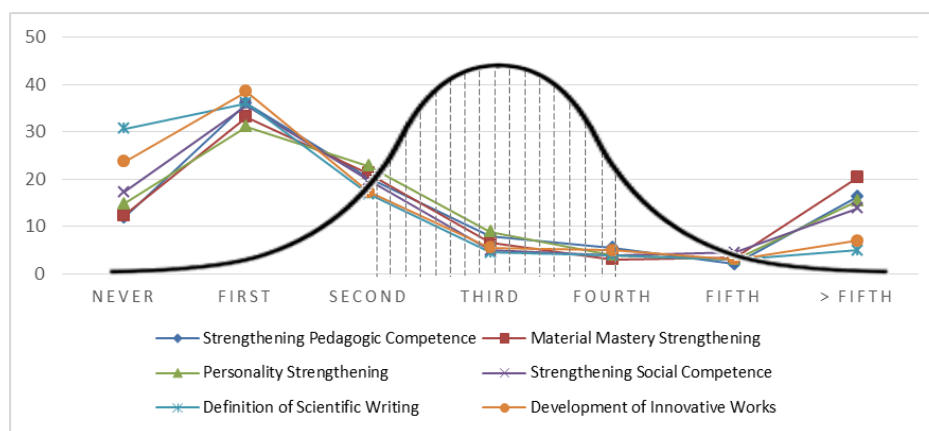


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by

Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of sig 0.000 < 0.05 and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST (IST) program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5 Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

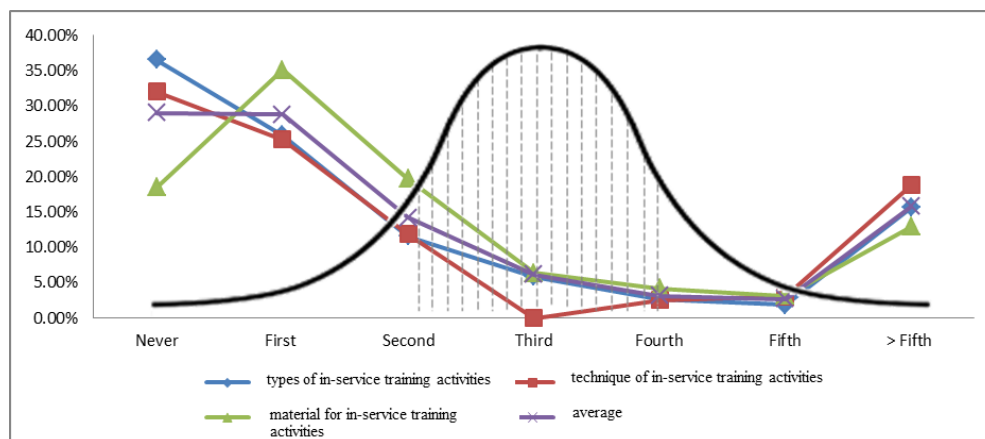


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by

SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Danim, 2012). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Nikmah, 2019).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the reserach result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Sobri, 2013). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development or lecturer professional empowerment is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).


The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger

dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Kyriacou, 2018).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the techniqueclass visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant in IST (Nurhajati & Bachri, 2017). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in table 6.

Table 6 Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2nd	3rd	4th	5th	> 5th
Level		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Expore	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources						✓	
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial					✓		
	Entrepreneurship						✓	
	Supervision							✓
Social								

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to

find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

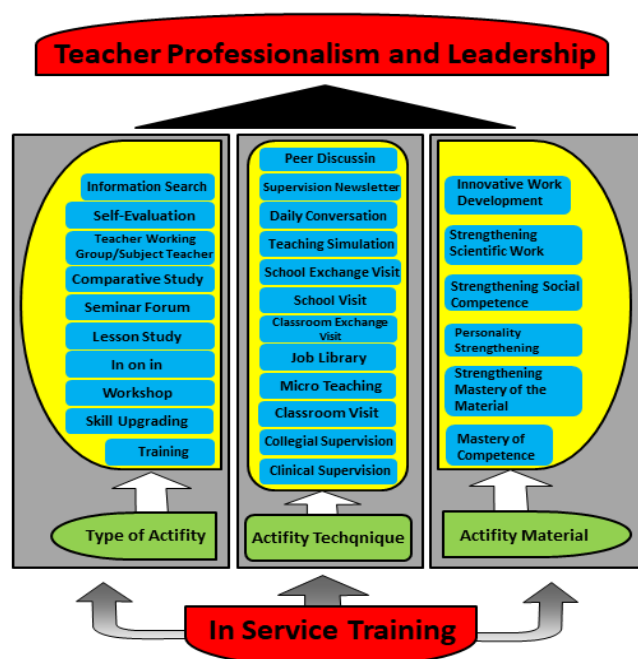


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

Conclusion

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA: STUDY CONCURRENT TRANSFORMATIVE STRATEGY

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IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA: STUDY CONCURRENT TRANSFORMATIVE STRATEGY

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Abstract: This study seeks to explore the governance of in-service training for Elementary School teachers so that they can be involved in various types, techniques, and materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The authors analysis the perspectives of various thinking frames, to obtain comprehensive results. The finding is that there is a group of elementary school teachers who have not received, have repeatedly received, and even more than 5 times received In-service training. The governance of in-service training in the form of a roadmap has the values of fairness, equity, and proportionality in distributing training services to elementary school teachers that are supported by a digital-based platform. Teachers can easily access, download, document, and use their track record to assess professionalism and become teachers leadership.

Introduction

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Cihuy, 2019; Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Firdaus, 2016). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands (Arwildayanto & Sumar, 2018). Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivnikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020; Willingham, 2021). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014; Pangrazi & Beighle, 2019). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Indonesia, 2003).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakci, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

Method

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

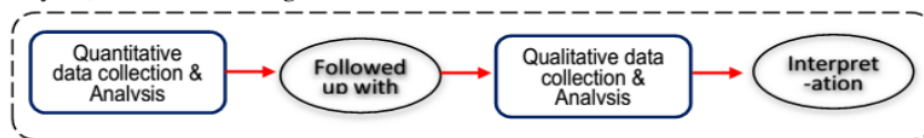


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views

that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1.

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
		Amount	53	94	55	202

(Researchers, 2021)

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

Data collection techniques include questionnaires, tests, interviews, and document studies (Sileyew, 2019). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Stronge, 2018), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages., namely data collection, data condensation, data presentation and conclusion drawing or data verification (Saldana et al., 2014).

Findings

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1) assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20.30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
Independent	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

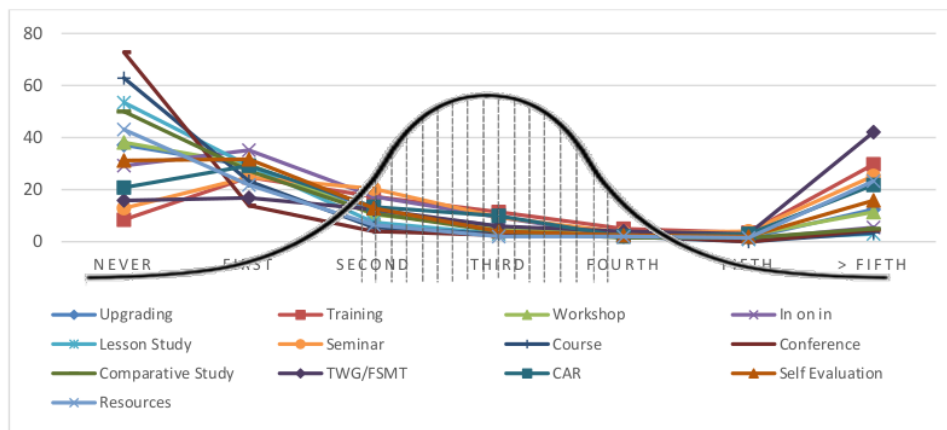


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28,22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38,12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

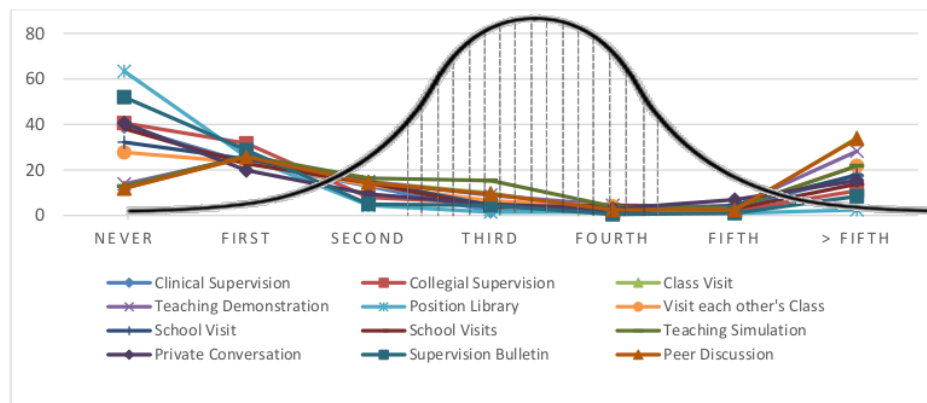


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98	16.34
Material Master Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

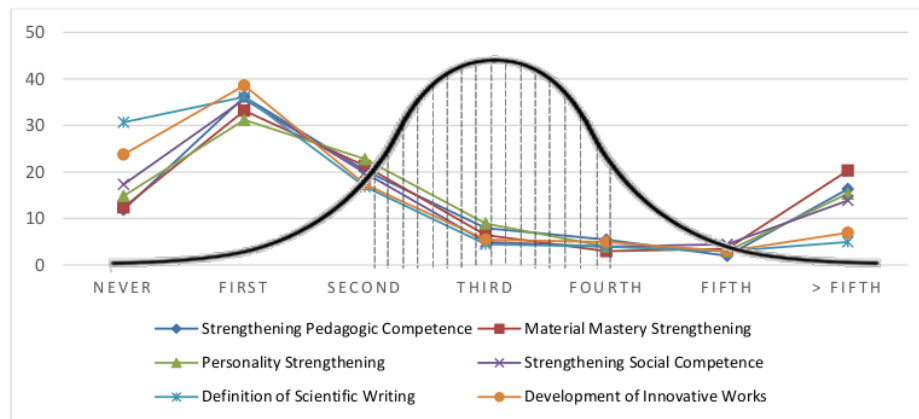


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form

of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of sig $0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59%), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST (IST) program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as

many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

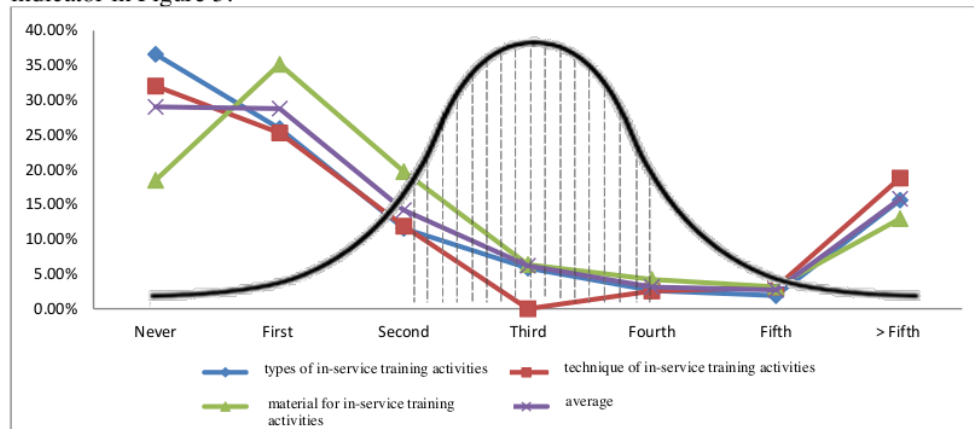


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Danim, 2012). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Nikmah, 2019).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a

professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a application that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Sobri, 2013). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development or lecturer professional empowerment is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).

The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process

because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Kyriacou, 2018).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the techniqueclass visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant in IST (Nurhajati & Bachri, 2017). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of IST for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time related to pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.


Position	Competency	Frequency of IST implementation						
		never	1st	2nd	3rd	4th	5th	> 5th
Level 		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Exporer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources							✓
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial							
	Entrepreneurship							
	Supervision						✓	
	Social							

Table 6 Roadmap of IST for SD Teachers

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

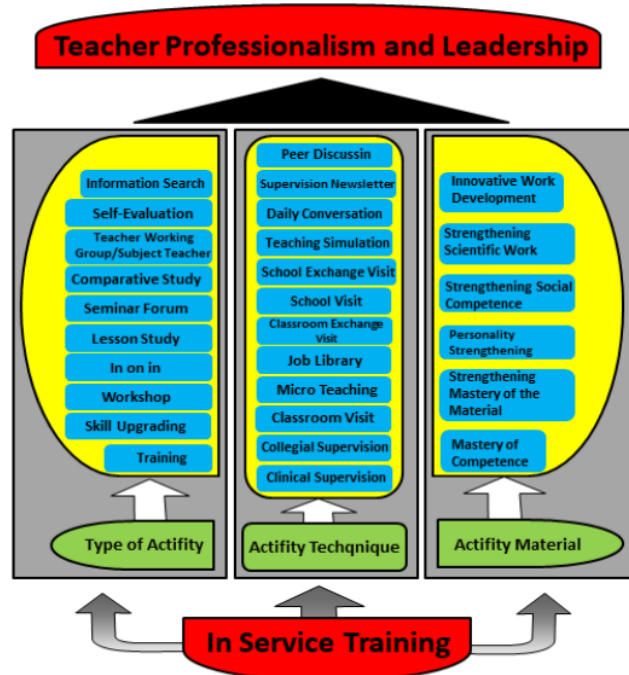


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

Conclusion

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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4. Konfirmasi bukti artikel revisi pertama yang di submit, 5 Januari 2023

IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA

Abstract: This research seeks to explore the governance of in-service training for elementary school teachers so they can be involved in various types, techniques, and training materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The author analyzes perspectives from various frameworks, to get comprehensive results. The finding is that there are still a group of elementary school teachers who have not received in-service training, (Simamora, 2021) some have repeatedly received in-service training, and some have even received in-service training more than 5 times. The governance of in-service training in the form of a roadmap has the values of fairness, equity and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. So that teachers can easily access, download, document training materials and evidence, and the government as teacher managers can use their track record to assess professionalism and give them the opportunity to become teacher leaders.

Keywords; governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Cihuy, 2019; Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Firdaus, 2016). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However,

the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands (Arwildayanto & Sumar, 2018). Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in

Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020; Willingham, 2021). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014; Pangrazi & Beighle, 2019). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Indonesia, 2003).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015)(Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakcı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

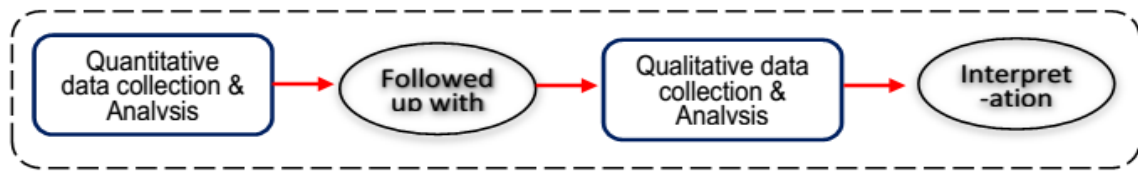


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1.

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

(Researchers, 2021)

Data collection techniques include questionnaires, tests, interviews, and document studies (Sileyew, 2019). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials),

and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Stronge, 2018), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages., namely data collection, data condensation, data presentation and conclusion drawing or data verification (Saldana et al., 2014).

FINDINGS AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1)assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45

	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20.30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
Independent	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

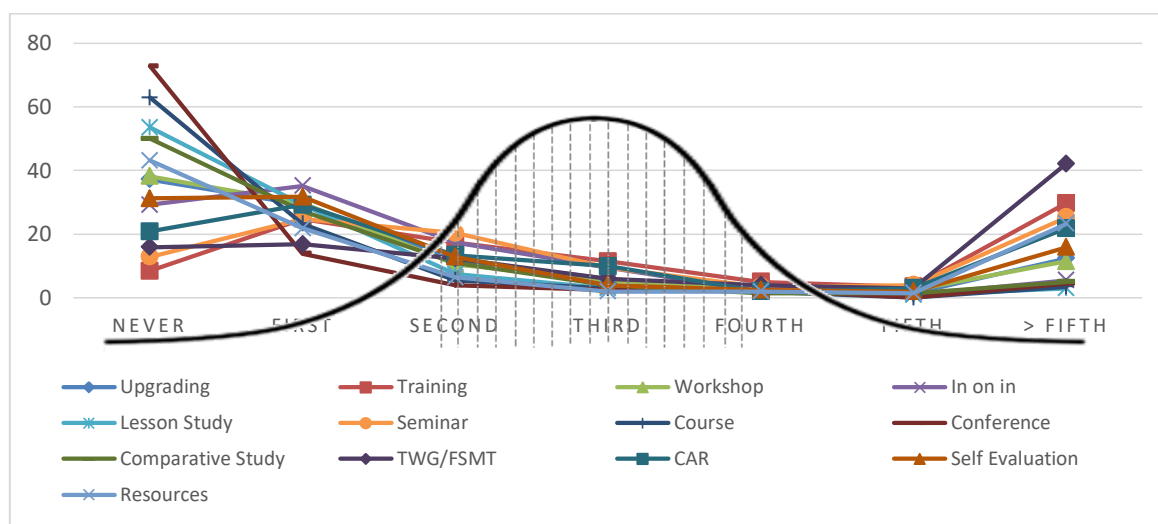


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school

visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28,22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38,12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

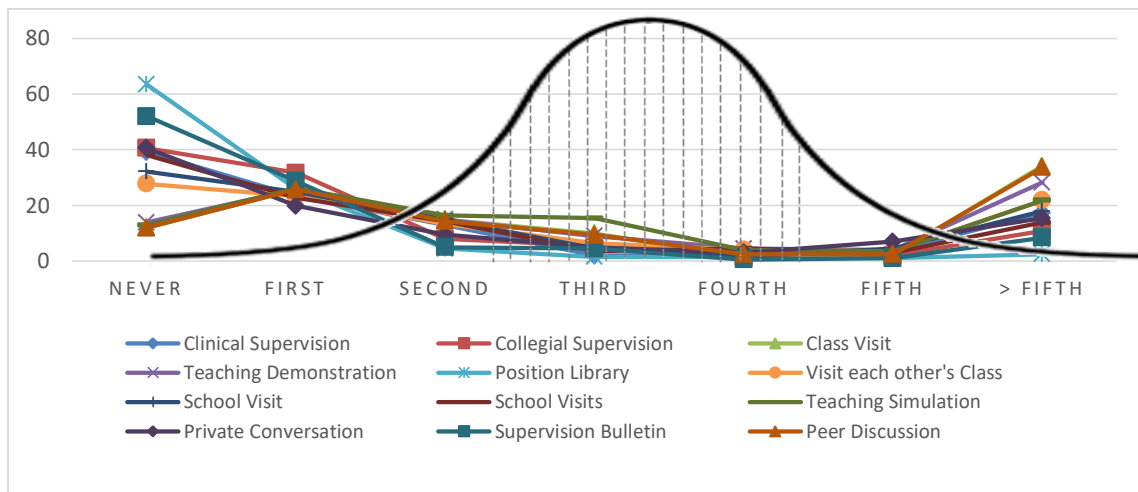


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to

improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

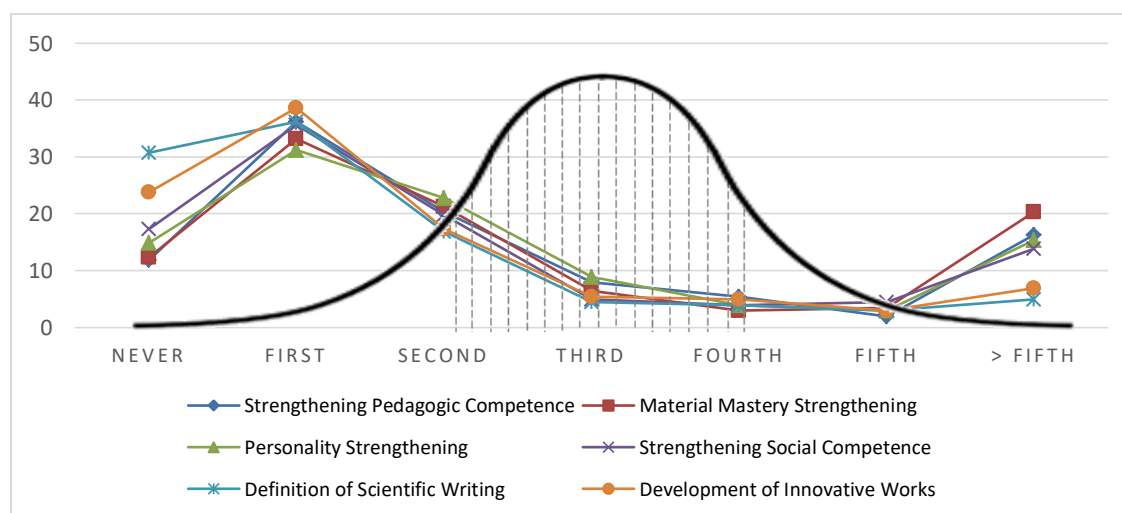


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching,

as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of $\text{sig } 0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST

activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST (IST) program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

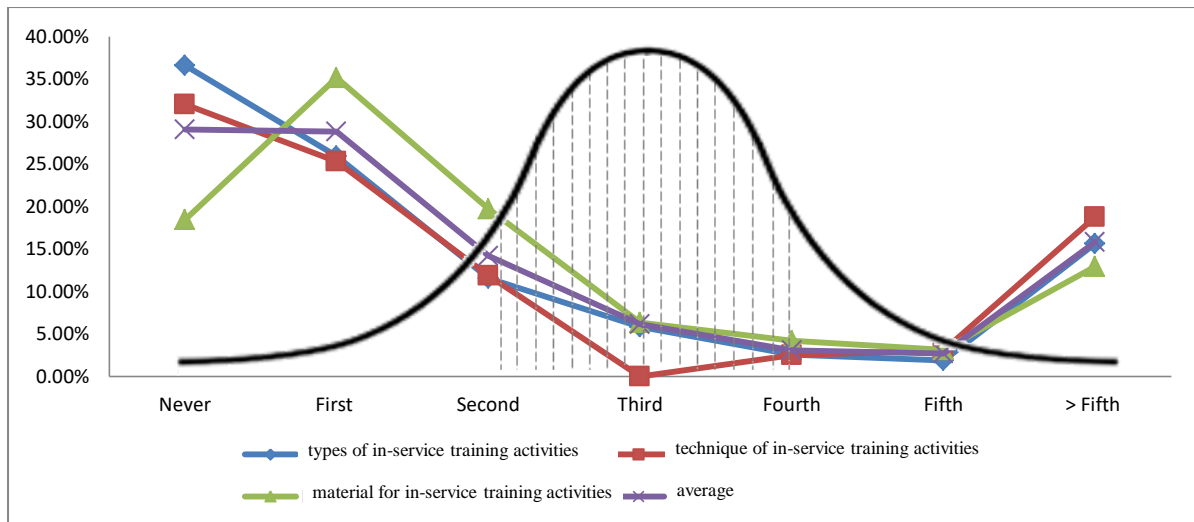


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Danim, 2012). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Nikmah, 2019).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for

colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion

(2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Sobri, 2013). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development or lecturer professional empowerment is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).


The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Kyriacou, 2018).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the techniqueclass visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant in IST (Nurhajati & Bachri, 2017). There are several IST techniques that can be used in the COVID-19 pandemic

or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

Table 6 Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2nd	3rd	4th	5th	> 5th
Level 		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Exporer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources						✓	
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial					✓		
	Entrepreneurship						✓	
	Supervision						✓	
	Social							

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such

as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.



Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation

and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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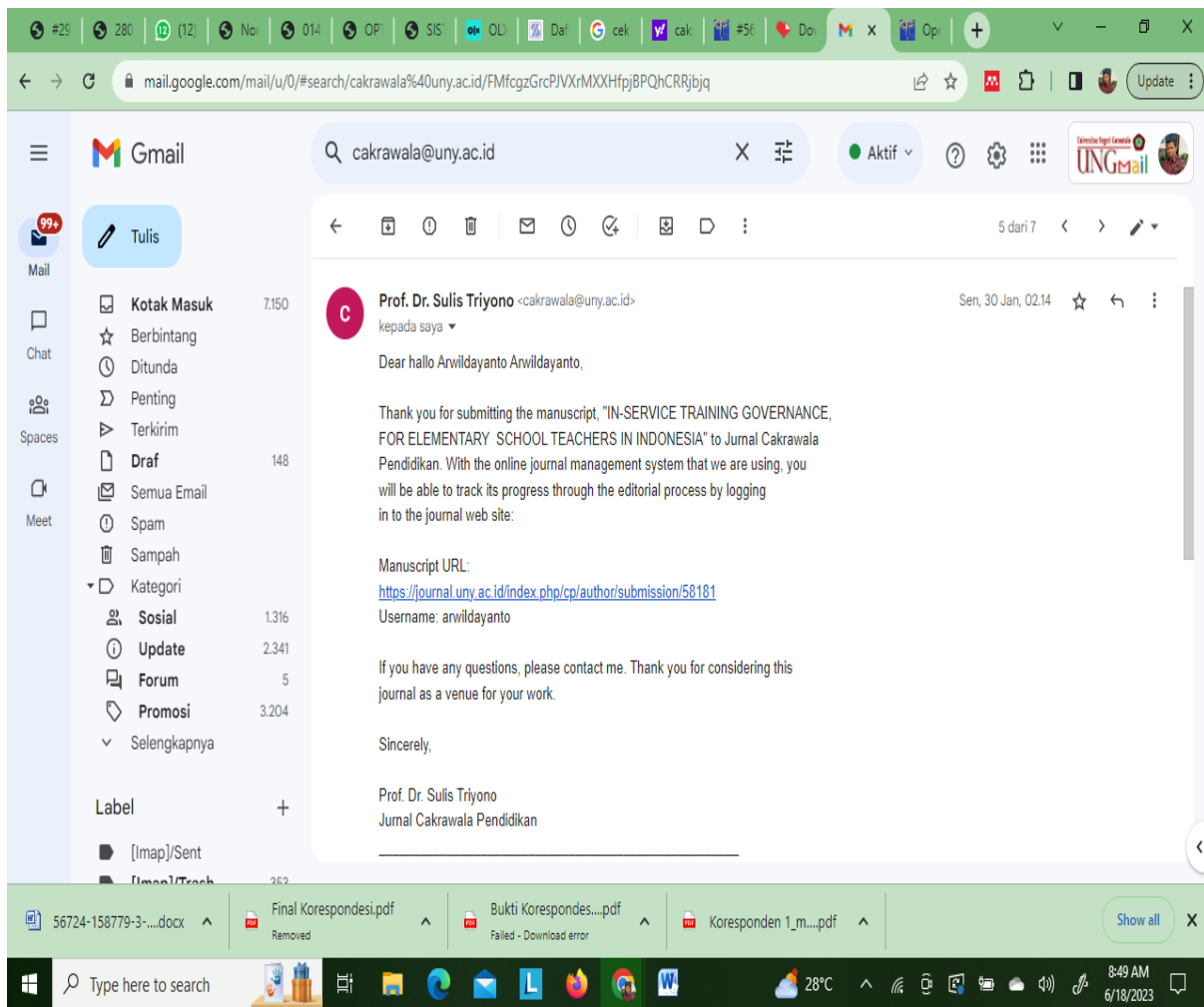
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5. Bukti Konfirmasi akun dari editor In Chief Cakrawa Pendidikan, 30 Januari 2023



4. Konfirmasi Hasil Review kedua, 30 Januari 2023

IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA

Abstract: This research seeks to explore the governance of in-service training for elementary school teachers so they can be involved in various types, techniques, and training materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The author analyzes perspectives from various frameworks, to get comprehensive results. The finding is that there are still a group of elementary school teachers who have not received in-service training, (Simamora, 2021) some have repeatedly received in-service training, and some have even received in-service training more than 5 times. The governance of in-service training in the form of a roadmap has the values of fairness, equity and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. So that teachers can easily access, download, document training materials and evidence, and the government as teacher managers can use their track record to assess professionalism and give them the opportunity to become teacher leaders.

Comment [L1]: there are still quotes

Keywords; governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Cihuy, 2019; Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Firdaus, 2016). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However,

the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands (Arwildayanto & Sumar, 2018). Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in

Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020; Willingham, 2021). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014; Pangrazi & Beighle, 2019). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Indonesia, 2003).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015)(Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakcı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

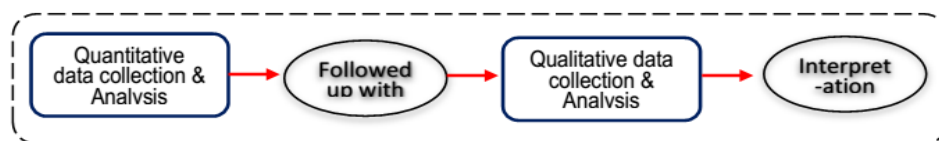


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1.

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
		Amount	53	94	55	202

(Researchers, 2021)

Data collection techniques include questionnaires, tests, interviews, and document studies (Sileyew, 2019). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials),

and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Stronge, 2018), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages., namely data collection, data condensation, data presentation and conclusion drawing or data verification (Saldana et al., 2014).

FINDINGS AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1)assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45

	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20,30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
Independent	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

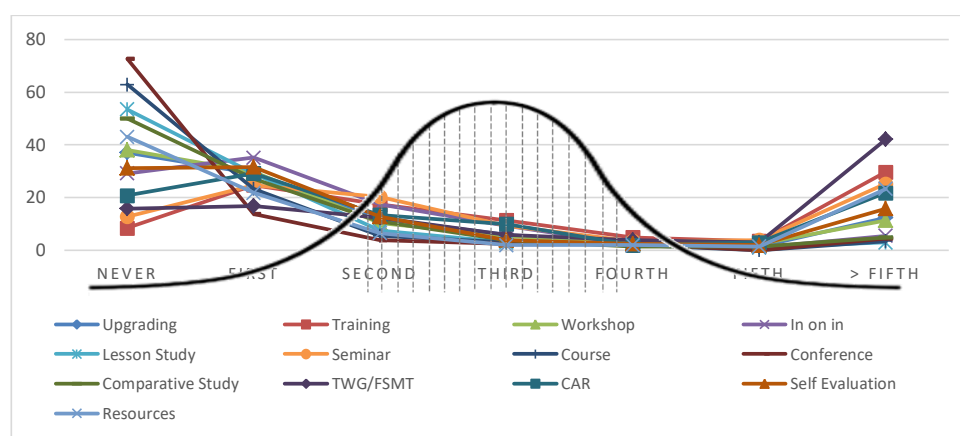


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school

visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28.22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38.12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

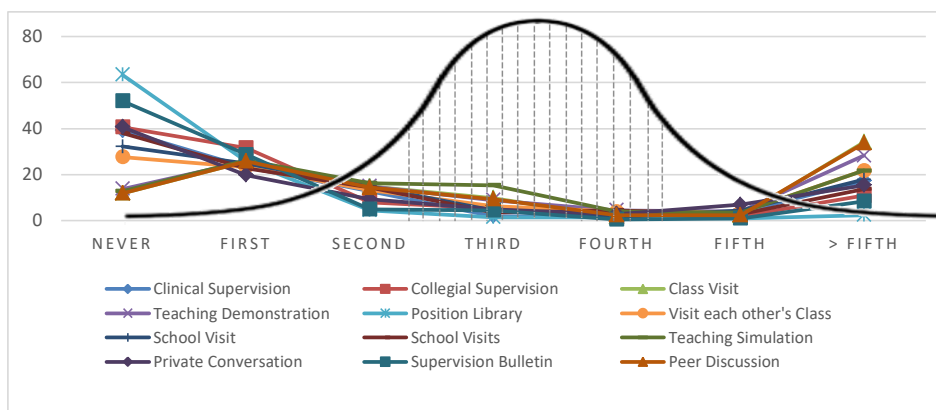


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to

improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

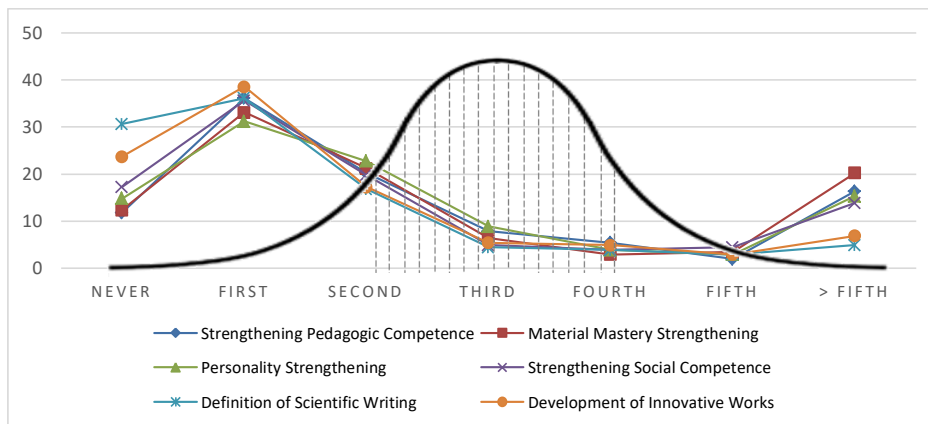


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching,

as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of $\text{sig } 0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59%), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST

activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST (IST) program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

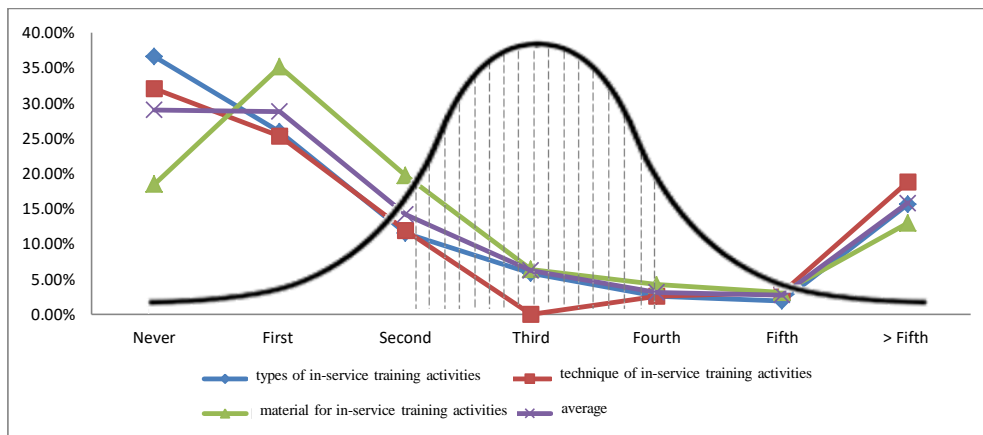


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Danim, 2012). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Nikmah, 2019).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for

colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion

(2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Sobri, 2013). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development or lecturer professional empowerment is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).


The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Kyriacou, 2018).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the technique class visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant in IST (Nurhajati & Bachri, 2017). There are several IST techniques that can be used in the COVID-19 pandemic

or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

Table 6 Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2nd	3rd	4th	5th	> 5th
Level 		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Explorer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources						✓	
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial					✓		
	Entrepreneurship						✓	
	Supervision						✓	
	Social							

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such

as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

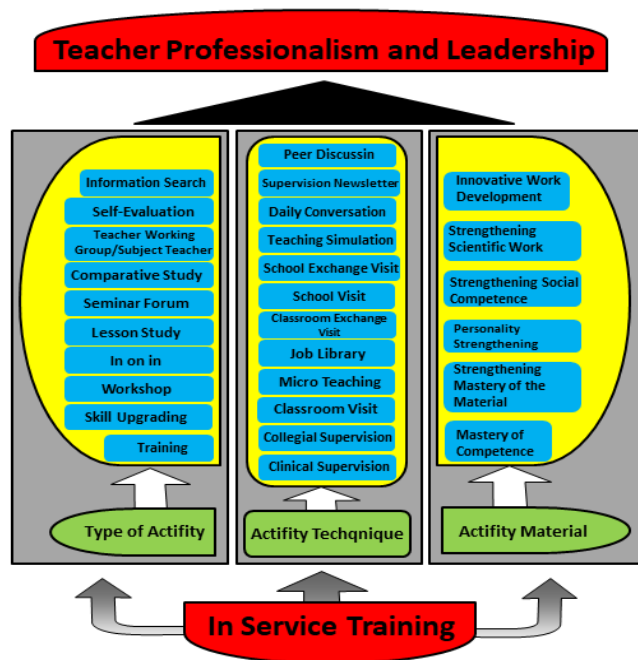


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsivities as school principals or leaders of colleagues at school.

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation

and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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6. Bukti Konfirmasi submit hasil revisi kedua, respon kepada reviewer dan artikel yang di resubmit, 10 Februari 2023

The screenshot shows a web browser window with the URL journal.uny.ac.id/index.php/cp/author/submissionReview/56724. The user is logged in as **arwidayanto_22**. The page displays the submission details for article #56724, titled "In-service training governance, for elementary school teachers in Indonesia". The submission status is "REVIEW". The authors listed are Arwidayanto Arwidayanto, Bambang Budi Wiyono, Rusdinal Rusdinal, Sari Dewi, Varun Ashokan, Eduart Wolok, and Hariadi Said. The editor is Soni Nopembri, Ph.D. The page also shows the peer review process, including the review version (56724-159671-1-RV.DOCK) initiated on 2023-01-05, and the editor version (56724-163421-1-ED.DOCK) dated 2023-02-10. On the right side, there is a sidebar with navigation links such as "Focus & Scope", "Author Guidelines", "Peer-Review Process", "Publishing System", "Indexing", "Author(s) Fees", and "Contact". At the bottom right, there is a section for "Cakrawala Pendidikan" showing a Q3 quartile and an SJR 2022 score of 0.36.

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#56724 Review
SUMMARY REVIEW EDITING

Submission

Authors Arwidayanto Arwidayanto, Bambang Budi Wiyono, Rusdinal Rusdinal, Sari Dewi, Varun Ashokan, Eduart Wolok, Hariadi Said

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Cakrawala Pendidikan

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6. Bukti konfirmasi hasil revisi artikel kedua, 10 Februari 2023

IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA

Abstract: This research seeks to explore the governance of in-service training for elementary school teachers so they can be involved in various types, techniques, and training materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The author analyzes perspectives from various frameworks, to get comprehensive results. The finding is that there are still a group of elementary school teachers who have not received in-service training, some have repeatedly received in-service training, and some have even received in-service training more than 5 times. The governance of in-service training in the form of a roadmap has the values of fairness, equity and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. So that teachers can easily access, download, document training materials and evidence, and the government as teacher managers can use their track record to assess professionalism and give them the opportunity to become teacher leaders.

Keywords; governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Sholihah et al., 2020). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education

(PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands. Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers,

851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Widhiyanti, 2016).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakçı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading,

individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

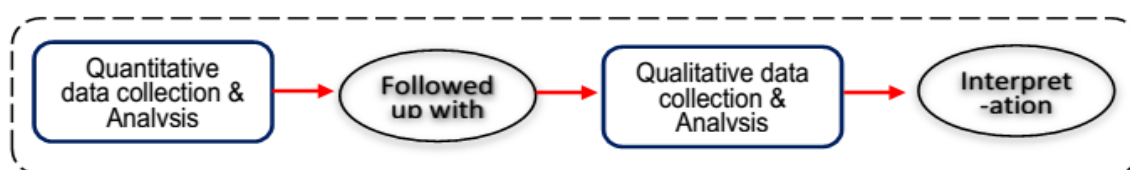


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

Data collection techniques include questionnaires, tests, interviews, and document studies (Johannesson et al., 2014). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Connell, 2009), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers

who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages, namely data collection, data condensation, data presentation and conclusion drawing or data verification (Gephart Jr, 2004).

FINDINGS AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1) assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20.30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
Independent	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

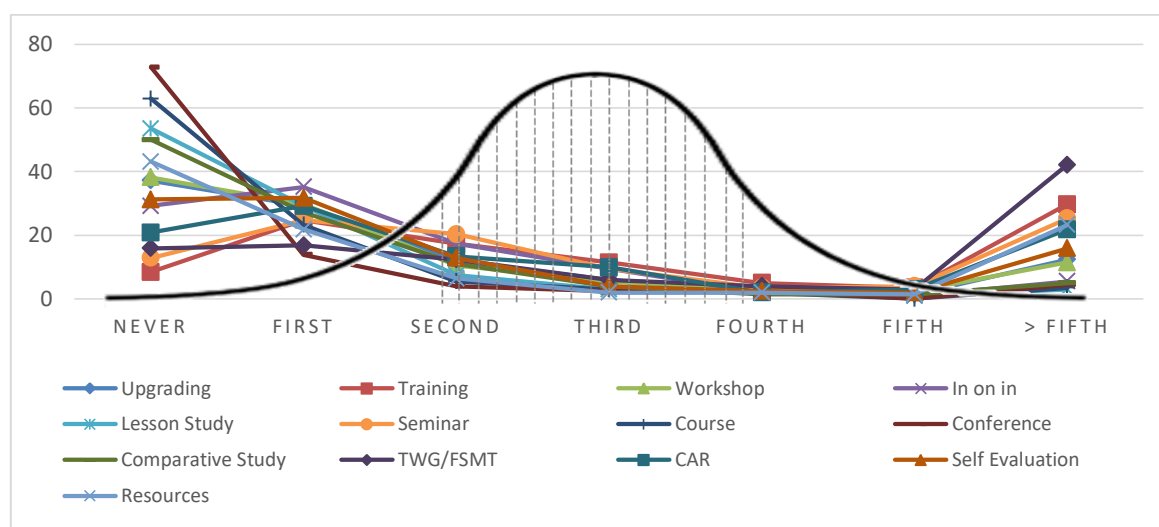


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28.22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48

Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38.12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

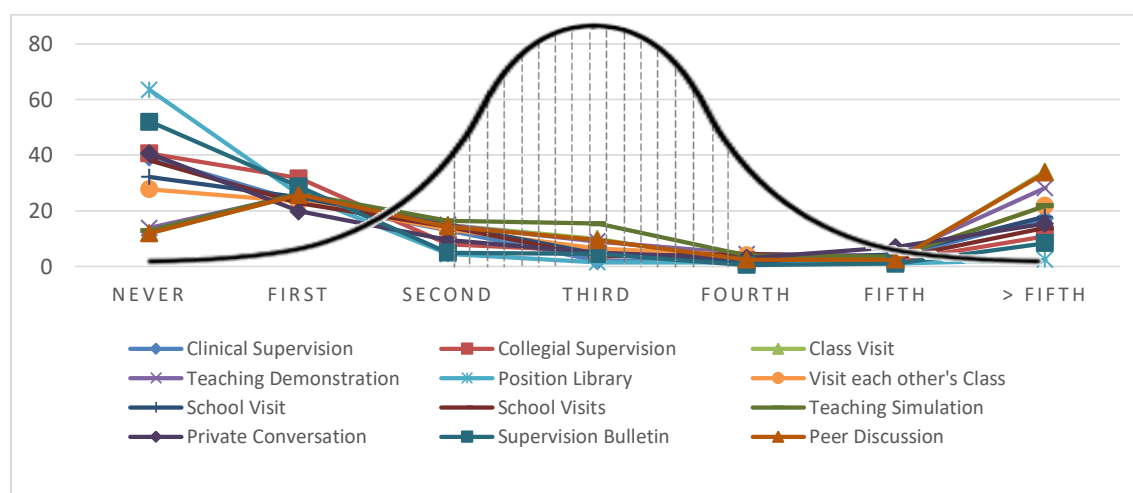


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social

competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

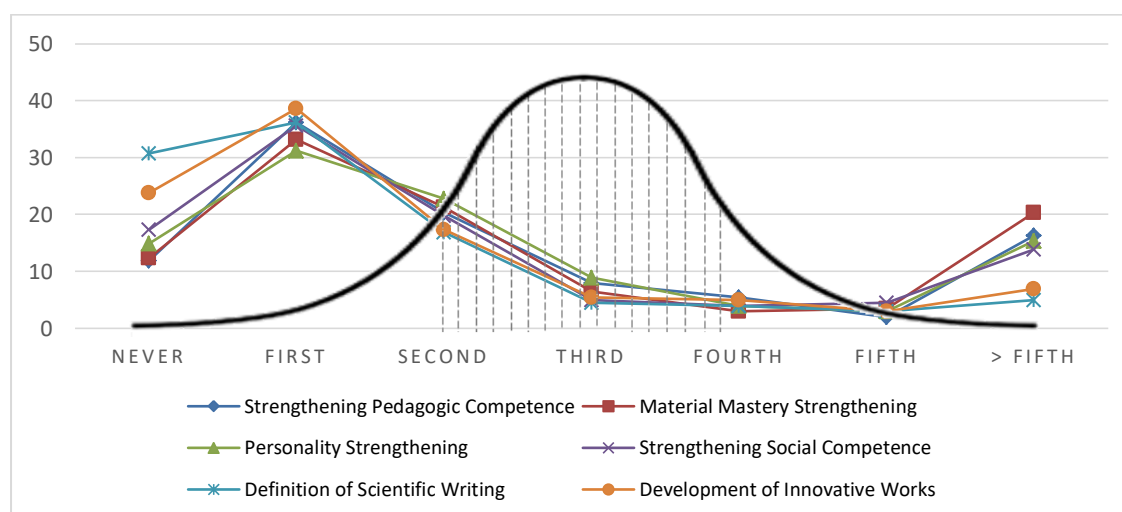


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category,

including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of $\text{sig } 0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is

primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

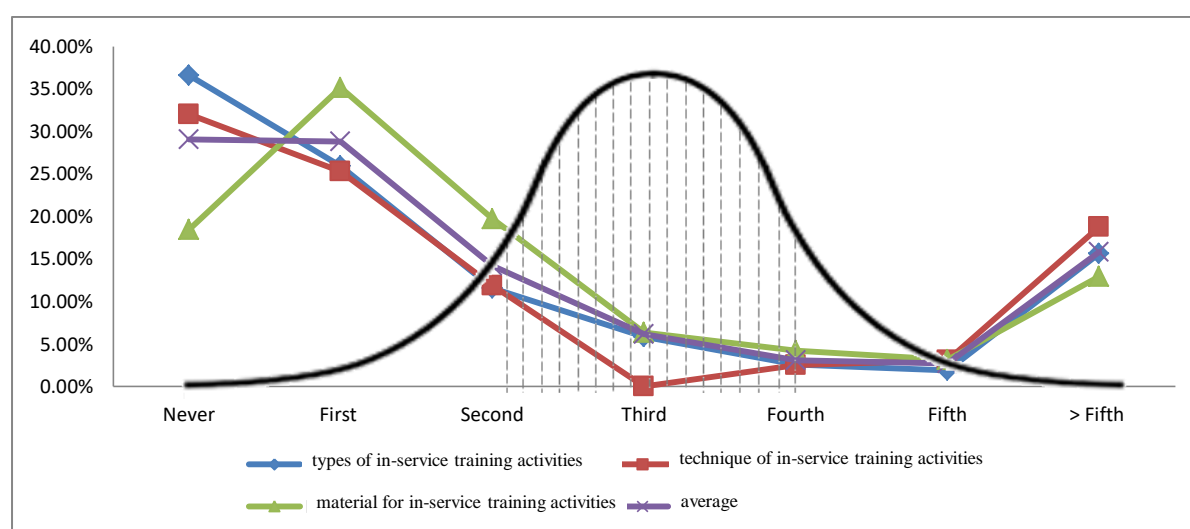


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and

extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Saihu, 2020). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Bernard et al., 2015).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of

State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNIS). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Malm, 2009). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).


The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical

and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Loewenberg Ball & Forzani, 2009).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the technique class visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant IST (Mihladi & Timur, 2011). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

Table 6 Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2 nd	3rd	4th	5th	> 5th
Level 		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Exporer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources							✓
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial					✓		
	Entrepreneurship							✓
	Supervision						✓	
	Social							

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication,

cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

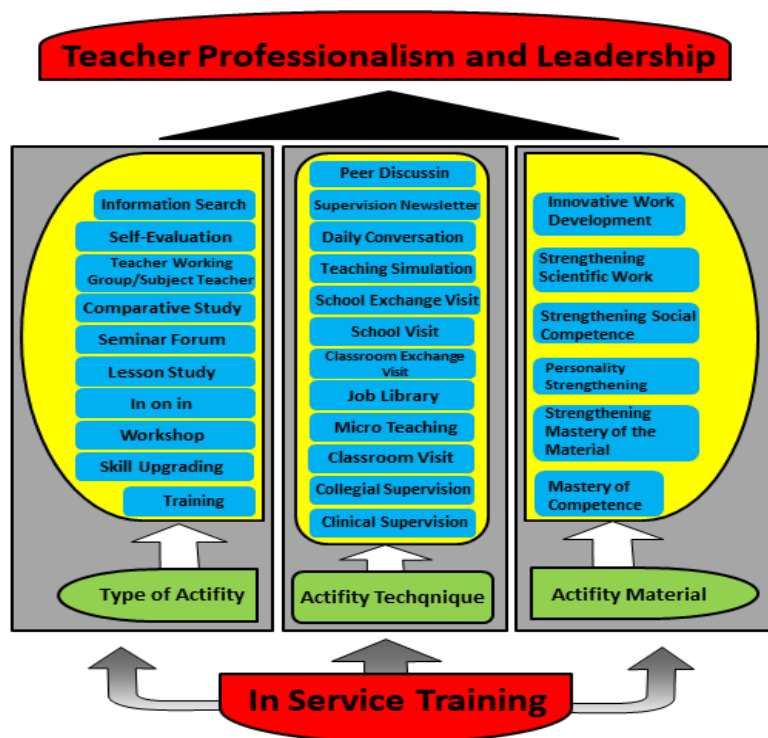


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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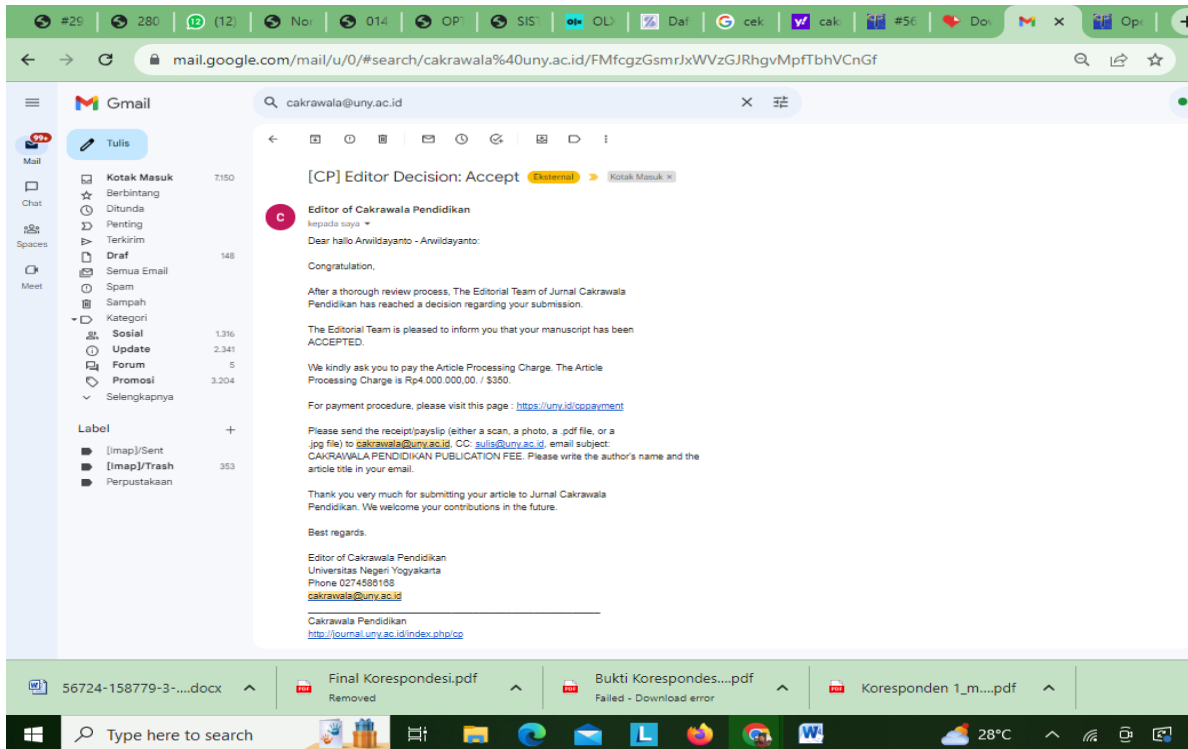
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7. Konfirmasi dari Editor in Chief Cakrawala Pendidikan UNY via email arwildayanto@ung.ac.id menyatakan bahwa artikel diterima (*accepted*) 18 Maret 2023



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Prof. Dr. Drs. Sulis Triyono,

8. Konfirmasi revisi artikel tahap ketiga secara mandiri, 11 Mei 2023

IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA

Abstract: This research seeks to explore the governance of in-service training for elementary school teachers so they can be involved in various types, techniques, and training materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The author analyzes perspectives from various frameworks, to get comprehensive results. The finding is that there are still a group of elementary school teachers who have not received in-service training, some have repeatedly received in-service training, and some have even received in-service training more than 5 times. The governance of in-service training in the form of a roadmap has the values of fairness, equity and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. So that teachers can easily access, download, document training materials and evidence, and the government as teacher managers can use their track record to assess professionalism and give them the opportunity to become teacher leaders.

Keywords; governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Sholihah et al., 2020). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education

(PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands. Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers,

851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Widhiyanti, 2016).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakcı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading,

individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

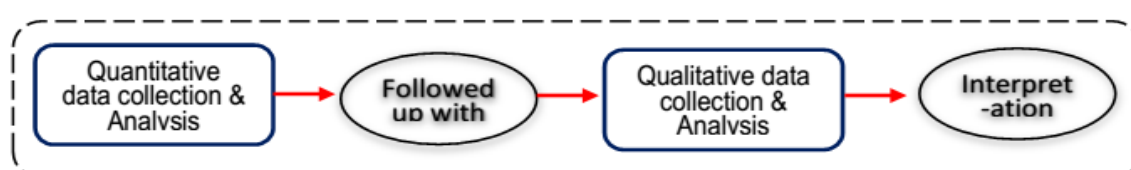


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

Data collection techniques include questionnaires, tests, interviews, and document studies (Johannesson et al., 2014). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Connell, 2009), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages, namely data collection, data condensation, data presentation and conclusion drawing or data verification (Gephart Jr, 2004).

FINDINGS AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1) assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20,30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
Independent	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27

Average Percentage (%)	36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%
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Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

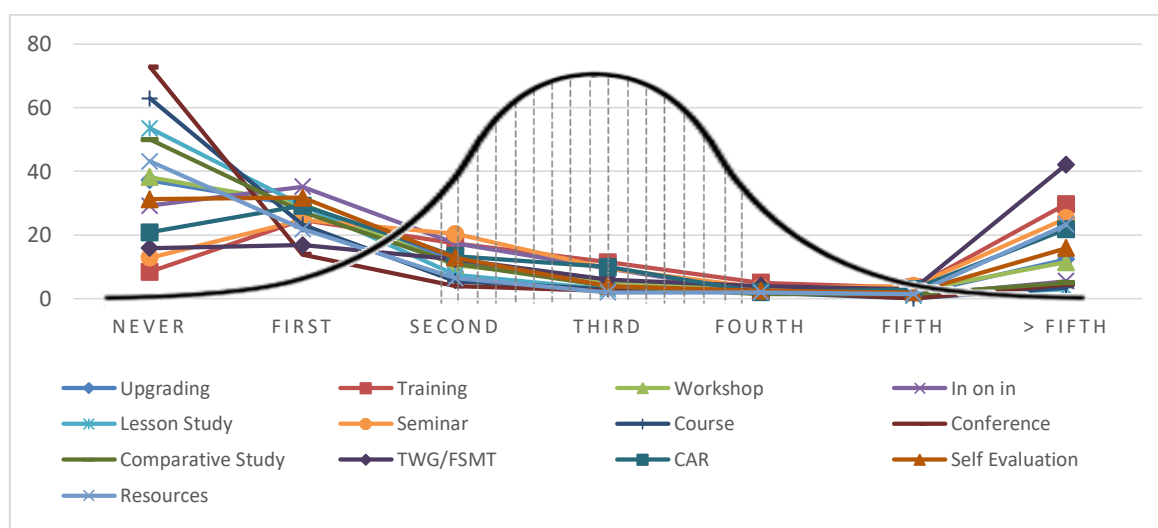


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16

Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28,22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38,12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

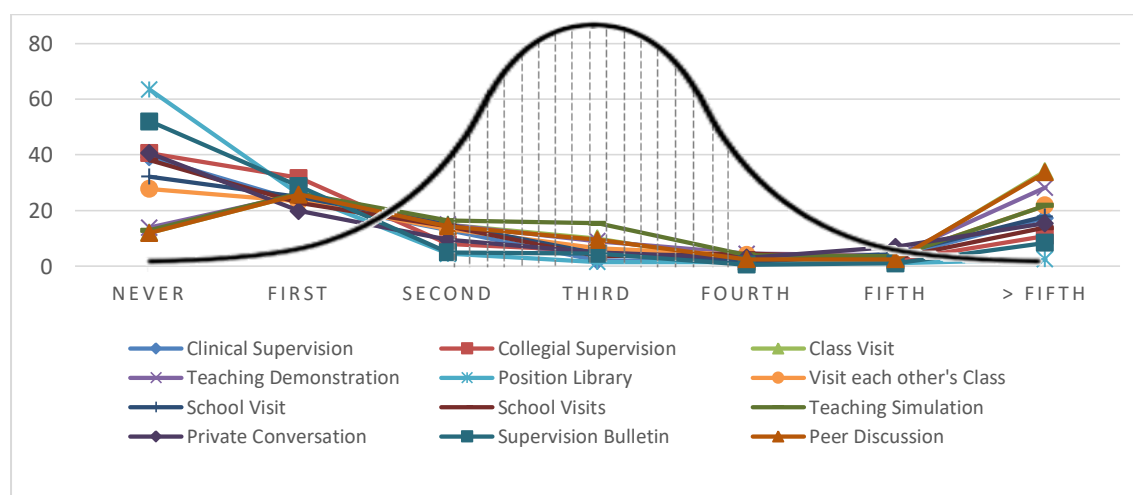


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic

competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98)	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

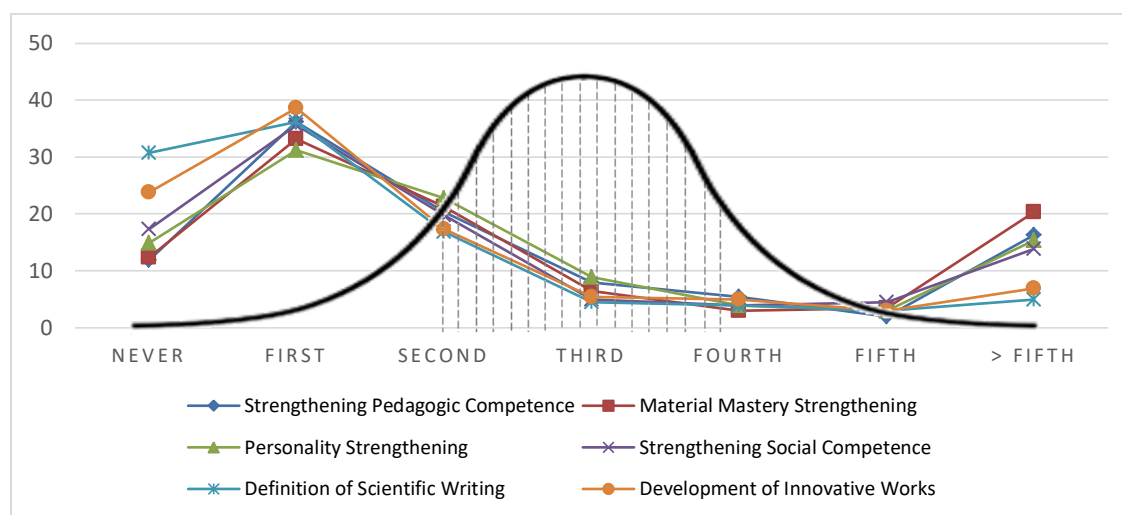


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of $\text{sig } 0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

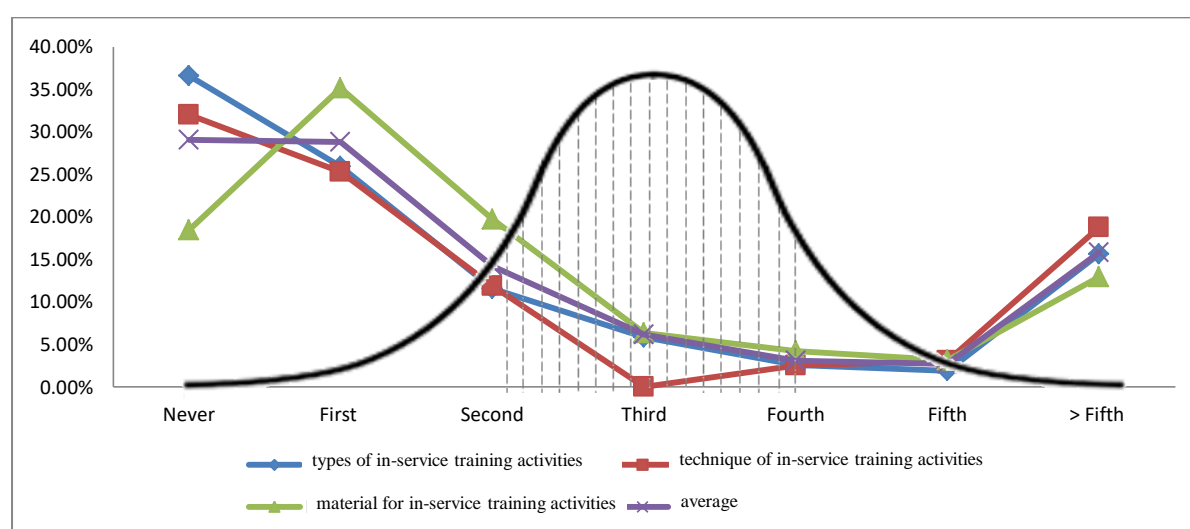


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Saihu, 2020). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Bernard et al., 2015).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that

facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Malm, 2009). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).

The IST governance for SD teachers has the following advantages; 1) improvement


of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Loewenberg Ball & Forzani, 2009).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the technique class visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant IST (Mihladi & Timur, 2011). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide

roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

Table 6 Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2 nd	3rd	4th	5th	> 5th
Level 		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Exporer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social			✓				
	Professional				✓			
	Professional Engagement					✓		
	Digital Resources						✓	
PROFESSIONAL TEACHER (IST at least 4 times)								
TEACHER LEADERSHIP (IST > 5 times)								
Teachers with Additional duties (School Principal)	Personality							
	Managerial					✓		
	Entrepreneurship						✓	
	Supervision						✓	
	Social							

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use

of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

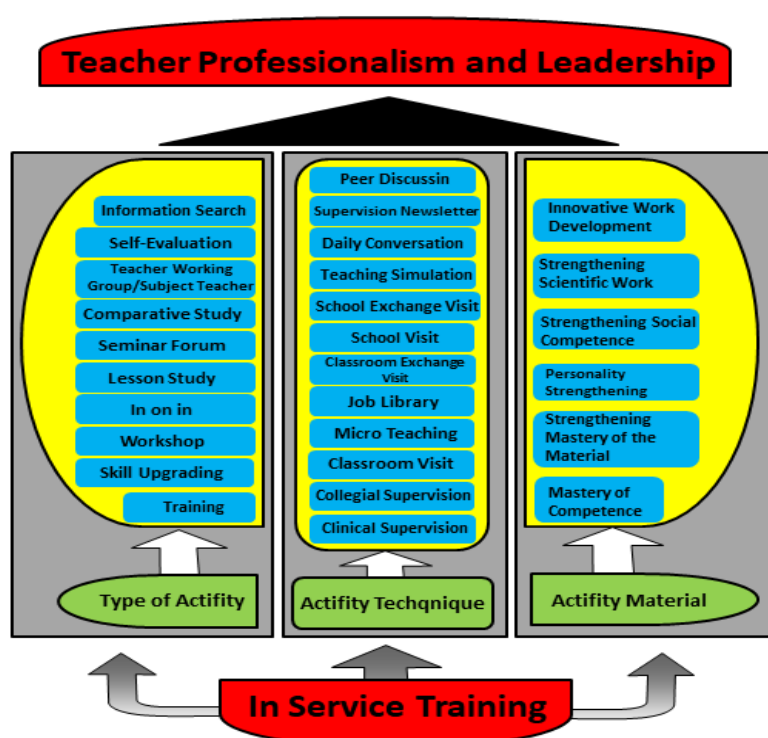


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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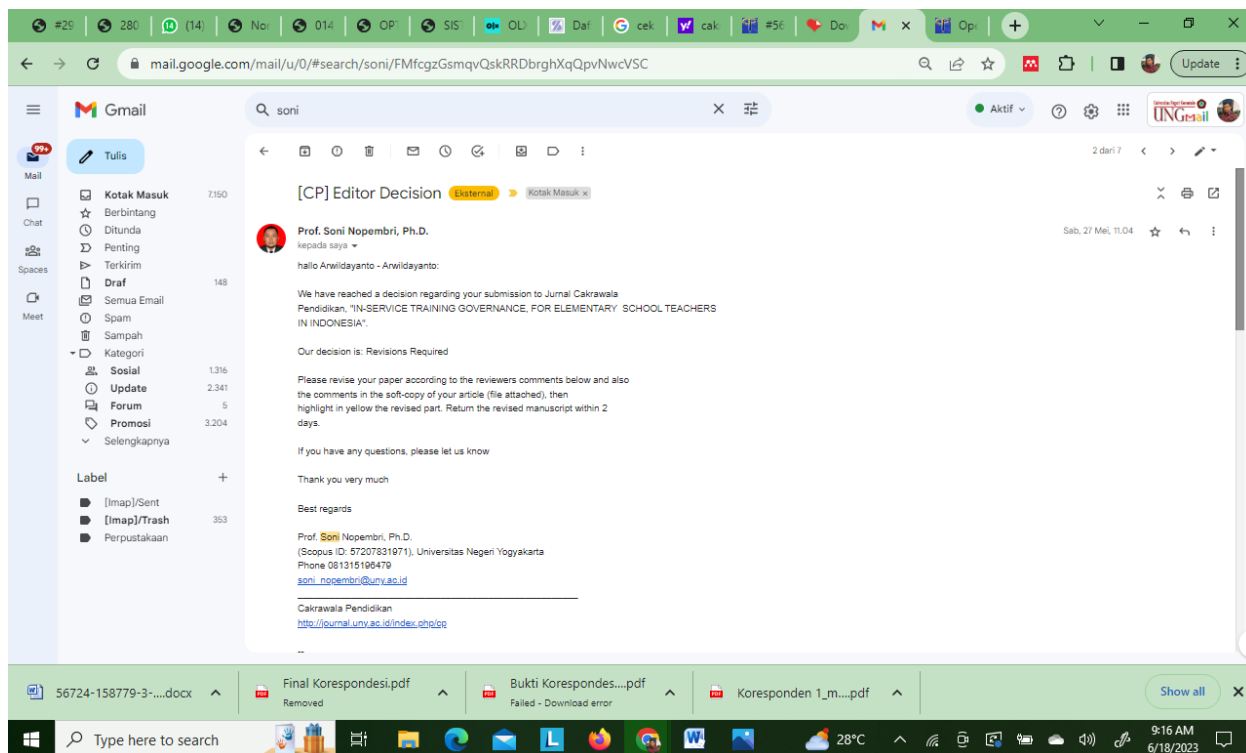
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9. Bukti abstrak artikel published, 24 Mei 2023



The screenshot displays a web browser window with multiple tabs open, including Google, Unduh file, doc.google, and Spam - arwil. The active tab shows the URL journal.luny.ac.id/index.php/cp/article/view/56724. The page layout includes a top navigation bar with links like HOME, ABOUT, USER HOME, SEARCH, CURRENT, ARCHIVED, ANNOUNCEMENT, and CALL FOR PAPER. The left sidebar features a 'USER' section indicating the user is logged in as 'arwildayanto_22', with links to 'My Journals', 'My Profile', and 'Log Out'. Below this is a 'JOURNAL CONTENT' section with a search bar and a 'Search Scope' dropdown set to 'All'. The main content area shows the article title 'In-service training governance, for elementary school teachers in Indonesia' and a list of authors: Arwildayanto Arwildayanto, Universitas Negeri Gorontalo, Indonesia; Bambang Budi Wiyono, Universitas Negeri Malang, Indonesia; Rusdinal Rusdinal, Universitas Negeri Padang, Indonesia; Sari Dewi, Universitas Negeri Padang, Indonesia; Varun Ashokan, National Council of Educational Research and Training, India; Eduart Wolok, Universitas Negeri Gorontalo, Indonesia; and Hariadi Said, Universitas Negeri Gorontalo, Indonesia. The article ID is 10.21831/cp.v4i2.56724. The abstract text reads: 'This research seeks to explore the governance of in-service training for elementary school teachers so they can be involved in various types, techniques, and training materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The author analyzes perspectives from various frameworks, to get comprehensive results. The finding is that there are still a group of elementary school teachers who have not received in-service training, some have repeatedly received in-service training, and some have even received in-service training more than 5 times. The governance of in-service training in the form of a roadmap has the values of fairness, equity and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. So that teachers can easily access, download, document training materials and evidence, and the government as teacher managers can use their track record to assess professionalism and give them the opportunity to become teacher leaders.' The keywords are 'governance; in-service training; professionalism; teacher leadership; concurrent transformative strategy'. The right sidebar contains a 'EDITORIAL TEAM' section with links to 'Publication Ethics', 'Focus & Scope', 'Author Guidelines', 'Peer-Review Process', 'Publishing System', 'Indexing', 'Author(s) Fees', and 'Contact'. Below this is an 'ARTICLE TOOLS' section with links to 'Print this article', 'Indexing metadata', 'How to cite item', 'Finding References', 'Email this article', and 'Email the author'. At the bottom, there is a 'Cakrawala Pendidikan' section with a link to 'Education'.

10. Bukti Konfirmasi memerlukan revisi artikel tahap keempat dari Editor Cakrawala Pendidikan dan Artikel yang di review, 27 Mei 2023.



IN-SERVICE TRAINING GOVERNANCE, FOR ELEMENTARY SCHOOL TEACHERS IN INDONESIA

Abstract: This research seeks to explore the governance of in-service training for elementary school teachers so they can be involved in various types, techniques, and training materials. The research design was categorized as mixed methods using both quantitative and qualitative methods. Applied to the concurrent transformative strategy model. The author analyzes perspectives from various frameworks, to get comprehensive results. The finding is that there are still a group of elementary school teachers who have not received in-service training (Simamora, 2021), some have repeatedly received in-service training, and some have even received in-service training more than 5 times. The governance of in-service training in the form of a roadmap has the values of fairness, equity and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. So that teachers can easily access, download, document training materials and evidence, and the government as teacher managers can use their track record to assess professionalism and give them the opportunity to become teacher leaders.

Keywords: governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Cihuy, 2019; Mercier-Laurent, 2020). Various pre-service education and in-service training (IST) programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Firdaus, 2016). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program

Comment [A1]: Some? No exact no? Since it a applied quantitative approach

Comment [A2]: As the readers are not only Indonesians and probably they have not understood yet the teacher professionalism in Indonesia, you need to discuss the nature of Indonesian teacher professionalism certification at the beginning

Comment [A3]: Please restructure the sentence so it is more understandable

(PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Comment [A4]: (Locally termed Pendidikan Latihan Profesi Guru, PLPG)
Do like this for all Indonesian abbrev

Considering the rapid advancement of educational science and technology, in-service teacher training for elementary school (SD) is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands (Arwildayanto & Sumar, 2018). Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

Comment [A5]: Elementary school teachers?

Comment [A6]: What is this?

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in

Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020; Willingham, 2021). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014; Pangrazi & Beighle, 2019). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Indonesia, 2003).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015)(Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakçı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

Comment [A7]: Clarify these

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

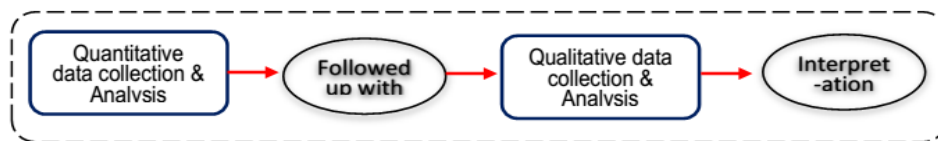


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

Comment [A8]: Why these?

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1.

Comment [A9]: Different from table 1 shows

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
		Amount	53	94	55	202

(Researchers, 2021)

Data collection techniques include questionnaires, tests, interviews, and document studies (Sileyew, 2019). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials),

and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Stronge, 2018), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions **FGD** and Whats App group of participants.

Comment [A10]: Focus group interview? And what documents are studied?

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages., namely data collection, data condensation, data presentation and conclusion drawing or data verification (Saldana et al., 2014).

FINDINGS AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Comment [A11]: Flow the findings according research questions

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1)assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45

	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20,30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
Independent	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
Average Percentage (%)		36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

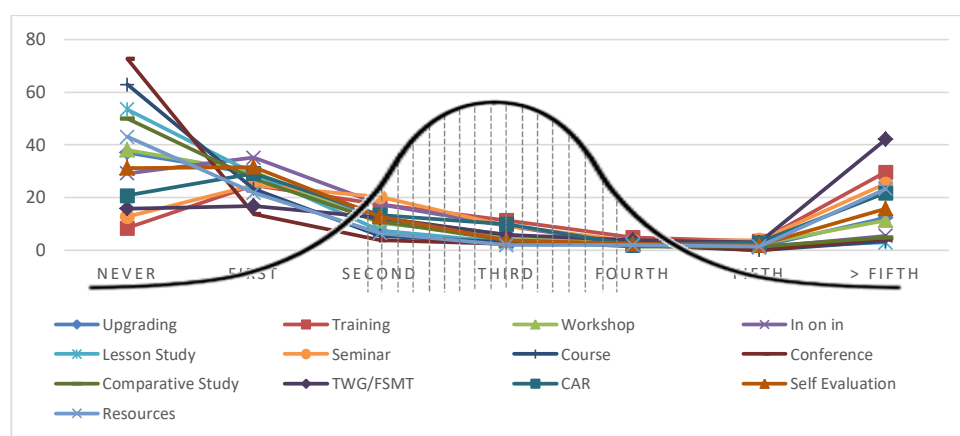


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school

visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28.22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38.12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

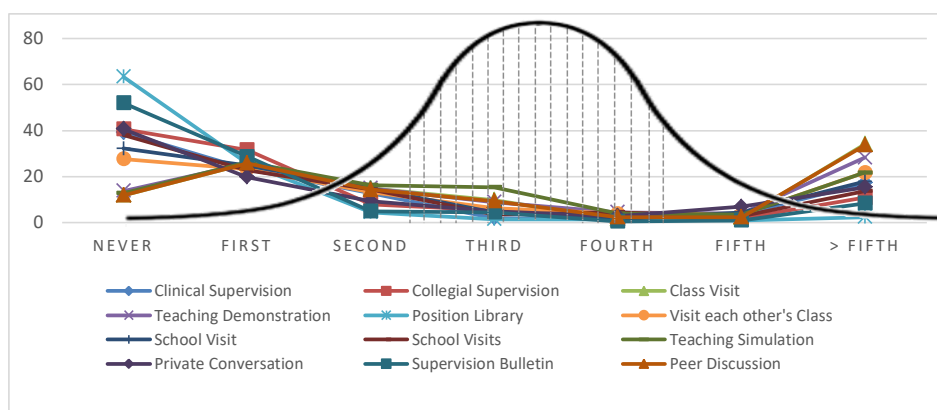


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to

improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20.30	7.92	5.45	1.98	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20.30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

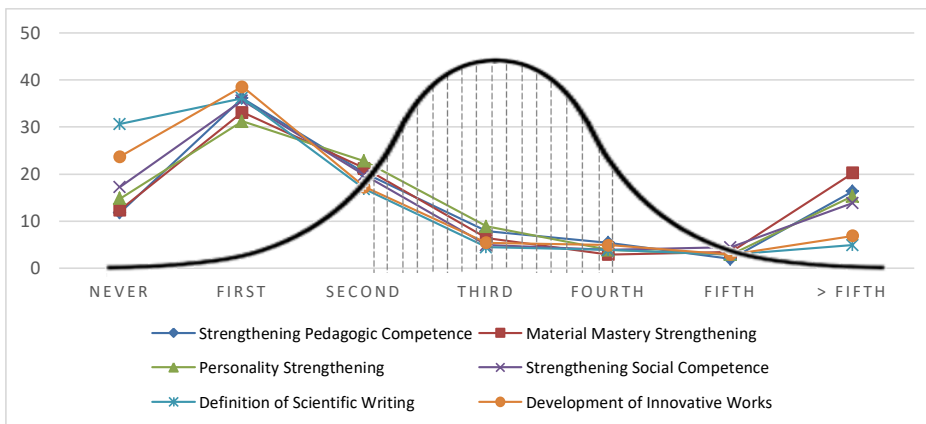


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching,

as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Comment [A12]: It seems that the finding from questionnaire only described here, what about the data gathered by other methods as described in Method?

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of $\text{sig } 0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59%), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST

activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST (IST) program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

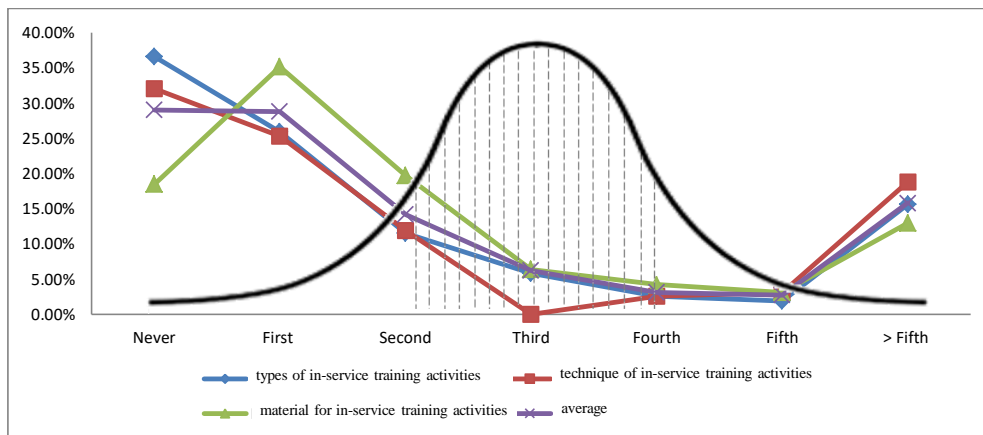


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Danim, 2012). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Nikmah, 2019).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for

colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion

(2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Sobri, 2013). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development or lecturer professional empowerment is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).


The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Kyriacou, 2018).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the techniqueclass visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant in IST (Nurhajati & Bachri, 2017). There are several IST techniques that can be used in the COVID-19 pandemic

or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

Table 6 Roadmap of IST for SD Teachers

Table 6 Roadmap of IST for SD Teachers									
Position	Competency	Frequency of IST implementation							
		Never	1st	2nd	3rd	4th	5th	> 5th	
Level		Beginner (0-5 Years Old)			Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Exporer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator		
Teachers	Pedagogy	✓							
	Personality		✓						
	Social				✓				
	Professional					✓			
	Professional Engagement						✓		
	Digital Resources								✓
PROFESSIONAL TEACHER (IST at least 4 times)									
TEACHER LEADERSHIP (IST > 5 times)									
Teachers with Additional duties (School Principal)	Personality								
	Managerial						✓		
	Entrepreneurship							✓	
	Supervision							✓	
	Social								

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such

as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

Comment [A13]: Does it fit here?

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

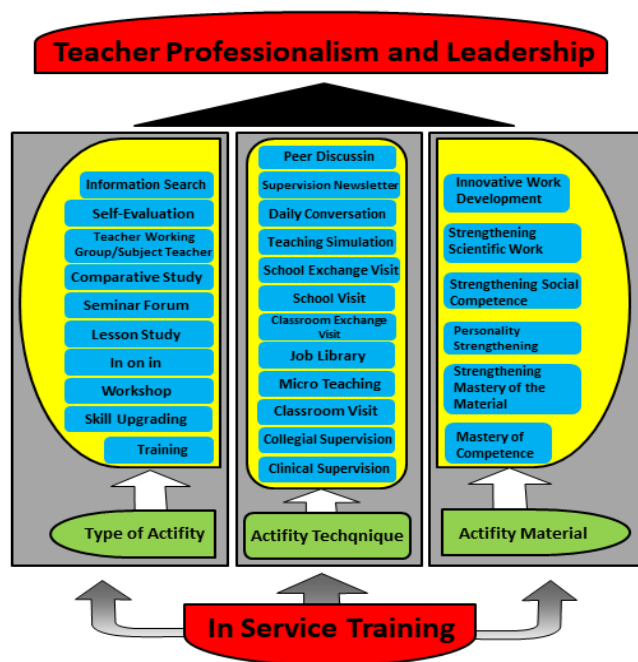


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

Comment [A14]: What are the suggestions?

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identity and implement the best in-service practices within the nation

and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

Comment [A15]: Why?

Comment [A16]: Why?

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11. Bukti konfirmasi revisi artikel tahapan ke empat, 29 Mei 2023

In-service training governance, for elementary school teachers in Indonesia

Abstract: This research seeks to investigate the governance of in-service training for elementary school teachers, enabling them to engage with diverse types, techniques, and training materials. The research methodology employed a mixed-methods approach, utilizing both quantitative and qualitative methods, and applied the concurrent transformative strategy model. The author analyzes perspectives from various frameworks to obtain comprehensive results. The study revealed that there are still a group of elementary school teachers who have not received in-service training while some have received it repeatedly, and others have received it more than five times. The governance of in-service training in the form of a roadmap has the values of fairness, equity, and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. This enables teachers to easily access, download, and document training materials and evidence, while the government can use their track record to assess professionalism and provide opportunities for them to become teacher leaders.

Keywords; governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers will be able to provide highly competitive student outputs (Peter et al., 2022). Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Sholihah et al., 2020). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly improved (Anif & Zain, 2015). Including the Teacher Professional Education

(PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands. Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers,

851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Dwi Hadya Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Widhiyanti, 2016).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakcı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading,

individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level? Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

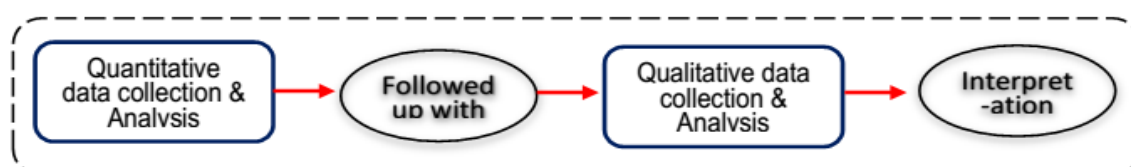


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java and West Sumatera; owing to these area facilitating the study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sampel based on the characteristics of gender, employment, education, certification and class, as shown in table 1

Table 1 Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

Data collection techniques include questionnaires, tests, interviews, and document studies (Johannesson et al., 2014). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Connell, 2009), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages, namely data collection, data condensation, data presentation and conclusion drawing or data verification (Gephart Jr, 2004).

FINDINGS AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1) assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2: Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20,30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
Independent	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27

Average Percentage (%)	36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%
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Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

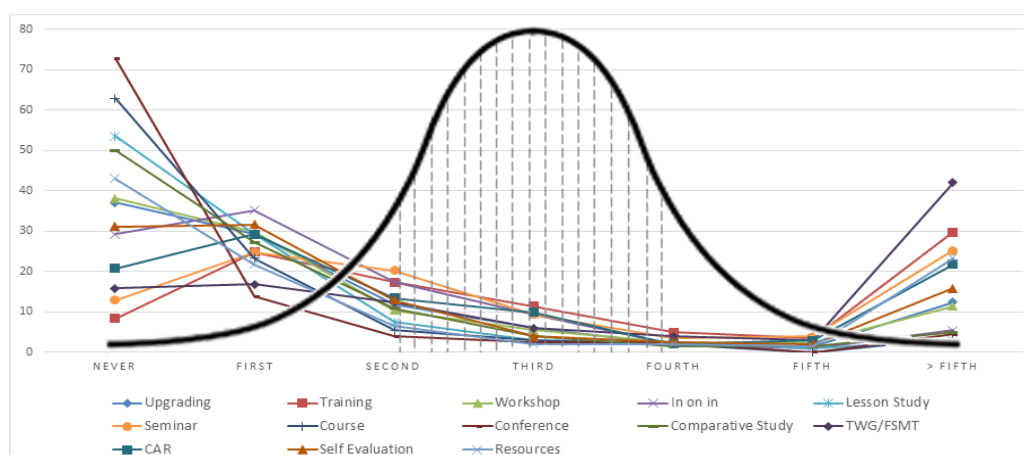


Figure 2 Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3 Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28.22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78

School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38.12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

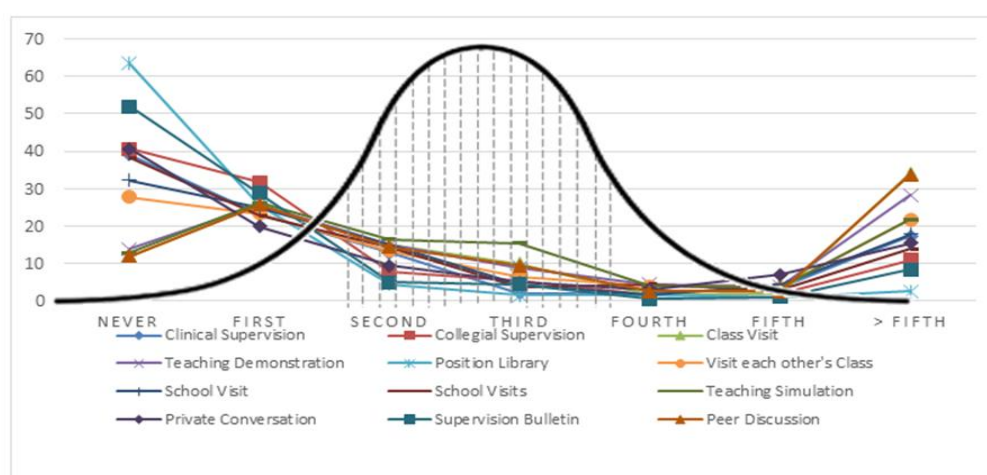


Figure 3 Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4 Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20,30	7.92	5.45	1.98)	16.34
Material Mastery Strengthening	12.38	33.17	21.29	6.44	2.97	3.47	20,30
Personality Strengthening	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

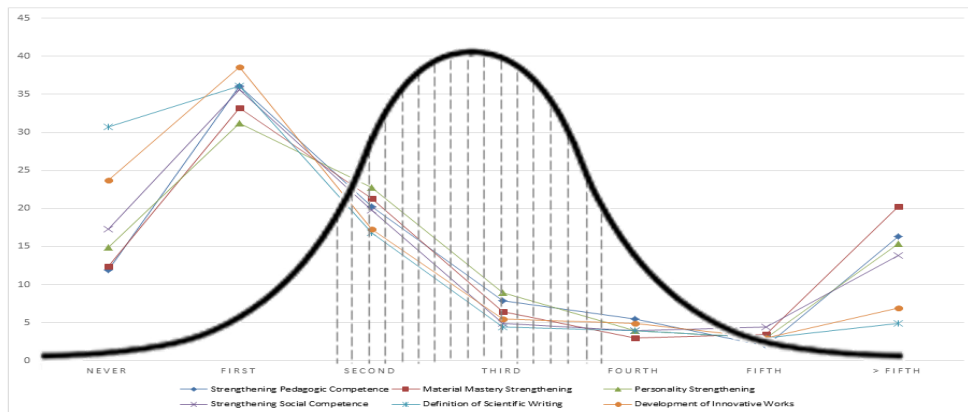


Figure 4 Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion and Suggestions

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research

(43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of sig $0.000 < 0.05$ and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%),

strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5: Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

(Researcher Analysis, 2021)

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

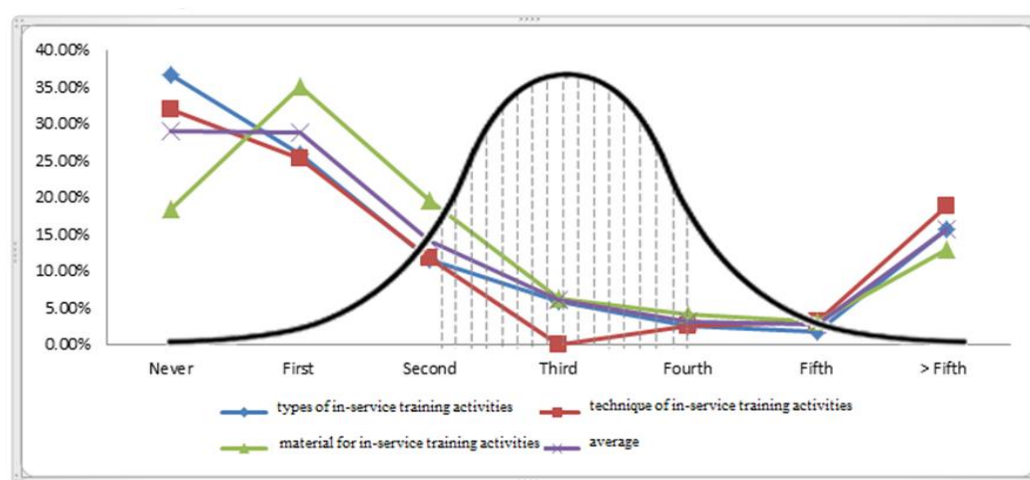


Figure 5 Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by

SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Saihu, 2020). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Bernard et al., 2015).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main

Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Dwi Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing *Merdeka Mengajar* platform that is available for download on the Playstore as of October 31, 2021. The availability of *Merdeka Mengajar* platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the research result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Malm, 2009). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).

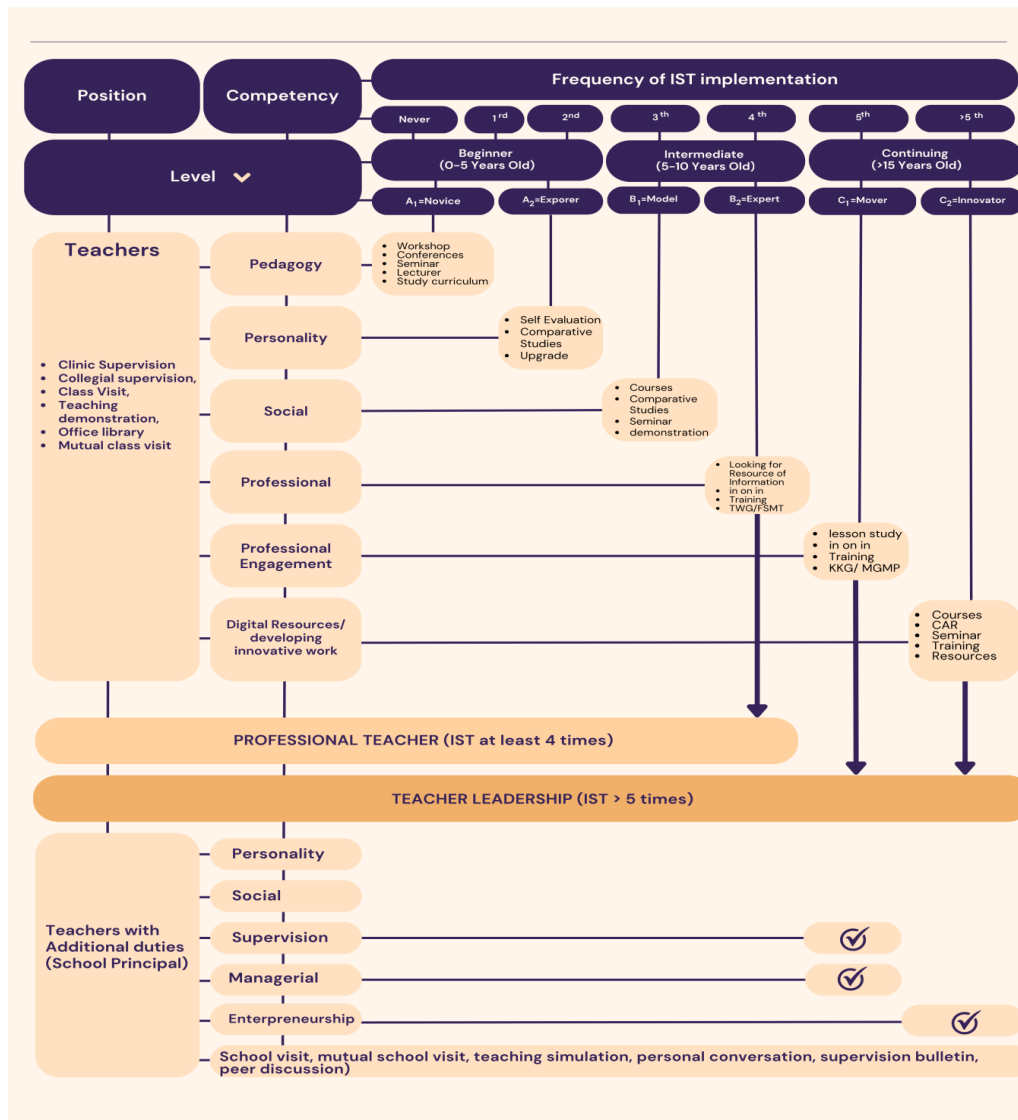
The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger

dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Loewenberg Ball & Forzani, 2009).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the techniqueclass visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant IST (Mıhladıız & Timur, 2011). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

Table 6 Roadmap of IST for SD Teachers



The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakc, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022). Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related

work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Didik Suhardi, (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instil the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated manner which encourages the organization to carry out its functions (Tanang & Ash, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.

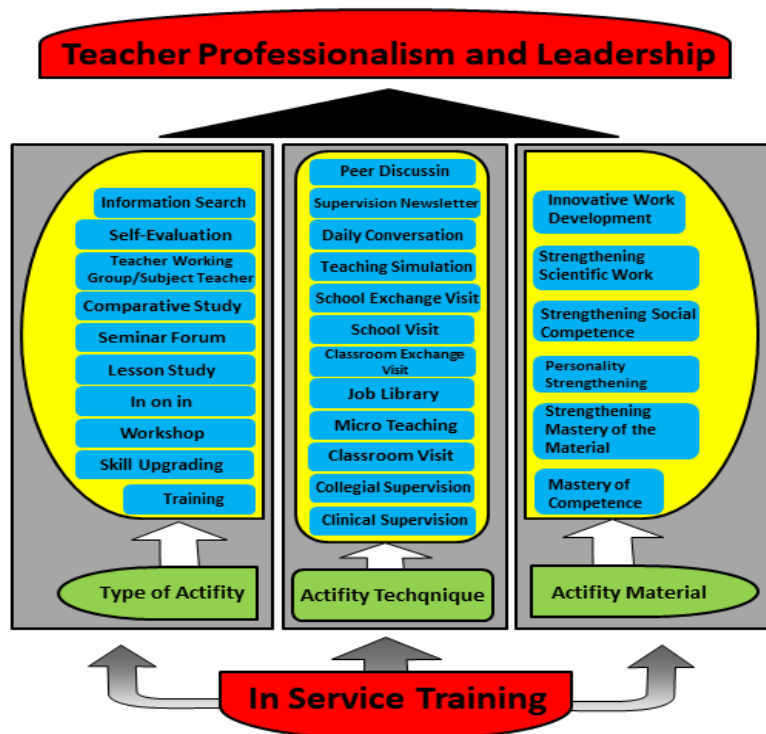


Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsibilities as school principals or leaders of colleagues at school.

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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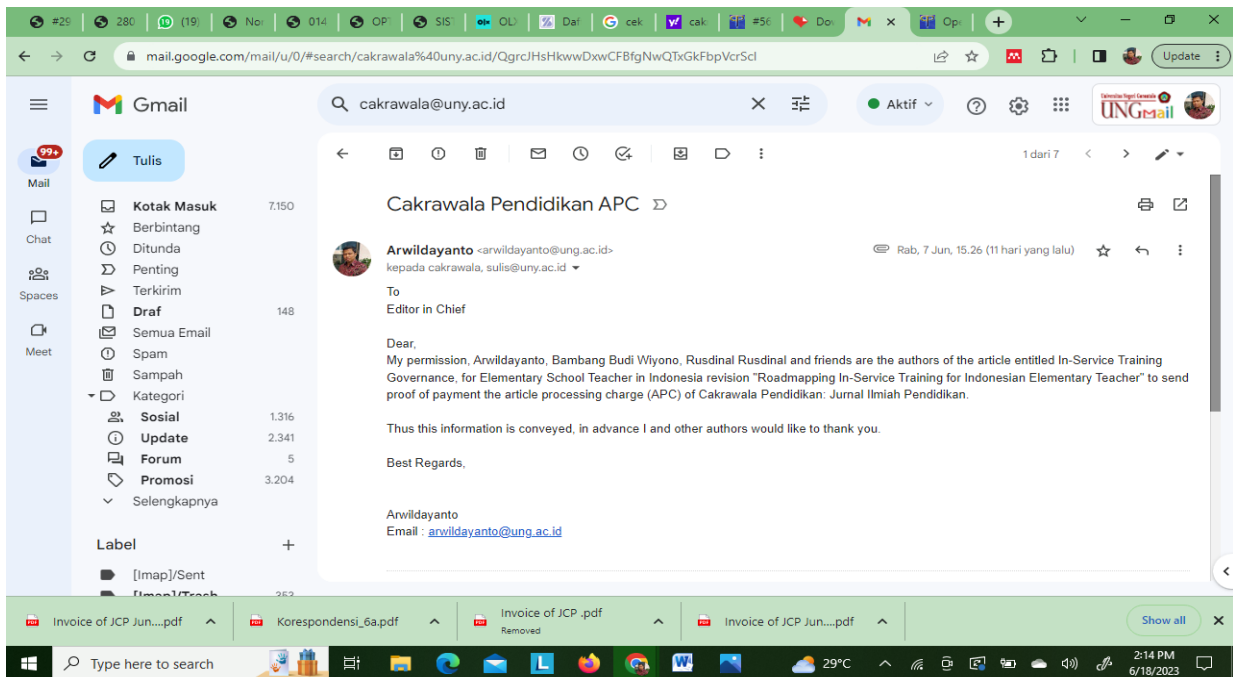
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Lembar 1. Putih Bank
Lembar 2. Biru Penyetor



In-service training governance, for elementary school teachers in Indonesia

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ABSTRACT

This research seeks to investigate the governance of in-service training for elementary school teachers, enabling them to engage with diverse types, techniques, and training materials. The research methodology employed a mixed-methods approach, utilizing both quantitative and qualitative methods, and applied the concurrent transformative strategy model. The author analyzes perspectives from various frameworks to obtain comprehensive results. The study revealed that there are still a group of elementary school teachers who have not received in-service training while some have received it repeatedly, and others have received it more than five times. The governance of in-service training in the form of a roadmap has the values of fairness, equity, and proportionality in distributing training services to elementary school teachers which are supported by digital-based platforms. This enables teachers to easily access, download, and document training materials and evidence, while the government can use their track record to assess professionalism and provide opportunities for them to become teacher leaders.

Keywords: governance, in-service training, professionalism, teacher leadership, concurrent transformative strategy

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INTRODUCTION

In the industrial revolution 4.0, there are high expectations that teachers are able to provide competitive student output. Due to the fact that the industrial revolution 4.0 coincided with the emergence of the era of society 5.0, which was characterized by the development of supercomputers, intelligent robotics, digital activities supported by artificial intelligence, and neurotechnology (Lase, 2019). The industrial revolution 4.0 and the era of society 5.0 are known as the era of disruption, enabling optimal optimization of students' brains through the support of teacher professionalism in utilizing technological advances in teaching (Mercier-Laurent, 2020). Various pre-service education and IST programs have been implemented to optimize teachers' professional work in Indonesia (Bakar, 2017). Improving the professionalism of teachers' work is an important part of the mandate of Law Number 14 of 2005, and regulation of the Minister of National Education Number 16 of 2007 that teachers in Indonesia must meet three standards, namely: qualification, competency, and certification (Sholihah et al., 2020). As a derivative of the mandate of the law, the Indonesian government has taken a policy by implementing a program to increase teacher professionalism through pre-service education, in the form of the Teacher Education Training and Education Program (PLPG). However, the result has not significantly

improved (Anif & Zain, 2015). Including the Teacher Professional Education (PPG) program for pre and in-service as a condition for obtaining certification, it has not demonstrated any improvement in teachers' professional performance (Musfah, 2016). Moreover, in some places (casuistic), teachers' performance tends to deteriorate after receiving certification. The government has also adopted a policy to increase the professionalism of teachers in the form of in-service teacher training as continuous professional development (CPD), which needs to be managed in an integrated manner in order to produce professional teachers and foster leadership potential (Solehuddin et al., 2020).

Considering the rapid advancement of educational science and technology, in-service teacher training for SD is essential based on educational levels. Therefore, SD teachers must be adaptive and able to present a variety of innovations, methods, media and interesting high-quality teaching materials, as well as to deliver fun learning in accordance with current demands. Through a sustainable and fair in-service teacher training management system, primary school teachers can develop their abilities, expertise, and moral character. For this reason, a study on the governance of IST in SD Indonesian is believed to be able to provide a solution to improve and maintain the professional performance of SD teachers (Widodo et al., 2017).

IST for SD teachers is defined as training during service or carrying out the teaching profession at the basic education level to improve skills and abilities in the work area (Tzivinikou, 2015). Further, IST for SD teachers must be carefully planned to meet the demands and requirements of high-quality teaching as the cornerstone of continuing education. SD teachers are expected to be able to follow the dynamics and developments of current science and technology to improve professional competence, and understanding related to the principles and current teaching techniques based on information technology (Rusmono, 2020). IST for SD teachers, as part of on-the-job training or advancement in the context of achieving children's learning objectives, preparing for competition in the future (Sahlberg, 2013).

There are various form of IST activities for SD teachers, such as short courses, workshops, need-based training and upgrading, to increase the knowledge, skills and competency capacity of SD teachers (Ajithkumar, 2016; Keskin et al., 2022). The forms of IST activities require good governance, since SD teachers start their careers at a relatively young age, so their teaching practice experience is insufficient. According to data issued by the Ministry of Education and Culture on January 11, 2022, the majority of teachers in Indonesia, including those who teach in SD, are millennials; out of 2,906,239 total teachers, 851,316 individuals (9.29%) are between the ages of 30 and 39. In fact, there are 514,233 teachers aged 20-29 years. More interestingly, 3,988 young teachers under 20 years old (Jayani, 2022). The dominance of SD teachers at the millennial age has implications for low work experience. On the other hand, the demands of professional SD teachers in the era of the industrial revolution 4.0 and the era of society 5.0 are getting higher, which is the reason for the necessity of in-service teacher training (Harris & Anthony, 2001; García & Weiss, 2019). Sri Wahyuningsih, as the Director of SD Ministry of Education, Culture, Research, and Technology, emphasized these demands and hopes, underlined the need for SD teachers to implement student directed learning and the utilization of numerous digital learning tools (Prastiwi, 2021).

In the current era of disruption, SD teachers must update their skills and sustainably attitudes to carry out their duties. Teachers must continue to study and make innovations and improvements to create fun and joyful learning for children (Hodges et al., 2020). If IST is not provided, SD teachers could become unproductive, and their work environment would remain monotonous and the same from year to year (Carlone et al., 2014). IST is a strategic plan to improve competence, materials mastery, skills in writing scientific papers, and development of innovative works towards professional teachers, including a commitment to reforming education for the future (Ridho, 2014; Mahmuda, 2016). Law Number 20 of 2003 concerning the National Education System, article 3 explains that professional teachers do not only carry out learning tasks in the microscope but also in the macro scope, namely; carry out the mandate of the Indonesian nation to carry out the function of education, develop capabilities and shape the character and civilization of a dignified nation in the context of the intellectual life of the nation (Widhiyanti, 2016).

IST programs should ideally be carried out systematically, organized and comprehensively planned in both formal and informal settings (Ogunyinka et al., 2015). Formally, IST consist of upgrading the capacities of teacher through workshop, on the job training and internships (Mutshekwane, 2014). Informally, it is carried out at the desire of individual teachers and groups of teachers to develop themselves related to their work and position (Alfuadi, 2018). The SD teachers' IST program can be highly beneficial if it is properly managed, starting from planning, needs analysis, determining the type, technique and material of activities, evaluation and follow-up are carried out properly and coordinated with related parties (Bayrakçı, 2009; Saihu, 2020).

IST for SD teachers is carried out with various types of activities, including: institutes, conferences, workshops, staff meetings, committees, professional reading, individual conferences, visits and demonstrations, seminars, correspondence courses, exhibitions, in on in, lesson study, seminars, courses, comparative studies, teacher working groups or Kelompok Kerja Guru (TWG/KKG), Forum of Subject Matter Teachers or Musyawarah Guru Mata Pelajaran (FSMT/MGMP), classroom action research (CAR), self-evaluation, and looking for sources of information related to the material and the teaching profession (Osamwonyi, 2016). In addition, there are other forms of implementing in-service teacher training, namely; in-house training (IHT) in the form of training, lectures, internship programs, school partnerships, distance learning, coaching and internal discussions, further education, writing teaching materials, media creation, making technological works or works of art (Zumroti, 2018). Complementing the various types of previous in-service teacher training activities, several types of education and training help refine the concept, such as community surveys, field trips and school visits (Goodale, 2020). Various types and techniques of IST activities for SD teachers in Indonesia are interesting to study and provide solutions, so that in-service teacher training can be managed properly. Fundamental research questions were raised regarding the general framework for in-service teacher training activities held at the elementary level. Systematic governance of the IST system for teachers? What is the role of official institutions for in-service teacher training? What types of IST activities are provided to SD teachers?

METHOD

This mixed methods study applies two quantitative and qualitative methods and an approach to inquiry that combines research to answer research questions in a single study (Schoonenboom & Johnson, 2017; Nasruddin et al., 2019). The governance of in-service teacher training should be examined in terms of processes and outcomes. The test is conducted using a combination of two quantitative and qualitative methods. The Mixed method findings are believed to be better, complete, and comprehensive (Masrizal, 2012). The mixed method employed is the concurrent transformative model, in which the author evaluates the perspective of the frame of mind, work, and perception of objects related to the governance model of IST for SD teachers in Indonesia from various perspectives or analyses, as described in Figure 1.

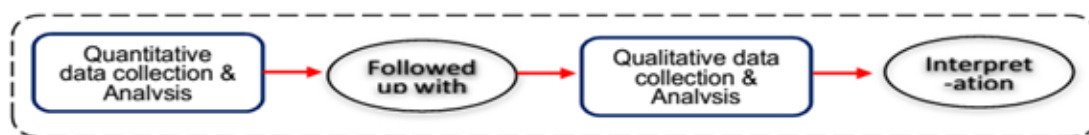


Figure 1. Transformative Mixed Research Methods (Pardede, 2019)

The transformative mixed study is the author's strategy of merging, connecting or embedding different data is to show various perspectives or alternatives from various views that have been extensively discussed about in-service teacher training (Creswell & Tashakkori, 2007). By using the method, it is expected that the author can identify the components of the in-service teacher training system that affect SD teachers' professionalism as well as the best in-service teacher training governance model to shape them. The study is conducted in three provinces in Indonesia, namely Gorontalo, East Java, and West Sumatera; owing to these area facilitating the

study process and due to Covid-19 pandemic, the data was collected using Google Forms. Further, convenience sampling was used, in which respondents provided the data and agreed to contribute in an effort to simplify the data collection process (Abowitz & Toole, 2010; Etikan et al., 2016).

A total of 251 people participate in the study based on virtual focus group discussion (FGD) activities developed by the author (Plomp, 2013). FGD participants were asked to fill out a Google form related to the IST in which they were engaged. A total 202 SD teachers provided the full answers, which met the target as a study sample based on the characteristics of gender, employment, education, certification and class, as shown in Table 1.

Table 1. Research Samples of SD Teachers in Gorontalo, East Java and West Sumatera

No	Characteristics of Respondents		Province			Total
			Gorontalo	East Java	West Sumatera	
1	Gender	Man	14	19	8	41
		Woman	39	75	47	161
2	Employment	Civil Servant	48	80	48	176
		Non-Civil Servant	5	14	7	26
3	Education	SD Education Teacher (PGSD)	24	80	36	140
		Non PGSD	29	14	19	62
4	Certification	Available	45	85	46	176
		Unavailable	8	9	9	26
4	Classification	III	10	15	7	31
		IV	38	65	41	144
		Unavailable	5	14	7	26
Amount			53	94	55	202

Data collection techniques include questionnaires, tests, interviews, and document studies (Johannesson et al., 2014). The IST questionnaire consists of several indicators, including induction activities, competency improvement (types, techniques and training materials), and further studies. The teacher's professionalism test is carried out through questions to measure the skills, knowledge, intelligence, abilities or talents of teachers (Connell, 2009), related to the pedagogic, professional, social and personality competencies of teachers (Rusilowati & Wahyudi, 2020). While the interviews were conducted in the form of discussions FGD and Whats App group of participants.

Model study data analysis concurrent transformative strategy consists of the quantitative analysis (Terrell, 2012), which examines the components of IST for SD teachers who have attended various trainings, short educational programs that implemented through assignments (directives) in the form of upgrading activities, training, workshops, seminars, lesson studies, and courses. Meanwhile, collegial in-service education, such as comparative studies, KKG/MGMP and PTK (Ingersoll & Strong, 2011). Qualitative analysis was carried out through interpretive descriptive, the author reported the data by explaining and providing an overview of the collected data and the data was concluded related to the governance of IST to produce professional teachers in several stages, namely data collection, data condensation, data presentation and conclusion drawing or data verification (Gephart Jr, 2004).

FINDING AND DISCUSSION

In order to make it easier for readers to understand this article easily, it begins with a description of the findings presented first followed by discussion, as follows;

Finding

Data on IST activities can be described in three aspects, including types, techniques and materials of IST activities. The types of IST activities attended by SD teachers started from never, once, twice, three times, four times, five times and more than five times. Types of IST activities are divided into 3 groups, namely; 1) assignment (directive) in the form of upgrading activities, training, workshops, seminars, lesson study, courses, 2) collegial, consisting of lesson study, comparative study, KKG/MGMP, PTK. 3) Independent in the form of self-evaluation activities, and information research. The details findings are described in Table 2.

Table 2. Types of Elementary Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

IST Type		Never (%)	First (%)	Seconds (%)	Thirds (%)	Fourth (%)	Fifth (%)	> Fifth (%)
Directorate	Upgrade	37.13	29.21	11.88	5.94	1.98	1.49	12.38
	Training	8.42	24.75	17.33	11.39	4.95	3.47	29.70
	Workshop	38.12	29.70	10.40	5.45	2.48	2.48	11.39
	In on in	29.21	35.15	17.33	9.41	1.98	0.99	5.45
	Course	62.87	23.27	5.45	2.97	1.98	0.00	3.47
Collegial	Lesson Study	53.47	29.21	7.43	2.97	2.48	0.99	2.97
	Conference	72.77	13.86	3.96	2.48	2.48	0.00	4.46
	Seminar	12.87	24.75	20.30	9.41	3.47	3.96	25.25
	Comparative Study	50.00	27.23	10.89	3.96	1.49	1.49	4.95
	TWG/FSMT	15.84	16.83	12.38	5.94	3.96	2.97	42.08
Independent	CAR	20.79	29.21	13.37	9.90	1.98	2.97	21.78
	Self Evaluation	31.19	31.68	12.87	3.96	2.48	1.98	15.84
	Resources	43.07	21.78	6.44	1.98	1.98	1.49	23.27
	Average							
	Percentage (%)	36.6%	25.9%	11.55%	5.84%	2.6%	1.89%	15.62%

Based on table 2 above, the average percentage of the IST activities in never category is 36.6%, once as much as 25.9%, twice as much as 11.55%, three times as much as 5.84 %, four times as much as 2.6%, five times as much as 1.89% and more than five times as much as 15.62%. The distribution of SD teachers participation in various types of IST activities is depicted in Figure 2.

Figure 4 of the normal curve above revealed the types frequency of IST activities attended by SD teachers in Gorontalo, East Java and West Sumatera shows it is not normally distributed. However, it has provided great benefits for capacity building and increasing the professionalism of teachers' work, as explained in an interview with an SD teacher in East Java who stated that the IST activities provides valuable experiences, including through workshops and seminars (W/G/JT/SD/FGD/23/12/2021).

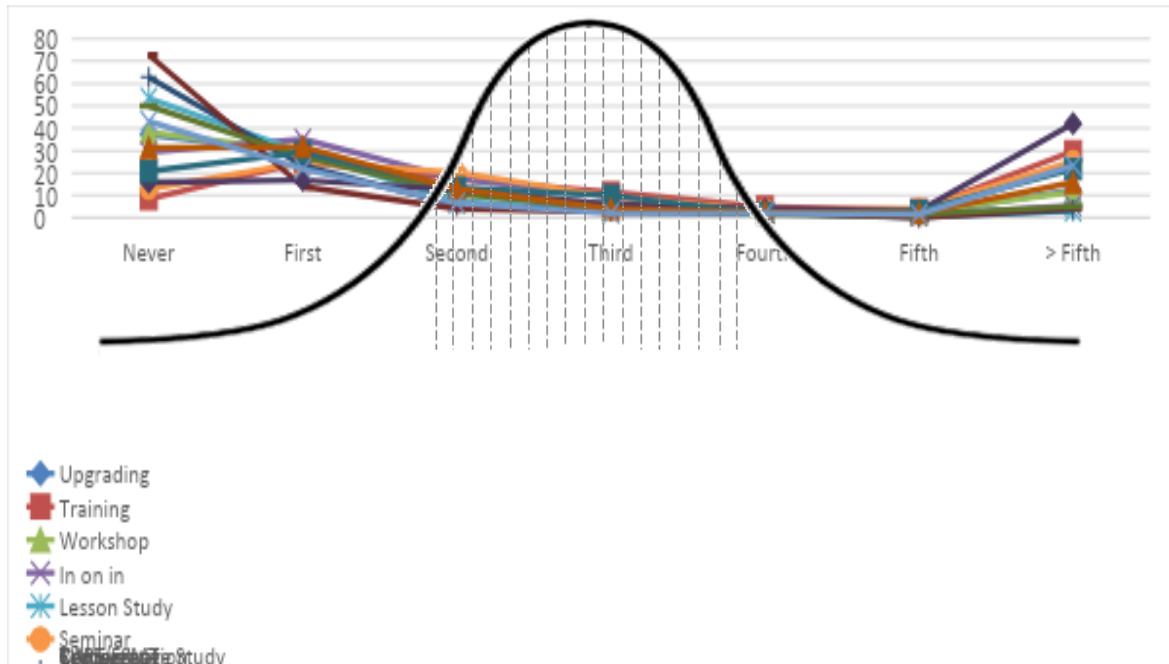


Figure 2. Normal Curve Types of SD Teacher Training In-Service Activities in Gorontalo, East Java and West Sumatera

Techniques for IST activities attended by SD teachers in three provinces of Gorontalo, East Java and West Sumatera, including; clinical supervision, collegial supervision, class visits, teaching demonstrations, office libraries, mutual class visits, school visits, mutual school visits, teaching simulations, personal conversations, supervision bulletins, peer discussions, as described in Table 3.

Table 3. Techniques for IST of SD Teachers in Gorontalo, East Java and West Sumatera

IST Techniques	Never	First	Second	Third	Fourth	Fifth	> Fifth
Clinical Supervision	39.11	23.27	12.87	1.98	1.98	3.47	17.33
Collegial Supervision	40.59	31.68	7.92	5.45	1.49	1.98	10.89
Class Visit	11.99	25.74	14.85	9.90	1.49	1.98	34.16
Teaching Demonstration	13.86	25.74	14.85	8.91	4.46	3.96	28,22
Position Library	63.37	25.74	4.46	1.49	1.49	0.99	2.48
Visit Each Other's Class	27.72	23.27	13.37	6.44	3.96	3.47	21.78
School Visit	32.18	24.75	14.85	4.46	1.49	4.46	17.82
School Visits	38,12	22.77	14.36	3.47	4.46	2.97	13.86
Teaching Simulation	12.87	26.24	16.34	15.35	3.96	3.47	21.78
Private Conversation	40.59	19.80	9.41	4.95	2.97	6.93	15.35
Supervision Bulletin	51.98	28.71	4.95	4.46	0.50	0.99	8.42
Peer Discussion	11.88	25.74	14.36	9.41	2.48	2.48	33.66
Average Percentage (%)	32.02%	25.28%	11.88%	6.36%	2.56%	3.1%	18.8%

Based on table 3, the average percentage of the IST activities in never category is 32.02%, once as much as 25.28%, twice as much, 11.88%, three times as much as 6.36, four times as much as 2.56%, five times as much as 3.1% and more than five times as much as 18.8%. The distribution of SD teacher participation in various techniques for IST activities is depicted in Figure 3.

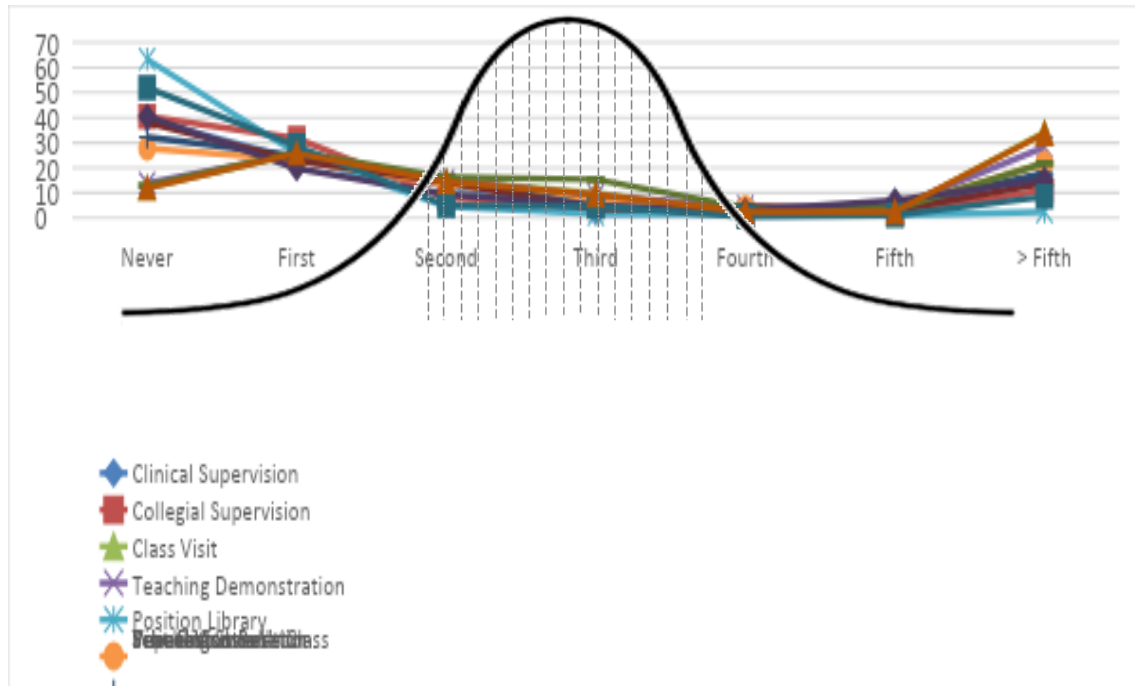


Figure 3. Normal Curve of SD Teacher Training In-Service Techniques in Gorontalo, East Java and West Sumatera

Figure 5 normal curve above reveals the frequency of IST activity techniques followed by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been normally distributed. However, various IST techniques have contributed to increasing experience, as explained by an SD teacher in Gorontalo Regency that peer discussion techniques are required in the school environment to build collaboration between teachers to improve active participation in work and discussions about science and school progress (W/G/GTO/SD/FGD/23/12/2021).

The material for IST activities attended by SD teachers with the frequency of implementation ranging from never, once, twice, three times, four times, five times and more than five times. The materials observed consist of strengthening pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works, as described in Table 4.

Table 4. Materials for IST for SD Teachers in Gorontalo, East Java and West Sumatera

IST Materials	Never	First	Second	Third	Fourth	Fifth	> Fifth
Strengthening Pedagogic Competence	11.88	36.14	20,30	7.92	5.45	1.98)	16.34
Material Mastery	12.38	33.17	21.29	6.44	2.97	3.47	20,30
Strengthening Personality	14.85	31.19	22.77	8.91	3.96	2.97	15.35
Strengthening Social Competence	17.33	35.64	19.80	4.95	3.96	4.46	13.86
Definition of Scientific Writing	30.69	36.14	16.83	4.46	3.96	2.97	4.95
Development of Innovative Works	23.76	38.61	17.33	5.45	4.95	2.97	6.93
Average Percentage (%)	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%

Based on Table 4, the average percentage of the IST activities in never category is 18.48%, once as much as 35.15%, twice as much as 19.72%, three times as much as 6.36%, four times as much as 4.21%, five times as much as 3.14% and more than five times as much as 12.96%. The

distribution of SD teacher participation in various material for IST activities is depicted in Figure 4.

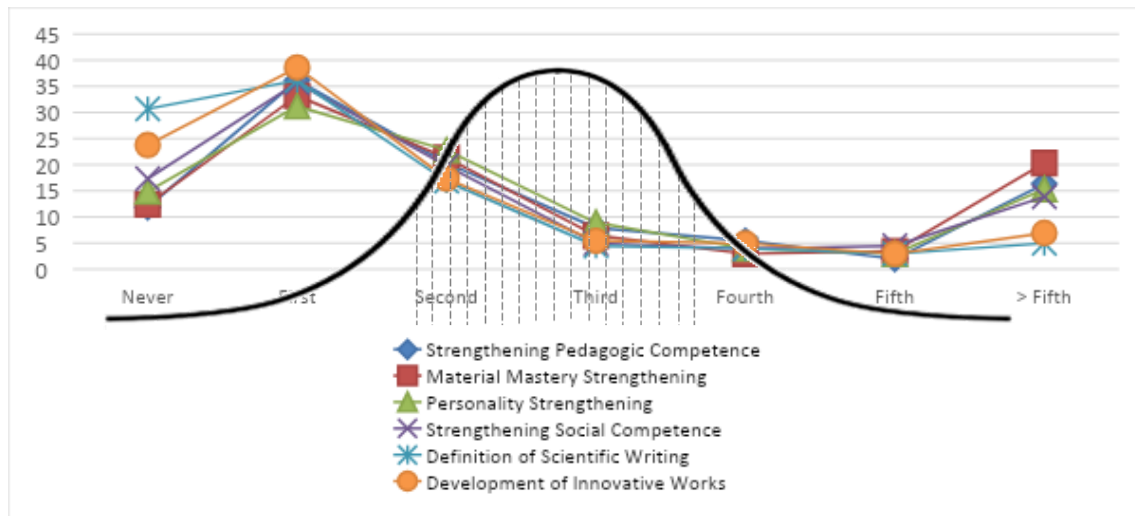


Figure 4. Normal Curve for SD Teacher IST Materials in Gorontalo, East Java and West Sumatera

Figure 4 of the normal curve above revealed the frequency of IST materials attended by SD teachers in Gorontalo, East Java and West Sumatera shows that it has not been distributed normally. The IST materials provided to teachers are beneficial in job coaching, as explained by a teacher from West Sumatera, that after receiving IST material in the form of development of innovative works, we are more prepared and have adequate skills in mastering information technology (W/G/SB/SD/FGD/23/12/2021).

Discussion

The data display in table 2 and figure 2 related to the types of IST activities followed by SD teachers explains that the dominant percentage of teachers is in the never category, including upgrading (37.13%), workshops (38.12%), courses (62.87%), lesson study (53.47%), conference (72.77%), comparative study (50%) and information research (43.07%). Once category, consisting of; in on in (35.15%), CAR (29.21%) and self-evaluation (31.68%). Category more than 5 times, consisting of; training (29.70%), seminars (25.25%), and KKG/MGMP (42.08%). The study findings align with the team's report Organization of Economic Co-operation and Development (OECD) in research on teacher participation in continuing training by type of activity. The types of IST activities surveyed by the OECD are forums of subject matter teachers (FSMT) in various countries, showing the trend of data being more dominant in the form of informal dialogues arriving at 90%, including KKG/MGMP meetings, seminars, the average frequency is more than 5 times (> 40%).

The dominant activities in IST are types of KKG/MGMP and seminars, owing the ease of implementing the activities. The KKG/MGMP provides a forum for teachers to develop various issues pertaining to the teaching profession, such as teaching materials, teaching methods, tools and media as well as evaluation of learning outcomes (Huynh, 2020). This type of seminar is attaining popularity owing to its inherent flexibility and promotion of experiential and adult learning principles (Anggraini, 2019). Based on study conducted by Hidayati, (2012), it was found that there is a positive and significant effect of participation in MGMP and IST simultaneously increases teachers' professional competence with a probability of sig 0.000 < 0.05 and the contribution arrives at 83,1%.

Likewise, the data contained in table 3 and figure 3 related to the technique of IST activities followed by SD teachers explains the dominant percentage of teachers in the never attended

category, including clinical supervision (39.11%), collegial supervision (40.59), position library (63.37), visit each other's class (27.72), school visit (32.18%), school visits (38.12), private conversation (40.59%), supervision bulletin (51, 98%). While in the more than five times participating categories, including class visit technique (34.16%), and teaching demonstration (28.22%) which became the favorite or dominant choice in IST activities for SD teachers in Gorontalo, East Java and West Sumatera. Due to its simplicity of use and the need to accurately represent the teacher's work, this class visit and teaching demonstration technique has become popular. not merely distributors of syllabus materials. India launched the 'Quality Education Program', one of which is dialogic interactions through class visit and demonstration techniques (Sim, 2011; Saigal, 2012).

Further, interesting facts were discovered in relation to the IST materials that SD teachers attended based on the data in table 4 and figure 4. The presented material is primarily dominant in the one-time category, including strengthening pedagogic competence (36.14%), strengthening material mastery (33.17%), personality strengthening (31.19%), strengthening social competence (35.64%), strengthening the writing of scientific papers (36.14%), and developing innovative works (36.81%). This study is in line with research which concludes that there are significant differences in teachers' pedagogical competence based on their participation in the IST program. The more often teachers participate in IST programs, the better their pedagogy and competence (Salim, 2019). IST materials provided to SD teachers act as a catalyst to increase teachers' capacity to update their skills and knowledge in teaching and learning, leading to better performance (Omar, 2014). Overall, from the various frequencies that were asked of SD teachers who were surveyed as many as 202 people, the data discovered that the average dominant percentage was in the never category (29.03%), once (28.78%) and more than five times (15.80%), details can be seen in Table 5.

Table 5. Recapitulation of indicators for IST for SD teachers in Gorontalo, East Java and West Sumatera

Indicators	Never	First	Second	Third	Fourth	Fifth	> Fifth
Types of IST activities	36.6%	25.9%	11.55%	5.84%	2.60%	1.89%	15.62%
Techniques for IST activities	32.02%	25.28%	11.88%	6.36%	2.56%	3.10%	18.8%
In-Service Trainin Activity Material	18.48%	35.15%	19.72%	6.36%	4.21%	3.14%	12.96%
Average	29.03%	28.78%	14.18%	6.19%	3.12%	2.71%	15.80%

From table 5 above, it can be visualized the position of each elementary teacher IST indicator in Figure 5.

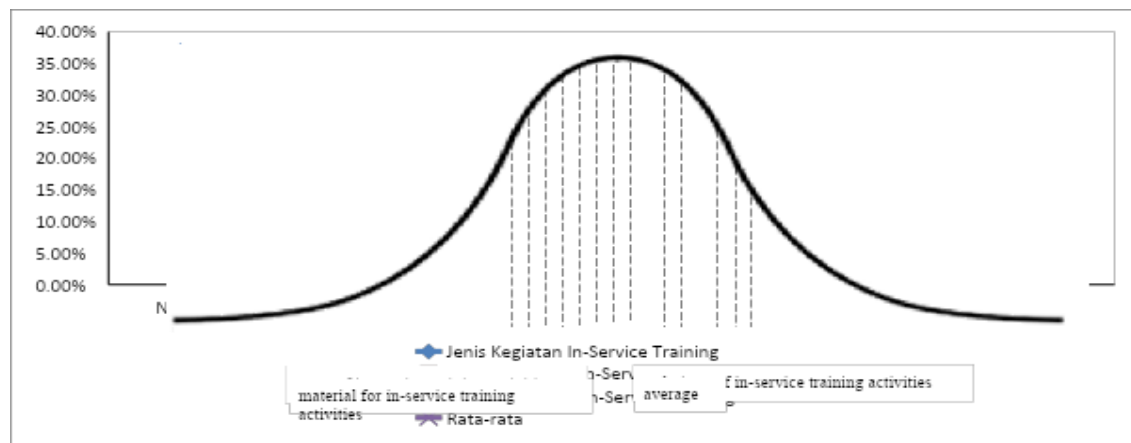


Figure 5. Visualization of each indicator of in-service teacher training for SD teachers

Based on data from table 5 percentage figures and figure 5 visualization of each type, technique and material for IST activities, it is evident that there is an excessively large and extreme disparity between SD teachers who have not participated in various types, and varied IST techniques and materials, compared to SD teachers who have participated in aforesaid IST activities more than five times. The distribution of IST activities attended by SD teachers is ideally can be given proportionally and fairly following the normal curve. Thus, the teachers who have not participated in the aforementioned activities can be reduce to almost zero percent (0%). Teachers who receive initial assignments should be immediately allowed to participate in one type of IST, in the form of: upgrading, workshops, courses, lesson studies, conferences, comparative studies and looking for sources of information, in on in, CAR, self evaluation, training, seminars, and KKG/MGMP. Various types of IST can be followed by teachers formally in the form of an assignment by the principal to a teacher to take part in upgrading, as a commitment to developing teacher capacity and professionalism (Saihu, 2020). Types of IST can be in the form of courses, applications, lectures, workshops, seminars, studying the curriculum, community surveys, demonstrations, field trips, and visits to schools (Bernard et al., 2015).

Furthermore, teachers who participate in various types of in-service teacher training either 1 time, 2 times, and 3 times, should increase the number of teachers involved. Likewise, teachers who follow more than 4 times, and 5 times should be fewer in number. The consideration is that teachers who have attended various types, techniques and materials for IST activities more than 4 times or more are directed to; 1) preparation to become a professional teacher who has expertise, 2) instructor training in the field of subjects for colleagues, 3) teacher leadership for teacher colleagues or school principals. Hence, it is necessary to plan for a good SD teacher functional position mapping, sustainable IST governance, as described Ibnu Hamad Former Spokesman for the Ministry of Education and Culture of the Republic of Indonesia, stated that IST is still minimal and uneven (Tashandra, 2016). Overcoming the dynamics of equity and inadequate quality of in-service teacher training is an important reason for the need for a governance model for in-service teacher training in Indonesia. The distribution of opportunities to participate in various types, techniques and IST materials for SD teachers, which is carried out by the Ministry, Universities, Schools, and other Education and Training Organizations (LPD) is seen as an effort to increase teacher professionalism.

The governance of IST must be carried out fairly, equally, and proportionally for every educator and education staff, which is supported by a software (application) that facilitates arrangements starting from planning, implementation, monitoring, and evaluation as well as follow-up. The Personnel Section of the Secretariat of the Directorate General of State Assets, Ministry of Finance of the Republic of Indonesia, has initiated the provision of an IST planning application in collaboration with the Directorate of State Asset Management and Information Systems (Directorate of PKNSI). This application can assist with the Main Performance Index (KPI) monitoring and achievement for implementing employee capacity building. Registration of proposed IST through a single sign on (SSO) account is valid no later than 14 days before the IST is held (Wahyudi, 2016). The Ministry of Education and Culture has also done the same thing, developing Merdeka Mengajar platform that is available for download on the Playstore as of October 31, 2021. The availability of Merdeka Mengajar platform provides SD teachers an alternative to participating in IST independently, anywhere, and anytime (Public et al., 2022). This definitely lessens the disparity between teachers who have never received IST services compared to some teachers who have attended it more than 5 times.

Good, intensive and quality IST management, according to Vice Rector IV UNG Ikhfan Haris during his speech at a FGD about his experience in Germany, teachers who do not obtain IST services within a year can file an objection to the government. This is a form of the government's commitment to provide reactualization and increase the scientific capacity of teachers to adapt to the dynamics of technology that continues to develop rapidly (W/JT/Co/TI/23 December 2021), thus the teachers can confidently teach students new things and schools can adapt to change (Ertmer & Ottenbreit-Leftwich, 2010). IST program, as the reserach result of the Research and Development Center of the Ministry of Religion (2018) shows that Islamic Junior High School science teachers greatly impact teachers' knowledge, skills, competencies, and

attitudes (Umroh, 2018). Effectiveness of IST encourages teachers to improve their work skills, ability to cope with stress, frustration, and conflict, which can increase self-confidence, increase technical and intellectual knowledge, including lessening their anxiety of facing new tasks in the future (Malm, 2009). The management of IST for SD teachers is in line with the mandate of the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, article 7 paragraph (2) confirms that teacher professional development is carried out through self-development that is implemented in a democratic, fair, non-discriminatory, and sustainable manner by upholding human rights, religious values, cultural values, national pluralism, and professional codes of ethics (Nasional, 2003).

The IST governance for SD teachers has the following advantages; 1) improvement of organizational work, the realization of a harmonious working relationship between superiors and subordinates, the delegation of authority and interactions based on technical and intellectual maturity, 2) the occurrence of a fast, precise decision-making process because it involves all teachers who are in charge for carrying out operational activities and not just ordered by the principal, 3) increasing teachers career opportunities, 4) stronger dedication, 5) more fluent and effective communication can improve the quality of the school organization's policy formulation process, functional conflict resolution, increases the sense of unity and family atmosphere among school members (Bakar, 2017). Including developing teachers capacity and competence, increasing knowledge about the development of educational problems, avoiding the possibility that teachers will be left behind in educational progress, including the obligation of teachers to update and improve their professional level (Ball & Forzani, 2009).

Arrangement in the implementation of IST techniques is crucial, due to the dominance of the technique class visits (34.16%), and teaching demonstrations (28.22%) that carried out more than 5 times are phenomena that teachers tend to perform things that are easy to observe and simple to implement but have not provided other complex experiences. The finding is in line with the condition that there are still many IST activities with no optimal results, making it difficult to apply the output to the education world (Arifin & Nurhadi, 2019). Based on the current condition, the criteria for selecting the IST technique are as follows 1) following the competencies expected from the teacher, 2) the knowledge to be possessed, 3) the characteristics of the teacher who is a participant IST (Mihladić & Timur, 2011). There are several IST techniques that can be used in the COVID-19 pandemic or the new normal era ahead, which include didactic, lecture, case study, interaction, simulation, case-based, interactive, and didactic lecturer, because it is based on computer media which to make it more effective (Bluestone et al., 2013).

The administration of in-service education for SD teachers also aims to increase proportionality. The research data indicates that on average, the teachers are in the categories of one-time language administration related to language pedagogic competence, strengthening material mastery, strengthening personality, strengthening social competence, strengthening scientific writing, and developing innovative works. The low percentage of administration of these materials demonstrates that the in-service teacher training's objectives and targets have not been sufficiently outlined. Organizers of IST such as LPMP, Universities, Department of education, schools and other professional institutions worked on teacher capacity and competency development need to conduct a need analysis and provide roadmap IST for teachers from novice, explorer, model, expert, mover and innovator with additional duties, as described in Table 6.

The Roadmap of IST for SD is divided into 3 levels, beginner, intermediate and advanced, in line with IST in developed countries. For instance, in Japan, there are different IST levels for teachers, including initial teacher training, secondary teacher training, experienced teacher training, and training for teachers with additional duties. Meanwhile in Turki, there are different groups for IST, such as basic, preparatory and practical training (Bayrakçı, 2009). In India, numerous teacher training initiative have been implemented to develop teacher capacity and enhance higher-order thinking among in-service teachers, such as NISHTHA or National Initiatives for School Heads Teachers for Holistic Advancement (Malika, 2022).

Table 6. Roadmap of IST for SD Teachers

Position	Competency	Frequency of IST implementation						
		never	1st	2 ⁿ _d	3rd	4th	5th	> 5th
Level		Beginner (0-5 Years Old)		Intermediate (5-15 Years Old)		Continuing (>10 Years Old)		
		A ₁ =Novice	A ₂ =Explorer	B ₁ =Model	B ₂ =Expert	C ₁ =Mover	C ₂ =Innovator	
Teachers	Pedagogy	✓						
	Personality		✓					
	Social				✓			
	Professional							
	Professional						✓	
	Engagement							
	Digital							✓
	Resources							
	PROFESSIONAL TEACHER (IST at least 4 times)							
	TEACHER LEADERSHIP (IST > 5 times)							
Teachers with Additional duties (School Principal)	Personality							
	Managerial						✓	
	Entrepreneurship							✓
	Supervision						✓	
	Social							

Based on these examples, SD teachers are expected to be formal and informal, and each teacher can determine their aspirations and efforts to find types, techniques, and materials suitable for their development. The State's obligation with related work units is to prepare the implementation of IST for SD teachers, conduct mapping and organize the types, techniques and materials to be provided. The governance must be supported by a digital platform, so the teachers can easily access information, register, download materials, and remind the organizer to invite teachers who never participated and ask the experienced teacher to guide their colleagues. This was in line with the former Director of PSMP Kemdiknas (2008-2015), and also the Secretary General of the Ministry of Education, Suhardi (2019) stated that in the 4.0 era, the teachers are demanded to undergo in-service as many as training in order to become motivators, leaders, mastery use of technology and learning media, inspirational teachers, instill the discipline values, hard work, independence, responsibility, critical thinking, creative, good communication, cooperation, tolerance, and other values, that they need in the future. The variety of IST materials that teachers participate in while in the office can be effective in increasing professionalism, which is proven by the effectiveness of the IST program design that is managed in an integrated

manner which encourages the organization to carry out its functions (Tanang & Abu, 2014). The said training provides bigger opportunities for the achievement of professional teachers and teacher leadership in the classroom, school and community.

The in-service teacher training roadmap serves as a solution in order to make so that the distribution of in-service teacher training can be more equitable, proportional and in accordance with the achievement targets. The roadmap also addresses the issues raised by General of Teachers and Academic Administration (GTK), Ministry of Education, Culture, Research and Technology, Iwan Syahril (2020) that the IST have been more pedagogy-focused. Therefore, the mover and the innovative teachers in their fields are required in order to advance education. Unlike the previous competency enhancement, IST for driving teacher places more emphasis on leadership and innovation. Teachers are urged to accelerate education quality improvement (Republican, 2020). In addition, as described in Figure 6, the author designed a more complex and varied IST governance in terms of the types, approaches, and resources used for teacher SD.



Figure 6. IST Model for SD Teachers

Figure 10 provides various types, techniques and materials for IST that can be delivered to SD teachers to develop the capacity and professionalism of work and teacher leadership potential. Thus, these will ease the related parties to organize IST in a sustainable, fair, and integrated manner with the support of digital-based platform technology. Further, it will be facile for teachers to access, register, participate, join, document IST activities as long as the individuals are teachers or teachers with additional responsivities as school principals or leaders of colleagues at school.

CONCLUSION

A solution suitable for the current conditions is IST governance supported by a sustainable, equitable, and integrated digital platform. Additionally, as an effective method to cope with IST, which is still in extreme conditions, between groups of teachers who have never been and groups of teachers who have participated repeatedly to be included in the normal curve with a frequency of minimal 3-4 times activities as long as the person concerned is a teacher or a teacher who have

leadership potential in schools as well as teachers who become the leaders of their colleagues. In-service teacher' programs at the elementary level should identify and implement the best in-service practices within the nation and across the globe. Separate platforms should be created to recognize and appreciate the best teachers in the country.

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