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Original Paper

The Role of Autonomy and Accountability in Implementing and Assimilating ICT in Elementary Schools in Israel's Arab Sector

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Abstract

This article examines the extent to which the autonomy and accountability of principals, ICT coordinators, and teachers affect the successful implementation and assimilation of ICT in Arab sector elementary schools in Israel. The findings show strong positive correlations between the level of autonomy and accountability of principals ($rp=0.763$, $p<0.001$), coordinators ($rp=0.588$, $p<0.001$), and teachers ($rp=0.770$, $p<0.001$) and successful implementation and assimilation of IT in schools. The conclusions emphasize the leading role of ICT coordinator as an agent of change, the necessity for collaboration between academy and school in order to create an environment for proper assimilating ICT into schools' vision and reality, as well as the importance of personal empowerment in ICT leaders to foster a new form of ICT leadership.

1. Introduction

The Israeli educational system is found in a process of adjusting itself to the 21st century's requirements, by introducing various digital technologies with the purpose of developing research skills and critical thinking, enhancing digital literacy and thereby making the school a more relevant place for the students (Peled & Blau, 2011). Despite general mood of reluctance and resistance to using technology, it cannot be disputed that in-school access to computers has become almost universal: the findings of the national survey of 3150 teachers, 97% of teachers reported access to computers, with 96% of computers in schools having Internet access (Gray, Thomas, & Lewis, 2010).

Yet, even though computers used to be perceived as the "silver bullet to education reform," it seems that the continued under-use of technology in the classroom led to little or no change in the educational landscape, having failed to address the instructional purposes (Gray et al., 2010). Both implementation and assimilation of ICT innovations in schools require systemic changes, by no means easy to perform, since the schools had always operated in a traditional way (Arar, Yosef, Ismael, & Badarni, 2016). In

addition, the assimilation of innovations is by and large an externally imposed top-down policy, without any involvement of teachers or considering existing well-defined practices, norms, and inherent opposition to change within the school (Levin & Fullan, 2008; Zimmerman, 2006). The externally imposed changes may also result in teachers' resistance to innovation, as they threaten their academic freedom, autonomy, and professionalism (Fullan, 2011).

An appropriate training may definitely help teachers become more flexible and, as a result, more willing to adapt their traditional teaching methods to digital innovations (Aiken & Gerstl-Pepin, 2014). It has been shown that pedagogical knowledge among teachers with positive attitudes toward ICT affects their willingness to make changes in their work (Shamir-Inbal, Dayan, & Kali, 2009).; it was also demonstrated that the professional development of teachers constitutes a crucial variable, when it comes to fostering a successful integration of ICT in teaching (Riel & Becker, 2000).

In this context, the collaboration between academy and school is essential for the implementation and assimilation of ICT. Unfortunately, the collaborative academy-school initiatives in the Jewish education system in Israel have been scarcely studied, and this scarcity is especially pronounced in the Arab education system that serves Israel's largest minority group (Arar et al., 2016).

In addition to providing suitable training programs, the collaboration should include experts who will not only lead the process of assimilating ICT culture, but also become *educational leadership* in the field (Bowyer, Gerard, & Marx, 2008). The role of ICT leaders, both on regional and school levels, is also essential in empowering teachers as leaders for change (Avidov-Ungar & Shamir Inbal, 2013). The empowerment of ICT leaders result from the process of assimilating ICT culture which motivates the teachers who are willing to cooperate with introducing the change. The process of empowerment itself is motivated by interpersonal relations within the school as organization, if the organization provides the workers with the suitable climate, the relational framework, and the resources needed to create a feeling of empowerment (Hargreaves, 2005).

An ICT coordinator is a key figure in implementing and assimilating ICT culture in schools; it is, in fact, a new role with new definitions of fields of action, skills, and capacities. A principal's "right hand," he/she acts in several domains at the same time: technological, pedagogical, and administrative-managerial (Avidov-Ungar & Shamir-Inbal, 2013). The coordinator is a hybrid figure, as his/her role is both administrative and pedagogical (McGarr & McDonagh, 2013). He/she is a "bridge" of mediation between the requirements of the system and the needs of the school (Avidov-Ungar & Shamir Inbal, 2013).

All said brings us back to the old new question of the school leadership, which has become an education policy priority around the world; the increase in school autonomy with more emphasis on schooling and school outcomes have resulted in a need to reconsider the role of school leaders, with much more room for improvement to professionalize school leaders (Pont, Nusche, & Moorman, 2008). In the context of assimilating ICT culture in schools, the variables of autonomy and accountability may reflect the form of leadership employed by the school principals in terms of distributing authority and encouraging

autonomy, which, in turn, result in positive attitude toward making ICT a part of their working routine and life.

2. Methodology

2.1 Research Objectives

The purpose of the research was to explore the impact of autonomy and accountability of principals, ICT coordinators, and teachers in elementary schools on the success of implementing and assimilating ICT in their work. The research intended to find out the extent to which those two variables, autonomy and accountability, positively affect the success of assimilating ICT culture in elementary schools in Israel's Arab sector. Autonomy and accountability were addressed as by-products of the new forms of leaderships with distributing authority and providing a greater degree of autonomy and accountability to teachers and coordinators. In particular, the research focuses on the figure of the ICT coordinator to explore his/her prominence and dominance in the general process.

2.2 Research Question

The main research question focused on the positive impact of autonomy and accountability of principals, ICT coordinators and teachers alike on the process of implementing and assimilating ICT culture in the school. The second question specifically addressed the role of the ICT coordinator, as a key figure, a principal's right hand, and a leader, assuming the especially strong correlation between the variables.

The following hypotheses were derived from the questions:

1. There is a positive correlation between the level of autonomy and accountability of all the participants and the success of ICT assimilating process. In other words, the more autonomous and accountable they feel, the more positively they view the process of ICT assimilation.
2. There is an especially strong positive correlation between the level of autonomy and accountability of the ICT coordinators and the successful process of implementing ICT. In other words, the ICT coordinators will report the highest levels of autonomy and accountability and the success of the process.

3. Findings

The hypotheses were examined using the Pearson correlation test among the participants with administering separate tests for three groups: principals, ICT coordinators, and teachers (N=345). The following tables display the results for all groups (Table 1) and for each group separately (Table 2).

Table 1. Means and Standard Deviation

Rp	Standard Deviation	Mean	
0.769***	.49	4.21	Autonomy and Accountability
	.74	4.56	Successful implementing and integrating of ICT in teaching

***p<0.001.

As seen in the Table 1, the findings indicate a very strong and significant correlation between Autonomy and Accountability of the participants and the success in the process of ICT implementing and integrating in teaching (r_p=0.769, p<0.001); that is to say, the more the participants perceive themselves as autonomous and accountable, the more they believe in the successful integration of ICT in school and are willing to assimilate it. The first hypothesis was confirmed.

Table 2. Means and Standard Deviations among Three Groups

Teachers (N=308)		ICT coordinators (N=17)		Principals (N=20)		
Sd. Deviation	Mean	Sd. Deviation	Mean	Sd. Deviation	Mean	
4.47	0.40	4.54	0.14	4.18	0.49	Autonomy
						Accountability
0.77	4.53	4.69	0.37	4.96	0.18	Successful
0.763***		0.588***		0.770***		implementation of ICT

*p<0.05, ***p<0.001.

The findings show strong positive correlations between the autonomy and accountability of all the participants and the successful implementation of ICT, and in each separate group: teachers (r_p=0.770, p<0.001); ICT coordinators (r_p=0.588, p<0.001) and principals ((r_p=0.763, p<0.001). However, there was no significance difference in the scores obtained by ICT coordinators, moreover, they were even lower, as compared to other two groups (r_p=0.588). Therefore, the second hypothesis was only partially confirmed, as the correlation was not as strong as predicted.

4. Discussion and Conclusions

The main conclusion that can be drawn from the findings is that both teachers and coordinators have a significant degree of autonomy and accountability. The high levels of autonomy and accountability of all the participants in the educational process are associated with the open and supportive leadership that decentralizes authority and encourages joint decision making. It is a leadership that can embrace different people occupying different role and functions, such as principals, vice-principals, school governing boards, teachers, and coordinators; here the authority is not only in the hands of one person but is distributed among different people inside and outside the school (Pont, Nusche, & Moorman, 2008).

The research consistently suggests that distributed leadership positively affects school effectiveness and school improvement (Leithwood et al., 2006a; Leithwood et al., 2006b). The finding highlights the need to extend the leadership development to middle level management and to potential leaders in the school (Pont et al., 2008). The results of this research make it clear that a principal who promotes ICT by decentralizing authority and increasing the amount of responsibility on coordinators and teachers, thereby encouraging their sense of autonomy, will lead to the most outstanding success in assimilating

ICT culture in schools.

It can be inferred that *the positive, open and decentralizing leadership with a new vision plays an important role in the increasing sense of autonomy and accountability for all the stakeholders: principals, coordinators, and teachers alike*. This creates more opportunities for the inside leaders to emerge to implement the change in cooperation. Moreover, studies show that having an inside leadership at school is essential for carrying out innovations such as ICT implementation (Avidor-Ungar & Shamir-Inbal, 2013). They also clearly indicate that people from within the school should be the subject of major investment (Avidov-Ungar & Shamir-Inbal, 2013).

Those people are teachers who become ICT leaders and promote the change from inside. The conclusion that should be drawn is that the successful ICT coordinators will grow from within, out of those very teachers who will feel autonomous and accountable enough to become an agent of change (Ertmer, Ottenbreit-Leftwich, & Tonduer, 2015).

The findings support the previous studies showing that those who affect ICT assimilating at school are: 1) supportive principals; 2) teachers enthusiastic about ICT; 3) the change agents appointed by school (Avidov-Ungar, Fridman, & Olshtain, 2014). The findings also provide an indirect support for the studies that showed a positive impact of ICT leaders' personal empowerment, which was defined as one of the catalysts for assimilating ICT culture, on the school's strengths in the process of assimilation, in other words, on the successful implementation (Avidov-Ungar & Shamir-Inbal, 2013).

At the same time, it can also be concluded that the key role of the ICT coordinator is still "under construction"; more specifically, the new role still needs further defining, as it presents new domains of action and responsibilities and a combination between administration and pedagogy. It also require developing new forms of training, based on extending the knowledge and skills, which will lead to more personal and professional empowerment.

It should be also kept in mind that the processes of technological assimilation in schools are not an end in itself, but rather a means to make teaching and learning more effective and to enable a systemic shift in the whole pedagogical conceptual framework (Avidov-Ungar, 2010).

4.1 Recommendations

The research demonstrates the crucial importance of further investigations into the ways of enhancing new forms of professionalism which combines and integrates between several fields of knowledge and require extensive and novel training. That teaches us about the need to re-conceptualize our approach to training teachers and principals, in the view of a new figure of ICT coordinator. The old forms of training are no longer compatible with new and rapidly changing demands of the digital era. The extended body of knowledge - Technology and Pedagogy Content Knowledge - becomes critical for effective implementing novel technologies assimilating ICT culture in the school (Doering, Veletsianos, Scharber, & Miller, 2009).

It should be particularly kept in mind that, in addition to a natural inherent resistance to change, teaching in ICT environments presents teachers with a wide variety of challenges, organizational, affective,

cognitive, and others (Avidov-Ungar & Eshet-Alkalai, 2014). A technologically literate teacher needs to master the attention management skills involved in e-teaching, as well as the ability to communicate effectively in learning settings that are not face-to-face (Eshet, 2012). And in this context, the role of ICT coordinator as a catalyst for leading this shift in teaching paradigms proves particularly critical.

Some elements of knowledge among ICT coordinators can develop during lifelong learning courses: such professional development courses are important to the coordinators for successful implementation during these complicated tasks as agents of change at their schools. The findings further emphasize the urgency of advanced training programs, aimed at personal empowerment of ICT coordinators, both in technological and pedagogical dimensions: the former consists of acquiring innovative knowledge and skills, the latter refers to integrating ICT in teaching and learning (Avidov-Ungar & Shamir-Inbal, 2013). The professional guidance of ICT leaders was found of most importance, as it has been found that the feeling of personal empowerment, reported by ICT leaders after pedagogical guidance, had a positive impact on school strengths following ICT implementation. Therefore, the future research should also explore the role of autonomy and accountability on the personal empowerment of ICT leaders, and their joint impact on successful assimilation of ICT culture and educating future leaders of change.

References

Aiken, J., & Gerstl-Pepin, C. (2014). Designing the Ed.D. and Ph.D. as a partnership for change. *Planning and Changing*, *44*(3/4), 162-180.

Arar, K., Yousef, M., Ismael, R., & Badarni, A. (2016). Leading Change: Collaboration between Sakhnin Arab Teacher Education College and Al-Bashaer High School. In J. Slater, R. Ravid, & M. Reardon (Eds.), *Building and Maintaining Collaborative Communities: Schools, University, and Community Organizations*. Emerald Publishing.

Avidov-Ungar, O. (2010). "Islands of innovation" or "Comprehensive innovation" Assimilating educational technology in teaching, learning, and management: A case study of school networks in Israel. *Interdisciplinary Journal of E-Learning and Learning Objects*, *6*, 259-280. https://doi.org/10.28945/1314

Avidov-Ungar, O., & Eshet-Alkalai, Y. (2014). A systemic perspective on measures for predicting effective integration of innovative technologies in school systems. *Journal of Cognitive Education and Psychology*, *13*(1), 19-31. https://doi.org/10.1891/1945-8959.13.1.19

Avidov-Ungar, O., & Shamir-Inbal, T. (2013). Empowerment patterns of leaders in ICT and school strengths following the implementation of national ICT reform. *Journal of Information Technology Education: Innovations in Practice*, *12*, 141-158. https://doi.org/10.28945/1865

Avidov-Ungar, O., Fridman, I., & Olshtain, E. (2014). Empowerment amongst teachers who hold leadership positions. *Teacher and teaching: Theory and practice*, *20*(6), 704-720. https://doi.org/10.1080/13540602.2014.885706

Bowyer, J., Gerard, L., & Marx, R. (2008) Building leadership for scaling science curriculum reform. In

Y. Kali, M. C. Linn, & J. E. Roseman, (Eds.), *Designing coherent science education. Implications for curriculum, instruction, and policy* (pp. 123-152). New York, NY: Teachers College.

Doering, A., Scharber, C., & Miller, C. (2009) GeoThentic: Designing and Assessing with Technological Pedagogical Content Knowledge. *CITE Journal*, *9*(3).

Ertmer, P., Ottenbreit-Leftwich, A., & Tonduer, J. (2015). Teacher beliefs and uses of technology to support 21st century teaching and learning. In H. Five, & M. Gills (Eds.), *International Handbook of Research on Teachers Beliefs*. New York, NY: Routledge.

Eshet-Alkalai, Y. (2012). Digital literacy: A revised model. *Issues in Informing Science and Information Technology*, *9*, 267-276. https://doi.org/10.28945/1621

Fullan, M. (2011). *Change leader: Learning to do what matters most*. San Francisco: Jossey-Bass/Wiley.

Gray, L., Thomas, N., & Lewis L. (2010). *Teachers' Use of Educational Technology in US Public Schools*. National Center for Education Statistics.

Hargreaves, A. (2005). Educational change takes ages: Life, career and generational factor in teacher emotional responses to educational change. *Teaching and teacher Education, 21*, 267-983. https://doi.org/10.1016/j.tate.2005.06.007

Leithwood, K., Day, C., Sammons, P., Harris, A., & Hopkins, D. (2006a). *Successful School Leadership: What it is and how it influences pupil learning*. London, DfES Research Report 800.

Leithwood, K., Day, C., Sammons, P., Harris, A., & Hopkins, D. (2006b). *Seven strong claims about successful school leadership*. Nottingham, DfES/NCSL.

Levin, B., & Fullan, M. (2008) Learning about system renewal. *Journal of Educational Management, Administration and Leadership, 36*(2), 289-303. https://doi.org/10.1177/1741143207087778

McGarr, O., & McDonagh, A. (2013). Examining the role of the ICT coordinator in Irish post-primary schools. *Technology, Pedagogy and Education*, *22*(2), 267-282. https://doi.org/10.1080/1475939X.2012.755132

Peled, A., & Blau, Y. (2011). *Are the teachers ready for a change*? Computer to every teacher, computer to every pupil—Primary results of a comparative study inside.

Pont, B., Nusche, D., & Moorman, H. (2008). *Improving School Leadership* (Vol. 1). Policy and Practice. OECD.

Riel, M., & Becker, H. (2000). *The belief, practices and computer use of teacher leaders*. Irvine: University of California, Centre for research on Information Technologies and Organizations.

Shamir-Inbal, T., Dayan, J., & Kali, Y. (2009). Assimilating online technologies into school culture. *Interdisciplinary Journal of E-Learning and Learning Objects*, *5*, 307-334. https://doi.org/10.28945/80

Zimmerman, J. (2003). Why some teachers resist change and what principals can do about it. *NASSP Bulletin*, *90*(3), 238-249. https://doi.org/10.1177/0192636506291521