

# **PEDAGOGICAL NEEDS FOR TEACHERS**

**TO INTEGRATE APPS  
IN THE FORMAL SCHOOL  
CURRICULUM**

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## ABSTRACT

This chapter gives insight into the pedagogical needs of teachers to introduce ICT in the school curriculum from a Turkish perspective. The working area of the Esenler District Education Authority (ESENLER İLÇE MİLLÎ EĞİTİM MÜDÜRLÜĞÜ) comprises 54 public schools and around 3.000 teachers. Starting from a definition of pedagogical knowledge the author approaches the questions on how teachers can integrate technology into their teaching, which are the challenges that teachers and students alike face when teaching with technology and the necessity to develop collaborative learning approaches.

## KEYWORDS

TEACHERS NEEDS

TECHNOLOGICAL  
KNOWLEDGE

COLLABORATIVE  
LEARNING

PEDAGOGICAL  
KNOWLEDGE

ICT IN SCHOOL

## PEDAGOGICAL KNOWLEDGE

Pedagogical knowledge is teachers' deep knowledge about the processes and practices or methods of teaching and learning. They encompass, among other things, overall educational purposes, values, and aims. This generic form of knowledge applies to understanding how students learn, general classroom management skills, lesson planning, and student assessment. It includes knowledge about techniques or methods used in the classroom; the nature of the target audience; and strategies for evaluating student understanding.

A teacher with deep pedagogical knowledge understands how students construct knowledge and acquire skills and how they develop habits of mind and positive dispositions toward learning. As such, pedagogical knowledge requires an understanding of cognitive, social, and developmental theories of learning and how they apply to students in the classroom.

## HOW CAN TEACHERS INTEGRATE TECHNOLOGY INTO THEIR TEACHING?

The integration of technology into education is inevitable with the quick development of technology in every field. Technology; It is seen by many educators, teachers and researchers as an indicator of high quality in education. The importance of technology integration in curriculum is increasing day by day.

In order to educate students who have access to information and use this information, teachers should be able to use technological tools (computer, internet, etc.) effectively. Roblyer and Edwards (2005) presented five reasons for teachers to use technology in education:

1. Motivation
2. Educational skills
3. Teacher productivity
4. The necessity of the information age
5. Support new teaching techniques

Many educators and researchers believe that technology integration plays an important role in providing a rich education and training environment for the educational curriculum. Our pupils and students are all born during the digital era for which they need a wide range of technological and digital skills in their everyday life and most importantly in their future work and career.

Usually, teachers are willing to use technology in their lessons especially, Science, Math, Foreign Language, Geography teachers are using smart boards or projection in their lessons. As we saw in reality, technology is used for just presentation but according to contemporary education skills, the main idea should be create active students. Embracing the use of technology integration in our daily work beyond word processing and power point presentations is still new to many educators.

There is no "one best way" to integrate technology into curriculum. Honouring the idea that teaching with technology is a complex, ill-structured task; we propose that understanding approaches to successful technology integration requires educators to develop new ways of comprehending and accommodating this complexity.

At the heart of good teaching with technology are three core components: content, pedagogy, and technology, plus the relationships among and between them. The interactions between and among the three components, playing out differently across diverse contexts, account for the wide variations seen in the extent and quality of educational technology integration. These three knowledge bases (content, pedagogy, and technology) form the core of the technology, pedagogy, and content knowledge (TPACK) framework. An overview of the framework is provided in the following section, though more detailed descriptions may be found elsewhere (e.g., Koehler & 2008; Mishra & Koehler, 2006).

Teachers who participated in our DAs generally think that it is not so difficult to integrate technology into education. But beside this it is only possible with a limited area of curriculum. Some part of the lessons should be theoretical and it is not easy integrate technology for this kind of lessons.

## THE TPACK FRAMEWORK

The TPACK framework builds on Shulman's (1987, 1986) descriptions of PCK to describe how teachers' understanding of educational technologies and PCK interact with one another to produce effective teaching with technology. Other authors have discussed similar ideas, though often using different labeling schemes. The conception of TPACK described here has developed over time and through a series of publications, with the most complete descriptions of the framework found in Mishra and Koehler (2006) and Koehler and Mishra (2008).

In this model (see Figure 1), there are three main components of teachers' knowledge: content, pedagogy, and technology. Equally important to the model are the interactions between and among these bodies of knowledge, represented as PCK, TCK (technological content knowledge), TPK (technological pedagogical knowledge), and TPACK.

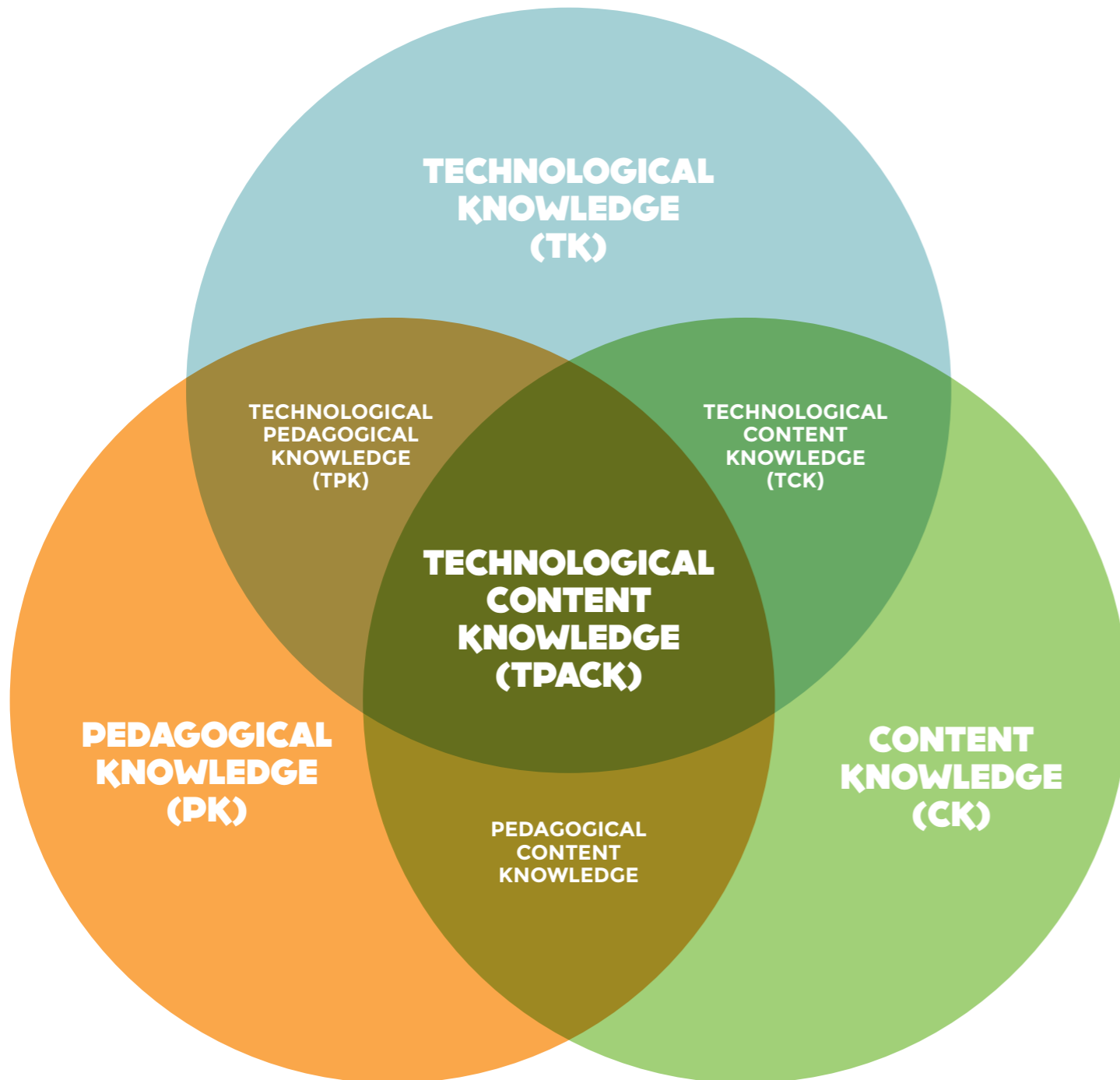


FIGURE 1. The TPACK framework and its knowledge components

## THE CHALLENGES OF TEACHING WITH TECHNOLOGY

As a matter of practical significance, however, most of the technologies under consideration in current literature are newer and digital and have some inherent properties that make applying them in straight forward ways difficult.

Most traditional pedagogical technologies are characterized by specificity (a pencil is for writing, while a microscope is for viewing small objects); stability (pencils, pendulums, and chalkboards have not changed a great deal over time); and transparency of function (the inner workings of the pencil or the pendulum are simple and directly related to their function) (Simon, 1969). Over time, these technologies achieve a transparency of perception (Bruce & Hogan, 1998); they become commonplace and, in most cases, are not even considered to be technologies. Digital technologies—such as computers, handheld devices, and software applications—by contrast, are protean (usable in many different ways; Papert, 1980); unstable (rapidly changing); and opaque (the inner workings are hidden from users; Turkle, 1995). On an academic level, it is easy to argue that a pencil and a software simulation are both technologies. The latter, however, is qualitatively different in that its functioning is more opaque to teachers and offers fundamentally less stability than more traditional technologies. By their very nature, newer digital technologies, which are protean, unstable, and opaque, present new challenges to teachers who are struggling to use more technology in their teaching.

Some teacher, especially young ones are more eager to integrate technology to their lessons but some of the technological materials are expensive and they are not providing by school management. Beside this nowadays most of the online educational tools are seems free but when you start to use it in your lessons you have to register yourself and you have to pay some amount of money and this money is not to buy full version usually you have to pay monthly and it is getting a problem after a while.

In their experiences we used 10 tablets on DAs in different schools in rotative way. But if they want to implement this kind of DAs during whole education period, they have to buy tablets and they have to buy minimum 1 tablet to each students for an effective learning but it costs is a lot for most of the schools' budget.

Social and contextual factors also complicate the relationships between teaching and technology. Social and institutional contexts are often unsupportive of teachers' efforts to integrate technology use into their work. Teachers often have inadequate (or inappropriate) experience with using digital technologies for teaching and learning. Many teachers earned degrees at a time when educational technology was at a very different stage of development than it is today. It is, thus, not surprising that they do not consider themselves sufficiently prepared to use technology in the classroom and often do not appreciate its value or relevance to teaching and learning. Acquiring a new knowledge base and skill set can be challenging, particularly if it is a time-intensive activity that must fit into a busy schedule. Moreover, this knowledge is unlikely to be used unless teachers can conceive of technology uses that are consistent with their existing pedagogical beliefs (Ertmer, 2005). Furthermore, teachers have often been provided with inadequate training for this task. Many approaches to teachers' professional development offer a one-size-fits-all approach to technology integration when, in fact, teachers operate in diverse contexts of teaching and learning.

Another challenge of teachers who participated to our DAs is to have crowded classrooms. We experienced DAs with 10 students it was effective when you have less student and enough materials with this way they found chance to give feedback one to one to each students in a limited lesson time. But in reality they says they have crowded classrooms approximately 40 students with such a big groups it is not possible to provide enough equipments and time management is almost impossible. And if teachers want to implement this kind of DAs with this kind of crowded classrooms, it is not possible to reach each students one by one and if you can 't support each student in right time it is not good way to teach lesson with technology.

Normally for a Science and Technology lesson, students must have the prerequisite skills it is easy to read or find something before lesson; they can make researches for improve their prerequisite skills. But with some of DAs it is important to students must have some basic technological prerequisite and the evaluation of it by teachers is an extra work.

Traditional teachers are not willing to integrate technology to their lessons because technological prerequisite of these kinds of teachers are not enough. Also some of them thought it is not necessary to have this kind of innovations for lessons.

In fact these teachers are not using technology in their life. It is not reasonable to wait from them to integrate technology into their lessons.

Our working area which is ESENER district of Istanbul has 54 public schools and around 3.000 teachers. We sent documents to all schools about **APP YOUR SCHOOL** projects and each teacher found a chance to read the aim of the project and we organised meetings for some teachers to explain methodologies of the project with details. And then when we make announcement about the implementation of DAs, many teachers want to be in the project. As we experienced most of the voluntary teachers are young teachers who want to be in the project. It shows us implementation of technological innovations in the classrooms is only possible with a new generation of teachers or with open mind teachers.

## WHAT ARE THE COLLABORATIVE APPROACHES TO LEARNING?

Collaborative learning is an umbrella term for a variety of approaches in education that involve joint intellectual effort by students or students and teachers. Collaborative learning refers to methodologies and environments in which learners engage in a common task in which each individual depends on and is accountable to each other. It involves use of small groups so that all students can maximise their learning and that of their peers. It is a process of shared creation: two or more individuals interacting to create a shared understanding of a concept, discipline or area of practice that none had previously possessed or could have come to on their own. Collaborative learning activities can include collaborative writing, group projects, and other activities.

The best learning happens when children are actively involved in a project. Collaborative learning is an approach that encourages students to create groups and work together to solve a given problem. There are several benefits learners get when working in a group setting.

Collaborative learning makes students with different backgrounds, race, or upbringing, to work together. They come together in a setting that maybe would not be possible if it were not for collaborative learning. In order to solve a project's given problem, children need to communicate. They are able to hear different opinions and learn more about different cultures. The collaborative learning methodology is ideal for children that have difficulties in a social setting.

Generally, people have different skills, passions, and knowledge. In a small collaborative group, when a question is raised, different students can have different answers and children can learn new things from one another, but also understand different perspectives.

In order to achieve a goal, students need to work together. They can work together without trusting each other, but for an effective collaboration and to reach a common goal, they need to learn to trust each other.

In a small group setting, each student has the opportunity to express her or his ideas. Being able to do so, and being heard can give the feeling of importance and value. The learning experience becomes more fun, and students are eager to learn more. As students work as a team, they also receive more support, therefore gain confidence. Collaborative learning can help shy students express themselves more.

Thanks to DAs, they gave a chance to our teachers for working collaborative way. In most of the DAs students worked with their peers and with this way it were more effective and better also for teachers because they learnt some things from each other. Also with this collaborative way, if a student prerequisite skills of technology is not enough they can learn from their friends more quickly and easily.