Computers & Education 97 (2016) 1–20

Contents lists available at ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

Prepared to teach ESL with ICT? A study of digital competence in Norwegian teacher education

Fredrik Mørk Røkenes*, Rune Johan Krumsvik

[a] Norwegian University of Science and Technology, Programme for Teacher Education, Jonsvannsveien 82, 7491 Trondheim, Norway
[b] University of Bergen, Department of Education, Christies Gate 13, Postboks 7802, 5020 Bergen, Norway

ARTICLE INFO

Article history:
Received 11 June 2015
Received in revised form 25 February 2016
Accepted 26 February 2016
Available online 2 March 2016

Keywords:
Digital competence
Student teachers
Teacher education
Secondary education
Pedagogical issues

ABSTRACT

The purpose of this study is to examine how secondary student teachers are educated to teach with ICT through an English as a Second Language (ESL) didactics course offered at a teacher education program in Norway. Using a case study methodology, four cohorts of postgraduate student teachers were examined over 4 academic semesters. The students were qualifying to teach ESL in secondary school. Data were collected through surveys, participant observations, and semi-structured interviews. A theoretical model for digital competence development was used as an analytical lens in the data analysis. Findings indicate that the mastery and appropriation of teaching ESL with ICT varies amongst student teachers. Through their studies, the overall digital competence development is both enabled and inhibited by a number of factors such as modeling, scaffolding learning experiences, linking theory and practice, reflection, access to resources and support, innovative assessment practices, and collaborative learning. The implications that these findings have for teacher education are discussed.

1. Introduction

In Norway, the *National Curriculum for Knowledge Promotion* (Ministry of Education and Research, 2006b) regards digital competence as a basic skill along with writing, reading, arithmetic, and speaking. Pupils and teachers are required to use information and communication technology (ICT)[1] across all school subjects at all levels of school (grades 1–13), including English as a Second Language (ESL), in order to meet curriculum competence aims (Ministry of Education and Research, 2006c; Norwegian Directorate for Education and Training, 2012). Naturally, this is also the case in Norwegian teacher education programs where national curricula (grades 1–7, 5–10, and 8–13) require student teachers to master the use of ICT for teaching subject disciplines in a competent and professional manner (Ministry of Education and Research, 2010, 2013). Consequently, researchers recommend that teacher educators need to move beyond only providing student teachers with mastery learning of basic digital skills, and instead look for ways of appropriating the "interpretive and creative potential of ICT into teacher training" (Tømte, Hovdhaugen, & Solum, 2009, p. 25).

* Corresponding author.
E-mail addresses: fredrik.rokenes@plu.ntnu.no (F.M. Røkenes), rune.johan.krumsvik@uib.no (R.J. Krumsvik).

[1] The umbrella term information and communication technology (ICT) refers "in principle to all possible technologies that are used for locating and processing information, communicating and producing digital media" (Aesaert & van Braak, 2015, p. 8). In this study, ICT includes computer technology, multimedia, the Internet, mobile devices, and so on where the integration of communications, audio, and video with computers make the individual technologies "nearly indistinguishable" (Anderson, 2008, p. 8).

http://dx.doi.org/10.1016/j.compedu.2016.02.014
0360-1315/

In ESL and foreign language teaching, research shows that ICT can help teachers reach pedagogical goals, and can have a positive impact on pupils' language skills including reading, writing, and listening, and development of vocabulary (Felix, 2005; Golonka, Bowles, Frank, Richardson, & Freynik, 2014; Stockwell, 2007; Zhao, 2003). Thus, future ESL teachers should be prepared in teacher education to stimulate pupils' language learning in schools through integration of ICT. However, despite the availability of digital tools and innovative teaching approaches, researchers observe that ICT-integration and digital competence development is limited. Internationally, ICT has been seen to be used in teacher education in a superficial manner for lesson planning, personal communication, word processing, presentation tools, and information searches (Blin & Munro, 2008; Drent & Meelissen, 2008; Kay & Knaack, 2005). Student teachers report that they feel unprepared to teach with ICT and innovative approaches to using ICT for teaching are not promoted in teacher education (Sang, Valcke, Braak, & Tondeur, 2010; Valcke, Rots, Verbeke, & van Braak, 2007). Often, student teachers' digital competence is limited to basic digital skills including office tools and social media while at the same time having little experience with using ICT for teaching and learning (Lei, 2009; Twidle, Sorensen, Childs, Godwin, & Dussart, 2006; Valtonen et al., 2013). A similar situation can be detected in Norway where the uptake of ICT in teacher education programs is like in international studies reported to be slow and poorly integrated, and where teaching is mostly tool-oriented and reliant on the initiative of enthusiasts (Hetland & Solum, 2008; Tømte et al., 2009; Tømte, Kårstein, & Olsen, 2013). For example, Guðmundsdóttir, Loftsgarden, and Ottestad (2014) report that newly qualified teachers see little correspondence between the ICT training provided in Norwegian teacher education and the demands imposed on them for teaching with ICT in schools (Guðmundsdóttir et al., 2014). Hence, the authors recommend a stronger focus on setting clear goals for ICT-usage in teacher education, to clarify the purpose of integrating ICT in the curriculum, and to make available digital learning resources for teaching in and across subject disciplines in schools.

Overall, there seems to be a situation in teacher education internationally as well as in Norway where it is challenging to promote ways of teaching with ICT that move beyond basic digital skills. Thus, researchers recommend that "teacher education programs should stimulate the pedagogical use of ICT to improve existing teaching practice and contribute to the development of new, innovative teaching practices" (Kirschner, Wubbels, & Brekelmans, 2008, p. 435). Accordingly, several literature reviews have identified approaches that could be implemented to promote digital competence in teacher education such as modeling ICT integration for teaching, scaffolding student teachers' learning experiences, and reflecting with and about didactical use of ICT (Enochsson & Rizza, 2009; Kay, 2006; Røkenes & Krumsvik, 2014; Tondeur et al., 2012). For instance, Røkenes and Krumsvik (2014) found eight approaches that can be used to develop digital competence in student teachers qualifying to teach in secondary school. The authors point out modeling as one of the most frequently used approaches in the research literature, and note that teacher educators play an important role in preparing future teachers for teaching with ICT since they act as digital role models (cf. Lunenberg, Korthagen, & Swennen, 2007). Other approaches identified by the authors include giving student teachers time to reflect on the educational value of ICT in their subject discipline, and providing them with hands-on opportunities to experience the digital tools themselves (Røkenes & Krumsvik, 2014). For future ESL teachers the preparation they undergo in teacher education should include opportunities to both master basic digital skills and, more importantly, to appropriate didactical ways of teaching with ICT to meet curricula requirements (Haugerud, 2011; Instefjord, 2014; Lund, Furberg, Bakken, & Engelien, 2014). Otherwise, as is the case with Norwegian teacher education, there is a danger "of a gap being created between teacher training and the practices that student teachers encounter when graduated" (Krumsvik, 2014, p. 270). At the moment, few studies have investigated digital competence development in ESL student teachers in Norwegian teacher education. To respond to this need, the aim of this study is to investigate how secondary ESL student teachers develop digital competence through an ESL didactics course in a Norwegian teacher education program.

2. Background

This section first describes the theoretical concepts used in this study such as digital competence. Second, a digital competence model is presented and discussed in light of research on ICT in teacher education. The model is later used as an analytical lens in the data analysis. Finally, research on ICT in ESL and foreign language teaching is presented and linked to the purpose of the study.

2.1. Digital competence

Digital literacy (Buckingham, 2006; Gilster, 1997; Lankshear & Knobel, 2006), or digital competence (Ala-Mutka, 2011; Erstad, 2010; Ferrari, 2012; Janssen et al., 2013; Krumsvik, 2007) as it is more commonly referred to in Norway, can be broadly defined as "skills, knowledge, creativity, and attitudes required to use digital media for learning and comprehension in a knowledge society" (Erstad, Kløvstad, Kristiansen, & Søby, 2005, p. 7, my translation). While this definition can be understood on a macro level by looking at the general role of the citizen in contemporary society, Krumsvik (2011) has narrowed the definition by focusing on a micro level and the teaching profession specifically: "Digital competence is the teacher/TE's [teacher educator's] proficiency in using ICT in a professional context with good pedagogic-didactic judgment and his or her awareness of its implications for learning strategies and the digital Bildung of pupils and students" (Krumsvik, 2011, pp. 44–45). This definition focuses on teachers' professional and pedagogical use of ICT by distinguishing them from other users.