



Key Elements of Effective Mandatory Professional Development Programs

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Mandatory professional development (PD) programs are prevalent in the system despite research evidence of its weakness in changing teachers' actual classroom practices. There is no coherent understanding of what makes mandatory PD programs effective. We accessed 23 articles from three databases using the Preferred Reporting Items for Systematic Reviews and Meta-analysis to develop a knowledge base of mandatory PD. We explored how mandatory PD programs have been researched and conceptualised, emphasising what key elements support teachers' implementation of their acquired knowledge and skills. We developed a framework for designing a mandatory PD program with integrated system-level and school-level extended programs to ensure its effectiveness. Our findings expand Desimone's elements of effective PD to include school-extended elements such as opportunity and autonomy to implement, monitoring and evaluation mechanisms, and support and resources for teachers. The framework has implications for articulating policy, improving mandatory PD practices, and theoretical understanding of effective mandatory PD programs.

Keywords: professional development (PD), mandatory PD, elements of PD, effective PD, professional development programs

INTRODUCTION

The use of mandatory professional development (PD) programs, also known as centralized, conscripted, formal, or government PD programs (Rahman, 2016), is highly prevalent in many educational systems. This type of PD is often used for optimizing limited resources available (Tanang & Abu, 2014) and for ensuring uniformity of training even with the absence of teacher motivation to upskill themselves (Gavora,

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2011). Although any form of PD program aims to facilitate teacher learning, an active process in which teachers engage in activities that lead to a change in beliefs, perceptions, views, knowledge, and teaching practices, the use of mandatory PD programs has received considerable critical attention because it often does not suit teachers' needs (Ross & Bruce, 2007). It offers generic knowledge without further support for changing teachers' practice (Cole et al., 2012), and it disregards teachers' motivation and position as experienced learners (Hunzicker, 2010). Mandatory PD programs are also closely associated with an authoritarian perspective where experts deliver a set of knowledge (Rahman, 2016), assuming that teachers have the same learning needs (Carlyon, 2015; Teng & Alonzo, 2023). It is often viewed as an ineffective series of activities imposed on teachers with minimum impact on their learning or classroom practices.

Despite the criticisms of using mandatory PD programs, it is still one of the most common approaches. To address the criticisms above and to ensure that mandatory PD programs are designed and enacted to enhance teaching effectiveness, we aimed to develop a collective knowledge that will extend our understanding of the characteristics of effective mandatory PD programs, where teachers apply the content learned and skills acquired to improve their practices. We explored the literature from the last 10 years to revisit various mandatory PD programs reported in peer-reviewed journals, including their conceptualization, key elements, and factors influencing their effectiveness. This insight is built upon Desimone's (2009) work, which summarises five key features of an effective teacher PD program generated from the literature. The work of Desimone provides a solid knowledge base for developing effective PD programs. She outlines five key elements, including content focus, active learning, coherence, duration, and collective participation, that define effective PD design. These five elements have been used extensively to design any form of PD, including mandatory PD programs (Avidov-Ungar & Herscu, 2020; Sukri & Yunus, 2018).

Based on our extensive reading of the literature, no newer consensus has been presented after Desimone's (2009) work regardless of critiques on its acceptability (Opfer & Pedder, 2011) or the lack of inclusion of mandatory PD programs (Kennedy, 2016). Hence, insight from our study can result in a greater understanding of mandatory PD designs where ideas of improvement can be generated. To achieve this aim, we answered the following questions: 1) How is mandatory PD program researched and conceptualized in the literature? and 2) What are the key elements of an effective mandatory PD program?

Literature Review

The term mandatory PD is used to refer to the learning process, such as conferences, seminars or workshops among members of a work team at a course, college or training institution (Harwell, 2003), that positions teachers as passive participants with minimal interaction to support their learning (Kennedy, 2016). On the contrary, a voluntary PD program is deemed more effective because they engage teachers in different activities embedded in their everyday work lives (Bray-Clark & Bates, 2003). This view of PD programs suggests that mandatory PD programs are less effective than voluntary PD

programs. However, there are reports that individual factors relating to teacher motivation (Smith et al., 2003) and program design and structure (Dewith, 2014; Ekawati & Kohar, 2016; Habalo, 2017; Oo et al., 2023) contribute to the effectiveness of mandatory PD programs.

Obligatory participation characterizes mandatory PD programs, where teachers' attendance is compulsory (Bredeson, 2000; Mahler et al., 2017). This problem is particularly pointed out by Kennedy (2016), where "attendance is mandatory, but learning is not" (p.973). Despite the criticism for mandatory PD programs, it is widely implemented in many education bureaucracies due to limited resources available for teacher learning (Tanang & Abu, 2014) and to ensure uniformity of content (Heyward et al., 2018; Thair & Treagust, 2003). Accordingly, teachers in China (Li, 2016; Lu et al., 2019), Indonesia (Ashadi & Rice, 2016; Heyward et al., 2018), and in some parts of the Netherlands (Janssen et al., 2013) are mandated to attend nationwide PD programs to align their quality development in compliance to national educational goals. Features of the mandatory PD programs in these countries showed a similarity where the given program engages teachers in hour-long seminars on consecutive days. Mandatory PD programs are also implemented to close the national educational achievement gap between different areas (Ashadi & Rice, 2016; Lu et al., 2019) and increase teacher literacy in particular teaching areas (Mushayikwa & Lubben, 2009; Wang et al., 2017). The content is built around the national curriculum and directed towards improving teacher classroom practices that support student learning.

The success of mandatory PD programs is largely dependent on contextual factors. In three countries in Sub-Saharan Africa, voluntary PD programs did not work because both local and regional authorities did not have the capacity to run (Kruijer, 2010). The government's withdrawal from centralized educational programs exacerbated the poor support of the education system. Teachers indicated their need for support for centralized teacher development activities at the national level. In Indonesia, the regional teacher learning community has been shelved for decades because of its incapability to perform its function (Bjork, 2003). Teachers are reluctant to embark on learning programs that are not mandated and do not reward them with career opportunities such as a promotion.

Often in some places, the regional authorities cannot run local PD program activities that are more contextualized and likely to meet the teacher's needs (Schleicher, 2011). In the Netherlands, beginning teachers tend to depend on government support in preparing to teach students from lower socioeconomic status (Gaikhorst, et al., 2017). Regional and local PD programs that were initiated voluntarily lack structure and did not help teachers to deal with students who required special needs/attention. In Pakistan, teachers also need a government-supported PD program because they have compassionate grounds for becoming teachers but are not rewarded with adequate salaries to afford costly private PD program activities (Alam & Farid, 2011). It was apparent that the low-cost and uniform content of mandatory PD programs ensure sustainable support for teacher development activities.

METHOD

To answer our research questions, we conducted a literature review search and analysis from three databases according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009), a widely used framework for reporting and synthesising literature review. We followed the steps described below.

Data Sources and Literature Search

We conducted an initial search of the literature through three databases: ProQuest, Scopus, and Web of Science. The time frame for this review was from January 2009 to June 2021, limiting to the period when Desimone (2009) established the key features of PD programs, namely, content focus, active participation, coherence, duration, and collective participation. The combinations of keywords professional development, professional learning, mandatory, compulsory, and teacher were used to identify the papers in every database. The detailed search strategy syntax used for each database are shown in Table 1. Articles included in this review are those published in peer-reviewed English journals only. There were no restrictions regarding the design of studies: quantitative, qualitative, or mixed method.

Study Selection

The literature search based on the inclusion/exclusion criteria identified 543 articles (see Figure 1). After removing the duplicates, the titles and abstracts of the articles were reviewed to see if they met the criteria. To ensure that we have included all possible articles, we also searched in Google Scholar and extracted five articles that are not on our list. As the purpose of the review is to help contextualize the key features of the mandatory PD program for teachers, the following criteria were used: school setting, English paper only, peer-reviewed only, and empirical study. After applying these criteria, 98 articles remained for full-text review.

Table 1
Search strategy syntax

Database	Syntax	Number of Articles
ProQuest	noft ("Professional development" OR "professional learning" OR "teacher learning" OR "teacher development") AND noft(mandatory OR conscripted OR compulsory OR centralized OR government) AND noft(teacher)	198
Web of Science	TOPIC (("Professional development" OR "professional learning" OR "teacher learning" OR "teacher development") AND (mandatory OR conscripted OR compulsory OR centralized OR government) AND (teacher))	154
Scopus	TITLE-ABS-KEY (("Professional development" OR "professional learning" OR "teacher learning" OR "teacher development") AND (mandatory OR conscripted OR compulsory OR centralised OR government) AND (teacher) AND PUBYEAR > 2010 AND (LIMIT-TO (DOCTYPE, "ar"))	191

Accessing Full-Text Articles

After the initial screening, the 98 relevant articles were downloaded for subsequent full-text article review. These articles were reviewed to find clear information about the mandatory PD program. Papers that did not clearly articulate PD program for teachers

and full texts are presented in another language were excluded. Following the same shortlisting and consensus-building process above, 23 articles remained for qualitative evidence synthesis.

Coding and Reporting the Final Results

Three stages of thematic synthesis in systematic reviews highlighted by Thomas and Harden, (2008) were used. First, we employed an inductive approach by coding line by line the elements of effective mandatory PD programs described in the article. To increase the rigor of our coding, two authors worked on the same papers and compared their outputs afterwards. Any inconsistencies were discussed and negotiated until a consensus was reached. Second, descriptive themes were identified from those elements described in the reviewed articles. Finally, all of us reviewed the descriptive themes to generate analytical themes. Then we completed the analyses by grouping the final list of elements based on their similarity. The results of the thematic synthesis are presented in the following section.

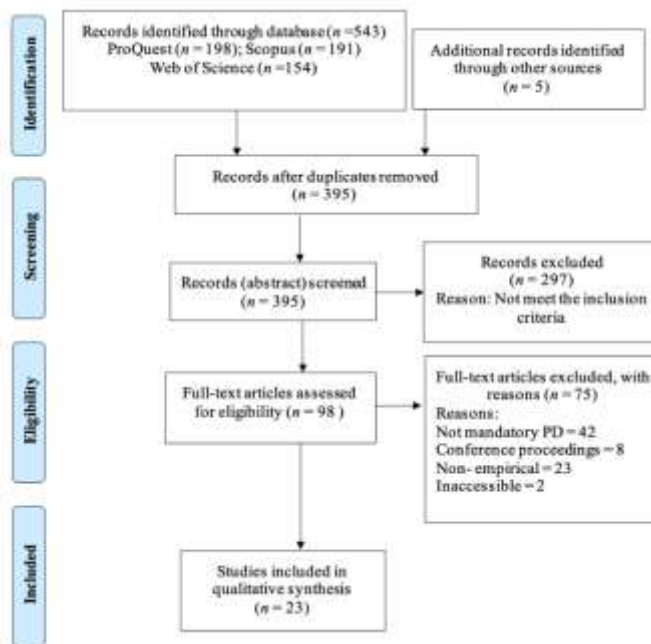


Figure 1
Study selection flow diagram

FINDINGS

Results are presented following the order of our research questions.

Research and Conceptualization of Mandatory PD Programs

Most studies reporting mandatory PD programs were conducted in Indonesia (26.09%), the USA (13.04%), Israel (8.70%) and the rests are from other countries. In terms of

school setting, nine studies included primary school teachers, three used secondary school teachers, two were in both settings, and nine did not specify. Almost half of the studies used ethnography (47.83%), followed by quasi-experimental (34.78%), descriptive (26.09%), and correlational (4.35%). Data collection methods were mainly surveys (60.87%), interviews (30.43%), personal reports (13.04%), document analysis (8.70%) and focus groups (4.35%). The duration of the delivery of the mandatory programs varies from a few days (Rahman et al., 2015 – 10 days), weeks (Lu et al., 2019 – two weeks), to the sustained periodic program over many years (Sukri & Yunus, 2018 – one year; El-Hamamsy et al., 2021 – two years; Luís, 2018 – five years).

In terms of purpose, mandatory PD programs are implemented primarily to support national reforms (Avidov-Ungar & Herscu, 2020; El-Hamamsy et al., 2021; Gökmenoğlu & Clark, 2015), respond to national issues on low student achievement (Sukri & Yunus, 2018), ensure equity (Lu et al., 2019), upskill teachers or part of on-going mandated professional development program (Gero, 2015; Henry & Namhla, 2020), and respond to the inadequacy of pre-service teacher education to prepare beginning teachers (Main & Pendergast, 2017). There are also mandatory PD programs developed and implemented by schools to respond to the collective needs of teachers (Luis, 2018).

There are many terminologies associated with mandatory PD programs. These include nationwide (Grace et al., 2015), state-wide (Li, 2016), compulsory (Avidov-Ungar & Herscu, 2020; Gökmenoğlu & Clark, 2015), and government-based training (Main & Pendergast, 2017; Zein, 2016). In terms of its theoretical underpinnings, only seven studies used specific theories. The choice of theory depends on the aim of the study. Main and Pendergast (2017) based their study on Desimone's five key features to explore the effectiveness of upskilling classroom teachers and building teacher efficacy. Janssen et al. (2013) used Ajzen's theory of planned behaviour to engage teachers in reflection to formulate learning goals to improve performance. Smith (2014) used the community of inquiry (COI) framework to guide the design and approach of online mandatory PD programs within the intersection of three types of presence: teaching presence, social presence, and cognitive presence. Grace et al. (2015) used Carr and Kemmis's (1986) broad view of action research as an approach to help teachers apply their knowledge and skills from a mandatory PD program, while Henry and Namhla (2020) used Bronfenbrenner's ecological systems theory to explore factors that contribute to teacher learning.

The 23 studies were conducted for various aims. The most common is to evaluate the implementation of mandatory PD programs (Gökmenoğlu & Clark, 2015; Grace et al., 2015; Yadav et al., 2016; Baker et al., 2017; Henry & Namhla, 2020; Lu, et al., 2019; Othman & Masum, 2017; Li, 2016; Main & Pendergast, 2015; Rahman et al., 2015), test the viability of an alternative PD program (Smith, 2014; Luís, 2018; El-Hamamsy et al., 2021; Ekawati & Kohar, 2016), explore the beliefs, perceptions and attitudes of teachers in the efficacy of existing PD programs (Gero, 2015; Sukri & Yunus, 2018; Zein, 2016), and examine the experiences of teachers regarding the activities of continuing professional development programs (Avidov-Ungar & Herscu, 2020; Avidov-Ungar, 2020). Other aims include exploring the beliefs and perceptions of

teachers on the efficacy of PD programs (Janssen et al., 2013), discussing problems and issues encountered in the implementation of PD programs (Spatay et al., 2020), investigating the professional development practices of teachers (Tanang & Abu, 2014), and conducting needs analysis about the skills of teachers necessary for building a teacher education program (Ragawanti, 2014).

Key Elements of Effective Mandatory PD Programs

The elements of effective mandatory PD programs were identified based on the reported positive outcomes by individual studies reviewed. For example, it has been reported that teacher participation in mandatory PD program changed teachers' beliefs and attitudes (Baker et al., 2017; Janssen et al., 2013; Li, 2016), conceptions of effective discipline-specific practice (Ekawati & Kohar, 2016), and increased their understanding of effective practice (Spatay et al., 2020). In addition, participation in mandatory PD has increased their affective skills, including confidence (Li, 2016; Pendergast, 2017) and self-efficacy (Baker et al., 2017; Othman & Masum, 2017). Some studies have reported improved teachers' knowledge and practices (Rahman, 2015; Zein, 2016), increased adoption and implementation of learned skills (El-Hamams et al., 2021), which resulted in improvement in actual performance and expertise (Janssen et al., 2013) and increased student outcomes (Baker et al., 2017; Grace et al., 2015; Lu et al., 2019). It was also reported that a well-designed mandatory PD program developed teachers' positive perception of its coherence and relevance (Main & Pendergast, 2017; Othman & Masum, 2017; Tanang & Abu, 2014), which has resulted to their increased motivation to participate and actively engage in succeeding PD programs (Avidov-Ungar, 2020; Baker et al., 2017; Gero, 2015; Grace et al., 2015; Rahman, 2015).

The five critical elements identified by Desimone (2009), content focus, active learning, coherence, duration, and collective participation, are common features identified in the papers we reviewed. Although it was not indicated that these features should come in order, we listed our findings from the most common feature.

First, most studies indicated the strong role of content focus in ensuring the effectiveness of mandatory PD programs (Gökmenoğlu & Clark, 2015; Smith, 2014; Tanang & Abu, 2014; Yadav et al., 2016). PD program's content consists of helpful information to improve teacher knowledge, which will impact their instructional practice and student learning. The core feature of every PD program activity is about their objectives to influence teachers and students as the end-users. Teachers perceive content focusing on useful information to improve teacher knowledge to be effective (Rahman et al., 2015; Yadav, et al., 2016). One successful design in mandatory PD is demonstrated in the study of Grace et al. (2015).

Secondly, coherence of mandatory PD program enhances their effectiveness (Gero, 2015; Li, 2016; Main & Pendergast, 2017; Sukri & Yunus, 2018). This refers to the alignment between PD program activities and teacher beliefs, school goals, or government reforms and policies. It is a fundamental feature in a teacher PD program affecting teacher attitudes toward any given program and plans related to implementing newly obtained knowledge. The alignment of mandatory PD programs to the current issues in education contributes to its effectiveness (Li, 2016). In addition, the alignment

of the mandatory PD programs to national education agenda promotes higher motivation of teachers to engage in them (Gero, 2015; Sukru & Yunus, 2018).

Thirdly, the use of an active learning strategy in mandatory PD programs increases teachers' engagement (Tanang & Abu, 2014), contributing to its effectiveness. Active learning design that allows teachers to socialize and learn from sharing their experiences is desirable (Avidov-Ungar & Herscu, 2020). Teachers prefer to learn in workshops with participatory learning experiences (Tanang & Abu, 2014). Mandatory PD programs can be an avenue to build cooperation among teachers from other schools (Avidov-Ungar & Herscu, 2020; Tanang & Abu, 2014). These programs can be designed to provide meaningful discussion, planning, and practicing that reflects their daily work.

Fourth, teachers' collective participation (Janssen et al., 2013; Main & Pendergast, 2017) facilitates significant learning. The gathering of PD program participants is based on similar teaching subjects, grades, schools, districts, or years of teaching experience boosts mutual interaction that advances the learning process for participants. Clusters of teachers with similar characteristics and beliefs can be identified to ensure that the design of interventions are specific to each cluster (Janssen et al., 2013, p. 260). Such grouping may promote the effectiveness of mandatory PD programs. Similarly, Main and Pendergast (2017) argue that teachers can discuss concepts and skills with colleagues they work closely with. Through collective participation, teachers can carry out 'collaborative planning' and 'sharing and networking' (p. 763). It appears that collective participation is intertwined with active learning teachers with similar characteristics find it easier to learn together.

Fifth, duration and timing of PD programs are critical. Engagements distributed over a particular period being more effective (Ekawati & Kohar, 2016; El-Hamamsy et al., 2021). PD programs require a sufficient time for teachers to build their capacity and change pedagogical practices. The study by El-Hamamsy et al. (2021) showed that two-year mandatory PD was proven effective when spread in different training sessions over the whole school year because "teachers would have time to introduce the content into their practices and reflect on it" (p. 5084). This is consistent with the study of Ekawati and Kohar (2016) that some follow-up workshops effectively give spaces for teachers to discuss experiences, success, difficulties, and other problems related to their classroom implementation. These studies align with the notion that multi-phased activities (Borko, 2004) may be offered in a mandatory PD, such as classroom observations (Goldschmidt & Phelps, 2010), coaching and mentoring (Burns & Lawrie, 2015), or lesson development (Kang, et al., 2013). Well-planned sustained mandatory PD could change teachers' understanding and behavior towards applying what they have learned (Baker et al., 2017).

In addition to these elements consistent with Desimone's work, other emerging key features that relate to contextual factors contribute to the effectiveness of mandatory PD. First, the design of mandatory PD programs is critical for applying knowledge and skills learned. A sequential approach was demonstrated to be a good model, where teacher learning is extended in their respective schools after their initial engagement in

large-scale PD (Othman & Masum, 2017). This approach provides opportunities for teachers to try implementing their new knowledge and skills while drawing from their autonomy. Second, a monitoring and evaluation mechanism should be in place (Grace et al., 2015; Sukri & Yunus, 2018) where teachers receive constructive feedback when implementing new practices (Grace et al., 2015) to improve further. This mechanism could be through classroom observation (Gero, 2015), either formally or informally. The opportunity for teachers to implement new approaches with trial and error and the opportunity to receive feedback enhances the effectiveness of mandatory PD programs (Luis, 2018; Sukri & Yunus, 2018). The involvement of school leaders in this process is critical and is seen to benefit teachers, not only in getting feedback but also in clarifying some issues related to the actual classroom implementation of the mandatory PD content. Third, support and resources needed by teachers in the actual implementation are needed to ensure the application of PD content. These include financial, moral, infrastructure (Tanang & Abu, 2014) and learning and teaching resources (El-Hamamsy et al., 2021). The provision of supporting and enabling mechanisms in the school, including school policy and resources (El-Hamamsy et al., 2021; Grace et al., 2015; Main & Pendergast, 2017), is seen to increase the likelihood of implementing the new knowledge and skills learned.

Finally, one critical element for successful mandatory PD program is how the whole program taps on teacher affective skills. Specifically, although mandatory PD is criticized for disregarding teacher motivation, the design and processes could build teachers' extrinsic motivation to realign their perspectives and views into thinking that the program is something they need (Grace et al., 2015). Effective mandatory PD programs can also enhance teacher motivation if the contents relate to teacher orientation. Also, teachers' intrinsic motivation is developed from regular support. Apart from motivation, the mandatory PD program should draw on teacher agency and autonomy. Providing activities that allow teachers to act purposefully in response to the program contributes to its successful implementation (El-Hamamsy et al., 2021; Janssen et al., 2013; Smith, 2014). There is also evidence that allowing teachers to experiment with new strategies after engaging in mandatory PD programs could lead to successful content uptake (Grace et al., 2015).

DISCUSSION

This review sought to develop a collective knowledge about mandatory PD programs. Answers to our research questions revealed significant insights into how it is researched, conceptualized, and implemented. Although the 23 articles used the terminology and its related concepts extensively, the conceptualization of mandatory PD is diverse in terms of its purpose and theoretical underpinnings. The weak theoretical conceptualization is evident, with only seven studies explicitly using theories to guide their research. Some studies used psychological theories (Janssen et al., 2013; Henry & Namhla, 2020), while others used curriculum design theories (Smith, 2014; Main & Pendergast, 2017), and research theory (Carr & Kemmis, 1986). The competing theoretical frameworks used warrant further exploration of this construct.

The most significant finding of our paper is the intersection of teacher motivation, contextual factors, and PD design, which makes mandatory PD programs effective in supporting teachers to learn and acquire new knowledge and skills and implement them to improve their practices. We have extended Desimone's five elements of effective PD programs. Although these five elements are critically important and are evident in most studies, they are not enough to ensure the effectiveness of mandatory PD programs. There is an interplay between the key features and the rationale for using mandatory PD programs (Avidov-Ungar & Herscu, 2020; Sukri & Yunus, 2018), teacher motivation (Avidov-Ungar & Herscu, 2020; Tanang & Abu, 2014)) and needs (Bauer et al., 2020; Ross & Bruce, 2007), or availability of support and resources (Asih et al., 2022; Grace et al., 2015; El-Hamamsy et al., 2021; Tang & Abu, 2014). The content focus of mandatory PD plays a pivotal role in teachers' positive changes, but if this content does not address the needs of teachers, they will perceive the PD to be ineffective (Avidov-Ungar, 2020; Baker et al., 2017; Rahman et al., 2015; Zein, 2016). In addition, even if the content focus of the mandatory PD program is aligned with the aims of national reform and is perceived by teachers to be relevant to their needs, but the contextual factors, including classroom set-up, workload, and resources do not support the implementation of the content learned, teachers will not implement any change in their practices (Rahman et al., 2015; Tanang & Abu, 2014; Zein, 2016).

Other key features of mandatory PD programs are highlighted in the articles we reviewed. First, mandatory PD programs with extended duration sustain teachers' motivation to apply the knowledge and skills in their respective classrooms (Ekawati & Kohar, 2016; Main & Pendergast, 2017). The principals' support for teachers and provision of resources are critical for the success of mandatory PD programs. Second, teachers' involvement in program design and delivery increases the acceptability and relevance of the program (Grace et al., 2015; Rahman et al., 2015). Onsite modification of the program based on teachers' feedback increases teachers' positive perception of the mandatory PD programs. Third, the availability of spaces for active learning motivates teachers to participate and explore how the PD content can be applied in their classrooms (Janssen et al., 2013; Li, 2016; Luís, 2018).

Based on our understanding of the intersection of teacher motivation, contextual factors, and PD program design, we developed a framework for effective implementation of mandatory PD programs. We highlight the elements required post-engagement in the mandatory PD program. The elements from our review are divided into two categories: system-delivered PD and school-extended activities, as summarized in Figure 2. Desimone's five key elements, content focus, active learning, coherence, duration, and collective participation, are critical for designing and implementing mandatory PD (Main & Pendergast, 2017). These elements are evident in most studies reported to draw teachers' motivation and the likelihood of a positive perception of the benefits of mandatory PD programs (i.e., Janssen, et al., 2013; Main & Pendergast, 2015; Ragawanti, 2014; Smith, 2014; Yadav, 2016). In fact, 19 of the 23 studies cited one or more of these elements as critical factors for mandatory PD programs. What is evident in the literature is that these elements guide the initial approach to knowledge and skills acquisition, but they do not guarantee the actual implementation of that knowledge and skills (Rahman, 2016; Tanang & Abu, 2014; Zein, 2016). A mechanism to monitor and

support teachers' actual implementation of the new knowledge and skills is needed to attain the overall aim of the mandatory PD programs.

Various studies cited the need for an extended program in schools (Ekawati & Kohar, 2016; Grace et al., 2015; Sukri & Yunus, 2018). This program would provide opportunities and support for teachers to implement their acquired knowledge and skills. The extended program can be an added source of teachers' motivation to implement the knowledge or skills they learn from the mandatory PD program. From the framework, a mandatory PD program designed externally by the school will only be effective if school leaders implement an extended program in schools. This design is consistent with Grace et al. (2015) findings that a mandatory PD program is effective if there is time for teachers to reflect if the content of the mandatory PD program is relevant to their context and then give them autonomy to experiment to implement new knowledge and skills. The role of school leaders is critical in this aspect. They have to build a system for monitoring and evaluating teachers' implementation in their respective classrooms (Gero, 2015; Othman & Masum, 2017; Yadav, 2016). This system will provide critical information for school leaders on teachers' adoption of the content of mandatory PD (El-Hamamsy et al., 2021).

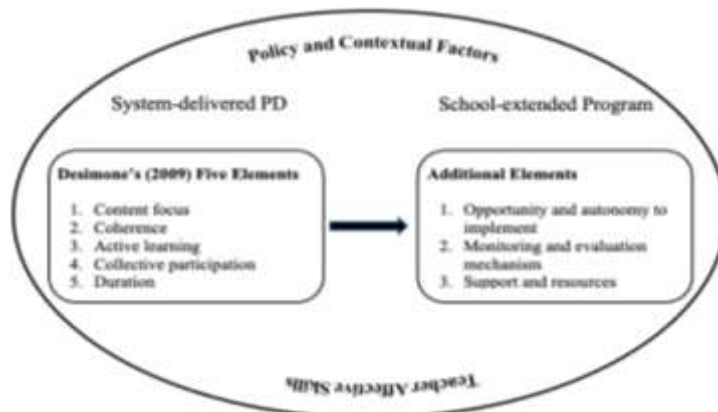


Figure 2

A mandatory pd design with a system approach and school-extended school program

The interactions between the system-delivered PD program, with all the elements cited by Desimone, and the school-extended program, with elements of opportunity and autonomy to implement monitoring and evaluation and support and resources, suggest that a mandatory PD program is not a one shot-approach. After engaging in a mandatory PD program, teachers must receive support to implement what they have learned in their respective classrooms. The opportunities for teachers to apply their learned knowledge and skills (Sukri & Yunus, 2018) and engage them in critical reflection after identifying what works well would increase the likelihood of sustained application of new knowledge and skills (Janssen et al., 2013).

CONCLUSION

In this paper, we synthesized 23 articles that reported how mandatory PD programs are researched, conceptualized, and designed to contribute to the scholarship of this type of PD. Although the use of mandatory PD programs is widespread because of its cost-efficiency and usability for uniformity of both content and delivery with a large number of teachers, the number of reported research is relatively low. It is also evident that its conceptualization and theoretical support are not clearly articulated. To ensure that teachers will implement the knowledge and skills they have learned from mandatory PD programs, this study proposes a two-stage approach with a system-delivered PD program following the elements of an effective PD program, and followed by a school-extended program, with elements of opportunity and autonomy to implement monitoring and evaluation and to provide support and resources. Also, our findings highlight that the design of mandatory PD programs should be underpinned by the intersection of teacher motivation, contextual factors, and PD design.

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