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Developing and validating instrument to assess teachers' involvement in decision-making

Nagarajah Lee
Center for Graduate Studies, Open University Malaysia.

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ABSTRACT

The involvement of subordinates in decision-making has attracted much attention among academicians as well as practicing managers. In the school scenario, there had been fervent calls to involve teachers in the decision making process ever since the advent of the school based management concept. However many are still debating on how to involve teachers effectively in the decision making process. One of the major concerns is, whether the decisional situation is in the zone of acceptance of the teacher. Even though much has been done in evaluating teachers' participation in decision making in schools, there is still lack of systematic procedure to develop the right instrument to assess this phenomena. In light of this, the following paper discusses the process of developing and validating an instrument to assess teachers' participation in decision-making. The instrument was developed via focus group interviews involving teachers and school administrators. The instrument measures teachers' participation in decision-making from five perspectives: curriculum and instruction, student related issues, staff related issues, financial issues, and general administration. The instrument was administered to 48 school administrators and 216 teachers and based on the results the reliability index was computed. The Crobach Alpha values for the dimensions ranges from 0.79 to 0.94. Apart from that, the instrument was also subjected to various types of validity check such as face and content validity, concurrent validity, and dimensionality to ensure that it has sound psychometric properties.

Introduction

Participative management only received its momentum in recent years, even though this concept has been around for a long time. The theme was formalised and popularised by behavioural scientists such as Blake and Mouton (Managerial Grid), Mac Gregor (Theory X and Theory Y), and Likert (Four Model System). The central thrust of this theory is that, empowered employees will feel better about their jobs and this will enhance their productivity. Participative management refers to regular and significant employee involvement in organisational decision-making.

The type of decision-making approach used in an organisation depends very much on the culture of the organisation and the leadership style of the administrator. In any organisation, these aspects vary according to the decisional situation. At the core of any effort to involve employees in decision making is their expertise and knowledge regarding the decision and the operation of the organisation in general. There are a number of decision-making styles, which vary from being highly participative to being purely autocratic. Lawler(1986) classified decision-making approach as:

1. ***Top-Down:***

Top-level individuals in the organisation make the decisions and tell the people at lower levels what the decisions are.

2. ***Consultative:***

People at the top level make a tentative decision, announce it to the organisation and ask for opinion.

3. ***Consultative-Upward Communication:***

Individuals at the lower level of the organisation are expected to propose ideas and potential decisions to higher levels, but the ultimate decision-making power is always held by the people at the top.

4. ***Consensus*:**

Decisions are widely discussed in the organisation and considered final only when everyone agrees that it is the right decision.

5. ***Delegation with Veto:***

Decisions are given to the lower-level employees to be made but the high-level manager has the power to accept or reject it.

6. ***Delegation with Policy Philosophy Guidelines:***

Choices are given to lower-level employees and they make the decision within certain constrains.

7. ***Pure Delegation:***

Decisions are left to the lower-level employees and they are free to make them in whatever way they wish.

Decision Making

According to Mintzberg (1976), as quoted by Gore (1992), decision is defined as a specific commitment to action; and therefore it includes all purposeful behaviour that concludes with a commitment to do something rather than merely talking about it. A decision is defined as the moment of choice and the type of decisions vary, depending on the level. Decisions that are made at the lower level differ from those that are made at top management level. Holt (1987) and Simon (1960) in Gore (1992) grouped decisions mainly into two types: programmed

Tele:
E-mail addresses: nagarajah@oum.edu.my

and non-programmed decisions. Programmed (or generic) decisions are those repetitive and routine decisions that are made based on previous experience with similar problems. In addition, input for these decisions such as policies, procedures, rules and guidelines are available. On the other hand, non-programmed decisions are so complex that the system they follow cannot be determined as each decision is unique and is characterised by uncertainty and incomplete information. In general, all decisions can be classified into three major categories: a) routinely occurring decisions, b) adaptive decision involving adjustments of existing policies, and c) innovative decisions involving the establishment of new policies and goals (Gore, 1992)

In an organisation with the pyramidal organisational structure, such as public schools, non-programmed decisions are made by top management, which deals with strategic decisions such as objective building and management plans. Programmed decisions, on the other hand, are exercised by middle management who are mainly concerned with making administrative decisions. The lower management deals with operating decisions such as rules, methods and procedures.

Decision-making is defined as the process of choosing from among alternatives. It pervades administrative functions such as planning, organising, staffing, directing, co-ordinating and controlling. Griffiths (1956) defined decision-making as a process, which one goes through in order to be able to pass judgement and terminate a controversy while, Owens (1970) described decision-making as a process of selecting a course of action among available alternatives. Shavelson (1976), in his writing on teachers and decision-making, described decision-making as a process that involves giving consideration to all possible alternatives and the consequences, making choice, and arriving at a solution that ends uncertainty. Generally, decision-making can be summarised as a process of arriving at a solution to a problem where one needs to go through the process of identifying the alternatives and choose the best with prior consideration of its constraints and consequences.

Decision-making is a complex phenomenon because human beings with different preferences, interests, expertise, and need-dispositions are involved in the making of decisions. Lipham (1974) as quoted by Rice and Schneider (1994), identified three dimensions in the decision-making process:

a) decision stage: how a decision is made,
b) decision content: what a decision deals with; and
c) decision involvement: who participates in making a decision.

Participative Decision-Making

The participative decision-making model centres its attention on employees' involvement in the decision-making process. The root of a participative management program is the involvement of the members of the organisation in the decision-making process. In this sense, every member of the organisation is participating, playing a part in helping the whole organisation in achieving its objectives. In relation to the educational environment, Bridges (1967) described teachers' participation in decision-making as a manner in which the administrators involve teachers in the decision-making process. Duke (1980), in his writing on shared decision-making in schools, defines participative decision-making as teachers' involvement in the process by which decisions are made through consensus. Yulk (1982), on the other hand refers to participative decision-making as a management style or type of decision-making procedure through which subordinates are allowed to influence some of the manager's decisions. According to him, participation is sometimes used synonymously with other terms such as: consultation, joint decision-making, power sharing, and democratic management.

In discussing the concept of participative decision-making, Hoy and Tarter (1993) centred their discussion on the level of employee participation in decision-making, which is the heart of participative management. They noted that participation varies along a continuum of extensive to limited participation. They proposed a six-stage cycle for participation comprising of: defining the problem, specifying the alternatives, examining the consequences, implementing the plan, and monitoring and evaluating the result. According to them, extensive participation occurs when subordinates are involved as early as in the problem defining stage. On the other hand, participation is limited if subordinates are only involved in the later steps of the cycle. In other words, employees' participation lays in a continuum, from limited to extensive participation depending on the organisations' needs and constraints.

It is not all the time that employees must be involved in the decision-making process. Participation only will be meaningful if the involvement of the employees can contribute to the decision-making process in particular and the organisational growth in general. In elaborating further on decisional criteria and employee participation, Dill described that for different kinds of organisations and different types of decisions, patterns of participation will have the following goals:

a. Control goals: ensures decisions are made in order to control and there is someone to consult in evaluating the decisions.
b. Motivational goal: bridges the gap that often exists between the making and the implementation of the decisions by making them in such a way that the decision-makers are involved in its implementation.
c. Quality goal: improves the quality of the decisions by involving those who have the most to contribute to the decision.
d. Training goal: helps in developing skills of handling problem for those who aspires administrative positions.
e. Efficiency goal: ensures that the decisions are made quickly with little waste of manpower.

Teachers as Decision Makers

Arriving at the right decision is the ingredient for the success of the school as the nation's development agent. In specifically discussing the concept of decision-making in the educational arena, one should agree that it is the basic skill that a teacher should have. Hunter, M (1984) defined teaching as a constant stream of professional decisions that affects the probability of learning. She also emphasises that decisions are made and implemented before, during, and after interacting with the students.

In further asserting the importance of decision-making in teaching, Hoyle (1986) provided a research-based perspective for six stages of decision-making in teaching. These stages are:

1) problem awareness, where the teacher is aware of the existence of the problem.
2) problem definition, where the teacher knows exactly what the problem is.
3) developing alternatives, which involves identifying and verifying all the possible solutions to address the existing problem.

4)evaluating alternatives, which involves making the best choice from the alternatives after considering the possible consequences.
5)implementing a plan, which involves following the proper steps as decided earlier; and
6)evaluating results, which is the process of identifying and rectifying the shortcomings, if there are any.

Teachers make decisions as they plan, implement, and evaluate instructions. Teachers appear to make decisions in various ways, including using a linear process in reaching conclusions and a reflective process in considering context and actions. Regardless of the process used, teachers make decisions in a complex environment in preparing their lesson presentations and in organising and managing instruction. Teachers also make decisions about meeting their instructional needs, evaluating student performance, and improving their teaching.

With the recent development of new concepts of management in education such as Side Base Management and Management by Objective, teachers' participation in decision-making has become a central issue in school administration. Two of the most persistent questions are, "When and to what extent should teachers be involved in the decision-making process?"

According to Lawler (1986), the effectiveness of teachers' participation in the decision-making process highly depends on four important aspects:
1)The task to be performed.
2)The nature of the individual.
3)The culture of the school.
4)The formal structure of the school.

Before involving the teachers in the decision-making process, the administrator should fairly consider all these factors to ensure that the participation is meaningful. It could be safely said that participation of subordinates in decision-making could improve the quality of decisions made and promote co-operation only if the right strategy is linked to the right situation. There are some decisions that the subordinates simply accept because they are indifferent to them. According to Barnard (1982), as cited by Hoy & Tarter (1993), there is a zone of indifference or acceptance in each individual within which orders are accepted without conscious questioning of their authority. Models of shared decision-making using this zone of acceptance to guide subordinate participation in decision-making was first developed by Bridges(1967). He advanced two propositions:
1) If subordinates are involved in making decisions located in their zone of acceptance, participation will be less effective.
2) If subordinates are involved in making decisions clearly outside the zone of acceptance, participation will be more effective.

However, he further argues that there are times where decisions fall neither clearly within nor outside the zone of acceptance; in this situation subordinate's involvement in decision-making will be marginally effective, and it would depend heavily on the administrators' skill to determine the level of subordinates' involvement. Bridges further elaborated that the zone of acceptance of the subordinates can be determined by applying the 'relevance rule' and the 'expertise rule'. This is summarised in figure 1.

According to this rule, when the decisions are outside the zone of acceptance, teachers should be involved in the decision-making process. The knowledge and the skill they have can be used to improve the decision. It is also appropriate to involve them if they have personal stake in the outcome of the decision. One important aspect to note here is that teachers should not be involved in decision-making when they have neither the inclination nor the skill to aid the process.

Do subordinates have personal relevance?

Can subordinate contribute expertise?	Yes	No
Yes	Outside zone of acceptance (Definitely include)	Marginal with expertise (Occasionally include)
No	Marginal with relevance (Occasionally include)	Inside zone of acceptance (Definitely exclude)

Figure 1 : Decision Issues of Zone of Acceptance adapted from Hoy and Tarter (1993), A Normative Theory of Participative Decision-making in Schools

Involving teachers in decision-making has a number of potential advantages. These include higher motivation, job satisfaction, better decision quality, higher employee morale, and less resistance to chance. For example Duke (1980) asserted that teachers might see three benefits resulting from shared decision-making, such as the following:
a) a feeling of self-efficacy, which refers to the satisfaction which many people derive from accomplishing something which they consider important.
b) a sense of ownership, in which shared decision-making conceivably contributes to an individual's feeling of being part of a collective enterprise.
c) work place democracy, which is the doctrine that workers have a basic right to participate in the making of decisions, which affect the utilisation of their labour.

Generally, it can be summarised that there are four potential advantages a school can derive by involving teachers in the decision-making process: i) encourage better decisions, ii) enhance greater understanding and acceptance of a decision, iii) improve job satisfaction, and iv) create a sense of ownership.

Purpose

Taking part in decision-making will arouse a sense of responsibility within the teachers, hence motivating them to strive further in achieving set objectives. Unless the teachers are involved in decision-making, it would be very difficult to get their full co-operation. However the administrators of schools need to be aware of the areas to involve teachers. Therefore, this study was aimed at identifying the various decisional areas that teachers can be involved in. The information gathered was used to develop an instrument to assess teachers' participation in decision-making. The specific objectives of the study are:
1. To determine the various decisional situations where teachers are involved.
2. To categorise the decisional situations into specific decisional areas (dimensions).
3. To establish the validity and reliability of the instrument.

Research Design

This study employs the focus group interviews and questionnaire survey as the main tools for data collection. Focus group interviews were conducted to elicit information on the various dimensions of performance management at the questionnaire development stage. The information derived from the interviews was utilized to construct the questionnaire that was later used to collect data to establish the reliability and validity of the instrument.

Table 1: The specific decisional situations extracted from the focus group participants.

Decisional situations
• Text books and other supporting materials
• Content of the subjects
• Teaching methods and strategies
• Homework policies
• Preparing teaching timetables
• Marking policies related to students' work
• Methods of reporting students' work to parents
• School examination policies
• Class streaming policies
• Strategies to evaluate and improve students' learning.
• Promotion, retention, or expulsion of students
• Students' discipline, school rules
• Extra curricular activities
• Students' welfare
• Staff development
• Staff performance appraisal
• Assigning teachers to various committees.
• Preparing department's budget
• Expenditure priorities
• Budget committee
• Annual school target
• School calendar/ activities
• School development plan
Agenda of staff meeting

Table 2: Number of items based on the various decisional areas

Dimension	Number of Items	
Decisional Areas	Before Refining	After Refining
Curriculum and Instruction	10	10
Student Related Issues	5	4
Staff Related Issues	6	4
Financial Issues	5	4
General Administration	6	4

Table 3: Summary of the Reliability Index

	Alpha Value
Decisional Areas	
1) Curriculum and Instruction	*0.85*
2) Student Related Issues	*0.79*
3) Staff Related Issues	*0.88*
4) Financial Issues	*0.94*
5) General Administration	*0.91*

Table 4 : Correlation Analysis on the various decisional areas

	Curriculum & Instruction	**Student Related Issues**	**Staff Related Issues**	**Financial Issues**	**General Administration**
Curriculum & Instruction		0.562	0.317	0.341	0.441
Student Related Issues	0.562		0.531	0.536	0.587
Staff Related Issues	0.317	0.531		0.640	0.725
Financial Issues	0.341	0.356	0.640		0.620
General Administration	0.441	0.587	0.725	0.620	

* indicating values are significant at 0.01 level (2 tailed)

Table 5: Final Run of Factor Analysis

Items	Curriculum & Instruction 1	Curriculum & Instruction 2	Student Related Issues	Staff Related Issues	Financial Issues	General Admin
Class streaming policies	0.813					
Curriculum option (new subject)	0.765					
Instructional material	0.645					
Evaluating and improving student's learning	0.579					
Teaching methods/strategies		0.866				
Selecting the content		0.639				
Method to report student's progress		0.547				
Policy for marking students' work		0.477				
Formal examination policies		0.458				
Homework policies		0.456				
Policies regarding student's discipline			0.94			
Promotion, retention and expulsion of students			0.457			
Student's welfare			0.439			
Promotion exercise of teachers				0.822		
Staff performance appraisal				0.736		
Assigning teachers to committees				0.602		
Staff development plan				0.538		
Expenditure priorities of the department					0.894	
Departmental budget					0.670	
Overall school expenditure					0.615	
Long-term school development plan						0.851
School annual calendar						0.754
School annual goals						0.646
Agenda for staff meetings						0.616
Eigenvalue Variance (%) (Total 63.3%)						

Table 6: Estimates and Fit Indices from CFA on the various decisional areas

Construct	No of Items	Range of Std Regression	GFI	CFI	TLI	Bentler Bonnet Coef Δ	RMSEA	CMIN/df
Curriculum and Instruction I	6	0.539 – 0.744	0.97	0.96	0.92	0.96	0.10	3.03
Curriculum and Instruction II	4	0.684 – 0.816	0.98	0.98	0.94	0.98	0.29	3.01
Student Related Issues	3	0.678 – 0.799	0.98	0.97	0.95	0.96	0.07	2.99
Staff Related Issues	4	0.721 – 0.899	0.98	0.96	0.91	0.96	0.10	2.98
Financial Issues	3	0.622 – 0.774	0.97	0.94	0.89	0.92	0.08	2.98
General Administration	4	0.714 – 0.844	0.96	0.95	0.91	0.91	0.11	3.01

Note : CFI value of 0.9 and above testifies strong scale unidimensionality, Δ value of 0.90 and above testifies strong scale convergent validity (Sureshchander et.al, 2001).

Instrumentation

Dawn and Lovemore (2001) asserted that in developing a sound instrument, the researcher needs to understand the exact nature of the problem and the research objectives and then systematically develop the questionnaire taking into consideration the issues of validity and reliability. The procedure used to develop the instrument for this study is consistent with the eight-step process of instrument development suggested by Churchill (1976). The instrument development process consists of: defining the construct, identifying the domain, generating items, collecting preliminary data (piloting), purifying the instrument, collecting fresh data, further purifying the instrument, and evaluating the reliability, validity and dimensionality of the instrument.

a) Defining the Construct and Identifying the Domain

In this study, the various decisional areas where teachers involvement are significant were defined as: curriculum and teaching, student related issues, staff related issues, financial issues, and general administration. The dimensions of the decisional areas are defined based on the Alutto-Belasco Decisional Participation Scale, a questionnaire measuring decisional conditions designed by Alluto-Belasco 1972.

b) Generating Items

The items for each component of the decisional areas were constructed using focus group interviews. The focus group interviews involved representatives from ten selected primary schools from Kuching. The group interview was carried out in two stages: stage one - Interview with school administrators (principals and senior assistants); and stage two - Interview with selected teachers. The multiple respondents' technique was preferred since this allowed the researcher to establish the measures from different perspectives. Using multiple respondents permits one to acquire comprehensive information on the phenomenon of interest and a broader and richer understanding of the problem under investigation. The triangulation between data sources also enhances the quality of the data (Pinsonneault & Kraemer, 1991).

The specific decisional situations were later translated into questionnaire that was used to collect data from the teachers where their responses were used to establish the psychometric properties of the instrument.

c) Pilot Test and Purifying the Instrument

The draft instrument consists of two sections: Section 1- demographic information; Section 2 – Teachers' Decision-making Scale (TDMS) to assess teachers' participation in decision making in schools. The questionnaire was piloted to 15 teachers and 15 school administrators. They were asked to rate the appropriateness of each item using the scale 1 to 4 where '1' indicates 'seldom or never' and '4' indicates 'always or almost always'. The items with the mean value of 2.25 and above were removed. Table 2 shows the number of items for each decisional area.

Reliability

Reliability is the measure of consistency of a particular instrument. This refers to the capability of the instrument in producing consistent results if it were to be repeatedly administered to a homogenous group of respondents. In this study, the internal-consistency was used to evaluate the consistency of the responses for each item within the instrument. The Alpha values for the various dimensions of the instruments are shown in Table 3

Validity

The validity of the instrument used in the survey refers to whether or not it measures what it purports to measure. It is an important issue to be addressed since the validity of the study very much depends on the validity of the instrument used. Broadly, validity can be termed as a measure of how "truly" a particular concept is represented by its construct; that is "the extent to which the research findings accurately represent what is happening in the actual situation" (Hussey & Hussey, 1997). In other words, it refers to how accurately a particular construct is translated into measurable behaviours. This is widely known as 'construct validity'. The construct validity can be further classified into 'translation validity' and 'criterion-related validity'. The translation validity focuses on the accuracy of the items reflecting the construct while the criterion-related validity examines whether the respondents responded to the items in the way they should (Trochim, 2002). Under the category of translation validity are 'face validity' and 'content validity' while criterion related validity consists of 'predictive validity', 'concurrent validity', 'convergent validity', and 'discriminant validity' (Trochim, 2002).

i Face Validity and Content Validity

According to Churchill (1976), clearly specifying the domain of the construct, generating items that exhaust the domain, and purifying the resulting scale should produce a measure which is content or face valid and reliable (Churchill, 1976, p. 70). Since a thorough review of the literature was carried out to determine the constructs, and the focus groups were used to generate items, this researcher argues that necessary steps had been taken to establish sound face and content validity. Furthermore, the final questionnaire was evaluated by a group of experts in the field of educational administration and the finalised questionnaires were administered to randomly selected respondents and the result of the survey was factor analysed using both exploratory and confirmatory factor analysis technique.

ii Convergent Validity

Convergent validity is the extent to which different approaches measuring similar constructs gives the same result. At one extreme, completely different instrument can be used to determine convergent validity, while at the other extreme each item or component in the same instrument can be viewed as different approaches in measuring the constructs (Ahire, Golhar & Waller, 1996).

In this paper, the concept of convergent validity refers to the degree of positive relationships among the components that make up the construct. According to Narver and Slater (1990), if the constructs exhibit convergent validity, then there should be a strong correlation between the components that form the construct. Thus, the convergent validity was established by using the correlation analysis between the components of the constructs. Table 4 displays the correlation among the various decisional areas that are presumed to make the participative decision-making (PDM) construct.

The correlation coefficient values ranges from 0.137 to 0.725, indicating moderate positive relationships. In other words, the five decisional areas - curriculum and instruction, student related issues, staff related issues, financial issues, and general administration - converges to a common construct. This provides evidence for convergent validity.

iii Dimensionality:

This is a process of evaluating the "belongingness" of the items to certain dimensions in the construct. If the instrument is said to be dimensionally sound, those items should only measure the dimensions that they belong to and not any other dimensions. Some researchers classify dimensionality under content validity arguing that dimensions are a part of the content of a construct while some others broadly group them under construct validity (Sureshacandar, Rajendran & Anantharaman, 2002). If the dimension for the construct is supported by a sound theory and the researcher has a reasonably good knowledge of the number of dimensions and the items, then a confirmatory factor analysis (CFA) is used to test the dimensionality. In contrast, the exploratory factor analysis (EFA) is used when the researcher is uncertain about the relationship between the items and latent factors (dimensions).

In this study both the EFA and CFA were used. The exploratory process was used to first unearth the underlying factors, thereby illustrating the relationship between the latent factors (dimensions) and the observed variables (items), while the CFA was used to confirm whether the items actually belong to the dimension for which they are theoretically designed (Sureshacandar et al., 2002). For the EFA, the principal component analysis was used as the extraction method and the factors were rotated using the Varimax rotation method with Kaiser normalization. Prior to that, a reliability test was performed and only items with an index greater than 0.4 were considered for factor analysis.

The EFA provides a six-factor solution with 63.32% total variance explained. However factor 1 and 2 measures similar domains, the issues related to teaching and learning, thus these two factors were combined and defined as curriculum and instruction for further analysis. The Bartlett Test of Sphericity gives a very small p-value (0.000), indicating that there is a statistical probability that the correlation matrix has a significant correlation among at least some of the variables (Hair, Anderson, Tatham & Black 1995). Furthermore the Kaiser-Meyer-Olkin Measure of Sampling Adequacy is also very high, 0.863, indicating that the latent constructs can predict the variability of the responses in the observed variables. In other words, both the tests provide evidence that support factor analysis.

According to Ahire et al. (1996), the EFA has some major limitations such as items loading on more than one factor, and items statistically correlate with one another but cannot be explained theoretically. To overcome the inherent limitations of the EFA, the CFA is recommended. In this study, the CFA was performed by carrying out path analysis using structural equation modeling. In this procedure the number of factors and the items loading to each factor were specified (this is also termed as measurement model) and the hypothesized measurement model was then tested for model fit. The result shows that the hypothesized model has an overall good fit (χ^2 /df =2.98, GFI = 0.91, CFI = 0.90, TLI = 0.19, RMSEA = 0.064). Table 5 displays the result of the EFA. Only items with factor loading greater than 0.400 were used for the final run of the factor analysis.

To further assess the degree of uni-dimensionality of the constructs and the convergent validity of the items representing the constructs, measurement models were specified for each construct and the CFA was carried out for the individual constructs. In other words, this is a procedure to check how closely the designated items represent the construct. According to Ahire et al (1996), 'a goodness of fit index of 0.90 or higher for the model suggests that there is no evidence of lack of uni-dimensionality' (Ahire et al. 1996, p.38). Table 6 summarises the result of the CFA on the various dimensions of performance determinants.

From the result, it is evident that the respective items indeed belong to the latent constructs as hypothesized. Therefore it can be concluded that the teachers' decision-making in schools can be generalised into five major areas; curriculum and instruction, student related issues, staff related issues, financial issues, and general administration.

Conclusion

The instrument to assess teachers' participation in decision-making consists of five dimensions: curriculum and instruction, student-related issues, staff-related issues, financial issues, and general administration. The items representing each dimension were generated using focus group interviews. The instrument was administered to a total of 264 respondents and the result was used to compute the reliability, convergent validity, and dimensionality. Both the exploratory and confirmatory factor analysis were computed. The result indicates that, in general teachers participate in five different types of decisional areas: curriculum and instruction, student-related issues, staff-related issues, financial issues, and general administration.

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