Strategic factors and barriers for promoting educational organizational learning

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Abstract

This article uses a global model to analyse empirically how the personal and professional development of educators (personal mastery) facilitates the creation of a series of basic shared values (shared vision) and of team learning by the members of the educational centre, these inter-related strategic factors favouring, in turn, educational organizational learning and subsequent improvement in organizational performance. Likewise, verification is made of different learning barriers that hinder the acquisition, dissemination and sharing of knowledge by blocking shared vision and team learning. Using a national survey in educational centres in Spain, we found that these hypotheses are verified and that organizational learning plays a key role in the generation of organizational performance.

Keywords: Educational organizational learning; Educational centres; Personal mastery; Shared vision; Team learning; Learning barriers; Performance

1. Introduction

For the optimum development of learning in educational centres, educators should firstly recognize, support and defend learning as a fundamental element and valuable tool for obtaining long-term benefits. Recognition begins by accepting the need for one’s own personal growth and learning (personal mastery). Personal mastery is the discipline of personal growth and learning (Senge, 1990a; Senge, Roberts, Ross, Smith, & Kleiner, 1994). It concentrates on the part of learning in the learning organization that is the realm of the individual, allowing us to constantly clarify and deepen our personal vision. In other words, it lets us concentrate the whole time on what we really wish for. Personal growth allows us to concentrate our energies, develop patience and see reality objectively, expanding personal aptitude and capability to learn and encouraging others to learn. From this constant search for learning rises the spirit of the intelligent organization. It is essential to establish educational centres that produce intellectual wealth and, at the same time, allow people to develop their humanity and values. Without doubt, people are the basis and the principle of all business competences; therefore, their personal development should be promoted.

Educators with personal mastery should encourage the acquisition, creation and transfer of...
knowledge. They should involve all the integral parts, irrespective of organizational level (students, other colleagues, etc.), so that they may acquire new knowledge, know its application, understand the reality, incorporate it into their own cognitive model and develop adequate behaviour aimed at their transformation. Shared vision is composed of a guiding philosophy or core ideology and a tangible image of what we aspire to become (Collins & Porras, 1991, 1996). It is the result of a creative orientation and generative conversation (Maani & Benton, 1999) that encourage a common commitment to the future we wish to achieve (Senge et al., 1994). This image causes enthusiasm and emotion, which are translated into moving from the specific to the image of the future. This process is similar to Senge’s creative tension, from which the organization learns. The vision brings people closer to the organization’s commitments (educating, learning, etc.) and, by involving them more closely with these commitments, promotes a collective sense of the educational centre’s aims.

Likewise, teamwork and team learning should be encouraged as a central means of learning within educational centres (Veenman, Van Benthum, Bootsma, Van Dieren, & Van Der Kemp, 2002). Team learning can be seen as a process of alignment and development of the team’s capability, with the aim of creating the results the members want. This form of learning transforms collective aptitudes for thought and communication such that the teams develop an intelligence and capability that are greater than the sum of the members’ individual talents. This learning allows them to discover what brings the best results.

Shared vision and team learning are related, since shared vision allows an essential space to be created for the development of learning and teamwork. Both facilitate educational organizational learning and improvement in organizational performance. We define educational organizational learning as the capacity within an educational centre to constantly improve the intellectual level of its members and improve performance. This activity involves knowledge acquisition (development or creation of skills, insights, relationships), knowledge sharing (dissemination to others of what has been acquired by some) and knowledge utilization (integration of the learning so that it is assimilated, made widely available and generalized to new situations). As Senge (1990a, p. 3) states, learning organizations are “organizations where people continually expand their capacity to create the results they truly desire, where collective aspiration is set free, and where people are continually learning how to learn together”.

It is also important to analyse the influence of learning on performance. The word “learning” usually has positive connotations. It is thus usually associated with improvements in performance. However, we should bear in mind that, as with individuals, learning does not necessarily lead to an intelligent or improved behaviour. For learning to improve performance, we must obtain the correct knowledge from that learning and ensure that it is translated into appropriate actions. Only so we will improve organizational performance. Different barriers or obstacles hinder the obtaining of educational organizational learning by impeding the creation of a correct shared vision or team learning. It is only by recognizing these problems and facing up to them that we can overcome them.

In this study, we aim to verify how educators’ personal mastery facilitates the presence of basic shared values and team learning in the members of the educational centre, these inter-related strategic factors (shared vision and team learning) favouring, in turn, educational organizational learning and subsequent improvement in organizational performance. We also verify the existence of different learning barriers that hinder the acquisition, dissemination and sharing of knowledge by blocking shared vision and team learning. To achieve these goals and to fill in the empirical gaps existing in this field of research, we used a sample of 200 educators belonging to different educational centres in Spain.

2. Background

There are currently many signs that learning is acquiring great importance and attracting much attention, on both the individual and the organizational level. In academic and scientific circles, learning is currently one of the main challenges in the study of organizations, and interest in organizations that learn is increasing. We form part of a Society of Knowledge in which the old mechanical forms of thought from the industrial era are no longer of any use. We now need to create contexts in which the organization’s members can learn and experience systemic thought, question their mental assumptions and models, encourage dialogue, create a vision and carry out their actions effectively and efficiently.
The need to turn the organization into a learning entity (intelligent organization) is becoming an ever more popular idea among specialists and researchers. How to achieve it is not easy and raises many unanswered questions, even more so in the case of educational centres. Here, data are transformed into information via the ‘data process’. Subsequently, the information is turned into knowledge via the ‘learning process’. The resulting knowledge is a dynamic integration of experiences, values, contextualized information, perceptions and ideas that establish a mental structure allowing the evaluation and incorporation of new experiences, ideas and information. Thus, the knowledge is a combination of idea, learning and mental model, enabling distinctive basic educational competences to be obtained through a ‘mental creation process’. These competences generate value and competitive advantages.

Only educational centres that have an adequate learning process can incorporate and correctly exploit knowledge on a personal, group or organizational level. Learning enables the development of new abilities and knowledge, increasing the organizational capacity to act efficiently and improving the performance of both the educational centre and its members. Thus, learning comprises the acquisition (cognitive development), dissemination and utilization of this knowledge (behavioural development). Educational centres attempt to stay afloat and face up to adversities through their ability to learn and act in order to satisfy the changing needs of students and of society in general. These centres develop the central capacity for generative learning when they not only detect and correct existing errors (adaptive learning) but also change values, strategies and the theory used in the educational centre, providing added value to students and to society and satisfying their latent needs for new knowledge, teaching and education.

Nowadays, the close link between competitive advantage and organizational learning (e.g., Easterby-Smith, 1998; Moingeon & Edmondson, 1996; Senge, 1990a; Ulrich, Von Glinow, & Jick, 1993) reveals the need to carry out empirical studies to identify, analyse and promote the strategic factors that enable educational centres to possess the capacity to learn generatively.

The first significant factor in achieving educational centres that encourage organizational learning is the presence of educators with the real capacity to learn and a view of learning as investment, not expenditure. Personal mastery should be analysed as the discipline of growth and personal learning. Because people are the basis and principle and all competences, their personal development should be promoted. Thus, if educators manage to gain a high level of personal mastery, there will be important positive effects on learning in educational centres. Educators with a high degree of personal mastery will achieve greater communication between the normal conscious (a conscious mind) and the subconscious (the automatic or subconscious mind). This will allow them to carry out extremely complex tasks with ease and will make them more committed to their own development as well as to that of others and the entity (Senge, 1990a; Senge et al., 1994, 1999).

Personal mastery helps the organization to generate a shared vision—originating from personal visions—and subsequent organizational learning. To achieve this we must create a feeling of community within the organization. This encourages collective commitment, which acts as a driving force that affects and unites all the members in an effort to ensure the common interest. This vision should be oriented towards the future and requires the creation of an adequate organizational flexibility that is transformed into flexibility of vision the more we work on it, learning from the past and the present (Senge, 1990a; Senge et al., 1994).

Personal mastery also affects the propensity to encourage teamwork and team learning, which, in turn, affect organizational learning. Without team learning, the organization cannot learn, since the team is the fundamental learning unit, over and above the individual himself. Furthermore, when teams learn, the members learn. Teams are based on intelligent people who have developed the skills of individual learning such as knowing how to listen, reflect, read, write, calculate and use their knowledge to advantage; in other words, individuals with a high level of personal mastery (Guns, 1996; Senge, 1990a). Shared vision plays an equally important role in building team learning. We should point out that individuals do not abandon their own vision for that of the team’s vision. Rather, the team’s vision is a reflection of its members’ individual visions (Senge, 1990a). Though much has been written on teams and on learning in organizations, there is still no full understanding of the value of learning in teams. This may be due to the fact that
most of the empirical research on team learning has taken place in laboratories rather than in real-life organizations (Edmondson, 1999), hence the interest in analysing this variable in educational centres.

Teams must learn to identify, synthesize and eliminate the factors blocking learning (Hart, 1996). Undoubtedly, team learning and shared vision are negatively affected by barriers, disorders or obstacles that block them and hinder subsequent organizational learning. In addressing how organizations can improve their team learning and shared vision, researchers have identified a number of problems that organizations face when trying to develop these strategic factors (e.g., McGill & Slocum, 1994; Niemi, 2002; Rosenholtz, 1986; Senge, 1990a; Shaw & Perkings, 1992; Snyder & Cummings, 1998). Because these problems prevent organizations from achieving their learning potential, they can have an adverse effect on organization’s performance. Understanding the nature of the problems is a necessary first step towards resolving them. A second step should be finding a way to synthesize these different problems into a few learning barriers. Knowledge of the interrelated causes is essential both for analyzing the barriers and for designing appropriate interventions to treat them. Unfortunately, although researchers have identified a number of problems, there have been few attempts to synthesize these problems into two or three barriers.

The main problems that influence the achievement of team learning and shared vision in the educational centre are: (1) multiple-personality disorder, (2) temporal myopia, (3) perturbations, (4) superstitious learning, (5) fancy footwork, (6) paralysis, (7) social defences, (8) independent sub-units, (9) defensive routines, (10) projection, (11) over-emphasis on competition, and (12) reactivity.

2.1. Multiple-personality disorder

Departmental boundaries and dysfunctional reward and control systems may encourage people not to share their visions (Wenger, 1997). As a result, the educational centre may appear to act as if it has multiple personalities or inter-competing perspectives, to lack a shared vision that facilitates coordination and correct team learning. This disorder is related to the problem of multiple independent sub-units.

2.2. Temporal myopia

This myopia (and spatial and failure myopia) prevents the correct contemplation of reality, making learning more difficult. It prevents people from understanding that what is adequate in the short run (exploitation) is not necessarily so in the long run (exploration) and vice versa. Thus, a simplified world is created that concentrates more on the past than on the present and/or future. This specialization may generate a short-term competitive advantage but also produces a lack of adaptive capability potential in the long term, there being more overall disadvantages than advantages (Levinthal & March, 1993). It generates competency traps (we focus more on short-term rewards and the use of old competences and do not strive for new knowledge that provides strategic competences in the long run).

2.3. Perturbations

Noise or perturbations in the learning process can lead to situations in which early signs, wrongly interpreted by the noise, give rise to highly inappropriate results (Lounamaa & March, 1987). The presence of experimental process noise may hinder team learning or shared vision. Small variations in apparently unimportant elements will thus bring about ambiguous and/or erroneous results. In short, perturbations prevent us from seeing the cause–effect relationship (Bohn, 1995).

2.4. Superstitious learning

Ignorance, conflict and ambiguity can lead us to associate diverse outcomes with actions without there being a true cause–effect relationship. This causes a fictitious erroneous relationship on which we will make equally erroneous decisions. If these decisions are not corrected quickly; very negative effects will ensue: an interpretation is generated that usually coincides with superstitious learning (Levinthal & March, 1993; March & Olsen, 1975). A team or organization may incorrectly believe that its own actions will achieve a positive result by repeating the action which in fact yields harmful results (Argyris & Schön, 1978; Levitt & March, 1988). Or which causal relationships between organizational actions and environmental effects may be explained without adequate knowledge of
the alternative explanations or without consideration of whether these interpretations are trustworthy (Levitt & March, 1988).

2.5. Fancy footwork

This is related to the defensive routines that people use with defensive reasoning. People perform actions that prevent them from seeing the incongruence of what they are doing or that allow them to reject the presence of such incongruences. When this occurs, they will blame others. Fancy footwork is very dangerous to the team or organization. If everybody uses it, this blindfolded attitude will affect shared vision and prevent people from recognizing their commitments. If members feel the presence of fancy footwork but are unable to change the situation, they will feel bad and a situation of “organizational malaise” (Argyris, 1990) will be created.

2.6. Paralysis

This is the inability to act, such that, although clear plans and proposals exist, they are never implemented due to organizational constraints, confusion, apathy or complacency (Sitkin, 1992); a lack of intrinsic or extrinsic motivation regardless of goal consensus (Hedberg, 1981); role definitions, discrepant goals, or contradictory proposals (March & Olsen, 1975); or a lack of decision consensus, which gives rise to a lack of commitment from different teams (Walsh, 1995). A situation of "paralysis by analysis" (Eisenhardt, 1989) is equally possible, since people are anxious about negative outcomes and thus hesitate when it comes to making decisions or sanctioning actions.

2.7. Social defences

To drive out the defensive routine is complicated, for both social and psychological reasons. On a social level, educational management blames what must be said and heard, thus entering into anti-learning. When threats arise, defensive reasoning comes to the fore, leading management to censor something external and protect self without admitting it, even though management insists it is protecting the team, the department or the centre (Argyris, 1994).

2.8. Independent sub-units

The existence of a large number of independent learning sub-units may have an effect on results. Under certain circumstances, too many learning frontiers can reduce the usefulness of said learning (Lounamaa & March, 1987). Likewise, certain events may facilitate learning on one level while preventing it on another (Levinthal, 1991).

2.9. Defensive routines

These are ingrained habits, actions or practices that are used to protect us from feeling threatened, embarrassed or surprised when we express our feelings. They act as a protective barrier for our deepest assumptions. These routines usually become organizational and are of a defensive nature. Although they prevent the organization’s members from feeling embarrassed or threatened when possible errors are discovered in deep-rooted layouts (they hide the deepest assumptions), they also stop the team or organization from discovering the causes of the embarrassment or threat by encouraging mediocrity and promoting anti-learning (Argyris, 1990). The routines usually mask themselves. They are systemic and are thus incorporated into the organizational culture (Senge, 1990a). Because most people subscribe to them, the routines remain in place, affecting new arrivals even though organization members come and go. Breaking the defensive routine is difficult both for social and psychological reasons (Argyris, 1994).

2.10. Projection

This learning disorder occurs when centre members distort what they see for different reasons, such as the ambiguity of environmental data, which makes its interpretation more difficult (Beyer, 1981); political interests that lead to perceptions not supported by available data (Hickson, 1987); or the erosion of goals by lowering the aspiration levels (Hedberg, 1981).

2.11. Over-emphasis on competition

One of the main dysfunctions hindering learning is the presence of excessive competition (Kofman & Senge, 1993). Fascinated with competition, we often find ourselves competing with the every people with whom we need to collaborate, destroying the proper
balance between competition (it can promote invention and daring) and cooperation. Overemphasis on competition makes looking good more important than being good, turning ignorance into a sign of weakness and causing the so-called “skilled incompetence” of Argyris (1990).

2.12. Reactivity

The tendency to change only in reaction to outside forces is also harmful to learning. External reaction is not bad in itself. The problem is that our current institutions usually undermine our intrinsic drive to learn. We should promote creation where the impetus for change in the creating mode comes from within, from the individual and collective power of the organization’s members (Kofman & Senge, 1993). It is necessary to learn proactively.

In the following sections, we synthesize these problems into a few principal learning barriers and present a systematic model consisting of eight hypotheses about how personal mastery and learning barriers affect shared vision and team learning and how these factors are related to organizational performance through organizational learning. The factors we have just analysed are among those most frequently analysed in the relevant literature (e.g., Kofman & Senge, 1993; Senge, 1990a; Senge et al., 1994; Slater & Narver, 1995). We recognize that some other factors might be included in this model; however, it was necessary to limit our model to be able to offer empirical evidence for our arguments.

3. Hypotheses

3.1. Personal mastery capability

Any organization requires its people, the basis and principle of all business competences, to improve their personal and professional development potential. Only through this search for constant, individual and personal learning can the spirit of the “intelligent organization” be achieved.

Shared visions emerge from personal visions developed through personal mastery. “Personal mastery is the bedrock for developing shared visions. This means not only personal vision, but commitment to the truth and creative tension—the hallmarks of personal mastery” (Senge, 1990a, p. 211). Thus, shared vision and personal mastery are almost always simultaneous projects. In the context of what they want for the organization, people must inevitably reflect on what they want for themselves, on the current reality and on their objectives (Senge et al., 1994).

In the same way, personal mastery is closely linked to team learning. “Team learning is the process of aligning and developing the capacity of a team to create the results its members truly desire. It builds on the discipline of developing shared vision. It also builds on personal mastery, for talented teams are made up of talented individuals” (Senge, 1990a, p. 236). Individuals do not abandon their own vision for that of the team. Rather, team vision is a reflection of their individual visions, the fruit of personal mastery (Senge et al., 1994). The team members should be committed in one direction; that is, they must perceive a common fate (Maani & Benton, 1999). Such alignment and commitment to a shared vision enable the team to develop its capacity to think and act in a joint and synergic manner (Moravec, Johannessen, & Hjelmas, 1997; Senge et al., 1994). Based on the above, we can formulate the following hypotheses:

H1. Personal mastery capability will be positively associated with shared vision capability.

H2. Personal mastery capability will be positively associated with team learning capability.

3.2. Learning barriers

Numerous authors have studied the diverse problems that hinder organizational learning. In this study, we have analysed the main obstacles that block, delay, distort or prevent educational organizational learning by acting on the presence of a shared vision or team learning why we group them into a few main learning barriers.

These learning barriers explain why the members of educational centres can work as a team without there necessarily being team learning or the sharing of a common vision (e.g., Argyris, 1990, 1994; Levinthal & March, 1993; Senge 1990a). They can also prevent the correct realization of the process that integrates individual and team learning and/or the process by which one personal vision feeds off other personal visions to build up a shared vision—such that individual learning may never be shared, disseminated and absorbed by the other members, hindering their growth in intellectual capital. Taking the above into account, we have established the following hypotheses:
H3. Learning barriers will be negatively associated with shared vision capability.

H4. Learning barriers will be negatively associated with team learning capability.

3.3. Shared vision capability

The team is formed by a small number of people with complementary skills who are committed to a common purpose or vision, set of performance goals, and approach for which they hold themselves mutually accountable (Katzenbach, 1997; Katzenbach & Smith, 1993). If we want the educational centre to learn, its constituent teams need to learn. Team learning is the next logical step after shared vision, since a collective vision gives the team the energy to learn together and a context in which to work as a team. A joint aspiration gives the team members a motivation for joint learning. Furthermore, shared vision offers a framework for the emotional changes that team learning requires (Senge et al., 1994).

A visionless team cannot create its own future but only reacts to it (Collins & Porras, 1991). Without vision we will have adaptive team learning. With shared vision we will obtain generative team learning. Shared vision gives us the strength to reveal our thoughts to the other team members, recognizing defects and rejecting underlying assumptions, learning from our mistakes, having the courage to experiment and the will to take risks (e.g., Mintzberg, 1994; Senge, 1990a). Likewise, shared vision is a vision that rests upon the other members of the team or the organization (Senge, 1990a; Senge et al., 1994). Based on all this, we advance the following hypothesis:

H5. Shared vision capability will be positively associated with team learning capability.

Likewise, shared vision, which guides an organization’s learning, allows all the energies of the educational centre’s members to be concentrated and put into play (Slater & Narver, 1995). It is therefore one of the central capabilities to encourage organizational learning (Maani & Benton, 1999; Senge, 1990a; Senge et al., 1994) and “a necessary but not a sufficient condition for the development of an organization that can learn, adapt, and respond effectively to a rapidly changing competitive environment” (Dess & Picken, 2000, p. 22). Not creating a shared context (a shared vision) prevents the implementation of a learning laboratory (Leonard-Barton, 1992), blocking knowledge management and neutralizing organizational learning (Fahey & Prusak, 1998).

Hence, there is a positive relationship between shared vision and organizational learning (e.g., Hodge, Anthony, & Gales, 1998; Hodgetts, Luthans, & Lee, 1994; Senge, 1990a; Senge et al., 1994; Thomas, 1994). Educational centres that learn possess a common or shared vision that pushes them towards action and the fulfilment of their objectives (Landier, 1992). Such rationales and evidence imply the following:

H6. Shared vision capability will be positively associated with educational organizational learning capability.

3.4. Team learning capability

From the perspective of resources and capabilities, the transformation processes of the standard resources in core capabilities imply learning. There are different phases in the core capability development process. The essential elements in this process of creating core competences are individuals and teams, since they generate knowledge when they solve problems in different stages. The result is the development of organizational capabilities, but these are the result of the individuals and teams and of their learning (Andreu & Ciborra, 1996).

The strategic literature has established the presence of a relationship between team learning and organizational learning. In this sense, although the scope of the learning is organizational, “learning organizations” defend their learning through work teams (Edmondson, 1999; Katzenbach & Smith, 1993; Swierenga & Wierdsma, 1992). In fact, if we analyse quick-learning organizations, we see that the team occupies a central role, encouraging the members of these organizations to learn together (Guns, 1996).

Without teams and team learning, the organization cannot learn. The team is the basic learning unit, more so than the individual himself. According to Lynn (1998), the team can learn not only from itself (within-team learning is the learning that occurs within the context of the team itself, the equivalent of learning by doing), but also from other teams within the organization (cross-team learning: the experience gained by one team within a company and then transplanted to another) or from
the market (market learning: knowledge gained external to the firm from competitors, suppliers, and customers). The role of the team is so important that team learning is one of the five disciplines that promote organizational learning. There is a positive relationship between team learning and organizational learning (Senge, 1990a; Senge et al., 1994), for the adoption of a systemic perspective forms the basis for turning individual and team learning into organizational learning. The very team learning wheel exposes how learning occurs in a team in which there is public reflection, shared feeling, joint planning and co-ordinated action (Senge et al., 1994).

The presence of self-led work teams encourages socialization and allows individuals to interact with each other and share experiences and mental models (Nonaka, 1994; Nonaka & Takeuchi, 1995). Thus teamwork and team learning help to initiate the knowledge creation process, which will generate organizational learning (e.g., Nonaka & Johansson, 1985; Nonaka & Takeuchi, 1995; Nonaka, Reinmoeller, & Senoo, 1998). However, although the organizational knowledge creation process takes place on a team level, the organization will provide the necessary conditions to make it possible (Nonaka & Takeuchi, 1995). Thus, learning from the perspective of knowledge can be understood as the process of creating new knowledge produced within the organization’s individuals and teams and as the process that encourages intraorganizational and interorganizational knowledge (Sánchez & Heene, 1997).

Nevis, Dibella, and Gould (1995) and DiBella, Nevis, and Gould (1996) highlight the importance of teamwork and team learning for organizational learning, underlining the propensity we may have to develop individual or team skills as one of the seven learning orientations. Team learning is the point of union between individual and organizational learning. “The individual learning should be embedded in a concept of team learning, which in turn should be embedded in a concept of organization learning... at the individual level, the critical process is interpreting; at the group level, integrating; and at the organization level, institutionalising” (Inkpen & Crossan, 1995, p. 598). In short, team learning is so important that certain authors have studied learning on a team level but not on an organizational level (e.g., Honey & Mumford, 1982; Pedler, 1991; Revans, 1982, 1983). Taking the above into account, we can formulate the following hypothesis:

**H7.** Team learning capability will be positively associated with educational organizational learning capability.

### 3.5. Organizational performance

The influence of educational organizational learning on the educational centre’s performance should be analysed empirically, since there is very little knowledge of whether learning is transformed into performance (Snyder & Cummings, 1998) and of the ambiguity or time-lag between the two (learning today will affect performance tomorrow). The possibility that the results of learning will be disguised by exogenous factors makes the study of such a link even more difficult (Inkpen & Crossan, 1995). To suggest that incremental learning should always lead to incremental performance improvements is misleading (Inkpen & Crossan, 1995; Tsang, 1997), since it is possible that learning may not improve the organization’s results because it is not correctly put into practice (Cook & Yanow, 1993; Hoopes & Postrel, 1999; Huber, 1991). However, generally speaking, organizational learning has a positive impact on performance improvements and on changes in behaviour, leading towards performance improvements (e.g., Argyris & Schön, 1978; Bohn, 1994; Dodgson, 1993; Fiol & Lyles, 1985; Garvin, 1993; Senge, 1990a).

Thus, organizations or educational centres with a greater amplitude, depth and speed of learning have higher levels of performance (Demarest, 1997; Hurley & Hult, 1998; Zahra, Ireland, & Hitt, 2000). The presence of a shared vision and team learning that favour the sharing of knowledge among all the members of the centre also has a positive effect on organizational performance. Nor should we forget that educational centres that promote the learning spirit willingly sacrifice part of today’s performance in order to achieve improved performance tomorrow. Present performance is the fruit of yesterday’s learning, and tomorrow’s performance will be the product of today’s learning (Guns, 1996; Senge, 1990b). Since learning is a major component in any effort to improve organizational performance and to achieve a sustainable competitive advantage (March, 1991), we propose:

**H8.** Educational organizational learning capability will be positively associated with organizational performance.
4. Methodology

This section presents the research methodology used in this study. We first describe the sample used and then go on to discuss how each of the variables included in the study is operationalized. Finally, we present the statistical analysis.

4.1. Sample and procedure

The first necessary step in an empirical study is selecting the population to be analysed (Schofield, 1996). The population for this study consisted of the high schools and universities from two of Spain’s autonomous regions (Andalusia and Madrid). The sample of educational centres was selected by means of a stratified sampling with proportional affixation (types of educational centre and autonomous regions) from the database of the Spanish Ministry of Education and Science. Choosing a sample of firms located in the educational sector and in a relatively homogeneous geographic, cultural, legal and political space minimizes the impact of the variables that cannot be controlled in the empirical research (Adler, 1983; Hofstede, Neuijen, Ohayv, & Sanders, 1990).

Drawing on our knowledge of key dimensions in this study, previous contacts with interested teachers (practicing teacher, teachers who left teaching, etc.), and new interviews with consultants and academics interested in the topic and familiar with the Spanish education system, we developed a structured questionnaire to investigate how educational centres face learning issues. We omitted the responses of the interviewees in this first stage from the subsequent analysis of the survey data.

As in other research in the field of knowledge and organizational learning (e.g. Simonin, 1999; Yli-Renko, Autio, & Sapienza, 2001), we provided one questionnaire per sample unit to a sufficient number of sample units, such that the information obtained would be representative and extrapolatable to the population (external representativity). We decided to follow other recent research (e.g. Cant, 2004; Colley & Volkan, 2004) in using educators (specifically directors of studies and department heads) as our key informants, since they receive information from a wide variety of members in the organization and are therefore a very valuable source for evaluating the different variables of the organization. Educators also play a major role in forming and moulding these variables by determining the types of behaviour that are expected and supported (Baer & Frese, 2003). Although numerous actors may be involved in the process, those polled in this study are ultimately responsible for plotting the organization’s direction and plans and for guiding the actions carried out to achieve them. In addition, we chose the same types of informant to ensure that the level of influence among the organizations is constant, which increases the validity of the variables’ measurements (Glick, 1985).1

Surveys were mailed to the 400 selected centres along with a cover letter. We used this method because it allowed us to reach a greater number of centres at a lower cost, to exert less pressure for immediate reply, and to provide the interviewees with a greater sense of autonomy. In addition to the questionnaire, the envelope contained a stamped addressed envelope for returning the survey. The cover letter explained the goal of the study and offered recipients the possibility of receiving the results once the study was completed. To reduce possible desirability bias, we promised to keep all individual responses completely confidential and confirmed that our analysis would be restricted to an aggregated level that would prevent the identification of any organization.

The questionnaires were sent in April 2001. Five weeks later, a second mailing was done and the educators were contacted by phone in order to increase the level of response. The completed questionnaires were received during the months of May and June 2001. The respondents were given the possibility of contacting the interviewer by phone or e-mail with any queries, suggestions or recommendations they had. Two hundred valid questionnaires were returned, which gives an overall valid response rate of 50% (Table 1). Fifty nine per cent of the respondents were male and 41% were female. In all, 78.9% of the respondents were in the 25–45 age

1We are deeply grateful to one of the referees of this article for suggesting the need to confirm that the information provided by the main person polled was representative of the organization (internal representativity). To confirm the validity of the information provided by the director of studies or department head, we obtained additional information from ten professors in several educational centres. We then used different tests to contrast these results with those obtained from the main person polled for each centre and confirmed the non-presence of significant differences in the variables studied. Once we confirmed the existence of internal representativity in the sample, we followed the recommendation of different previous research (e.g. Glick, 1985) in only considering the questionnaires obtained from the director of studies/department head.
group. 58.8% had less than 10 years of experience in the educational centre. We did not find significant differences between the respondents and the sample or between early and late respondents. Likewise, a series of $\chi^2$ and $t$-tests revealed no significant differences between the replies of directors of studies and department heads or corresponding to gender, geographical location, age and years of experience in the educational centre or type of educational centre.\(^2\)

Since all measures were collected in the same survey instrument, the possibility of common method bias was tested using Harman’s one-factor test (see Konrad & Linnehan, 1995; Scott & Bruce, 1994). A principal components factor analysis of the questionnaire measurement items yielded ten factors with eigenvalues greater than 1.0 that accounted for 65% of the total variance. Since several factors, not just one single factor, were identified and since the first factor did not account for the majority of the variance (27%), a substantial amount of common method variance does not appear to be present (Podsakoff & Organ, 1986).

### 4.2. Measures

#### 4.2.1. Personal mastery capability

Analysis of personal mastery reveals that certain circumstances are needed in order for it to develop. The educational centre must promote personal growth and learning and provide an appropriate organizational climate (e.g., Dibella et al., 1996; Nevis et al., 1995; Senge, 1990a; Slater & Narver, 1995). Educators with a high level of personal mastery know their current reality, have a personal vision and adequately handle the creative tension that is generated so that the reality can be made to resemble the vision (e.g., Fritz, 1989; Senge, 1990a, 1990b; Senge et al., 1994). They possess the necessary competences, skills and abilities to face up to professional and personal challenges successfully and have a constant personal desire to learn; they are committed to educational work, patience, perseverance and the spirit of sincerity (e.g., Aubrey & Cohen, 1995; Senge, 1990a; Senge et al., 1994).

We asked the educators to evaluate the importance they gave to different practices that promote personal mastery, using 11 items. These were assessed on a seven-point scale, with high ratings indicating important development of personal mastery. Exploratory principal components analysis with varimax rotation showed that we had to eliminate one item, since the anti-image correlation matrix showed that the measure of sampling adequacy (MSA) was less than 0.5, which may indicate that a variable that does not seem to fit with the structure of the other variables. These items formed two clear factors. The first factor explains 33% of the variance, and the seven items related to this first factor were directly linked to the educator’s personal mastery with a high reliability ($\alpha = 0.76$). We calculated the arithmetical mean of these items; a high score indicated a high degree of personal mastery of the educator. The second factor, formed by three items reflecting creative tension, explained 12% of the variance but presented a low reliability ($\alpha = 0.52$) and therefore was not included in our research. The appendix shows the items in this and the other measures used in this study.

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\(^2\)Cultural differences between different centres can and usually do affect professional development and other strategic variables. Culture is a factor that must be taken into account in studies of education and of organizational learning, since failure to do so may produce a bias of acculturation in the research (e.g., Barkema, Bell, & Pennings, 1996; Elsass & Veiga, 1994). Still, our consideration of university schools and high schools, the use of the same types of informant (Glick, 1985), and the use of organizations located in a relatively homogeneous cultural space (Adler, 1983; Hofstede, Neuijen, Ohayv, & Sanders, 1990) in order to minimize the impact of culture have led to the non-presence of significant differences between the two kinds of centre in the variables analysed for the sample chosen in this research.
4.2.2. Learning barriers

As we have already mentioned, numerous obstacles can prevent, block or delay organizational learning by acting on team learning and shared vision. Based on prior research studies (e.g., Argyris, 1994; Argyris & Schön, 1978; Kofman & Senge, 1993; Levinthal & March, 1993), 12 items were formulated with the aim of synthesizing these problems (multiple-personality disorder; temporal myopia; perturbations; superstitious learning; fancy footwork; paralysis; social defences; independent sub-units; defensive routines; projection; overemphasis on competition; reactivity) into a few principal learning barriers and examining whether these barriers existed in the educational centres analysed. The educators evaluated the importance of these problems on a seven-point scale with high rating indicating serious problems. Exploratory principal components analysis with varimax rotation showed that these items formed two clear barriers. Thus, the first factor explains 34% of the variance, and the six items related to this first factor (perturbations, superstitious learning, fancy footwork, social defences, defensive routines, projection) were directly linked to the organizational defensive model. This model prevents correct learning for social and political reasons, routines, perturbations, and inaccurate perception of cause-effect relationships. We calculated the arithmetical mean of these items; a high score indicated a high barrier to learning. The items presented a high reliability ($\alpha = 0.75$). The second factor explains 11% of the variance, and the six items related to this second factor (multiple-personality disorder, temporal myopia, paralysis, independent sub-units, overemphasis on competition and reactivity) were directly linked to organizational inertia. This factor reflected the reasons that proactive learning, learning in the long term, and learning without overemphasis on competition are blocked. We calculated the arithmetical mean of these items; a high score indicated a high barrier to learning. The items presented a high reliability ($\alpha = 0.68$).

4.2.3. Team learning capability

There are numerous scales that attempt to measure team work and learning (e.g., Ramamoorthy & Carroll, 1998; Shaw, Duffy, & Stark, 2000; Wagner, 1995). Based on these, we have drawn up a scale which asked the educators to evaluate the importance they gave to different characteristics that allow team learning to be promoted, using nine items (atmosphere of team dialogue, good communication channels, spirit of openness, preference for working collectively, team heterogeneity, rewards and incentives for teamwork, informal meetings, collective challenges, spirit of cooperation and companionship). These were assessed on a seven-point scale, with high ratings indicating significant development of team learning. Exploratory principal components analysis with varimax rotation showed that these items formed two clear factors. The first factor explained 44% of the variance, and the seven items related to this first factor were directly linked to the conditions that encourage team learning with a high reliability ($\alpha = 0.86$). Due to the importance of analysing these characteristics in our research (e.g. collectivism, dialogue, communication), the seven items were used to measure team learning in our global model. The second factor, formed by two items that reflect the existence of salary and job heterogeneity in the team, explained 13% of the variance, but presented a low reliability ($\alpha = 0.16$). Therefore, was not used in our research.

4.2.4. Shared vision capability

The first step in sharing a vision is ensuring that others understand this vision. For this to happen, the vision should be simple, clear and well communicated. Only then will it be understood by all the educational centre’s members (Oswald, Mossholder, & Harris, 1994). Furthermore, this vision should encourage the presence of a shared commitment to the future we wish to achieve. A lack of commitment to and confidence in the vision will lead to a negative situation of enlistment or mere observance (Senge et al., 1994). The vision should not be imposed on all the other members of the centre, since this would bring about apathy and complacency (Maani & Benton, 1999). An educational centre with shared vision is not made by a single charismatic visionary educator. Rather, it is a centre in which the responsibility of describing the vision falls upon all its members. The vision is present at all levels, and each individual or team makes this vision its own, perhaps adapting it slightly but maintaining a coherence with the shared vision of the centre itself (Collins & Porras, 1991). In short, the vision is born of the personal vision of each person and of the creative synthesis generated by interaction with the individual visions of the other members of the centre (Senge, 1990a; Senge et al., 1994).
Based on previous scales that measured clarity, vision sharing, trust in the vision, the presence of similarity in the goals to be reached and coherence with the personal vision and with the individual visions of others (e.g., Jehn, 1995; Oswald et al., 1994; Tsai & Ghoshal, 1998), we asked the educators to evaluate the importance they gave to these key characteristics of shared vision using five items. These were assessed on a seven-point scale, with high ratings indicating important development of a shared vision. Exploratory principal components analysis with varimax rotation showed that these items formed two clear factors. Thus, the first factor explained 50% of the variance, and the three items related to this first factor were directly linked to sharing a vision in the educational centre with a high reliability ($\alpha = 0.76$). Due to the importance of analysing these characteristics (clarity, sharing and trust in the shared vision) in our study, we used these three items to measure shared vision in our overall model. The second factor, made up of two items that reflected the coherence between the educational centre’s shared vision and the personal and individual visions, explained 16% of the variance but presented a low reliability ($\alpha = 0.41$). Therefore, it was not used in our research.

4.2.5. Educational organizational learning capability

We should encourage organizational learning in educational centres as a mechanism for the generation of distinctive basic educational competences that allow the results obtained to be improved. Based on the existing literature (e.g., Fiol & Lyles, 1985; Nonaka & Takeuchi, 1995; Senge, 1990a), we asked the educators to evaluate whether their centre had ongoing processes in place to search for the acquisition of new knowledge and changes in behaviour oriented towards improving the educational results (cognitive and behavioural change). We also asked whether the acquisition, sharing, dissemination and application of knowledge and learning were encouraged among the different members (organizational learning process). Likewise, they were shown the ideal model for an intelligent educational centre, with a view to evaluating whether the centre surveyed responded to that model. These three items were assessed on a seven-point scale, with high ratings indicating significant organizational learning. We validated our scales using a confirmatory factor analysis and showed that the scale was unidimensional with a high reliability ($\alpha = 0.77$). We used the three items to measure shared vision in our global model.

4.2.6. Organizational performance

We established a scale to measure different aspects of organizational performance in educational centres. We asked the educators to evaluate the following on a seven-point scale: the personal satisfaction their work gave them; the level at which educational innovations were implemented; the agile, quick implementation of the new knowledge learned; the centre’s ability to absorb new data, information and knowledge from students, colleagues or other centres with a view to adapting them to our educational systems; the centre’s capacity to anticipate and engage the changes stemming from educational reform and the demands of future students; the improvement in educational quality; the entrepreneurial culture; and economic viability of the educational centre. High ratings indicated good educational organizational performance. We validated our scales using a confirmatory factor analysis and showed that the scale was unidimensional with a high reliability ($\alpha = 0.76$). We calculated the arithmetical mean of theses items; a high score indicated good educational organizational performance.

4.3. Model and analysis

LISREL 8.30 program was used to test the theoretical model. Fig. 1 shows the basis of the model proposed and the hypotheses to be contrasted. We used a recursive non-saturated model, taking personal mastery ($\zeta_1$) and learning barriers ($\zeta_2$) as exogenous latent variables; shared vision ($\eta_1$) as the first-grade endogenous latent variable; and team learning ($\eta_2$), educational organizational learning ($\eta_3$) and organizational performance ($\eta_4$) as the second-grade endogenous latent variables. Through its flexible interplay between theory and data, this structural equation model approach bridges theoretical and empirical knowledge for a better understanding of the real world. Such analysis allows for modelling based on both latent and manifest variables, a property well suited to the hypothesized model, where most of the represented constructs are abstractions of unobservable phenomena. Furthermore, structural equation modelling takes into account errors in measurement, variables with multiple indicators and multiple-group comparisons.
5. Results and discussion

This section presents and discusses the main results of our research. First, Table 2 reports the means and standard deviations for all the measures as well as the inter-factor correlations matrix for the study variables in order to evaluate the significance level of the relationships that exist. Positive correlations exist among personal mastery, team learning, shared vision, educational organizational learning and organizational performance, and negative correlations between learning barriers and the rest of the variables analysed. The non-presence of multicolinearity was verified by calculating a series of tests (e.g. tolerance, variance inflation factor) (Hair, Anderson, Tatham, & Black, 1999).

Second, structural equation modelling (Bollen, 1989) was performed to estimate direct and indirect effects using LISREL 8.30 with the correlation matrix and asymptotic covariance matrix as input. We checked the presence of good fit in the joint model, the measurement model and the structural model (Hair et al., 1999). At a 5% level, the significance reached by the measurement model’s coefficients was statistically different from zero ($t \geq 1.96$) and presented factorial loads above their acceptable value of 0.4. The reliability coefficients were above the acceptable level, except for one of the items that measured shared vision (SHARVIS3), which was eliminated from the study. Once this item is eliminated, the constructs display satisfactory levels of reliability, as indicated by composite reliabilities ranging from 0.76 to 0.93 and shared variance coefficients ranging from 0.55 to 0.70 (Table 3). Convergent validity—the extent to which maximally different attempts to measure the same concept agree—can be judged by looking at both the significance of the factor loadings and the shared variance. The amount of variance shared or captured by a construct should be greater than the amount of measurement error (shared variance >0.50). All the multi-item constructs meet this criterion, each loading ($\lambda$) being significantly related to its underlying factor ($t$-values greater than 14.13) in support of convergent validity. Likewise, a series of $\chi^2$ difference tests on the factor correlations showed that discriminant validity—the degree to which a construct differs from others—is achieved among all constructs (Anderson & Gerbin, 1988). Discriminant validity was established between each pair of latent variables by constraining the estimated correlation parameter between them to 1.0 and then performing a $\chi^2$ difference test on the values obtained for the constrained and unconstrained models (see Anderson & Gerbin, 1988). The resulting significant differences in $\chi^2$ indicate that the constructs are not perfectly correlated and that discriminate validity is achieved.

The overall fit measures, the multiple squared correlation coefficients of the variables ($R^2$‘s), and the signs and significance levels of the path coefficients all indicate that the model fits the data well ($\chi^2_{\text{calc}} = 269.42, p < 0.001; \chi^2_{\text{ratio}} = 2.77; \text{NFI} = 0.95; \text{NNFI} = 0.96; \text{CFI} = 0.97$).
hypothesized model was a significantly better fit than the null model ($\chi^2_{120} = 5055.45$, $p < 0.001$; $\Delta \chi^2_{23} = 4786.03$, $p < 0.001$). All of the modification indices for the beta pathways between major variables were small, suggesting that adding further paths would not significantly improve the fit. The residuals of the covariances were also small and centred around zero. Inspection of the standardized structural coefficients (see Fig. 2) showed that the hypotheses were supported. The relative importance

Table 2
Means, standard deviations and correlations

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<tr>
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<td>0.57</td>
<td>0.59</td>
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Note: $n = 200$. Correlation 13 is significant at $p < 0.10$. Correlations between 0.14 and 0.18 are significant at $p < 0.05$. Correlations between 0.19 and 0.23 are significant at $p < 0.01$. Correlations greater than 0.23 are significant at $p < 0.001$.

Table 3
Measurement model—validity, reliability and internal consistency

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>Parameter</th>
<th>Validity, reliability and internal consistency</th>
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<td>Personal mastery</td>
<td>Permast</td>
<td>$\gamma^2_{11}$</td>
<td>1.00 (f.p.) 1.00</td>
</tr>
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<td>0.91 (f.p.) 0.83</td>
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<td>Barrier2</td>
<td>$\gamma^2_{13}$</td>
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<tr>
<td>Shared vision</td>
<td>Sharvis1</td>
<td>$\gamma^2_{14}$</td>
<td>0.83 (f.p.) 0.69</td>
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<tr>
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<td>Sharvis2</td>
<td>$\gamma^2_{15}$</td>
<td>0.85*** (29.68) 0.73</td>
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<td>Teamlea3</td>
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<td>0.77*** (28.36) 0.59</td>
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<tr>
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<td>Orglear2</td>
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<td>Orglear3</td>
<td>$\gamma^2_{312}$</td>
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<td>Organizational performance</td>
<td>Perfor</td>
<td>$\gamma^2_{413}$</td>
<td>1.00 (f.p.) 1.00</td>
</tr>
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</table>

Notes: $\gamma^* =$ standardized structural coefficient (t-students are shown in parentheses); f.p. = fixed parameter; $R^2 =$ reliability; AM = adjustment. measurement. $\chi = \alpha$ cronbach. CR = composite reliability; SV = shared variance; ***$p < 0.001$ (two-tailed).
of the variables is reflected by the magnitude of the coefficients.

The findings (see Table 4) show that personal mastery significantly and positively affects shared vision ($\gamma_{11} = 0.72$, $p < 0.001$). Thus, as predicted in Hypothesis 1, one of the essential elements we must consider on analysing shared vision is the capability for personal mastery. Shared vision acts as the energizing motor that drives and unites the members of the educational centre to succeed in creating the common future they desire (Collins & Porras, 1996; Maani & Benton, 1999). To achieve this shared vision requires creating an environment that allows the development of competences, skills and personal and professional abilities and that encourages the expression, transmission, sharing, and creative synthesis of the personal visions of the organization’s members (Senge, 1990a; Senge et al., 1994).

Likewise, personal mastery significantly and positively affects team learning ($\gamma_{21} = 0.53$, $p < 0.001$). The presence of individuals with a high degree of personal mastery encourages people to work in teams, thus verifying Hypothesis 2. In addition to the direct effect that exists between personal mastery and team learning, there is also an indirect effect between both 0.30, $p < 0.001$ through shared vision [0.72 x 0.41; see, for instance, Bollen (1989) for calculation rules]. The total effect of personal mastery on team learning is 0.83 (0.53 + 0.30), supporting Hypothesis 2. Previous research has revealed different strategic factors related to personal mastery (e.g. educational level, developmental level, the existence of complementary capabilities, diversity of knowledge among the members) that favour teamwork and team learning (Guns, 1996; Maani & Benton, 1999; Senge, 1990a; Senge et al., 1994).

Both shared vision and team learning may not occur due to the existence of certain barriers (the organizational defensive model and organizational inertia) that prevent them from flourishing in educational centres. These barriers can impede the formation of shared vision by breaking the link between individual and shared mental models. They can also prevent learning within the team,
producing learning only for individuals and breaking the link between shared mental models and team learning (e.g. Argyris, 1990; Kim, 1993; Senge, 1990a). The results of the model reveal that learning barriers are negatively associated with shared vision capability ($\beta_{12} = -0.09$, $p < 0.10$), supporting Hypothesis 3. Thus, personal mastery and learning barriers are closely related ($R^2 = 0.57$) to shared vision. There is also a direct negative relation between learning barriers and team learning capability ($\beta_{22} = -0.13$, $p < 0.001$). In addition to this direct effect, there is another indirect effect between both ($-0.04$, $p > 0.10$) through shared vision ($-0.09 \times 0.41$). The total effect of learning barriers on team learning is $-0.17$ ($-0.13 + -0.04$), supporting Hypothesis 4. If these barriers are not overcome, we do not foster organizational learning. The process remains incomplete, and shared vision and team learning are not achieved.

Team learning is also explained very well by the model ($R^2 = 0.90$) in terms of personal mastery, learning barriers and shared vision. Team learning is the logical next step after shared vision. This is demonstrated by the fact that there is a significant positive relationship between both ($\beta_{21} = 0.41$, $p < 0.001$), as established in Hypothesis 5. Once a shared mental model has been created, the team acts according to this mental model assumed by all. This collectively internalized vision guides behaviour and enables team learning rather than the vision of

Table 4
Direct, indirect and global effects

<table>
<thead>
<tr>
<th>Effect from</th>
<th>To</th>
<th>Standardized structural coefficients</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Shared vision</td>
<td>0.72***</td>
<td>8.77</td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Team learning</td>
<td>0.53***</td>
<td>4.12</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Shared vision</td>
<td>$-0.09^{†}$</td>
<td>-1.79</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Team learning</td>
<td>$-0.13^{***}$</td>
<td>-3.68</td>
</tr>
<tr>
<td>Shared vision</td>
<td>→ Team learning</td>
<td>0.41***</td>
<td>4.04</td>
</tr>
<tr>
<td>Shared vision</td>
<td>→ Educational organizational learning</td>
<td>0.26**</td>
<td>3.05</td>
</tr>
<tr>
<td>Team learning</td>
<td>→ Educational organizational learning</td>
<td>0.71***</td>
<td>8.87</td>
</tr>
<tr>
<td>Educational organizational learning</td>
<td>→ Organizational performance</td>
<td>0.75***</td>
<td>17.56</td>
</tr>
<tr>
<td><strong>Indirect effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Educational learning</td>
<td>0.30***</td>
<td>5.49</td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Educational organizational learning</td>
<td>0.78***</td>
<td>8.55</td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Organizational performance</td>
<td>0.58***</td>
<td>9.29</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Team learning</td>
<td>$-0.04$</td>
<td>-1.42</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Educational organizational learning</td>
<td>$-0.14^{***}$</td>
<td>-3.55</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Organizational performance</td>
<td>$-0.11^{***}$</td>
<td>-3.49</td>
</tr>
<tr>
<td>Shared vision</td>
<td>→ Educational organizational learning</td>
<td>0.29***</td>
<td>3.67</td>
</tr>
<tr>
<td>Shared vision</td>
<td>→ Organizational performance</td>
<td>0.42***</td>
<td>6.18</td>
</tr>
<tr>
<td>Team learning</td>
<td>→ Organizational performance</td>
<td>0.53***</td>
<td>8.67</td>
</tr>
<tr>
<td><strong>Total effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Shared vision</td>
<td>0.72***</td>
<td>8.77</td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Team learning</td>
<td>0.83***</td>
<td>9.18</td>
</tr>
<tr>
<td>Personal mastery</td>
<td>→ Educational organizational learning</td>
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</tr>
<tr>
<td>Personal mastery</td>
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<td>9.29</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Team learning</td>
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<td>-1.79</td>
</tr>
<tr>
<td>Learning barriers</td>
<td>→ Educational organizational learning</td>
<td>$-0.17^{***}$</td>
<td>-3.76</td>
</tr>
<tr>
<td>Learning barriers</td>
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<td>$-0.14^{***}$</td>
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</tr>
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<td>Learning barriers</td>
<td>→ Organizational performance</td>
<td>$-0.11^{***}$</td>
<td>-3.49</td>
</tr>
<tr>
<td>Shared vision</td>
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<tr>
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<td>→ Educational organizational learning</td>
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</tr>
<tr>
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<td>Team learning</td>
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<td>8.67</td>
</tr>
<tr>
<td>Educational organizational learning</td>
<td>→ Organizational performance</td>
<td>0.75***</td>
<td>17.56</td>
</tr>
</tbody>
</table>

Note: $^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$. 

particular individuals to prevail (Collins & Porras, 1996; Senge et al., 1994).

Educational organizational learning capability is affected both by shared vision and team learning ($R^2 = 0.89$). The presence of a shared vision in the educational centre allows all efforts to be pooled to achieve a common compromise with regard to educational organizational learning. That this relationship is both positive and significant ($\beta_{31} = 0.26, p < 0.01$) verifies Hypothesis 6. Shared vision is highly important for organizational learning (Maani & Benton, 1999; Senge 1990a; Senge et al., 1994), particularly because it pushes organizational members to work the same way to obtain common objectives (Landier, 1992; Slater & Narver, 1995). The absence of shared vision has been analyzed as one of the most important causes of failure for the processes of organizational learning (e.g., Fahey & Prusak, 1998; Leonard-Barton, 1992). Likewise, team learning is significantly related to educational organizational learning, such that the greater and stronger team learning is, the greater the organizational learning ($\beta_{23} = 0.71, p < 0.001$), as pointed out in Hypothesis 7. This shows that the fundamental unit of learning in modern organizations is not the individual but the team (Senge, 1990a). The results verify, as did the approach of action learning, that organizational learning is produced by the confrontation and exchange of experiences between members who form a specific collective. Comparing the magnitudes of these effects indicates that the effect of team learning is significantly larger than the effect of shared vision on educational organizational learning.

Finally Hypothesis 8 was supported by our finding a statistically significant parameter estimate for the path between educational organizational learning and organizational performance ($\beta_{43} = 0.75, p < 0.001$). The replacement of inefficient practices and routines with learned ones that have shown greater efficiency will improve the average yield of the organization (e.g., Argyris & Schön, 1978; Bohn, 1994; Garvin, 1993; Senge, 1990a). Our research shows that organizational performance is strongly affected by educational organizational learning ($R^2 = 0.56$). Other indirect effects in the model can be seen in Table 4.

In testing the theoretical framework, we fit several nested models, each incorporating different assumptions about parameters. Comparisons with reasonable alternative models are recommended as a means of showing that a hypothesized model is the best representation of the data. Comparison is considered to be an important part of assessing model fit (Bollen & Long, 1993; Kelloway, 1995). The summary statistics in Table 5 indicate that Model 1 was preferred to the others, supporting the inclusion of a model with these relationships among the analysed constructs. For example, if we compare the theoretical model (Model 1) with a model that does not consider the relationship between personal mastery and shared vision (Model 7), we can see that the latter has a worse Normed Fit Index

### Table 5

Model statistics against theoretical model

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\Delta \chi^2$</th>
<th>NFI</th>
<th>NNFI</th>
<th>CFI</th>
<th>ECVI</th>
<th>AIC</th>
<th>PGFI</th>
<th>NCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Theoretical</td>
<td>269.42</td>
<td>97</td>
<td></td>
<td>0.95</td>
<td>0.96</td>
<td>0.96</td>
<td>2.32</td>
<td>347.42</td>
<td>0.69</td>
<td>172.42</td>
</tr>
<tr>
<td>2</td>
<td>Without relationship shared vision $\rightarrow$ organizational learning</td>
<td>276.49</td>
<td>98</td>
<td>7.07</td>
<td>0.95</td>
<td>0.96</td>
<td>0.96</td>
<td>2.35</td>
<td>252.49</td>
<td>0.69</td>
<td>178.49</td>
</tr>
<tr>
<td>3</td>
<td>Without relationship team learning $\rightarrow$ organizational learning</td>
<td>296.67</td>
<td>98</td>
<td>27.25</td>
<td>0.94</td>
<td>0.95</td>
<td>0.96</td>
<td>2.48</td>
<td>372.67</td>
<td>0.69</td>
<td>198.67</td>
</tr>
<tr>
<td>4</td>
<td>Without relationship personal mastery $\rightarrow$ team learning</td>
<td>295.15</td>
<td>98</td>
<td>25.73</td>
<td>0.94</td>
<td>0.95</td>
<td>0.96</td>
<td>2.47</td>
<td>371.15</td>
<td>0.69</td>
<td>197.15</td>
</tr>
<tr>
<td>5</td>
<td>Without relationship barriers $\rightarrow$ team learning</td>
<td>278.49</td>
<td>98</td>
<td>9.07</td>
<td>0.94</td>
<td>0.96</td>
<td>0.96</td>
<td>2.36</td>
<td>354.49</td>
<td>0.69</td>
<td>180.49</td>
</tr>
<tr>
<td>6</td>
<td>Without relationship shared vision $\rightarrow$ team learning</td>
<td>274.32</td>
<td>98</td>
<td>4.9</td>
<td>0.95</td>
<td>0.96</td>
<td>0.96</td>
<td>2.34</td>
<td>350.32</td>
<td>0.69</td>
<td>176.32</td>
</tr>
<tr>
<td>7</td>
<td>Without relationship personal mastery $\rightarrow$ shared vision</td>
<td>354.86</td>
<td>98</td>
<td>85.44</td>
<td>0.93</td>
<td>0.94</td>
<td>0.95</td>
<td>2.87</td>
<td>430.86</td>
<td>0.69</td>
<td>256.86</td>
</tr>
<tr>
<td>8</td>
<td>Without relationship barriers $\rightarrow$ shared vision</td>
<td>272.34</td>
<td>98</td>
<td>2.92</td>
<td>0.95</td>
<td>0.96</td>
<td>0.96</td>
<td>2.32</td>
<td>348.34</td>
<td>0.69</td>
<td>174.34</td>
</tr>
</tbody>
</table>

*Note: n = 200.*
The results of this research reveal that we must encourage educational centres where all the members can develop themselves both personally and professionally (reaching a high degree of personal mastery). The basis of educational organizational learning should begin with the development of those in charge of helping to learn, i.e. the educators themselves. Only then can the students’ preparation be improved. Educators open to learning encourage learning in others by helping the organization’s members to discover their own mental models, to restructure their visions of reality so as to see beyond the superficial conditions, to develop systemic comprehension and to learn. The responsibility for learning should be returned to each subject who, supported by his knowledge, will be the one to guide his development within as well as outside the organization (Senge, 1990a, 1990b).

Another of the educator’s essential components should be the ability to transmit and create a shared vision. One of the main challenges is to provide a vision of the future that has a meaning for everyone on all levels (Senge et al., 1994). The educator must be the prime believer in the need to create a vision that is shared, not imposed. A vision cannot be forced onto employees, since this would only lead to apathy and complacency. It would not represent a true commitment as regards learning (Maani & Benton, 1999). An educational centre without shared vision cannot create its own future; it can only react to it (Collins & Porras, 1991). Without vision we have merely adaptive learning, but with vision we can achieve generative learning (Mintzberg, 1994; Senge, 1990a). Following the same line as previous research works (e.g., Senge, 1990a, 1990b, Senge et al., 1994), we have empirically verified the presence of a positive relationship between personal mastery and shared vision. Personal mastery is the foundational discipline from which we should foster shared vision (Senge, 1990a). Shared vision emerges from the creative orientation and personal and professional development of the members of the organization (Maani & Benton, 1999).

People committed to personal mastery are also more committed to teamwork and team learning and promote a climate that is favourable to both (e.g., Moravec et al., 1997; Senge, 1990a; Senge et al., 1994). Team learning is stronger than the mere sum of the learning of individual minds (e.g., Maani & Benton, 1999; Senge, 1990a), for it is based on people who have developed their individual learning skills through personal and professional development (Guns, 1996), as has been empirically proved. For teams to learn, learning must already have taken place in the individual members (Senge, 1990a).
This research has also verified the presence of a positive relationship between team learning and shared vision, established team learning as the next step after shared vision (Senge et al., 1994). Team members are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable (Katzenbach, 1997), and shared vision is needed to avoid individualistic behaviours (Longenecker & Neubert, 2000). A successful team is totally committed to the vision of a project and clearly understands its mission and objectives (Lynn, 1998; Senge, 1990a; Senge et al., 1994). Its members must feel a strong interest, even a passion, for the objectives and mission, which must in turn build on the personal visions of its members (Maani & Benton, 1999).

Educators have an important job: creating the conditions that facilitate the development of personal mastery, shared vision and team learning to obtain a competitive advantage over the educational centres where educators do not introduce them properly. They must encourage the organization’s members to achieve high levels of personal mastery, since this development will enable them to take more initiative, have a broader and deeper sense of responsibility in their work and learn faster. What then can educators intent on nurturing personal mastery do? They can work to foster a climate in which the principles of personal mastery are practiced. There is nothing more important to an individual committed to his own growth than a supportive environment. This environment can be provided by continually encouraging personal vision. The central strategy of the educator should be to become a good role model. Nothing fosters personal mastery more powerfully in the organization than to have an educator who is serious in his own personal mastery.

Talking about personal mastery may open people’s minds somewhat, but team learning will speak stronger than words. To develop team learning, we should try to create a spirit of sincerity, learn to listen to others, use techniques like the ladder of inferences, the left column and other mechanisms to develop aptitude for reflection and inquiry, such as dialogue and expert discussion. Educators generate team learning from the conviction that their efforts will yield more productive educational centre and greater personal satisfaction.

An educational centre commitment to personal mastery and team learning would be naive and foolish if educators in the organization lacked the capabilities of building a shared vision. There are no formulae for creating shared vision, but there are guidelines that can help to orient us. The educator must prepare the educational centre and shape the mental models, since, without an effective awareness of the changes needed and a deep commitment by top management, moving toward this vision would be impossible. Then, the firm’s strong and weak points are analyzed and the environment is examined, questioning the future and drawing up the strategy to reach it.

Finally, specific actions must be taken to overcome the internal and external obstacles to shared vision or team learning. This study would not be complete if we did not take a look at the learning barriers (the organizational defensive model and organizational inertia). The influence of these learning barriers is generally accepted in the literature. The educator can do a lot to prepare the organization’s minds and to create a context (culture, structure) that allows the organization to overcome these barriers. The members of the educational centre (educators, students, administrative personnel) should all recognize the overcoming of the learning barriers as an essential objective and devote the adequate means to achieving this goal. It has been shown that there is a negative relationship between these barriers and shared vision and team learning (e.g., Argyris, 1990; Senge, 1990a; Senge et al., 1994). Only if we manage to overcome these obstacles will we obtain an adequate shared vision and team learning which, as proven empirically, will boost educational organizational learning.

If this is not achieved, the members of the centre will not share their visions but will act as if they have different perspectives and compete with each other, thus eliminating team learning or shared vision. Such barriers hinder the creation of communities in which knowledge, experience and expertise are shared, freely moved by the spirit of a collective mind. Nonetheless, if the barriers can be overcome, the centre’s ability to set up co-ordinated effective actions that allow the development of organizational learning will increase.

The results of this study also shed additional light on competitive implications of organizational learning, showing positive relationships between learning and organizational performance, as had already been obtained by prior researchers (e.g., Argyris &
Schön, 1978; Fiol & Lyles, 1985; Garvin, 1993; Senge, 1990a). Through internal learning, educators should try to ensure that members of the centre possess knowledge with a high number of common terms and meanings. Such shared vocabulary facilitates their subsequent integration and coordination, increasing creativity, and enables them to perform subsequent joint projects more easily. In the same way, external learning will enable the centre to increase its store of knowledge and thus to face different questions more efficiently (Grant, 1996). Thus, learning is a major component in any effort to improve organizational performance and manages to strengthen the competitive advantage of the organization’s members (March, 1991). We must not forget, of course, that there will be a delay or time lag between the linking of organizational learning and performance. We must remember, however, that today’s learning will affect tomorrow’s performance, making this relationship even more positive (Guns, 1996; Inkpen & Crossan, 1995).

6.2. Limitations and directions for future research

This study has several limitations that may suggest further possibilities for empirical research. First, survey data based on self-reports may be subject to social desirability bias (Podsakoff & Organ, 1986). However, the assurance of anonymity can reduce such bias even when responses relate to sensitive topics (Konrad & Linnehan, 1995). The low risk of social desirability bias in this study was indicated by several educational managers who commented at the end of their questionnaires that it made no sense at all for their companies to go beyond regulatory compliance. Still, the responses are subject to interpretation by individual educational managers. Second, the absence of an objective measure of educational organizational learning is a limitation. However, the external validation of this variable and of some of the variables (e.g. organizational performance) from the archival data of a subset of respondents increased confidence in the self-reports and reduced the risk of common method variance (Sharma, 2000). Furthermore, as mentioned earlier, we tested for the possibility of common method bias using Harman’s one-factor test, and it does not appear to be present (Konrad & Linnehan, 1995; Podsakoff & Organ, 1986; Scott & Bruce, 1994).

Third, the cross-sectional nature of the research into a series of dynamic concepts (educational organizational learning, shared vision, etc.) allows us to analyze only a specific situation in time of the organizations studied, not their overall conduct over time. Our approach has reduced the magnitude of this problem, however, for the items shows that dynamic characteristics and causal affirmations can be made if the relationships are based on theoretical rationales (Hair et al., 1999). This is why we began with a theoretical effort that would allow us to identify and check the formal existence of the different cause–effect relationships. Nonetheless, future research should focus on longitudinal study. Educational organizational learning is very necessary and complex, influenced by organizational, personal, and environmental issues. One way of approaching educational organizational learning with greater precision and of studying its determinants, processes, and results systematically is through longitudinal research, for this approach allows us to analyze the evolution of their variables over time and to draw more reliable conclusions about these activities.

Fourth, our model analyses only some of the factors that, strategically, have been recognized as the main catalysts (or obstacles) for educational organizational learning. Others could be analysed, such as absorptive capacity, technology or systems thinking (e.g. Senge, 1990a). However, the strategic variables analysed have explained a high percentage of educational organizational learning variance. We should examine additional learning barriers, such as spatial myopia, tunnel vision, shooting the messenger, and so on. More attention to the influence of specific strategic factors or barriers to organizational learning is necessary in the future. Empirical papers supporting (or rejecting) our results would be welcomed. We find especially interesting the generation of empirical research better to understand the influence of these factors or barriers on educational organizational learning and organizational performance. Fifth, our use of a single respondent must be taken into account. Difficulties in obtaining sponsorship for research based on multiple views for each organization, lack of an alternative database of organizational characteristics for Spanish organizations, the value of the knowledge that those polled have of their organizations, and common practice in educational centre research all supported the use of this director of studies or department head as respondents. Sixth,
the educator’s perception both of the environment surrounding the educational centre and of the resources and capabilities existing inside it are fundamental for creating organizational learning. To make sense of the complex environment surrounding them, educators tend to form simplified internal cognitive representations (mental models). Using these mental models, educators focus on certain variables that they judge to be critical and make decisions, measure their performance, and so on, based on these variables (Porac & Thomas, 1990). It is therefore better to consider the relations analysed here more as perceptions than as definitive statements. Nevertheless, the participants have a great deal of experience in the strategic factors and barriers analysed.

Development of a collaborative scheme between academics and practitioners would allow an organizational strategy to be generated around the “conceptual triad” (knowledge management, organizational learning and intellectual capital) to determine other factors that influence educational organizational learning and to study further the processes, means and mechanisms by which to transform the educational centre into a “learning organization” where people have an internal motivation to learn and develop themselves personally and professionally and, thus, create a sustainable competitive advantage. Future studies should be based on a larger sample, preferably in more than one country. The homogeneous geographical context examined here limits the influence of external conditions, but future research might well integrate the influences of external factors explicitly. It would also be interesting to study similar characteristics with information provided by other actors in the educational centre (e.g. alumni, staff) and confirm the consistency of the results.

Appendix A

Please indicate your degree of agreement or disagreement (1, “disagree completely”; 7, “agree completely”) with the following statements:

**Personal mastery**

1. The educational centre fosters personal growth and learning (favours the personal and professional development of the organization’s members).
2. We possess the competences, skills, and abilities needed to face the everyday tasks of their personal and professional life with certainty.
3. There is a constant individual desire to read, study and learn new methods and skills that enable us to improve as people and professionals rather than because we feel obligated to do so by our work or by colleagues.
4. We view the gap between the desired state and the current one with a positive attitude and consider this gap an opportunity to learn.
5. We have the patience and perseverance necessary to achieve the goals we hope to reach.
6. We uphold truth over our personal interests.
7. Our usual workplace has a pleasant environment in which to work and learn.

**Learning barriers**

1. Barriers between some sections, areas or departments and others reduce the sharing of knowledge between people in different groups.
2. We usually focus more on the exploitation of current knowledge than on the search for new knowledge.
3. Many external factors in our work make correct learning challenging or difficult.
4. We often associate specific results with causes that have not really produced them, which leads us to repeat the action or commit an error.
5. We very often justify facts, guidelines and actions that do not seem very justifiable objectively.
6. Although the goals of our organization are clear, we almost never realize them due to lack of agreement or interest.
7. We often decide to act in a specific way even though it does not seem logical, alleging that it is necessary for the good of the group, department or organization (social reasons).
8. Our work is very independent of the rest of our colleagues in the organization.
9. In our work, it is assumed that the professor knows everything (if he does not know something, he should hide it so as not to be seen as incompetent).
10. Political interests often make us defend positions unsupported by reality.
11. We are normally more concerned with competing than with collaborating with the rest of the organization’s members.
12. We almost always change things because someone from outside tells us to, not through our own initiative.
Team learning

1. The educational centre has an atmosphere of team dialogue in which people express their ideas freely and fearlessly and listen to the opinions of others.
2. The educational centre has good communication channels that encourage work in teams.
3. In the educational centre, there is a preference for working collectively rather than individually.
4. The educational centre consistently encourages challenges that allow the development of personal and team abilities.
5. The educational centre usually has informal meetings to discuss openly how to resolve problems, allowing us to know each other and generate close relations between the members.
6. The educational centre has a spirit of openness to new information, knowledge and experiences.
7. The educational centre encourages a spirit of cooperation and companionship.

Shared vision

1. The educational centre’s mission or ultimate goal is well communicated and understood by all the members of the organization.
2. Goals are created and upheld by the great majority, not just by the leaders or by certain members (the goals of the educational centre are created and shared by all).
3. We are committed to the goals because we believe in them, not because they have been imposed by force.

Educational organizational learning

1. The educational centre has ongoing processes in place to search for the acquisition of new knowledge and changes in behaviour oriented towards improving educational results.
2. The educational centre greatly encourages the acquisition, sharing, dissemination and application of knowledge and learning among the different members.
3. Our educational centre fits the ideal model of a learning organization.

Organizational performance

Please indicate the quality of your organization’s performance (1, “very low”; 7, “very high”) for the following statements:

1. The personal satisfaction that your work provides.
2. The level at which educational innovations were implemented.
3. The agile, quick implementation of the new knowledge learned.
4. The centre’s ability to absorb new data, information and knowledge from students, colleagues or other centres with a view to adapting them to its educational systems.
5. The centre’s capacity to anticipate and engage the changes stemming from educational reform and the demands of future students.
6. The improvement in educational quality.
7. The existence of an entrepreneurial culture open to educational change.
8. The economic viability of the educational centre.

References


