Chapter 15
How Online Tasks Promote Teachers’ Expertise within the Technological Pedagogical Content Knowledge (TPACK)

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ABSTRACT

In the Information Communication Technology (ICT) era, teachers will have to wisely use the online environment in order to realize a new pedagogy. We developed a digital indicator for examining the extent to which technological knowledge is integrated with pedagogical content knowledge (TPACK). This indicator is used to examine online tasks developed by teachers in different subjects over time. The factors found to contribute and promote such integration are the instruction given to the teachers and time. These two factors enable the teachers to implement the appropriate pedagogy in a diverse technological environment. The authors recommend that correct integration of TPACK should be emphasized when planning professional development for teachers in the field of online tasks.

INTRODUCTION

The online world in which we live poses a real challenge to the education system, which includes the retooling of teachers via implementation that will make them familiar with the current technological tools at the disposal of the education system, and will change their teaching paradigm (Loveless, 2008). We will discuss the knowledge required of teachers who integrate technology in teaching as opposed to the misconception that the role of technology is in diversification, enrichment and expansion of teaching by means of illustrations which arouse the students’ attention and motivation (Prensky, 2008). There are those who claim that pedagogy has not yet met technology (Hui et al., 2005; Gao et al., 2006; Ilomäki et al., 2006). Such an encounter is essential, because educated use of information communication technology in teaching may support
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meaningful learning and may comprise a lever for
the teacher’s coping with didactic, content and
organizational issues (Dori et al., 2002; Kali &
Linn, 2007; Linn, Davis, & Bell, 2004).

This chapter describes the importance, difficulties
and challenges of introducing technology into
teaching, the knowledge required of teachers when
integrating technology in teaching – TPACK, and
a digital indicator developed for the evaluation
of the teachers’ different types of knowledge:
pedagogical knowledge, technological knowledge
and technological pedagogical content knowledge
(TPACK). In this research we examined online
tasks developed by teachers over time, where
some of the teachers received guidance and ac-
companiment in the development of the tasks. The
findings in this chapter refer to the professional
development of the teachers which took place in
these fields.

BACKGROUND

Online Learning Environments

The definition of an online education is: “an
approach to teaching and learning that utilizes
Internet technology to communicate and col-
laborate in an educational context. This includes
technology that supplements traditional classroom
training with web-based components and learning
environments where the educational process is
experienced on line. A good way for instructors
to enter the online arena is by using technology
to enhance an on campus class. Teaching online
requires a new approach to pedagogy” (Palloff
& Pratt, 2001, p5).

Today, use of an online environment plays a
major role in the formation of every youngster’s
personality and worldview. However, the educa-
tion system is mostly still found in the pre-internet
paradigm, while youths already routinely partici-
pate in activities such as online discussions, locating
information for personal use, using immediate
messages on the internet and mobile phone, and
sharing digital materials (Anderson & Kanuka,
The online learning environment comprises a
ground for creating an active learning environ-
ment. Computer communication enables speed
and interactivity, accessibility from everywhere
and the creation of global communication. Thus,
individuals and groups can actively participate in
personal and collaborative learning. The online
environment opens a broad range of opportunities
for the students, and can increase the school’s
relevance for them. The online environment also
has a high potential for the user’s learning and
enrichment outside the school (Parsad et al., 2005).

Advantages of the online learning environment
include: (1) possibilities for choice at the personal
level of each student and as a solution for the
heterogeneity of the learning group; (2) ongoing
and intimate dialogue between the learner and
the teacher; (3) opportunities for open learning
situations; (4) maximal accessibility to sources
of information and updated information; (5)
situations of high-level collaborative learning;
(6) facilitation of independent work, branched
thinking and personal inquiry (Zilberstein et al.,
2001). These six aspects are the foundations for
characterizing and activating an online learning
environment. The manner in which these char-
acteristics are expressed in the learning process,
alongside pedagogical characteristics, depends on
the teachers who activate and guide the learning,
and on the relation they create with the learning
group (Zilberstein et al., 2001).

Additional researchers support some of these
aspects and add others to the online learning
environment. Mazor et al. (2005) claimed that
the internet opens new ways of teaching which
contribute at the cognitive and interpersonal level
and lead to increased intrinsic motivation and
satisfaction from the learning process. Cross et
al. (2007) stated that online communities and the
virtual world supply an online learning environ-
ment which enables learning that requires high-
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