A Holistic Approach for Managing School ICT Competence Profiles towards Supporting School ICT Uptake

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ABSTRACT

Globally, large-scale national initiatives are being implemented towards promoting the level and quality of Information and Communication Technologies (ICT) use in school education. However, despite these efforts, the current level of ICT uptake from schools remains low. A wide range of factors have been identified as barriers, including lack of teachers’ ICT Competences and lack of ICT infrastructure. Typically, these barriers are tackled separately without taking into consideration the ecosystemic nature of schools as organizations. This paper introduces a holistic approach on School ICT Competence based on combining both individual teachers’ ICT Competences and schools’ eMaturity. Furthermore, it presents the design of a web-based School ICT Competence Management System which aims to capture and monitor schools’ overall level of ICT uptake and facilitate effective management of resources and strategic planning towards improvement, by jointly processing these data.

Keywords: eMaturity, ICT Uptake, Recommender Systems, School ICT Competence, Teacher ICT Competence

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1. INTRODUCTION

In all European countries, national policies for promoting the use of Information and Communication Technologies (ICT) in school education exist and many initiatives are undertaken to enhance the level and quality of ICT uptake in school education (Eurydice, 2011). The reason for this is the anticipated benefits associated with technology-supported teaching and learning (European Commission, 2012). Nevertheless, despite these encouraging findings, the current level of ICT uptake from schools across Europe is low (European Commission, 2010). Moreover, this inconsistency exists despite the recurrent attempts to overcome it, in the form of investments in ICT infrastructure (Durando et al., 2007; European Commission, 2013a), policy adjustments (European Commission / EACEA / Eurydice, 2012), and new paradigms in professional learning processes (Duncan-Howell, 2010; European Commission, 2013b).

The reasons for the abovementioned inconsistency are complex and are closely related to the ecosystemic nature of schools as organizations (Solar et al., 2013). In this view, schools are regarded as composite “organisms” comprising a wide range of actors and resources that co-operate within their physical premises and beyond. Moreover, each of these actors has its own unique contribution to the performance of the overall structure (Zhao & Frank, 2003). More specifically, these actors can include school teachers and their ICT Competences (Sang et al., 2010), ICT infrastructure of the school (Pelgrum, 2008) or purely managerial matters, such as school funding policy (Nachmias et al., 2004) and ICT strategy planning (Law & Chow, 2008). Therefore, these unique factors should be effectively captured and evaluated both in their own regard, as well as from a system’s perspective, for capturing their manner of interconnection towards more informed strategic planning of schools.

In our previous work (Sergis & Sampson, 2014a), the concept of School ICT Competence was introduced and aimed to pinpoint this plethora of interrelated factors influencing the level of ICT uptake of schools, along with a manner to describe their unique contributions. For the context of this paper, School ICT Competence Profiles will conceptually comprise two levels, namely the teachers’ ICT Competence Profiles and the schools’ level of eMaturity (Durando et al., 2007). The former relates to the specific ICT Competences of the individual teachers employed in each school, while the latter involves metrics for measuring the level of ICT uptake in a diverse set of school functions areas (e.g., teaching processes and infrastructure). Thus, this paper contributes to the field of digital literacy and digital competence by introducing a holistic approach on School ICT Competence based on combining both individual teachers’ ICT Competences and schools’ eMaturity. This holistic approach aims to address identified shortcomings in the school leadership literature (Davis, 2008; Dexter, 2008), namely the over-simplified existing standpoints about the ecosystemic nature of schools as organizations.

In the light of the abovementioned proliferation of the issues contributing to the level of school ICT uptake and related to the wide range of constituent parts of school ecosystems, a need is identified for systems that will facilitate schools in performing relevant holistic monitoring and managing tasks (Neuhauser, 2004). More specifically, the added value of the required systems would have to relate to mechanisms that will not only capture the elements of the School ICT Competence Profile, but will also meaningfully interpret and exploit these data in a unifying manner, towards informed decision making to support effective school management and strategic leadership.

Currently, however, no systems that approach the matter of capturing schools’ ICT Competence management from this holistic perspective have been proposed or implemented (Põldoja et al., 2014). Therefore, the contribution of this paper is a step towards addressing this issue, by presenting the design of a web-based School ICT Competence Management System. The added value of the proposed system refers to the enhanced functionalities it can offer for (a) capturing and monitoring both levels of
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