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Abstract

Purpose – The purpose of this paper is to investigate workplace learning among municipal officers in the high-learning-demanding organizational context of their work practice in the first year of mandate.

Design/methodology/approach – A before-and-after quasi-experimental design was used to assess the effect of time of work practice on learning work requirements. Level of mastery of role-relevant knowledge, skills and attitudes (KSAs) was measured on three occasions (once before and twice after occurrence of work practice), with 126 participants. Associations have been tested between this learning and level of education, previous experience, use of learning strategies at work, population size of municipalities and participatory public planning.

Findings – Findings suggest that the municipal officers showed learning of KSAs but no change in their attitude toward public administration. This learning has been positively associated to size of the municipalities, previous professional experience and learning strategies, especially regarding the cognitive strategy "intrinsic and extrinsic reflection". A possible positive effect of the use of participatory planning on this learning could have been detected if measures were taken after 11 months.

Research limitations/implications – The generalization of findings is limited, as data are restricted to the southern and southeastern regions of Brazil, in municipalities in which mayors belong to a given political party.

Practical implications – The study brought useful information that may contribute to provide some clues, to municipal officers and their parties, on how to accelerate the required learning that should take place right after election.

Social implications – The practical implications may be cautiously used in organizations in general.

Originality/value – The feasibility of a longitudinal design to measure work-related learning was shown. Options for more comprehensive studies that may better define the phenomenon of workplace learning and identify its relationships with other variables have been demonstrated.

Keywords Workplace learning, Competence development, Learning strategies, Local government services, Municipal officer teams, Participatory planning

Paper type Research paper

1. Introduction

Soon after being elected, Brazilian mayors and their team of secretaries are expected to deliver the results they have committed to during the campaign. It is their responsibility to provide to the citizens a complex set of services such as health, education, social welfare, transport and housing, dealing with managerial and political aspects involved in the implementation of a variety of projects. As well as in any organization, they face a workplace environment in which they deliver their work performance. Thus, they need

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to possess a set of knowledge, skills and attitudes (KSAs), to deliver those results. These KSAs constitute the competences that enable them to perform their work. Do they possess the required competences when they start the mandate? If they don't, how do they acquire them?

This research focused on this work situation, in which there is intense demand for work performance, there are scarce training and development (T&D) opportunities and individuals are the top-level decision makers in each city. The aim is to study the learning of work requirements that happens entangled with work itself, in the workplace.

Workplace learning is defined as an individual process that results from social interaction in spaces where work occurs, in which KSAs are acquired (Moraes and Borges-Andrade, 2014). This process may be a consequence of deliberate action induced by the organization or by the individual. Or it may not be induced, when learning occurs without any deliberate action to promote it. According to these authors, workplace learning is used comprising formal and informal learning, although it often refers to the latter.

Despite its growing importance, the field of workplace learning still requires more precise definitions of the terms, concepts and purposes of research. Precision would probably reveal opposing positions, absences, similarities and connections. A broader dialogue in a more rigorous construction of theories is needed (Fenwick, 2006).

There are three workplace trends that concern different research questions and implications for practice, in the current century (Noe *et al.*, 2013):

(1) workplace may constrain the use and effectiveness of T&D programs;

(2) there is increased use of technologies that provide learners with more control over what, where and when they learn; and

(3) knowledge sharing is necessary for transferring expertise and knowledge.

The present study is focused on a context in which the first trend has evolved. The major research question, as these authors have pointed out, is on "what antecedents and conditions facilitate continuous learning, especially informal learning […]" (Noe *et al.*, 2013, p. 4.4). The research sought to cast light on the way those elected municipal officers acquire the competences they need to perform their job and, at the same time, further understanding of workplace learning in general.

Relationships between variables considered in a workplace learning model are tested. The research participants were municipal officers in the beginning of their first mandate, at predominantly small and medium-sized municipalities, in a country with continental dimensions. It is a young democracy, under intense economic, technological and social transformations in the twenty-first century.

2. A model of workplace learning

Designed and structured T&D actions, widely used since the introduction of the Taylorist–Fordist management paradigm, have not been frequently producing the expected results in the contemporary context (Marsick, 2009). Learning activities that happen in unstructured ways, directly related to professional practice, seem to contribute more significantly to the acquisition of KSAs at work (Tynjälä, 2008). This study has been designed under the assumption that municipal officers learn KSAs during their first year in a political mandate.

There are several typologies and classification models in the workplace learning literature (Marsick and Watkins, 2001; Illeris, 2011; Ellström *et al.*, 2008; Kyndt *et al.*, 2009; Jacobs and Park, 2009). These typologies and models deal with the existence of tension between cognitive and context-considering approaches (Hager, 2011). A claim for an integrated view of the phenomenon is also present in a number of texts (Clarke, 2004; Marshall, 2008; Illeris, 2003).

Following this claim, this study was based on a heuristic model proposed by Illeris (2004, 2011). It may be more suitable to depict workplace learning, as it encompasses both the intra-psychic and the context arguments. It also offers a conceptual framework that grounds an attempt of showing that measuring informal learning may be done through "tools" familiar to those involved in formal learning, such as the application of a self-report of KSAs mastery standardized scale. This heuristic model integrates the notion of an individual's cognitive process, which leads to permanent changes not related to maturation, with the idea of a socio-cultural construction derived from the relationship of the individual with the environment.

It postulates two integrated processes – acquisition and social interaction – that must be active before learning itself occurs. The former process concerns both cognitive and emotional aspects, while the latter process relates to context and obeys a socio-historical logic. This study includes constructs related to both and they will be explained after each dimension of the model is presented.

These two processes connect three dimensions (*learning content, learning dynamics* and *environment*) in a triangular model, which has two of its corners at the top. The content dimension (cognitive) of the acquisition process refers to what is being learned and is located in the top left corner. The dynamics or emotional dimension, located in the top right corner, includes emotions, feelings, motivation and volition. The content and the dynamics dimensions are at the individual level. A third dimension, at the bottom corner of that triangular model, is not at the individual level: the environment. It has a social or cultural nature and is connected to both individual-level dimensions. The integration of these three dimensions triggers learning (Illeris, 2004, 2011).

Given these three dimensions, some relevant variables shall be highlighted. In the *learning* dynamics dimension, several studies in education have focused on learning strategies. These strategies are efforts undertaken by individuals to help learning, and also the practices adopted by people seeking to acquire and develop knowledge in any context, including the context of work (Sonnentag *et al.*, 2004; Holman *et al.*, 2001).

A taxonomy of learning strategies was developed, in an initial effort to organize this field. It groups learning strategies into three categories:

(1) *Cognitive*: Repetition, organization and preparation.

(2) *Behavioral*: Seeking help from others, trial and error or seeking help from written material.

(3) *Self-regulation*: Control of emotions and motivations and comprehension (Warr and Allan, 1998).

There are reports of instrument applications that empirically test this proposed structure for learning strategies in different contexts. The results have indicated increasingly consistent measures (Holman *et al.*, 2001; Brandão and Borges-Andrade, 2011). They enabled more precise investigation of the learning strategies used by

individuals to learn in the context of professional practice, instead of education. In the present study, these learning strategies are supposed to promote the acquisition of competences, in a context of few T&D opportunities.

The *content* dimension of the model proposed by Illeris (2004, 2011) may be addressed through the concept of competence. This concept has grown in importance in the scientific literature, as it grasps the complexity of the work-related contents nowadays learners are expected to acquire, a "unifying concept that integrates everything required to perform in a given situation or context" (Illeris, 2008, p. 11). Its measurement as an outcome in workplace learning situations is not an easy task. The results to be achieved are difficult to define, beforehand, and the distinction between learning and performing the work itself is usually unclear (Gola, 2009; Hoekstra *et al.*, 2009). This led most studies on workplace learning outcomes to adopt qualitative methods and to focus more on the learning process than on its outcome (Clarke, 2004; Hetzner *et al.*, 2009). Other authors argue that learning related to work can only be truly understood if it is also studied by means of quantitative methods (Marsick, 2003). The present study uses a quantitative method for the assessment of these competences as learning outcomes.

Competence has received many definitions in the literature, among which stands out the one that addresses the construct through its constituent elements. In this case, competence is described as a synergistic set of KSA components (Ruas, 2005; Illeris, 2003). Measuring outcomes of workplace learning based on the concept of competence implies the possibility of doing it through these components. Workplace learning, with all the dimensions and interconnections proposed by the previously described model, is more likely to withstand the challenge underneath this construct (Walkington and Vanderheide, 2008).

The third dimension of the model – *environment* – includes the social component of learning, and refers to the interaction between individuals and their learning environment. It concerns the learning opportunities available in the social and material surroundings and the circumstances where the professional practice of individuals takes place. It is divided in two types: the socio-cultural and the technical-organizational (Illeris, 2004, 2011). These environment types compete and interact dynamically, and are subject to influences from outside the organization. The socio-cultural environment relates to the various communities in which the employee takes part. The influences come from the political-institutional, social and cultural conditions.

The dynamic development of the technical-organizational environment is primarily influenced by market forces and by organizational and technological changes. The technical-organizational environment includes four dimensions that determine the learning opportunities offered to employees and, therefore, the required qualifications. They are *division of labor and job content*, *autonomy and skills application*, *possibility of social interaction* and *tension and stress*. These dimensions describe the physical, technical, operational and organizational environment of the work process. They include both resources and constraints, delimit the learning processes at work and are closely related (Jorgënsen and Warring, 2000).

Characteristics of the technical-organizational environment dimensions that influence workplace learning may be challenges, informal social interactions and exchange of knowledge with colleagues, relationships, job enlargement or redesigning and enrichment, planning processes, modeling, challenge, workload and autonomy

(Lundgren, 2010; Cunningham and Hillier, 2013; Eraut, 2011, van Ruysseveldt and van Dijke, 2011; Matsuo and Nakahara, 2013). Research findings indicate a certain prevalence of *possibility of social interaction* on the generation of workplace learning opportunities (Eraut, 2004; Gola, 2009; Hashim, 2008).

These research results also show that the technical-organizational environment dimensions relate to the management practices adopted by the organization. These practices operationalize the aspects relating to the referred environment (Illeris, 2003, 2004), as they are instruments with which the organization intervenes in those dimensions. Process management, for example, interferes with the dimension *content of work and meaning of work*, as it rethinks the division of labor to redesign processes. Competence-based management, on the other hand, relates to the dimension *skills application*. Taking into consideration what has been exposed about the dimension *possibility of social interaction*, participatory (or collaborative) management practices may have a great potential to generate opportunities of workplace learning.

There have been references to the induction potential of learning associated to planning, in some of its variants such as strategic, scenario and transformative planning. The assumption of the existence of a relationship between the use of participatory planning and workplace learning is anchored in two different aspects. On one hand, the idea of participating in the analysis and decision-making processes in planning refers to the consideration of the *opportunity of social interaction* dimension of the Illeris model. Moreover, the processes of defining outcomes to be achieved and continuously following-up their achievement suggest that individuals may learn from observed mistakes and successes (van der Heijden, 2004; Chermack *et al.*, 2006). The present study supposes, therefore, that participatory planning may promote the acquisition of competences.

The present study concentrates on the challenges confronted by Brazilian mayors and municipal secretaries, when they initiate a political mandate for the first time. In this circumstance, they need to deliver high performance as soon as they start, although they frequently do not know much about the tasks they have to perform to face demands. Given the complexity of the practice under these circumstances, may academic background or previous experience be helpful? If this complexity is increased, in larger cities, as compared to smaller ones, is it associated to more learning? This study also tries to answer these three questions.

The intense workplace learning of the first of the four-year term of Brazilian municipal officers is the focus of this study. It sought to cast light on relevant aspects of this learning process, by testing associations between the acquisition of competences and some variables considered in the workplace learning model proposed by Illeris (2004, 2011). These variables, in synthesis, are:

- three individual characteristics (level of education, previous experience and use of learning strategies at work); and
- two technical-organizational environment dimensions' characteristics (population size of the municipality, relating to the *tension and stress* dimension, and use of participatory planning by the officers team, relating to the *possibility of social interaction dimension*).

3. Method

The use of cross-sectional designs has limited research on informal learning. Researchers are encouraged "[…] to recognize that learning and human capital development involve change over time" (Noe *et al.*, 2013, p. 4.21). This study aimed at measuring the effect of a treatment (working practice) on a variable (acquisition of role-relevant KSAs, i.e. competence). To achieve this, a longitudinal before-and-after study was designed (Reichardt and Mark, 2004) in which two standardized scales were individually applied, once before (in the first 15 days) and twice after (100 days and 11 months after term beginning). The profile data of participants (function in public administration, age, sex, previous experience and level of education) were also collected during the first measurement opportunity.

The first standardized scale measured the mastery level of competence (KSAs) needed to perform the studied public function, described by the competence constituent elements (six Knowledges, 11 Skills and eight Attitudes). It was previously developed by the authors of the present study, specifically for this research. Its construction was carried out through 17 interviews with experienced on-the-job municipal officers who were at the end of their four-year term. It was further tested (25 items, 5 anchored scales) with a sample of 455 similar officers, initiating or ending their political mandates in states from the Brazilian north, northeast, southeast and south regions. The principal components (PC), principal axis factoring (PAF; Promax) and Cronbach alpha results suggested psychometric validity of the instrument and a two-factor empirical structure in accordance with the competences theory (Moraes *et al.*, 2011).

The second scale measured learning strategies at work and included 26 items. It was adapted by the authors of the present study, for the use with municipal officers, based on a previous scale that had been psychometrically tested in the Brazilian banking sector (Brandão and Borges-Andrade, 2011). It was applied to the aforementioned sample of 455 officers. Good evidence of validity emerged, based on results of PC, PAF (Promax) and Cronbach alphas, for a five-factor structure, similar to that obtained in the banking sector (Moraes and Borges-Andrade, 2010).

Data collection occurred on three occasions during local visits: in the beginning of the four-year term (January), 100 days after that and 11 months after the start of term (November).

During this third visit, information on the use of participatory planning throughout the previous 11 months was also collected with a checklist of seven items. They were filled by the researcher after questioning the groups of participants. This checklist was compiled based on previous content analysis of the responses of six participatory planning consultants to local governments. They answered the question "Which objectively verifiable indicators characterize the use of participatory planning by a municipal officer's team?" [Items: 1 – Was a planning seminar held in the beginning of the term with the participation of the majority of secretaries?; 2 – Are team meetings held at least once a year to evaluate the drawn up plan in the beginning of the term?; 3 – Are team meetings about the drawn up plan in the beginning of the term held at least once a month (meeting agenda is dedicated to the plan)?; 4 – Is there one single person responsible for the coordination of the plan?; 5 – Is there a defined plan and is it available for the team of municipal officers?; 6 – Are targets set and systematically monitored in the plan?; 7 – Is the budget consistent with the plan (resources are allocated according to

the strategic objectives of the plan)?]. The response to each item was limited to "yes" or "no".

The non-random sample used – which consisted of 126 first-term mayors (elected in November of the previous year) and municipal secretaries chosen by them – was defined considering restrictions of access to these authorities and cost restrictions. A third restriction was the need to apply questionnaires *in loco*, to guarantee that respondents were really mayors and secretaries, instead of any assistant that could be asked to answer the questionnaires. Given the difficulty to have access to these authorities and to gain their confidence, the national direction of the mayors' political party was asked for help. This has facilitated the contact with them right after the beginning of their first mandate. As for the costs, sampling criterion was geographical proximity between the cities, because visits had to be done at short and precise periods of the longitudinal study.

The 22 visited cities (out of 5,765 Brazilian municipalities) are distributed in three of the 27 Brazilian states, in the south and southern (more developed) regions of the country (out of five large country regions). Survey participants were mayors in their first term and their chosen municipal secretaries. The secretaries were responsible for policy areas such as health, education, transportation, security and planning at the municipal level. These individuals were always at the first hierarchic level of the city hall, below mayors. All mayors were members of the political party supporting the study. But secretaries could belong to any party in the political coalition that had won the election. That political party usually stimulates its partisans to learn and use participatory planning techniques. The characteristics of study participants are detailed in Table I.

The measurement scale for mastery level of competences of municipal officers showed a two-factor structure [Kaiser–Meyer–Olkin (KMO) = 0.91, total variance explained = 31.76 per cent]: Factor 1 – "Ks & Ss for the techno-political management", with 16 items (examples: knowledge of basic management features and knowledge about the specific features of the municipality divisions; skills related to government planning and project development based on the population demands), alpha = 0.91, factor loadings of the items between 0.76 and 0.38; and Factor 2 – "Democratic and republican attitude", with eight items (examples: beliefs on transparent accountability, honesty in using public resources, respectful personal relationships and respect to commitments previously established with the population), alpha = 0.81, factor loadings of the items between 0.81 and 0.41. Each factor was separately analyzed. The test results on statistical assumptions for Factor 1 indicated using the analysis of variance (ANOVA) test to check the hypothesis of the occurrence of workplace learning, i.e. the existence of statistically significant differences between the three longitudinal measurements. For Factor 2, however, normality problems occurred (skewness and

Sex	96 men	30 women
Function	21 mayors	105 secretaries
Age	21 to 70 years old	Average: 43 years old SD: 9.45
Education (%)	Elementary school = 8.7 High school = 26.8 Undergraduate = 31.5	Specialization = 23.6 Master's = 6.3 PhD = 2.4

Table I. Sample characteristics

kurtosis), which led to the choice of a non-parametric analysis: the repeated-measures Friedman ANOVA.

The factor analysis of the learning strategies at work scale resulted in the identification of five factors (KMO = 0.89, total variance explained = 59.70 per cent): extrinsic and intrinsic reflection (six items, alpha = 0.88, factor loadings of the items between 0.85 and 0.50), seeking help from written material (16 items, alpha = 0.78, factor loadings of the items between 0.83 and 0.42), seeking help from others (four items, alpha = 0.82, factor loadings of the items between 0.73 and 0.53), reproduction (four items, alpha = 0.68, factor loadings of the items between 0.75 and 0.38) and practical application (four items, alpha = 0.65, factor loadings of the items between 0.58 and 0.44).

The tests of associations between level of education, previous experience and learning were performed through repeated-measures factorial ANOVA tests. They were also used for the associations between learning and two environment characteristics, i.e. the population size of the municipality and the use of participatory planning by the team of municipal officers.

Qualitative data on management practices and learning content were also collected in the second and third visits. This required a specific and complex method for data collection with groups of municipal officers and for content analyses of the obtained results (Moraes, 2010). Qualitative results supported the quantitative ones. However, given the focus of the present report, qualitative method and results were not detailed here. Furthermore, page limits would be outgrown.

4. Results

4.1 Workplace learning

The assumption of learning in the exercise of municipal officers' work activities was first tested. The repeated-measures ANOVA of Factor 1 – Ks & Ss *for techno-political management* – revealed a statistically significant difference between the three longitudinal measures ($F = 11.25$, df = 1.89, $p = 0.00$). The curve slope between data collection times 2 (100 days after starting the first term) and 3 (November), compared with the slope between times 1 (January) and 2, suggested the existence of different results in each period (Figure 1). The comparisons of pairs of moments through *post hoc* tests with Bonferroni correction showed the existence of statistically significant differences between times 1 and 2 ($t = -2.91$, df = 125, $p = 0.00$) and times 1 and 3 ($t = -4.28$, df =125, $p < 0.00$). There was no statistically significant difference between times 2 and 3 ($t = -2.00$, df = 125, $p = 0.05$). The resulting significance level of the Friedman ANOVA test run with the Factor 2 – *democratic and republican attitude* – using the factor scores obtained by participants in each of the three data collections showed no significant differences between the measurements of this factor ($\chi^2 = 1.06$, df = 2, $p = 0.59$). Therefore, the next statistical tests of association of variables were only done for Factor 1 as the criterion variable.

4.2 Workplace learning and background

The measurement of education was collected in six levels. For analysis purposes, data were grouped into three levels:

(1) basic education (elementary + high school) (36 per cent);

(2) undergraduate (32 per cent); and

(3) postgraduate (specialization + master's + PhD) (32 per cent).

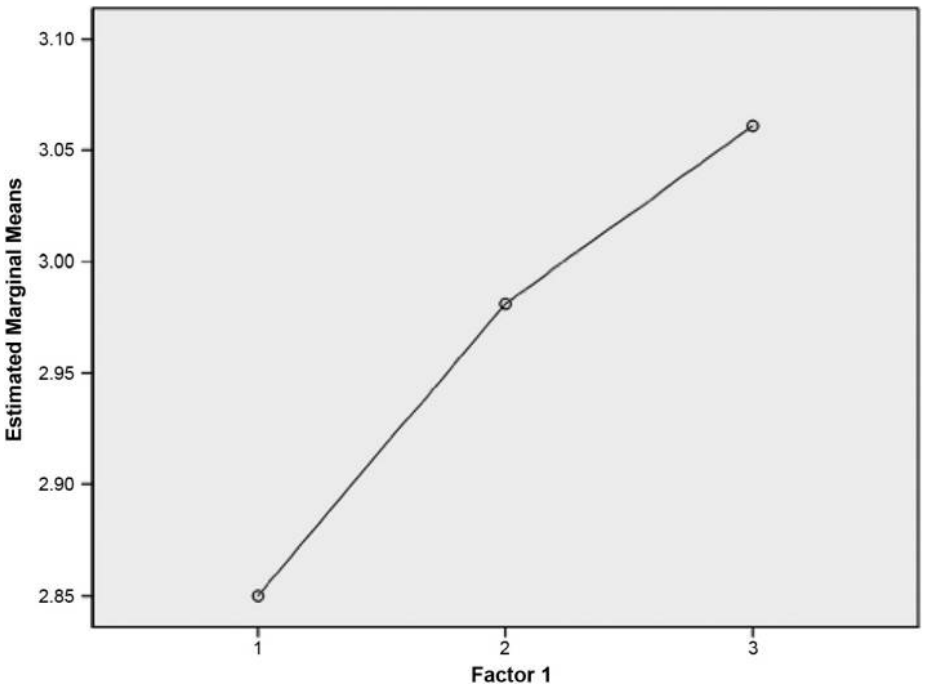

Figure 1. Relationships between the three data collection times for Factor 1 (*knowledge and skills for techno political management*)

The results of the repeated-measures factorial ANOVA did not show statistically significant results ($F = 0.15$, df = 3.78, $p = 0.96$). Therefore, level of education was not associated to changes in measures of Factor 1 (Ks & S*s for techno-political management*) obtained in the three successive data collections.

Previous experience on public management was grouped into two levels: up to one year (none + less than one year) (57 per cent) and over one year (43 per cent). Therefore, almost half of the participants in the sample have had some experience of more than one year as a municipal officer team member in other situations. Previous experience exceeding one year was associated with learning in Factor 1 ($F = 5.06$, df = 1,91, $p = 0.01$). This effect was more pronounced in the case of respondents without previous experience at the time of commissioning (January).

4.3 Workplace learning and learning strategies

The test of association (repeated-measures analyses of covariance) has indicated a statistically significant interaction between mastery of the competence (Ks & S*s for techno-political management*) and all five factors of learning strategies: *intrinsic and extrinsic reflection* ($F = 5.64$, df = 2, $p = 0.00$), *seeking help in written material* ($F = 6.00$, df = 2, $p = 0.00$), *seeking help with others* ($F = 3.72$, df = 2, $p = 0.03$), *reproduction* ($F = 3.10$, df = 2, $p = 0.05$) and *trial and error learning* ($F = 3.58$, df = 2, $p = 0.03$).

The repeated-measures factorial ANOVA test found no statistically significant interaction between workplace learning and the use of different learning strategies ($F = 0.64$, df = 4, $p = 0.63$). Figure 1 illustrates these findings. There was a concentration on using three of the five learning strategies: *intrinsic and extrinsic reflection*, *seeking help*

in written material and *seeking help with others*. No statistically significant differences were found between the groups. However, the analysis of the curve tendency in Figure 2 suggests that those who reported more use of *intrinsic and extrinsic reflection* continue to learn Ks & Ss (Factor 1) after the first 100 days of the political mandate (time 2). The elapsed time until the completion of the third measurement (from January until November) may have been too short to test this association.

4.4 Workplace learning and the environment

To test the connections between workplace learning of municipal officers and the population size of their cities, participants were grouped according to three distinct groups:

(1) up to 10,000 inhabitants (40 per cent);

(2) between 10 and 50,000 inhabitants (44 per cent); and

(3) over 50,000 inhabitants (16 per cent).

The population distribution of Brazilian cities is 46 per cent of municipalities have up to 10,000 inhabitants and 44 per cent have between 10 and 50,000 (Instituto Brasileiro de Geografia e Estatística, 2008).

The interaction between the population size and workplace learning of Ks & S*s for techno-political management* was statistically significant ($F = 7.9$, df $= 2$, $p = 0.03$). Results suggested that individuals from larger municipalities initiate the political mandate with a greater degree of mastery over these needed Ks & Ss. This level of competence remains stable up to 100 days; however, after that time, mastery continues to increase.

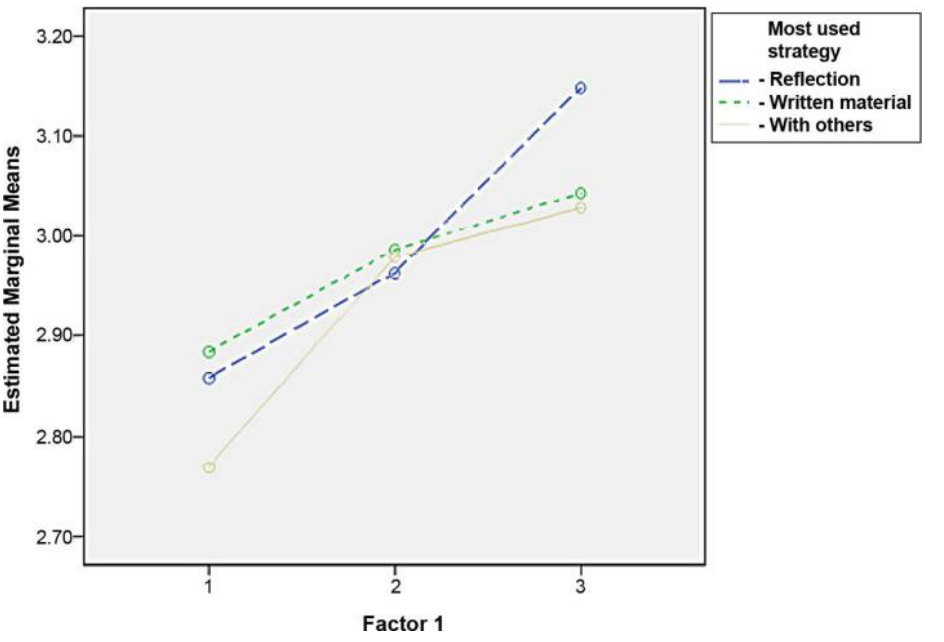

Figure 2.
Interaction between Factor 1 (*knowledge and skills for techno-political management*) and the most used learning strategies

The municipal officer teams of participants were grouped according to their scores on the items list on participatory planning. Teams that scored "yes" to items 1, 3, 5 and 7 were classified as "users of participatory planning" (44 per cent of participants). The other teams were classified as "non-users of participatory planning" (56 per cent of participants). Less than half the sample used this type of planning in the first 11 months of the mandate, although it was encouraged by the majority political party in the coalition that won the election.

The interaction between Factor 1 workplace learning and the use of participatory planning was not statistically significant ($F = 12.23$, df $= 1.89$, $p = 0.12$). However, Figure 3 shows a difference in the slopes of lines after the first 100 days in office. To investigate this difference, an ANOVA test was performed comparing data collection only of occasions 2 and 3, but the difference was not statistically significant ($F = 3.72$, df $= 1$, $p = 0.06$).

Despite this finding, the analysis of Figure 3 shows a different behavior of the two curves. It suggests that individuals in teams that used participatory planning continued learning after the first 100 days of the term. Therefore, these curves could probably differentiate more consistently at a later occasion than the third data collection (11 months after starting the political mandate). Indeed, a comprehensive planning process should include a periodic review, as indicated in item 2 (Are team meetings held at least

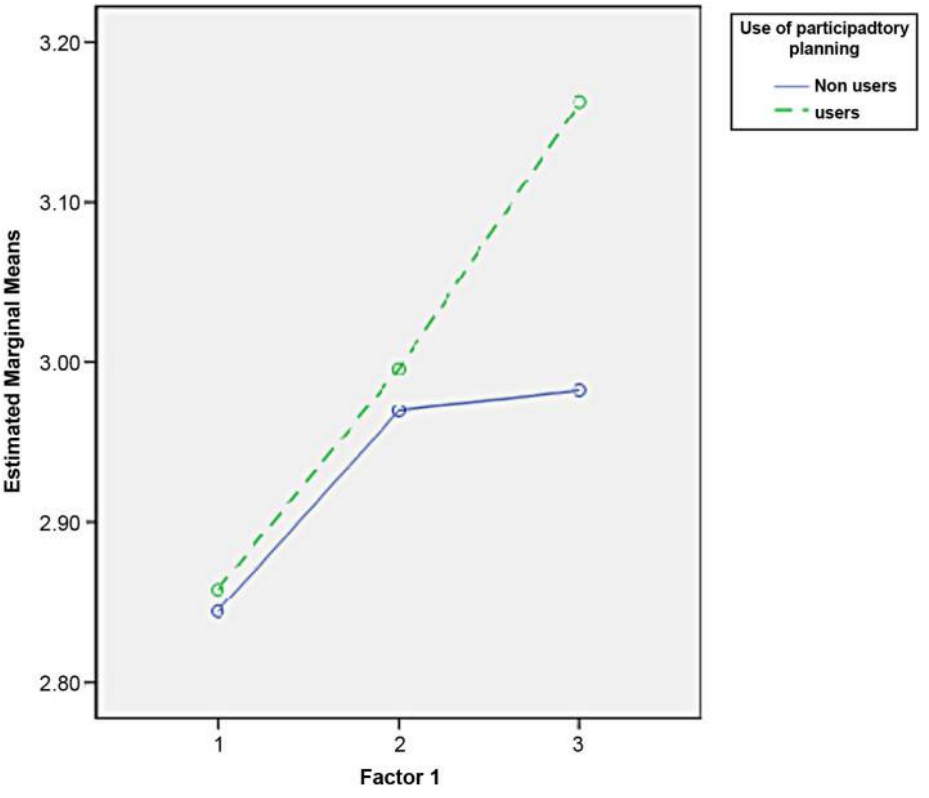

Figure 3.
Interaction between Factor 1 (*knowledge and skills for techno political management*) and the use of participatory planning

once a year to evaluate the plan drawn up in the beginning of the term?), of the instrument used to categorize the cities according to the use of planning. At these evaluation meetings – usually an activity that lasts longer than the monthly monitoring – individuals may perceive the differences between the desired and the actually achieved goals more clearly, thereby extracting more subsidies for their own learning. The 11-month longitudinal design may have been responsible for these findings, hence the third data collection may have been too early for detecting the influence of team participatory planning on workplace learning of Ks & Ss. A fourth data collection, after one year in office could probably better capture the differences between the slopes of curves in Figure 3.

5. Discussion

Tests with the two mastery level of competences factors suggested workplace learning of Ks & Ss in the first 11 months of the municipal term, but no change in the mastery of attitudes. The qualitative findings reported by Moraes (2010) support the view that attitudes have been acquired in previous experiences and more knowledge and skills have been learned during these 11 months. The test of differences between measurements in pairs showed that learning occurred especially in the first 100 days of the political mandate. This result is consistent with the commonly adopted practice of Brazilian teams of municipal officers. They develop specific plans for the first 100 days of the political term, after which they make new more informed plans for the whole four-year term. However, this also raises the reflection on the adequacy of such a short learning period, as continuous learning has been identified as relevant to high-level performance in organizations.

The different behaviors of the two factors are supported by the propositions of Gagné (1984) about the specific learning characteristics of KSAs. Gagné argued that attitudes are more difficult to modify than knowledge and skills. For this reason, the elapsed research period (11 months) may not have been sufficient for attitudes learning. This author suggests vicarious learning as a preferred way to promote attitude changes. In this case, however, this form of learning is significantly hindered by the fact that the newly appointed officers take their positions in replacement of (and in opposition to) a whole team in most municipalities. They have the occasional observation of officers from other municipalities as the only learning alternative.

No association has been found between the competences for techno-political management (Ks & Ss) and education. This finding is anchored in the propositions of Matus (2000), on the difficulty of developing the competence required for a public mandate through traditional academic training. The results suggest that this competence is acquired in practice, supporting the assumption that elected officials, even with low levels of education, can learn what is needed to carry out their mandates. However, previous experience on public management has been associated to these Ks & Ss. Therefore, the Ks & Ss needed to perform as a municipal officer were acquired during the political mandate, instead of being acquired in school. The findings suggest that the five learning strategies, used by those officials, may have been a key element in this acquisition process.

However, context was also very relevant: the population size of the cities, where those officers were exerting their political mandates, was associated to the techno-political management competences. This is possibly due to the tension and stress that comes

from the greater complexity that a larger number of citizens engenders, leading to more demand for learning. On the other hand, in smaller municipalities, there has been no increase in mastery of Ks & Ss after the first 100 days. These findings are consistent with the propositions on the technical-organizational learning environment dimension *tension and stress* (Illeris, 2004). Highly demanding environments would offer the challenges that stimulate acquisition of Ks & Ss. In addition, the use of participatory planning by them could also have been associated to this acquisition, after the participants had been more than one year at office.

The findings partly supported the relationships based on the theoretical model proposed by Illeris (2004). First, learning occurred only in terms of knowledge and skills. No statistically significant differences were found between the three successive measures of attitudes. Only one individual background variable seemed to be relevant: previous experience. This may be due to the characteristics of the studied professional activity. As for the dynamics of learning, another key component of the theoretical model, the tests showed a positive relationship between competence acquisition and the use of learning strategies at work. Intrinsic and extrinsic reflection is probably more important than the other two most commonly used strategies (seeking help with others and in written material). This may indicate that the increased use of certain strategies may bring greater benefits in terms of competence development (at least their Ks & Ss components).

Regarding the characteristics of the professional environment, the population size of cities resulted in differences in the acquisition of knowledge and skills. More gains occurred in larger municipalities, according to what is suggested by Illeris (2004) in relation to tension and stress. As for the use of participatory planning, the results did not show statistically significant evidence of differences between groups. However, they suggested a possible effect in promoting more verifiable changes in Ks & Ss if measures were made after a longer period.

The results on the use of the *intrinsic and extrinsic reflection* learning strategy strengthen the supposition that the inclusion of systematic reflection in work may be an important ally for learning among teams of municipal officers. They confirm other findings among bank managers that suggest this learning strategy as the greatest predictor of competence development (Brandão *et al.*, 2012).

Finally, from a methodological standpoint, this study showed the possibility of measuring workplace learning and the use of a longitudinal quasi-experimental design. Following what has been suggested by several authors, it has shown options for more comprehensive studies that may better define the phenomenon of workplace learning and identify its relationships with other variables. This study may also have contributed to give municipal officers and their parties some clues on how to accelerate the needed learning that should take place right after election.

6. Conclusion

There were some limitations to the study findings. One of them concerns the fact that the period for the last data collection may have been too short to verify the association of two variables included in the hypothesized model. Eleven months probably were not sufficient to statistically differentiate the effects of the adoption of participatory planning and the use of intrinsic and extrinsic reflection, when compared to the effects of the use of other strategies. Further research should be carried out to study the

association between these variables and workplace learning in longer longitudinal studies.

There are also limitations on the used learning measurement scale. It has been based only on self-reported KSAs. The collection of reports from others was not feasible, because there were no knowledgeable peers (from other cities?), immediate supervisors nor superiors. Self-reporting is more sensitive to the effects of social desirability, which may explain the high scores in attitudes since the first data collection. Thus, the use of attitudes as a criterion variable was impossible. Self-reports on Ks & Ss may be less sensitive to social desirability.

Regarding generalization of results, we highlight the limitations arising from the adoption of a non-random sample. Moreover, as participation in the survey was voluntary, it may have increased the likelihood of people who value the theme of learning to be respondents. This issue was clearly identified in the letter sent to them, when the first contact with the teams of each city was made.

The research focused on elected municipal officers' acquisition of managerial competencies they need to perform their job. It also sought to further understanding of workplace learning in general. The findings provide information, for example, to head members of political parties interested in promoting performance improvement of elected officers, as they suggest insights on possible ways to generate adequate learning opportunities to this public. They may also inspire human resource development professionals dealing with executives' development, as they face similar work conditions. They may consider systematic reflection as a way of promoting workplace learning opportunities to this public. Furthermore, in a broader view, the research findings also brought empirical evidence on the relationship between individual and contextual variables that should be considered in workplace learning.

Finally, these findings point to a possible change in the way certain managerial practices are usually seen. Apart from their role in coordinating actions in organizations, practices that provide space for reflection and knowledge interchange between peers should also be recognized as learning opportunities generators. The qualitative results reported by Moraes (2010) corroborate the assumption of the positive value of management practices that offer opportunities of social interaction and reflection about the work. Those opportunities included meetings and teamwork.

The study has demonstrated that a set of individual and contextual variables may be related to the development of municipal officers' competences that integrate "everything required to perform in a given situation" (Illeris, 2008, p. 11). However, "everything" meant only Ks and Ss, given the used scale of measurement, and those variables were limited to previous practice and the use of learning strategies in complex environments.

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