

Article

Understanding School Middle-Leading Practices: Developing a Middle-Leading Practice Model

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Abstract: School systems in Australia, and internationally, are focused on improving classroom teaching and learning to enhance student outcomes. Middle leaders (MLs) are increasingly required to lead school-based development initiatives to improve classroom practices. Informed by previous research on middle-leading and the theory of practice architectures, a survey instrument was created to understand who Australian school MLs are (n = 199) and ascertain their perceptions of the practices central to leading teaching and learning in their school sites. Through descriptive, exploratory, and confirmatory factor analyses, this paper reports on the reported practices of Australian MLs, and, through the analysis, a revised ML practice model is proposed. The results confirm that ML practices are orientated to the people they lead in their school site, who they support, collaborate with, and advocate for, with practising *leading upwards* to the school principal identified as an important ML practice.

Keywords: middle leadership; practice model; school leadership; factor analysis; practice architectures



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1. Introduction

For over a decade, Australian school systems have provided schools with greater autonomy, but also with greater accountability measures, with states, territories, and federal government simultaneously driving for school improvement [1]. The combination of these factors has led to an increase in school leadership roles and responsibilities, resulting in a growth of formal school leadership positions [2]. Simultaneously, to meet school improvement requirements, there has been a move towards implementing school-based teacher professional learning (PL) in Australia [3,4] and internationally [5], with site-based PL being the model of choice for some school systems and their leaders [6,7]. The duality of increased school formal leadership positions and the drive for improvements in classroom teaching and student learning has led to an increase in school middle leadership positions in Australian schools [8,9].

MLs are classroom teachers who also have a formally acknowledged school leadership role and are generally perceived as quality classroom practitioners with a broad sphere of influence, working with and between the principal and school executive leaders and the classroom teachers they lead [4,10]. The positioning, expertise, and work of MLs means that they often have a deep understanding of their colleagues' professional expertise and teaching practices, the school's policy directives, and student learning needs, resulting in MLs being identified as an important lever for improving classroom teaching and learning practices. The increase in school middle leadership positions, coupled with their potential to positively impact classroom practices [4,8], has resulted in a greater interest by education

governing bodies and school systems in middle leadership roles, responsibilities, and practices, and the support and professional learning that MLs require [10,11]

The Middle Leading Practices in Schools Survey (MLPSS) is an empirically and theoretically informed, author-developed, quantitative survey, that aims to provide an understanding of who Australian school MLs are, and their curriculum and pedagogical leading practices that they perceive as central to their work. In light of the preceding points, understanding middle-leading practices via the MLPSS addresses the following gaps in the research. First, there is an overreliance on literature reviews and small qualitative studies to understand the work and practices of MLs; thus, there is a need for a large-scale quantitative study [12]. Second, Australian middle-leading research has currently not crossed state, sectorial, or school context boundaries. Third, currently, there are no validated instruments that focus on investigating MLs' practices, and finally, in Australia, the Australian Institute for Teaching and School Leadership (AITSL) has proposed that middle-leading practices can be categorised within the three domains of Leading Teaching and Learning, Collaboration and Communication, and Managing and Facilitating [11], it is these three categories that are interrogated empirically in this study via the Middle Leading Practices in Schools Survey (MLPSS).

Through the responses of 199 Australian MLs to the specifically designed instrument (MLPSS), an understanding of who Australian school MLs are, and the perceptions of practices central to their work, is presented.

The research questions were as follows:

1. What are the dominant demographic profiles of the Australian school MLs who completed the MLPSS survey?
2. What practices do Australian school MLs perceive that they enact in leading curriculum and pedagogical development in their school sites?

Informed by an exploratory and confirmatory factor analysis of the MLPSS data, this paper proposes a revised middle-leading practice model to further investigate middle-leading practices.

2. Theoretical Background

2.1. ML Research

MLs have been variously defined and described in the educational and research literature, often differing in relation to the function and scope as set out by different jurisdictions, sector roles, policy guidelines or initiatives, and national contexts [13–15]. For example, Australian researchers [16] defined MLs as “formally appointed leaders, with accountable responsibilities, who operate between senior leaders and teachers, and lead in order to positively impact teaching and student learning” (p. 283). Grootenboer [15] argued that middle-leading is multi-dimensional and multi-directional, with MLs having the dual roles of being school leaders and classroom teachers, whereby their classroom currency is considered an important lever for building teacher capacity and influencing the quality of school teaching and learning change initiatives. At their core, however, different definitions highlight the duality of middle-leading practices, encompassing working with their teaching colleagues, and the school senior leaders, to influence and impact teaching and learning in classrooms [16,17].

Research suggests that some MLs may be more comfortable managing rather than leading [18,19], and their leading is different to that of principals [15] as it is practised primarily amongst their teaching colleagues [16] with a preference to lead in their area of responsibility rather than the whole school [20]. Currently, there is limited direct evidence of MLs impacting student learning [16]; however, there is agreement on the potential of MLs to have an educational impact on teaching and learning in classrooms [19,21].

Internationally, there is an increasing interest in ML roles, responsibilities, and practices across countries and school sectors (see, for example, in Sweden [22]; Hong Kong [21]; New Zealand [23]; England [24,25]). Research on ML practices has identified potential practices that may positively impact teachers' classroom teaching and students' learning. These

practices include MLs closely collaborating with principals and teachers to ensure shared understandings, [4] and an explicit focus on teaching and learning in the school [26]. It has been suggested that MLs may impact their teacher colleagues by translating school system policy directives, and school leaders' expectations and curriculum changes, to facilitate successful classroom implementation [27]. MLs capitalising on their position 'in the middle' and the relational nature of their work has been hypothesised to create a positive and collaborative school culture that is focused on teaching and learning [21]. It is posited that MLs may positively impact classroom practice by creating and sustaining the conditions that lead to improved classroom practices through the sharing of resources with the support of, and through collaboration with, colleagues [21,28,29]. What is important to understand is whether these identified impactful ML practices are those that are perceived by MLs as part of their everyday work, which is the focus of this study.

2.2. Middle Leader Practices (For a More Comprehensive Discussion of Middle-Leading Practices See [15])

While there is a growing number of studies focusing on school middle leadership, and epistemological aspects like middle leaders' knowledge and beliefs [30], the specific emphasis in this article is on ML practices. This is an intentional ontological shift that centres this study on the (middle) leading that occurs in school sites, and the happening of middle-leading as it unfolds in time and space. In this sense, middle-leading is experiencing a "practice turn" [29] that centres the sociality of educational middle-leading, and its phenomenological nature, as individuals encounter one another as interlocutors through their practices in particular sites [31]. The focus on practices, as distinct from designated roles, is important since, although a practitioner's assigned role might influence or prefigure practices (the discourses used, what activities are performed, and how people might relate to others) in a generic sense, what 'actually' happens on the ground in the reality of activity-time space cannot be pre-determined [15,32].

After an extended period of empirical research investigating the practices of middle leaders across several countries (including Australia, Canada, New Zealand, and Sweden), research [29] identified three broad and related practices undertaken by middle leaders:

1. leading and teaching;
2. managing and facilitating;
3. collaborating and communicating.

These coalesce in the project of leading curriculum and professional development in schools and result in the following summary:

The practice of middle leading involves engaging in (simultaneous) leading and teaching by managing and facilitating educational development through collaborating and communicating to create communicative spaces [31].

It was these three broad practices (See Table 1) that informed the AITSL middle leader practice categories [11] and were used to theoretically structure the Middle Leading Practices in Schools Survey (MLPSS).

Table 1. Overview of middle-leading couplings of key practices ([12], p. 5).

Practice Coupling	Description
Leading and teaching	Leading both curriculum and pedagogical development of other teachers and teaching their own classes. Includes providing professional learning for other teachers.
Managing and facilitating	Managing individual and collective spaces for curriculum and pedagogical development, e.g., moderation meetings that require 'management' practices to organise time and place, and facilitation of professional learning of others.
Collaborating and communication	Collaboration and communication with senior leaders and teachers on actions needed to achieve school goals.

2.3. Middle Leader Practice Models

Currently, there are no instruments that focus on understanding ML practices; however, there is a proposed model of MLs' roles and two models focused on ML practices. DeNobile [33] developed a *Middle Leadership in Education (MLiE)* model based on a synthesis of findings of literature from 1990 to 2017. The model did not focus on ML practices per se, but rather on six identified middle-leadership/managerial roles (*student focus, administration, organisation, supervisory, staff development and strategic activity*). De Nobile delineated a range of factors that influence ML work and potential ways MLs may influence school outcomes. A proposed model of ML instructional leadership practices, based on a review of 147 peer-reviewed journal articles, identified five ML practice domains (see Table 2) [34]. Additionally, through a scoping literature review, five ML instructional leadership practices were identified that may positively impact student learning outcomes [35] (see Table 2).

Table 2. Overview of proposed middle-leading practice models.

Name of the Middle Leader Practice Model	ML Instructional Leadership Practices	ML Practice Domains	Middle Leading Practices in Schools Survey (MLPSS)
Author(s)	Tang, Bryant and Walker (2022) [34]	Highfield and Rubie-Davies (2022) [35]	Grootenboer, Edward-Groves, Rönnerman (2020); AITSL [12]
ML practice model informed by	Systematic literature review	Literature review	Small-scale empirical research
Identified ML practices	<ul style="list-style-type: none"> Promoting teacher learning and professional development Managing and facilitating teaching and learning Defining departmental purpose and direction Creating and maintaining positive culture Developing and improving curriculum 	<ul style="list-style-type: none"> Collegial working environment Focus on student academic results Management of resources Goals and expectations Positive learning environment for student and teachers 	<ul style="list-style-type: none"> Leading teaching and learning, Collaboration and communication Managing and facilitating

Table 2 summarises the two ML practice models and the MLPSS survey instrument used in this study; similarities between the ML practice models include the following:

- (i) MLs focussing on leading teaching and learning;
- (ii) MLs developing and supporting others;
- (iii) MLs creating conditions for individual and team success.

2.4. Focus of the Study

To summarise, given the potential of MLs to impact their teaching colleagues' classroom practices and, in turn, student learning, coupled with school and systemic desires for middle leaders to lead school teaching and learning initiatives, there is a need to empirically understand what MLs perceive to be their core practices for leading curriculum and pedagogical development in their school sites and if these align with those practices deemed to positively impact classroom practices.

3. Materials and Methods

The MLPSS was an online questionnaire that was distributed through a wide range of Australian teacher professional learning organisations including the Victorian Department

of Education and Training (via the Victorian Teachers Middle Leader Conference), Independent Schools Queensland, Australian Council for Educational Leaders (a professional body of school leaders), and Catholic Diocese in Queensland, South Australia, and New South Wales. Purposive sampling was employed to ensure middle leaders came from a range of states, systems, and school types, ensuring that the MLPSS was completed by the target population—Australian school middle leaders.

The invitation to participate in the MLPSS survey was distributed via email to the professional learning organisations stated above. The information was then forwarded by email to MLs who were participating in the activities of the organisations. The purpose of the research and the ethical aspects were outlined in the invitation to the participants along with the MLPSS survey link. Online data collection occurred from May to September 2021, with 199 middle leaders voluntarily participating in the survey.

3.1. Measures

While it is usually preferable to use an existing instrument that has been tested and verified, in this case, no suitable survey existed, so the authors developed the survey based on the theoretical framing derived from their previous empirical research, as discussed above. The first part of the MLPSS required middle leaders to provide demographic information including gender, age range, and years of teaching. This was followed by questions about their teaching context (Australian state/territory), school sector (state, catholic, independent), type of school (primary, secondary K-12, other), current leadership position title and years in the position, their academic qualification, and their level of teacher accreditation in reference to *The Australian Professional Standards for Teachers* (APST) (the aim of the APST is to encourage schoolteachers to complete targeted professional learning to improve their practice with the opportunity to be awarded higher teacher accreditation status) [36].

The second part of the MLPSS asked school middle leaders about their specific middle-leading practices based on the three dimensions of middle-leading practice (outlined previously in Table 1). There were nine items for the practice domain of “Teaching and Leading”, seven items for “Managing and Facilitating”, and seven items for “Collaboration and Communication” (see Appendix A). The participants were asked to respond on a 5-point Likert Scale (from 1 (Never) through to 5 (Always)) how often they engaged in a specific middle-leading practice. This was to ensure that the instrument had a phenomenological focus that centred on their practices rather than, for example, their roles, knowledge, or beliefs.

3.2. Data Analysis

To answer the first research question, descriptive statistics were calculated for the demographic items of the MLPSS using SPSS Statistics (Version 27) [37], and, to address the second research question, multivariate data analysis techniques were employed, including exploratory and confirmatory analyses. The first stage of analysis was an exploratory factor analysis (EFA). While the MLPSS was theoretically underpinned by the three middle-leading practice dimensions established empirically [15], it was important to explore the factor structure (middle-leading practice dimensions) according to how MLs responded to the middle-leading practice items [38]. While different practice items were created to reflect specific domains of middle-leading practices, data were first subjected to an EFA to establish the inherent groupings between scale items. These were evaluated statistically and compared to a priori theoretical groupings. The EFAs used principal axis factoring and an oblique (‘oblimin’) factor rotation, due to the expectation that extracted factors (i.e., subscales) would be distinct yet related. The initial EFA was a parallel analysis to determine the number of factors (middle-leading practice dimensions) to retain in the initial stage of the EFA [39]. To explore the structure of the data, and the nature of the factors and item interrelationships, a series of traditional exploratory factor analyses was undertaken to inform an ML practice model of best fit [40].

A CFA was undertaken to test the accuracy of the MLPSS model and to inform potential modifications [41]; the analysis was conducted using jamovi project (2022). To investigate the MLPSS model fit, several statistics were used, including the χ^2 root mean square error of approximation (RMSEA) [42], comparative fit index (CFI), Tucker–Lewis index (TLI), and Bayesian information criterion (BIC) [43]. A reasonable model fit is indicated by an RMSEA < 0.08 and a close fit RMSEA < 0.05 [44]. The TLI is a relative fit index and assesses the model by comparing the Chi-squared value of the model and the null model. Acceptable values for this index should be close to 0.95 [45]. The CFI also compares the model with the null model, where the null model variables are assumed to be uncorrelated with CFI values larger than 0.90, indicating a good fit [45,46]. In reference to the minimum sample size, the literature recommends a ratio sample size per item number of 5:1 (*n:p*), with a total sample size > 200 [47]. As 199 middle leaders completed over 85% of the 23 items, giving an *n:p* ratio of approximately 7:1, this was deemed sufficient for the analytical purposes employed.

4. Results

4.1. Descriptive Statistics

For the 199 middle leaders who completed the MLPSS, the demographic data can be found in Table 3 below. These data showed that the MLs in this sample were predominately female (74%), aged between 30–50 years, and with a mean time of teaching of 18 years (SD = 8.4). The titles of the ML respondents included ‘Head of Teaching and Learning and Curriculum’ (46%), ‘Head of Subject Area’ (30%), and ‘Assistant or Deputy Principal’ (15%). The mean number of years in their current leadership position was 5 years (SD = 5.1) and, for 43% of the participants, the highest qualification was a Bachelor of Education. The APST [36] guides Australian teachers’ professional learning and practice, and the results showed that over 50% of the respondents were at *Proficient* status—this is the basic level of accreditation required of all Australian teachers post-graduation from initial teacher education.

Table 3. Demographics information: Middle Leading Practices in Schools Survey (MLPSS).

Gender	Male: 51		Female: 148			
School Sector	State	Catholic	Independent			
	108	51	18			
School Type	Primary	Secondary	K-12	Non-traditional		
	75	70	22	9		
Australian State/Territory	New South Wales	Victoria	Queensland	Sth. Aust.		
	79	81	10	7		
Age Range	20–30	31–40	41–50	51–60	>60	
	16	70	58	44	11	
No of participants years teaching	1–5 yrs	6–10 yrs	11–15 yrs	16–20 yrs	>20	
	4	39	35	30	65	
No of participants years in their current leadership position	1–5 yrs	6–10 yrs	11–15 yrs	16–20 yrs	>20	
	120	31	15	4	4	
APST	Graduate: 1		Proficient: 90		Highly Accomplish: 32	Lead: 43
Highest academic qualification	B. Ed: 82	B. Ed+ Honours: 4	UG not education + Dip Ed: 54	Master of Education: 40	Masters not education: 7	PhD: 1
Leadership Position	Teaching Learning Curriculum: 80	Head of Subject: 53	Assistant Principal/Deputy Principal: 26	Student Wellbeing: 11	Administration: 2	Head Teacher: 3

Note: not all 199 participants completed all parts of the demographic survey.

Although these data are relatively simple, they do provide some insights into the teachers who are working as middle leaders in schools in Australia. Perhaps not surprisingly,

MLs are predominately women with an education bachelor's degree. Further interrogation of the data showed a greater response rate from female middle leaders from primary schools (65) compared to secondary (47); conversely, the response rate from males indicated more male middle leaders from secondary schools (23) compared to primary schools (10). The survey results suggest there are more women in middle leadership positions than men, in contrast to the AITSL 2021 Australian Teacher Workforce Data (ATWD) [9], where men were more highly represented in school leadership positions. The 2020 ATWD data showed that 48% of middle leaders were over 50, whereas this survey showed a greater percentage of middle leaders in the 30–40 and 41–50 age groups.

Of note was the high number of responses from certified Highly Accomplished and Lead certified middle leaders (75) to this survey, as nationally there are only 709 teachers at these levels (AITSL, 2020). Additionally, there were a high number of respondents (48) with a PhD or master's degree (not including a Master of Teaching or an Initial Teacher Education qualification), with the higher-level qualifications dispersed across four states and school sectors. It may be hypothesised that the middle leaders who responded to this survey are progressive in seeking out professional learning, with nearly 50% of the survey respondents coming from the Victorian Teachers Middle Leader Conference.

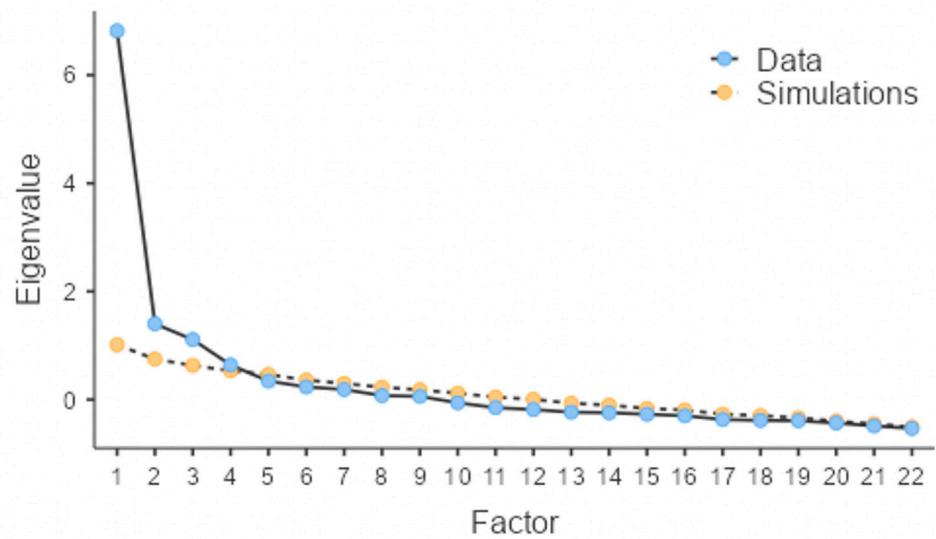
4.2. Factor Analysis

The results of factor analyses will be presented in two stages, with the first stage outlining the EFA commencing with a parallel analysis, followed by a traditional EFA, and then a forced 3- and 4-factor exploratory analysis due to the ambiguity of the initial results. The second stage of analysis was a multimethod CFA of the three factors (domains) of the MLPSS. Finally, based on the EFA and the CFA, a 4-factor solution emerged as the most viable and coherent model for the MLs' practices.

4.2.1. Stage 1 EFA

Initially a correlation matrix was completed for the MLPSS to ascertain if there was multi-collinearity between variables. Item 21 and Item 22 from the "Collaboration and Communication" domain were highly correlated. Item 21 accounted for most of the variance; thus, Item 22 was removed, resulting in 22 MLPSS items. The first analysis was a parallel EFA of the remaining 22 MLPSS items. The 'principal axis factoring' extraction method was used, in combination with an 'oblimin' rotation, as this is seen as the most accurate factor retention method [48]. Initially, the assumption checks, including Kaiser-Meyer-Olkin (KMO) values [49] and Bartlett's Test of Sphericity [50,51], were examined to test the eligibility of the MLPSS data for factor extraction. The results (KMO = 0.860 and Bartlett's Test of Sphericity $X = 1398$, $p < 0.01$), were both significant, suggesting that factor analysis was an appropriate strategy for the data. The parallel EFA scree plot was checked and it suggested three distinct factors with a potential fourth factor. Scree plots and eigenvalues can be found in Figure 1 and Table 4, respectively.

Due to the ambiguity of the parallel exploratory analysis, a traditional EFA was undertaken using a minimum residual extraction method in combination with an 'oblimin' rotation. Factor extraction was based on two criteria: the scree plot that indicated the number of factors and factors with eigenvalues greater than 1. The analysis suggested three factors; however, the RMSE = 0.074 indicated that a 3-factor model fit was not strong (a reasonable model fit is indicated by an RMSEA < 0.08, a close fit by an RMSEA < 0.05 [44] and TLI and CFI > 0.90 [43,46,52]). Given the ambiguity in whether the EFA implied a 3-factor (according to the eigenvalues) or 4-factor solution (according to the scree plot), further EFAs were conducted where a 3-factor and then a 4-factor model were forced (see Table 4). While the Tucker-Lewis index (TLI) and BIC values were similar for both solutions, the 4-factor model showed a reduced RMSE (0.0698), a closer model fit compared to the 3-factor model (0.0837) as shown in Table 5, providing evidence for a 4-factor model.

Scree Plot**Figure 1.** Parallel analysis scree plot and eigenvalues.**Table 4.** Parallel analysis eigenvalues.

Initial Eigenvalues	
Factor	Eigenvalue
1	6.8180
2	1.4011
3	1.1090
4	0.6396
5	0.3415
6	0.2339
7	0.1860
8	0.0732
9	0.0591
10	-0.0603
11	-0.1499
12	-0.1850
13	-0.2337
14	-0.2433
15	-0.2722
16	-0.2994
17	-0.3690
18	-0.3853
19	-0.3911
20	-0.4342
21	-0.4871
22	-0.5325

Table 5. Forced 3- and 4-factor exploratory analysis.

	3-Factor	4-Factor
RMSE	0.0837	0.0698
TLI	0.811	0.867
BIC	−496	−486
<i>p</i> Value	<0.001	<0.001

4.2.2. Stage 2 CFA

The second stage of statistical analysis was a multimethod CFA on the proposed 3-factor MLPSS, including all 23 items, to explore the factorial validity of the MLPSS. CFA is a measurement model that uses multivariate regression to describe relationships between several observed variables and a latent variable [53] and provides flexibility in the building of a model, which is the goal of this study [41]. For the CFA of the 3-factor MLPSS, both the CFI and TLI values were below the recommended criterion level of 0.90, and the RMSE was above 0.08. Based on the outcomes of the previous EFAs and the CFA, a 4-factor solution was generated with item inclusion and exclusion informed by prior EFA and CFA analyses. Figures 2 and 3 show the proposed three- and four-factor middle leader practice models and Table 6 shows the coefficients of the hypothesised relationships, together with their z-values, standard errors, and *p*-values, for both tested models.

Table 6. The coefficients of the hypothesised relationships, together with their z-values, standard errors, and *p*-values, for the 3-factor Middle Leading Practices School Survey (MLPSS) and the 4-factor School Middle Leading Practice Model (SMLPM).

	Item	Co-Efficient	Standard Error	z-Value	<i>p</i>-Value
Factor	Three-Factor MLPSS				
Teaching and Learning	Item 1	0.645	0.0701	9.19	<0.001
	Item 2	0.729	0.0596	12.23	<0.001
	Item 3	0.735	0.0615	11.95	<0.001
	Item 4	0.337	0.0791	4.26	<0.001
	Item 5	0.322	0.0841	3.83	<0.001
	Item 6	0.427	0.0575	7.43	<0.001
	Item 7	0.229	0.0651	3.52	<0.001
	Item 8	0.141	0.0572	2.47	<0.013
	Item 9	0.318	0.0501	6.35	<0.001
Managing and Facilitating	Item 10	0.673	0.0704	9.56	<0.001
	Item 11	0.898	0.0635	14.16	<0.001
	Item 12	0.832	0.0686	12.14	<0.001
	Item 13	0.567	0.0652	8.69	<0.001
	Item 14	0.516	0.0734	7.03	<0.001
	Item 15	0.617	0.0927	6.66	<0.001
	Item 16	0.535	0.0735	7.29	<0.001

Table 6. Cont.

	Item	Co-Efficient	Standard Error	z-Value	p-Value
Communication and Collaboration	Item 17	0.342	0.0649	5.27	<0.001
	Item 18	0.165	0.0561	2.94	0.003
	Item 19	0.194	0.0549	3.54	<0.001
	Item 20	0.491	0.0719	6.83	<0.001
	Item 21	0.953	0.0726	13.13	<0.001
	Item 22	1.054	0.0651	16.19	<0.001
	Item 23	1.049	0.0700	14.98	<0.001
Four-Factor SMLPM					
Leading, Managing, School Teaching Learning, and Curriculum	Item 1	0.637	0.0696	9.16	<0.001
	Item 2	0.718	0.0590	12.17	<0.001
	Item 3	0.693	0.0616	11.26	<0.001
	Item 10	0.692	0.0697	9.92	<0.001
	Item 11	0.893	0.0636	14.03	<0.001
	Item 12	0.822	0.0689	11.93	<0.001
	Item 16	0.490	0.0745	6.58	<0.001
Supporting Colleague Teacher Development	Item 4	0.635	0.0734	8.65	<0.001
	Item 5	0.595	0.0801	7.44	<0.001
	Item 13	0.581	0.0671	8.66	<0.001
	Item 14	0.746	0.0681	10.95	<0.001
	Item 15	0.837	0.0886	9.45	<0.001
	Item 17	0.560	0.0611	9.16	<0.001
Collaborating with Teachers on T&L	Item 19	0.218	0.0572	3.81	<0.001
	Item 6	0.548	0.0681	8.05	<0.001
	Item 7	0.532	0.0694	7.67	<0.001
Collaborating with Advocating to School Principal	Item 18	0.486	0.0621	7.83	<0.001
	Item 20	0.497	0.0753	6.61	<0.001
	Item 21	0.929	0.0790	11.76	<0.001
	Item 23	1.026	0.0781	13.13	<0.001

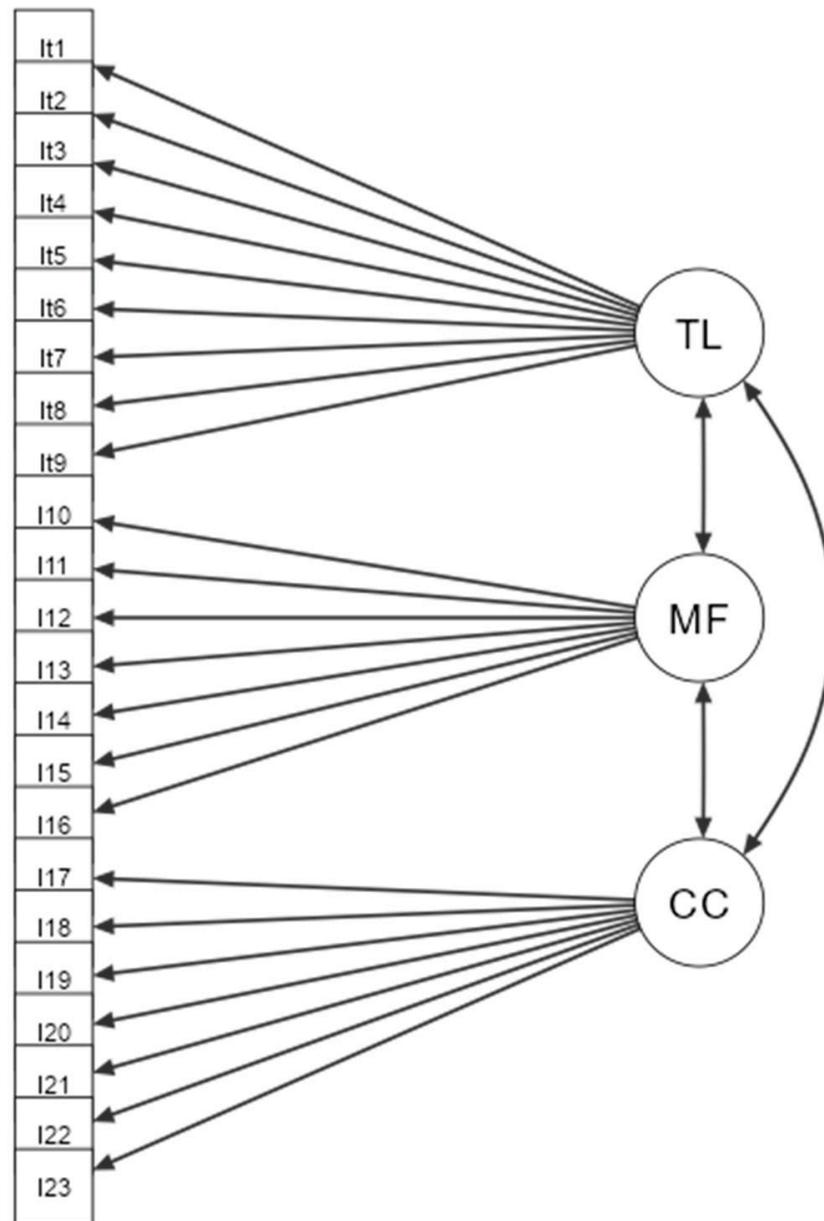


Figure 2. Three-factor Middle Leading Practices in Schools Survey (MLPSS).

1. Teaching and Learning
2. Managing and Facilitating
3. Collaborating and Communicating

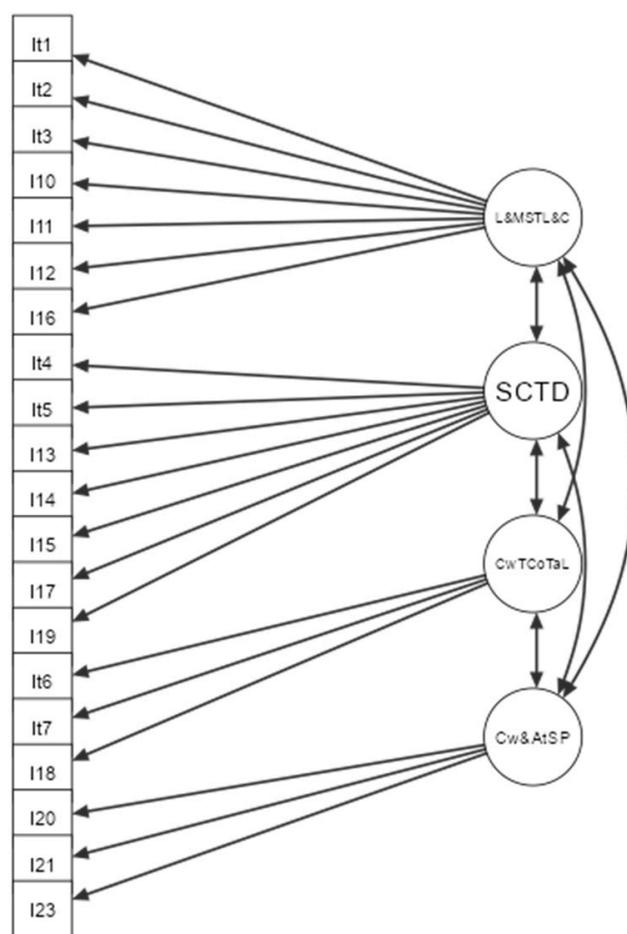


Figure 3. Four-factor School Middle Leading Practice Model (SMLPM).

- Leading and managing school teaching, learning, and curriculum
- Supporting teacher colleague’s development
- Collaborating with teacher colleagues on teaching and learning
- Collaborating with, and advocating to, the school principal

For the new 4-factor School Middle Leading Practice Model (SMLPM), Item 22, “Collaborate with my principal to facilitate school-based teaching and learning priorities”, was removed based on correlation analysis showing a high correlation between items 21 and 22. Regarding Item 6, “Lead collegial discussions about teaching and learning with my colleague teachers”, despite the fact that the EFA showed that the item cross-loaded on two factors (Factor 1: Leading and managing school teaching, learning and curriculum, 0.44 and Factor 2: Collaborating with teacher colleagues on teaching and learning, 0.51) the item was retained as ML discussions with colleagues on teaching and learning are deemed central to their work [21,26].

For decisions on item removal based on low item factor loadings, the suggested cut-offs ranged between 0.32 (*poor*), 0.45 (*fair*), 0.55 (*good*), 0.63 (*very good*), and 0.71 (*excellent*) [54]. Based on a result of under 0.32 being considered a *poor* item factor loading, Item 8 (CFA factor loading = 0.141), “Continue to intentionally develop my teaching practices”, and Item 9, (CFA factor loading = 0.318) “Respond to my school teaching and learning issues as they arise”, were both removed. Further evidence for the removal of these two items came from the EFA and CFA results, where both items never met the 0.45 *fair* threshold. It is possible that, from the MLs’ responses to Item 8, practices focused on self-development may not be perceived by MLs as a practice.

While Item 18, “Collaborate with my teacher colleagues on teaching learning”, did not meet the suggested cut-off (CFA factor loading = 0.165), this item had *excellent* EFA factor loadings (0.796–0.804). An additional argument to retain Item 18 is that the practice of ML collaboration with colleagues is widely acknowledged as important for ML impact on classroom teaching and learning [16,24]; hence, it was important to investigate whether this practice “fit” within the proposed 4-factor model. Additionally, it is acknowledged that ML work is often informal [16,27], so Item 19, “Have unplanned and informal conversation with my teacher colleagues”, was retained for this reason despite a low CFA factor loading of 0.194; however, the item met the *fair* cut-off across all EFAs. Finally, Item 16 “Respond to school management issues as they arise” was retained based on a *fair* factor loading (0.53) and based on ML research suggesting ML work is often informal and “in the moment” [15]. The higher factor loadings for Item 16 across the EFA and CFA compared to Item 8 suggest that Item 16, “management issues as they arise”, may take precedence over Item 8, “teaching and learning issues as they arise”, in relation to ML practices. Table 7 provides the title and description of the four factors and the item numbers from the MLPSS.

Table 7. School Middle Leading Practice Model (SMLPM).

ML Practices	Description	Item No
<i>Leading and Managing School Teaching, Learning, and Curriculum</i>	Focus on the practices of leading and managing at the school/subject/year level in the areas of teaching, learning, and curriculum. (ML practices are not focused on individuals, e.g., colleague teachers, principal.)	1, 2, 3, 10, 11, 12, 16
<i>Supporting Teacher Colleague’s Development</i>	Focus on practices supporting individual teacher colleagues’ development through informal conversations, mentoring teacher colleagues, classroom observations, facilitating collaboration between teacher colleagues, and performance appraisal of teacher colleagues.	4, 5, 13, 14, 15, 17, 19
<i>Collaborating with Teacher Colleagues on Teaching and Learning</i>	Focus on collaborative practices with colleagues through discussions, planning, and collaboration, with a focus on teaching and learning.	6, 7, 18
<i>Collaborating with and Advocating to the School Principal</i>	Focus on collaborative practices with principal on areas of curriculum development, teacher colleague professional development, and advocating to the principal for teacher colleagues.	20, 21, 23

Table 8 compares the model-fit results for the 3-factor Middle Leading Practices in Schools Survey (MLPSS) and 4-factor School Middle Leading Practice Model (SMLPM). Regarding the RMSEA, CFI, and TL for both models, the 4-factor model yielded improved fit indices compared to the 3-factor model across all key measures. However, while a better fit, the CFI and TLI for the 4-factor model were below the suggested criterion level of 0.90 [52]. The RMSEA of 0.0943 does not meet the 0.80 cut-off, suggesting that, overall, the 4-factor model does not meet the required thresholds across key measures and requires further refinement.

Table 8. Fit indices for 3-factor Middle Leading Practices School Survey (MLPSS) and 4-factor School Middle Leading Practice Model (SMLPM).

Fit Statistics	3-Factor Solution	4-Factor Solution
χ^2 (df)	775 (227)	410 (164)
RMSEA	0.120	0.0943
90% CI	0.110; 0.129	0.0829; 0.106
BIC	8971	7867

Table 8. Cont.

Fit Statistics	3-Factor Solution	4-Factor Solution
CFI	0.719	0.841
TLI	0.686	0.816

Chi2, df, degrees of freedom; RMSEA, root mean squared error of approximation; CI, confidence interval; BIC, Bayesian information criterion; CF, comparative fit index; TLI, Tucker–Lewis index.

5. Discussion

While school MLs' potential is acknowledged, and in both education policy and practice sites there is an expectation that MLs will lead site-based educational development in the curriculum, teaching and learning, and teacher professional learning [13,15], there is limited understanding of the actual everyday practices of middle leaders; this study focussed on developing a new instrument to understand the practices of school MLs. Models of MLs' work are limited and those that exist are mostly informed by literature reviews, so, here, the aim is to contribute to developing rigour and depth to increase the understanding of school MLs' practices based on robust empirical evidence involving both qualitative and quantitative measures. The findings of this study provide three key outcomes to that end: (1) a tested instrument for researching ML practices; (2) an emerging model of ML practices; and (3) some initial insights into who MLs are and their practices. These will now be discussed in turn.

5.1. The School Middle Leading Practice Model (SMLPM)

As noted previously, there is no known suitable instrument to investigate the practices of school MLs, and the purpose of this study was to commence the development of one. The Middle Leading Practices in Schools Survey (MLPSS) instrument aligns with the AITSL's three broad categories of ML practices [11], with the domains and items informed by empirical and theoretical work previously undertaken by the authors. This paper has focused on the verification and justification of the instrument, and its revisions, through a statistical multivariate analysis of the data, including factor analyses and calculating Cronbach's alpha scores for internal reliability (For the purposes of this article, we have not provided all the details and outcomes of the various statistical analyses undertaken, but we have tried to provide enough detail to satisfy the reader of the veracity of the claims). The validation of the MLPSS will be ongoing with construct validation being accumulated as the number of studies increases [55]. Clearly, the revised instrument will need to be used again in a different context (i.e., outside of Australia), and, through this, the internal and external validity of the instrument will be enhanced.

5.2. An Emerging Model of ML Practices

The research presented here sits within a larger four-year project that aims to develop an empirically grounded repertoire of ML practices, and the 4-factor solution that emerged from the data analysis is an important first stage in this process. Through the series of factor analyses, the four practice domains that emerged are provided in Table 7. Recently, two models of ML instructional practices have been proposed, both informed by literature reviews (see Table 2) [34,35]. Both models include ML practices that align with the empirically informed SMLPM model, including ML practices that develop and support colleagues, create a positive collegial learning environment, and develop school curriculum, teaching, and learning. However, analysis from this research showed MLs perceive their practices in relation to others (principal, teacher colleagues, school), this is not surprising as the relational nature of middle-leading has been well documented [12,15]. It may be that when developing models of ML practices attention needs to be paid not only to ML practices but to whom the practices are directed; it is possible that MLs may perceive collaborating with principals as a different practice to that with colleague teachers due to the different focus and outcomes required.

The findings presented are important since, firstly, the *model* is informed by data from across all the different school systems in Australia, primary, middle, and secondary, and from across most of the Australian states and territories. Secondly, the model presents an emerging representation of middle-leading practices that is empirically informed and based on data about what MLs do, as opposed to conceptions that are based on the literature, leadership ideologies, or role descriptions. Of course, the four sub-scales reflect the theoretical framing of the instrument that shaped the items; but, they do represent a departure from the three ML dimensions conception from the AITSL and previous small-scale research studies [11,15].

Two interesting findings from the factor analyses emerged. Firstly, MLs perceive their practices in relation to other educators (teachers, principal) rather than “grouping” similar practices together, e.g., collaborative practices. Secondly, the prominence and importance of *practising leading upwards* with the school principal was a new dimension that emerged; while it had been noted previously, it emerged as having greater significance in these findings. An implication of this work is that this *model* will continue to be refined and tested in different international contexts, and, importantly, more items added as new findings will emerge from the other stages of the larger research project.

5.3. Insights into MLs and Their Practices

Finally, the data revealed some initial insights into the teachers across Australia who have ML roles, the nature of those roles, and the practices that are central to their work. Their titles varied, with the secondary school participants being more likely to have a position specifically related to a curriculum area (e.g., Head of Mathematics), with nearly half of the MLs indicating that they have roles leading curriculum, teaching, and learning in their school, supporting previous research showing MLs as leaders of instructional development in schools [4,16,35]. It was noteworthy that nearly 70% of the respondents had held their current middle-leading position for less than five years, indicating that, while many may have a wealth of teaching experience, some MLs may be relatively inexperienced in formally leading others in school sites. This lack of leadership experience may be exacerbated by MLs having limited professional learning in leadership. Relatedly, as has been noted, more than half of the respondents had not acquired higher levels of APST accreditation, where the higher levels of *Highly Accomplished* and *Lead* standards focus on teachers developing and demonstrating the skills of leading and developing others, although these elements were clearly aligned to the practices MLs perceived were central to their work.

An important feature of the findings related to the 4-factor solution was the way that it suggested that ML practices are oriented to their school site, and, specifically, their teacher colleagues and/or the principal. In particular, the leading practices of MLs are focused on the teachers they lead, evident in domains 2, 3, and 4, highlighting middle-leading practices related to collaborating with, supporting, and advocating for their teacher colleagues. While principals and senior school leaders may also have a specific school and teacher focus, albeit quite broadly across all the practices and functions of a school site, the data showed that MLs were focused on their leading practices having a more direct influence and impact on their colleagues and, therefore, what happens in classrooms—the site where the core work of education occurs. In other words, MLs are well-placed to drive educational change and innovation and to support quality learning and teaching.

6. Conclusions

We have been somewhat cautious in our claims given that the findings, while robust, are based on a small purposive selected participant sample, with an instrument that requires further refinement and application. Nonetheless, the data allowed us to address the research questions, specifically in terms of the first research question, clearly, the titles, roles, and practices of MLs are diverse and serve a range of purposes. However, it was also evident that their leading practices are site-based and centred on making a

difference in the local educational practices of students and teachers. Importantly, the data indicated that many of the MLs were relatively inexperienced in their leading role, suggesting that there is perhaps a need for specific professional development for MLs. With the developing understanding of the practices of ML informed by this study, professional learning (PL) should not necessarily rest on generic knowledge about leadership in general, but rather PL should focus on *actual* ML practices, equipping and enabling MLs to lead and collaborate effectively *with the different people* within in their school (principal, other middle leaders, colleague teachers) and *within the particular and unique conditions and arrangements* of their own school site [56]. Additionally, the four practice domains of the MLPSS make evident that MLs perceive their practices to be focused on people, supporting, collaborating, developing, and advocating for the teachers they lead. Thus, it would seem important that ML PL supports the development of MLs' social-emotional competencies, which are deemed to be critical to the collaborative practices and the positive professional relationships noted as central for middle leader effectiveness [57,58].

Relatedly, the emerging 'model' of middle-leading practices has provided insights about the practices of MLs and how they are structured. It is perhaps a bit strong to call it a model per se, but the substance and the structure of the SMLPM provide preliminary insights on the focus for MLs' professional learning noted above. Importantly, it provides a foundation and insights that are grounded in empirical research, which means that it should more accurately and effectively reflect the actual leading practices of MLs, and the conditions and arrangements that shape their work.

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Appendix A. Extract from the Middle Leading Practices in Schools Survey (MLPSS)

On the Likert scale below, middle leaders were asked to circle on a scale from 1 (Not at all) through to 5 (Always) the extent to which they engaged in the specific activity.

Scale provided for each item.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

Teaching and Leading:

As a middle leader I:

- (1) Lead curriculum development;
- (2) Lead professional development;
- (3) Lead new initiatives in teaching and learning;
- (4) Observe my colleague teachers' classroom practices;
- (5) Invite my colleague teachers to observe my classroom teaching practices;
- (6) Lead collegial discussions about teaching and learning with my teacher colleagues;
- (7) Plan teaching and learning with my teacher colleagues;
- (8) Continue to intentionally develop my own teaching practices;

(9) Respond to my school's teaching and learning issues as they arise.

Managing and Facilitating

As a middle leader I:

(10) Manage curriculum development;

(11) Manage professional development;

(12) Facilitate staff meetings that focus on educational development;

(13) Organise opportunities for my teacher colleagues to work together;

(14) Organise classroom visits for my teacher colleagues to observe each other's classroom practices;

(15) Undertake performance appraisals of my teacher colleagues;

(16) Respond to school management issues as they arise.

Collaboration and Communication

As a middle leader I:

(17) Mentor my teacher colleagues;

(18) Collaborate with my teacher colleagues on teaching and learning;

(19) Have unplanned and informal conversations with my teacher colleagues;

(20) Advocate for my teacher colleagues to my school principal;

(21) Collaborate with my school principal to facilitate school-based curriculum development;

(22) Collaborate with my school principal to facilitate school-based teaching and learning priorities;

(23) Collaborate with my school principal to facilitate my teacher colleagues' professional development.

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