LOCAL MANAGEMENT AND LEADERSHIP FOR INNOVATION: A CRITICAL ANALYSIS FROM COLOMBIA

Gary Alberto Cifuentes Álvarez
University of Los Andes
Colombia

Abstract

The purpose of this paper is to highlight the relevance of management and leadership as a key to understanding barriers to and factors promoting educational innovation. An empirical study in Colombia supports the claim that these dimensions are still underexplored and should receive more attention in order to understand issues related to ICT integration in education. Case studies reveal that different types of leaders using a variety of management deploy different strategies for successful (or unsuccessful) innovation. This work is useful for scholars studying ICT integration, school administrators and education policy makers.

Introduction

When analysing ICT integration in education for the enhancement of teaching and learning, scholars and practitioners are usually devoted to exploring variables that address pedagogical or technological matters in education. However, some other approaches have recognized that institutional and organizational conditions are also key to understanding barriers to and factors promoting educational innovation (Hew & Brush, 2007). This work focuses its attention on these conditions in the case of ICT integration in Colombia. An analysis of factors influencing ICT integration is necessary in this country since this government has made many efforts and allocated resources to promote the incorporation of technologies in education; indeed, a national system for educational innovation involving ICT has been in place since 2013. Assuming that the set of programmes and strategies comprised in this kind of initiative has transformed educational institutions, this paper explores one region where ICT polices have been implemented; in particular I focus on analysing leadership and management of innovation in this setting.

In the following section, a short literature review on ICT leadership and management for educational innovation is presented. It remarks on the need for a more comprehensive reflection from scholars on ICT integration. After describing the research context, the main findings related to leadership and management are also addressed as necessary fields for understanding what occurs in school settings in which innovation and ICT are at the forefront.

ICT Leadership and Management as Open Areas of Study

Literature on ICT in education tends to highlight pedagogical strategies, teaching practices, criteria for technology selection, assessment of students' learning, etc., as the most salient dimensions for analysis. However, literature about organizational variables fostering innovation is less abundant (Goodison, 2002; Hayes, 2007). Among the conditions that are

underrepresented in the literature are the influence of an ICT coordinator (Tondeur, van Keer, van Braak, & Valcke, 2008) or having an ICT policy plan, that is, a blueprint of how an institution integrating ICT for education might look (Vanderlinde, 2011). Similarly, few scholars have studied the process of leading innovations through ICT. As MacLeod and Richardson (2011) state, there has only been a small amount of research on technology leadership, and similarly few recognizing the way ICT can promote educational innovation (Dexter, 2011). Even schools with high levels of access to technology do not necessarily improve teaching practices when using ICT due to other factors such as teacher`s ability and school level factors (Cuban, Kirkpatrick, & Peck, 2001).

Leading innovation through ICT is a practice that scholars refer to in at least two different ways. The first notion is the role of a school leader (Granger, Morbey, Lotherington, Owston, & Wideman, 2002), or the school technology leadership (Anderson & Dexter, 2008). Some of the features described for such leadership combine individual and school level conditions such as:

- An appointed ICT committee
- A financial plan for ICT integration
- The allocation of time for planning ICT integration by the principal
- Economic support from the government
- A concrete ICT teacher training program

A second way of understanding ICT integration from an organizational perspective is called ICT leadership (Vanderlinde, 2011). Considering previous literature on leadership, three practices are identified: setting direction, developing staff and redesigning the organization (Leithwood, Anderson & Wahlstrom, 2004; Leithwood & Jantzi, 2005). Consequently, the notion of ICT leadership involves the practice of setting the vision of ICT integration, fostering ICT teacher development, and finally providing conditions for access, support and policies for change within the institutions (Dexter, Anderson, & Ronnkvist, 2002; Zhao & Frank, 2003).

Drawing on a sociocultural approach that goes beyond the analysis of personal traits or charisma of a leader, Spillane (2004) develops a more robust model for understanding leadership as the complex interaction of leaders and followers who interact with artefacts in sociocultural situations. This framework can be useful for understanding ICT leadership: not only how a leader fosters innovation, but also the relationships and interactions between leaders and followers in complex situations. These situations involve artefacts such as ICT policy plans or other tools that shape the practice of the leader (Spillane, 2004).

In relation to the management of educational innovation, the literature on ICT integration is less abundant than that about leadership. In fact, management in education has been understood as something related to administrative and financial concerns, which are not related directly to the integration of technology. In other cases, the focus is on the management of technology within educational institutions, which is only one facet of managing an

educational innovation. This implies, for instance, constructing the financial plan for the acquisition of technology or determining the technical support for the institutional platform. As a matter of fact, it is common that leadership and management become synonymous outside of academic contexts.

In higher education, there has been some reflections on this regard in terms of change management, which can take a top-down or a bottom-up approach. The former is driven by management and supposes consensus that could transform into opposition despite efficiency in time and resource management; conversely, a bottom-up approach is generated by early adopters who struggle to spread innovation with local enthusiasm but take the risk to be ignored across the institution (Brown, 2013). What is interesting is that some scholars (Keppel et al., 2010) have pointed out a middle term or alternative approach between these extremes named also as a distributed leadership (as cited in Brown, 2013). Hence, change is managed by different stakeholders across the institution. Nevertheless, it is important to say that such analysis is situated in higher education -- not at a school level embedding different organizational variables -- and not in the context of ICT integration.

Given this gap in the literature, my framework considers some of the aforementioned areas that have been overlooked. Hence, I will use as a standpoint four areas of management for educational institutions at a school level as they are situated in this particular context (NME, 2008): *strategic management* relates to leading and steering the organization through intelligent decision making processes; *academic management* encompasses curricular design, follow up on implementation and assessment of pedagogical practices, and monitoring student performance. Perhaps the most acknowledged is the *administrative and financial management*, which deals with budgeting, spending, infrastructure acquisition but also human development. Finally, *community management* encompasses the interaction with external actors and populations with special needs in the community. Despite that all these areas are seemingly unrelated to ICT integration, they can certainly be useful to understanding how educational institutions innovate through the integration of ICT.

In short, management and leadership has received less attention than other aspects of ICT integration despite some scholarship that has been devoted to analyze these factors. In the following, a situated study focuses the attention in these two dimensions of ICT integration and aims to produce some preliminary findings of an ongoing research project.

A Relevant Research Context: The Colombian Case

Colombia has an interesting history of formulation and implementation of ICT policies to promote educational innovation. More than 25 years of history can be traced and framed in four strands such as policies for infrastructure, development of human talent, the enhancement of teaching practices, and also the management and production of educational resources (UNICEF, 2014). As stated earlier, a national system for innovation using ICT was launched in 2013 (NME, 2013) though this was neither the first nor the last government effort to improve the improvement by integrating technology.

At this point, a natural assumption would be that across the country educational institutions have the resources necessary to enhance educational quality using ICT. What I have described elsewhere as a will to innovate (Cifuentes, 2017) is related not only to a particular government (top-down approach) but also from the civil society (educational institutions, NGOs and other organizations) for promoting innovation and welfare for population.

The ideas presented in this work draw on a three-year project whose aim was to analyze two different regions in Colombia enacting this will to innovate through concrete practices of leadership and management for educational innovation. These regions were selected for their geographical and cultural differences. Indeed, the research project assumed that such differences create opportunities for educational innovation. Additionally, as key variables leadership and management are embedded in sociocultural and organizational settings that deserve more attention from the research community.

In each region, a group of educational institutions were located. A set of interviews with teachers, ICT coordinators and school directors were undertaken to explore the role of the aforementioned variables on ICT implementation. The findings presented in the following sections focus in only one of the selected regions as the project is still in its first stage of analysis.

Disentangling Management for Innovation

Regarding the first dimension, management, this study explored how identifying different types of management was necessary to understand the enactment of educational innovation. Administrative and financial, academic and strategic management were practical forms that merited analysis as they involve different actors and artefacts.

An important finding about strategic management indicated that in most cases, despite the absence of an ICT policy plan (a vision of ICT integration for improving education in the institution) the leaders interviewed were keen to take decisions addressing innovation. This is relevant given that literature mentions how strategic planning is essential for allocating resources, staff, time, etc. In most of the cases, we found that ICT policy planning was not a common practice, that is, formulating an explicit document mapping out how to integrate ICT for educational purposes, and only in few cases were there documents that specifically described a vision and operative description for ICT integration. One of the principals mentioned in the interview the need to make a formal statement about this, “Since 2000, when I was appointed as a principal, I decided to include ICT as part of the formal vision of the institution.”

Regarding academic management, ICT leadership is related to establishing strategic alliances to benefit students on a curricular level. A common practice we found was establishing external allies. For instance, one of the principals sought technical training for students through agreements with a national service that offers this kind of education. Another external actor which is strategic for the principals is the government itself. In Colombia, some of the

ICT policies are offered as public callings. This means that institutions must apply so they can demonstrate their interest. Since this model implies that each institution mobilizes efforts in order to be selected, the role of principals became fundamental.

As part of teacher development, we found that principals evaluated the various options open to the institution. In the case of PVD -- a specific national ICT policy -- an ICT coordinator commented on its underutilization, "The PVD includes an audiovisual room and a sound lab which are still brand new." What the interviewer pointed out was the potential of using these facilities to offer teacher training instruction and other courses for the community.

A similar interaction between institutions and external entities was present in the area administrative and financial management. Thus, allocating the internal institutional budget for resources, staff, infrastructure, etc., was a daily practice for the leaders interviewed. Management of external funds is an even more challenging practice that implies establishing a dialogue with the provincial government and the mayor`s office: "In 2013 the Secretary of Education gave us an iPad as a reward for achieving a high enrolment rate (...) as both teachers and students were enthusiastic about such device we started asking for additional financial aid to get more of them using the COMPES."A COMPES is a social policy that offers financial support from the Ministry of Education directly to the institution. Once again, allocating budget for innovation is a matter of management and leadership: "In 2003 there was a merge of institutions, so two rural schools joined my institution. At that time, there was not a single computer in these schools. So, I provided them with a laptop per institution. Currently I have five external schools," mentions a principal in relation to the allocation of financial support and how to deal with other school mergers.

Sustainability in ICT integration was also part of the management for innovation. In our study, we traced some struggles to achieve it. For instance, different ICT programs included acquisition of equipment. After their implementation, different kinds of devices had to receive permanent support and maintenance so they could operate properly afterwards. We could see that in some cases, such sustained support was not guaranteed. Both the principal and the ICT coordinator had to assume the consequences in that regard, like having useless devices or receiving frequent complaints from staff members.

ICT Leadership Practices on the Ground

As mentioned in the introduction to theoretical framework, a leadership practice is only possible through the interaction of leaders and followers in socio-cultural situations (Spillane, 2004). Despite the utility of this social approach, it is unavoidable to notice the importance of certain personal traits in the leaders interviewed and the way in which these impacted their leadership practices, and thus, the ICT innovations. Some of them were more enthusiastic, others were critics, and still others had a collaborative style. These personal traits in the leaders were relevant to understanding the kind of interactions they established inside and outside the institution. Within the

institution, it is important to mention the relevance of collaborative work with teachers and administrative staff as facilitators of ICT leadership practices.

On the other hand, external relations were pivotal for opening a range of possibilities for innovation. Among the most important actors was the provincial`s office as it provided financial resources for all the institutions in a specific region. Cases studies showed that dealing with this establishment in order to allocate resources destined for a school's ICT project -- sometimes diverted to other institutions -- was perhaps the most important struggle for principals. As was previously mentioned, the relation with the municipality was also complex since "it is a local authority that is not only certified but also receives all the financial resources (…) the Government of Cundinamarca receives up to $840.000 million pesos from COMPES."

Beyond struggles, good relations with the mayor´s office becomes a strategic asset that is necessary for accessing ICT programs. A principal mentioned that such relationships allowed the institution to participate in different initiatives. In fact, related to a distributed leadership approach we found that coordination with the mayor´s office was key to the financial and administrative management of some of these programs.

Considering that setting the vision for ICT integration in the institution is a foundational practice of ICT leadership, it was found that principals mobilized efforts based on their own vision had: "Why do you think it was important to participate in those calls from the government? Because undoubtedly, the world is now functioning entirely on a technology base."

In relation to teacher development -- a second practice that features ICT leadership -- one of the principals remembered that in 2014 the national ICT policy *Digital citizen* was launched as part of a teacher training initiative. As she mentions, this policy "allowed that *all my teachers* to become certified." When asked if they were invited to participate, she remarks sarcastically "No, I'm afraid they are not."

We found that a concrete competence in the practice of these leaders was their ability to envision opportunities for teacher training. For instance, a principal told us about some opportunities that could perfectly matched with teachers' needs -- such as multimedia production -- despite that other types of professional development opportunities specified in the ICT policies were underused.

In other institutions, providing conditions for the access to technology in order to promote educational change was part of ICT leadership. From a distributed leadership approach, it is important to highlight that a solo viewpoint of the leader taking decisions is a limited perspective to understand the practices we found. Indeed, the role of the principal for the acquisition of such technology was intertwined with the process of decision making at the school board in which she is involved.

As previously mentioned, the literature does not make a clear difference between leadership and management. We have tried to distinguish these terms when referring to innovation. Nevertheless, we are conscious that in practice, both are connected. One specific example is the kind of leadership and management for concrete ICT policies at the institutions we analyzed. In fact, the difference between successful and unsuccessful programs was related to appointing a coordinator that could be physically settled in the institution.

Conclusions

This work shows that leadership and management for educational innovation deserves a deep analysis as both contribute to successful integration of ICT. Although both dimensions have been analyzed separately, we have also shown that they need to be understood as intertwined practices. In other words, different types of management are embedded in concrete leadership practices. Regardless of whether we call those practices ICT leadership or technology leadership, from a distributed leadership approach, we found that personal traits are necessary but not sufficient for promoting ICT integration. For instance, charismatic or team-oriented leaders must deal with internal and external relations and conditions that shape their practice and the achievement of goals.

In the institutions we studied, one of the main issues we found from the principal's perspective was the lack of support from the provincial and the mayor's office level, especially as this external partnership guaranteed the allocation of resources for innovation. Considering the three main features of ICT leadership practice, it was found that fostering teacher development was the most frequent concern within the institutions. If defining the vision or providing infrastructure was meaningful for our leaders (principals or ICT coordinators), they actually focused more on providing conditions for teacher training to promote educational innovation.

We can also highlight the closed relation of management and leadership with other common dimensions such as teacher training, infrastructure, ICT support and curricular integration. Interestingly, management and leadership are not necessary areas included in an ICT policy plan, but they are a pump for its successful implementation. It is worth saying that in our visits to the institutions the design of this artifact was not common. Instead of this document, what we found was ICT policy planning, that is, the practice of leading innovation (Vanderlinde, 2011). From a critical point of view, institutions are wasting opportunities for strategic guidance when they do not formulate this kind of document but once again, practices of management and leadership from a bottom-up perspective were at the forefront in our study.

Obviously, leadership is an art shaped by personal experience; different types of management such as those analyzed here involve different skills and organizational conditions. If ICT integration for innovation involves different areas at pedagogical, technological and administrative levels, it should be supported by ICT policy plans. Educational administrators and ICT coordinators have to be more observant of these kinds of practices and artefacts in their institutions as they determine and open possibilities for innovation.

References

Anderson, R. E., & Dexter, S. L. (2000). School technology leadership: Incidence and impact. Center for Research on Information Technology and Organizations, University of California, Irvine and University of Minnesota. Retrieved from http://escholarship.org/uc/item/76s142fc

Anderson, R., & Dexter, S. (2005). School technology leadership: An empirical investigation of prevalence and impact. *Educational Administration Quarterly, 41,* 49-82.

Brown, S. (2013). Large-scale innovation and change in UK higher education. *Research in Learning Technology 21*(2) ISSN 2156-7069.

Cifuentes, G. (2017). The will to innovate in Colombia: ICT policies as a means for improving education. In K. E. Skouby, I. Williams, & A. Gyamfi (Eds.), *Handbook on ICT policies in developing countries*. Denmark and The Netherlands: River Publishers (forthcoming publication).

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal*, *38*(4), 813-834.

Dexter, S. (2011). School technology leadership: Artifacts in systems of practice. *Journal of School Leadership, 21*(2), 166-189.

Dexter, S., Anderson, R. E., & Ronnkvist, A. (2002). Quality technology support: What is it? Who has it? And what difference does it make? *Journal of Educational Computing Research, 26*, 287-307.

Goodison, T. (2002). Enhancing learning with ICT at primary level. *British Journal of Educational Technology, 33*, 215–228.

Granger, C., Morbey, M., Lotherington, H., Owston, R., & Wideman, H. (2002). Factors contributing to teachers' successful implementation of IT. *Journal of Computer Assisted Learning, 18*, 480–488.

Hayes, D. N. A. (2007). ICT and learning: Lessons from Australian classrooms. *Computers & Education, 49*, 385–395.

Hew, K., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development, 55*(3), 223-252.

Keppel, M., O'Dwyer, C., & Childs, M. (2010). Transforming distance education curricula through distributive leadership. *ALT-J, Research in Learning Technology, 18*(3), 165 178.

Leithwood, K., & Jantzi, D. (2005). Transformational leadership. In B. Davies (Ed.), *The essentials of school leadership* (pp. 31-43). Thousand Oaks, CA: SAGE.

Leithwood, K. A., Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning: A review of research for the Learning from Leadership Project.* New York, NY: Wallace Foundation.

Ministerio de Educación Nacional. (2008). Guía para el mejoramiento institucional. Serie Guía No. 34 (Cited as National Ministry of Education - NME).

Ministerio de Educación Nacional. (2013). Competencias TIC para el desarrollo profesional docente. Ministerio de Educación Nacional. (Cited as National Ministry of Education - NME).

McLeod, S., & Richardson, J. W. (2011). The dearth of technology leadership coverage. *Journal of School Leadership, 21*(2), 216–240.

Spillane, J. P. (2004). *Standards deviation: How schools misunderstand education policy.* Cambridge, MA: Harvard University Press.

Spillane, J., Halverson, R., & Diamond, J. (2004). Towards a theory of leadership practice: A distributed perspective. *Journal of Curriculum Studies, 36*(1), 3–34.

Tondeur, J., van Keer, H., van Braak, J., & Valcke, M. (2008). ICT integration in the classroom: Challenging the potential of a school policy. *Computers & Education*, *51*(1), 212-223. Retrieved from http://dx.doi.org/10.1016/j.compedu.2007.05.003

UNICEF. (2014). Las políticas TIC en los sistemas educativos de América Latina: Caso Colombia. Argentina: UNICEF.

Vanderlinde, R. (2011). School-based ICT policy planning in a context of curriculum reform (Unpublished doctoral dissertation), Ghent University, Ghent, Belgium.

Zhao, Y., & Frank, K.A. (2003). Factors affecting technology uses in schools: An ecological perspective. *American Educational Research Journal, 40*(4), 807-840.

Author Details

Gary Alberto Cifuentes Alvarez
gcifuent@uniandes.edu.co