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Students' evaluation of digital information: The role teachers play and factors that influence variability in teacher behaviour

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ABSTRACT

Students deal with large amounts of digital information each day, which, clearly, they need to be able to evaluate. Teachers can play pivotal roles in fostering students' evaluation of digital information. Here, using Norwegian data drawn from 1158 teachers in 116 schools, we report on an investigation into ways in which variables interact and influence such fostering. Overall, most teachers are found to report that student skills in evaluating digital information are a focus of instruction, especially in respect of the evaluation of accuracy, credibility and relevance. In addition, the results show moderate to high positive associations among the use of information communication and technology (ICT) in teaching generally, ICT self-efficacy for instructional purposes, collegial collaborations and the teacher fostering (of students' capabilities to evaluate digital information). Finally, a structural equation modeling (SEM) analysis indicates that the use of ICT in teaching and ICT self-efficacy for instructional purposes are positive predictors of variations in teaching practices related to fostering students' abilities to evaluate digital information.

1. Introduction

We live in a digital world where we are bombarded with news and information. Thus, it is an important skill to be able to sort out reliable information. Capability to evaluate information is an important skill for the individual, so he or she does not build a life on false premises. Furthermore, it is important for democracy and the society as a whole to have well informed citizens who are not easily being misled by "alternative facts" and "fake news". Teachers can play an important role in enhancing students' capabilities to evaluate digital information (Walraven, Brand-Gruwel, & Boshuizen, 2013); however, there are variations among teachers regarding their use of ICT in teaching (European Commission, 2013; Fraillon, Ainley, Schulz, Friedman, & Gebhardt, 2014; Gill, Dalgarno, & Carlson, 2015; Tondeur et al., 2015). This article used the International Computer and Information Literacy Study (ICILS) 2013 to investigate Norwegian schoolteachers' fostering of students' ability to evaluate digital information, and possible related variables (Fraillon et al., 2014).

Efficient digital skills "include developing digital judgement by acquiring knowledge and good strategies for the use of the Internet" (Norwegian Directorate for Teaching and Instruction, 2012, p. 12); however, there are reasons to be concerned about whether students are able to assess the quality of digital information (Puustinen & Rouet, 2009). Recent studies have identified that students tend to favour convenience with little focus on the evaluation of digital information (Biddix, Chung, & Park, 2011; Blikstad-Balas, 2016; Metzger, 2007; Walraven, Brand-Gruwel, & Boshuizen, 2009). Furthermore, there seems to be a discrepancy between the online sources students trust and the online sources they use (Biddix et al., 2011; Hatlevik, 2016; Walraven et al., 2009). Overall, it seems that many students require support from their teachers to develop the capability to evaluate digital information. Thus, the ways teachers' foster students' evaluation of digital information is an important area that should be investigated.

Furthermore, previous research has indicated that there are variations among teachers regarding their confidence in their ability to use ICT efficiently during instruction (Haydn, 2014), and that collegial cooperation is crucial to teachers' efficacy beliefs and to their actual teaching practices (Goddard, Goddard, & Tschannen-Moran, 2007). This paper examines the extent to which teachers

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indicated giving emphasise to develop students' capabilities to evaluate the quality of digital information. The paper also addresses whether there are specific circumstances, i.e. teachers' ICT self-efficacy for instructional purposes, ICT use in teaching practice and collegial collaboration when using ICT in teaching and learning, which could explain the variations in teachers' approaches to improving students' abilities to evaluate digital information. In the following sections, the studies used to formulate the research questions that were explored and the hypotheses that were tested are described.

1.1. Evaluating digital information

Students often use online sources when searching for information (Biddix et al., 2011; Metzger & Flanagin, 2013). A disadvantage of online digital resources and information is the uncertainty regarding editorial reviews (Kubiszeqski, Noorderwier, & Costanza, 2011) or other ways to check the quality of information (Walraven et al., 2009).

Metzger and Flanagin (2013) emphasised the importance of developing criteria that should be used to conduct a proper evaluation of digital information. Metzger (2007) recommended that students should examine the accuracy, authority, objectivity, currency and coverage of online information. *Accuracy* refers to determining whether precise and correct information is found. *Authority* involves the author of information, e.g. whether the author has recognised knowledge about the topic and whether the author is supported by other credible sources. *Objectivity* refers to the purpose of publishing information and determining whether the information is unbiased and presents facts. *Currency* is related to whether information is outdated or updated. *Coverage* involves checking information to ensure that it is coherent and comprehensive (Metzger & Flanagin, 2013).

Our study is a secondary analysis of already existing data (ICILS 2013). The ICILS 2013 was not designed to specifically measure exactly the same five criteria that Metzger recommended (2006; 2013). Instead, the ICILS framework (Fraillon, Schulz, & Ainley, 2013) includes measuring seven different aspects to describe ICT capabilities for students. One of these aspects, “Accessing and evaluating information”, involves evaluating digital information involves evaluating digital information by focusing on relevance, credibility, accuracy and exploring a range of digital resources. “Accessing and evaluating information” is described as the “investigative processes that enable a person to find, retrieve, and make judgments about the relevance, integrity, and usefulness of computer-based information” (Fraillon et al., 2014, p. 17). This is an important aspect of computer and information literacy because it deals with how students are capable of evaluating digital information and what the teachers are reporting about giving emphasise to develop these capabilities.

Nevertheless, some students experience difficulties using some of these criteria on their own. Recent research showed that students consider the validity of the information they find online to different degrees (Puustinen & Rouet, 2009). On one hand, there seems to be a group of students with thoughtful and appropriate approaches to evaluating information (Hatlevik, Tømte, Skaug, & Ottestad, 2011). On the other hand, many students seem to use insignificant criteria in their evaluation of online information (Metzger, 2007). Secondary school students tend to focus on content and form instead of using other criteria (Mason, Junyent, & Tornatora, 2014). Many students favour convenience and use few sources, e.g. conducting a search with Google before using Wikipedia to find information (Blikstad-Balas, 2016; Hatlevik et al., 2011). It appears that students tend to use readily available sources rather than the sources they judge most credible (Hatlevik, 2016). Recent research has also shown that students have difficulties dealing with inconsistent information across websites and identifying the characteristics of the most credible websites (Mason et al., 2014). Furthermore, research has indicated that source evaluation is difficult for students (Puustinen & Rouet, 2009) and that they therefore need support and guidance (Metzger & Flanagin, 2013; Walraven et al., 2013). Based on the results of these studies, many students require assistance in developing the capability to evaluate the relevance, credibility and accuracy of digital information. Students also require guidance to understand the reasons they should explore a range of digital sources.

Walraven et al. (2013) developed a programme used to guide students. They conducted research on students and their teachers who had access to this programme. The study showed that the programme could improve students' evaluation behaviours and examination scores. Thus, it would be interesting to investigate the extent to which teachers facilitate students' evaluation of digital information. Furthermore, it would be useful to identify variables that can explain variations in teachers' approaches to facilitating students' capabilities to evaluate digital information. Previous research has indicated that both teachers' ICT self-efficacy for instructional purposes (Scherer & Siddiq, 2015) and collegial collaboration (Tondeur et al., 2012) may have significant impacts on how and to what extent teachers use ICT in practice. In the following sections, research related to teachers' self-efficacy, their use of ICT and collegial collaboration is discussed.

1.2. ICT self-efficacy for instructional purposes

Self-efficacy is derived from an assumption that people are active agents capable of shaping the content and directions of their learning and achievements (Sáinz & Eccles, 2012). Self-efficacy involves the perceived expectations of one's capability to solve a problem, finish a task or accomplish a goal (Bandura, 1997, 2006). It is also important when choosing activities as well as for performance because being confident in the capability to obtain a goal could lead to a willingness to apply effort and persistence to the process (Bandura, 2006). Recent research emphasised the importance of teachers' self-efficacy in general (Christophersen, Elstad, Turmo, & Solhaug, 2016; Klassen & Chiu, 2010). One example is that self-efficacy has a positive correlation with higher levels of commitment to teaching and with more effective teaching practices (Skaalvik & Skaalvik, 2010; Viel-Ruma, Houchins, Jolivette, & Benson, 2010). Thus, it is important to investigate teachers' self-efficacy in using ICT for teaching purposes when investigating teachers' actual use of ICT in practice (Krumsvik, 2011).

Bandura (1997) asserts that self-efficacy is context and domain specific (i.e. not a global trait) and that the level of self-efficacy with regard to a specific type of task or behavior is affected by individuals' perception of mastery of that task and the interpretation of feedback on their performance. In this study, the focus was ICT self-efficacy for instructional purposes. Recent research showed a positive relationship between ICT-related self-efficacy and achievements in ICT (Abele & Spurk, 2009; Broos & Roe, 2006; Yang & Cheng, 2009). The concept of self-efficacy is also important when studying teachers' use of ICT during instruction (Fanni, Rega, & Cantoni, 2013; Krumsvik, 2014; Tondeur, Hermans, van Brak, & Valcke, 2008).

1.3. Use of ICT in teaching

Findings from different countries show that teachers' use of ICT for teaching and learning purposes is below expectations (European Commission, 2013; Fraillon et al., 2014; Gill et al., 2015; Tondeur et al., 2015). Further, there are also findings that show