

**Topic:**

Adaption and integration of LMS into teaching in Finnish secondary schools

**Research question:**

Does usage of LMS in schools with ICT supporting local policies and pedagogical positive attitude towards LMS usage differ from LMS usage of those schools where ICT support is not explicitly defined in local policies but pedagogical attitude towards using LMS is also positive?

**TODO:**

- Make list with abbreviations
- Make a structure (break text into the sections)

**TODECIDE:**

- Mention or not Almerin in the study. This could give additional motivation of why I am doing it (to understand the process of selling educational software to schools).

**Structure:**

- Introduction
  - Key abbreviations
  - Key definitions
  - ICT adoption and integration in domain of education
- Review and analysis of available literature
  - Categories of factors influencing ICT adoption and integration into teaching
    - Theories explaining personal factors
    - **School-level factors**
    - **System-level factors**
  - Different levels of educational policies as factors influencing school-level factors
    - School level policies factors
  - Identification of the research gaps
- Conclusion
  - The purpose of the study

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# 1 INTRODUCTION

## 1.1 Subject

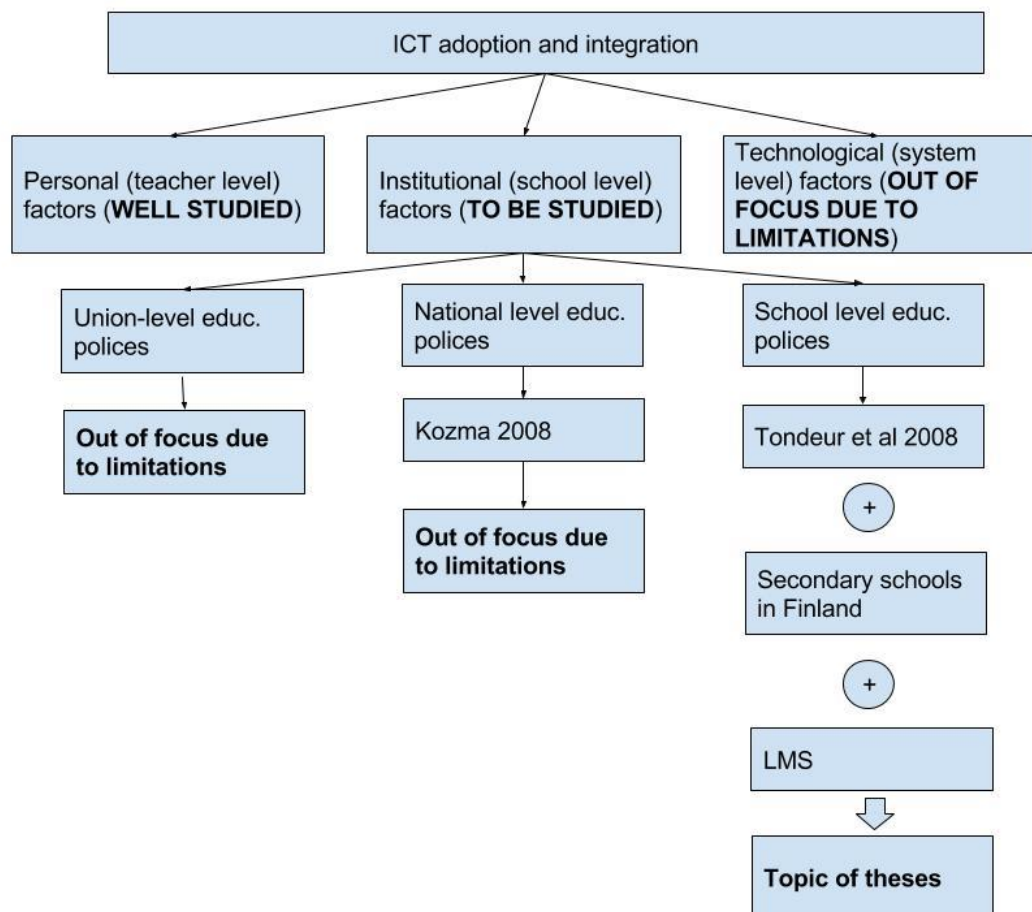
ICT – information and communication technology

LMS – learning management system

Adoption - the decision of an individual to make use of an innovation as the best course of action available. The process of adoption starts with initial hearing about an innovation to final adoption. (Rogers, 2003)

Integration - means of using any ICT tool (Internet, e-learning technologies, CD ROMs, etc) to assist teaching and learning (Williams, 2003).

## 1.2 Motivation



Even though the ICT adoption and integration as a big section of scientific studies has been studied well during late years, modern sophisticated ICT solutions might bring their own challenges in understanding of their adoption and integration into different domains thus this topic doesn't lose its relevance and still

needs to be investigated. For the purpose of this study has been chosen the domain of education. Performed literature review of Buabeng-Ando (2012) identified that there are three main big group of factors influencing teachers' adoption and integration of ICT into teaching: personal (teacher-level), institutional (school-level) and technological (system-level). As personal factors are concerned, in this study it is assumed that they have been studied well enough throughout performed various of studies and elaboration of various of theories like TAM and UTAUT so they are not focus of this study. Technological (system-level) factors has been studied significantly less but due to complexity of study which needs to be performed to study factors like rigid structure of traditional education system, traditional assessment, restrictive curricula, restricted organizational structure, technological factors are not the focus of this study neither. Schools, i.e. what happens inside of schools (school-level factors) are in their turn affected by different levels of policies: union-level if a country where a schools resides belongs to some union (like European Union), national-level and school level. The study of an effect of union or national-level policies on ICT adoption and integration into schools would require the study of schools of different countries what is unfeasible for this study due to the limitations. Why education – because now there is a movement from teacher – centered view to student - centered view.

### 1.3 Research questions

**Does the usage of LMS differ between Finnish secondary schools with the same positive level of pedagogical attitude towards LMS usage but with or without ICT supporting local policies?**

(Does usage of LMS in schools with ICT supporting local policies and pedagogical positive attitude towards LMS usage differ from LMS usage of those schools where ICT support is not explicitly defined in local policies but pedagogical attitude towards using LMS is also positive? (comparison is done according to the type of LMS; schools using the same LMS are compared together)).

- Do school have policies which are supporting usage of LMS (ICT plan, leadership, training, monitoring of integration LMS into teaching, cooperation between schools to share knowledge)?
- Is LMS, where in use, defined as a 'core' or 'supplementary' technology?
- How the process of choosing of ICT tools (focus on LMS) look like? Is that a bottom-up or up-to-bottom initiative?
- For what purposes do schools use LMS? (file sharing, submitting assignments, as a portfolio, platform for collaboration, for chatting, for organizing events, for providing materials according to student preferences (personalized learning), for analyzing / monitoring student success, for reducing teaching planning hours).

## **1.4 Research method**

Quantitative research method. Questionnaire is being developed now.

## **1.5 Capacity to carry out the work.**

My advantage in doing a research on the chosen topic is that I actually work in that company, so I have a possibility to collect more realistic data and have deeper insights. But what is my advantage can be a disadvantage as well: due to the work schedule, I have a limited time what I can dedicate for my theses writing, about 10 hours a week. Starting from next February this amount might be even smaller as I intend to be working full time. But my motivation to finish my theses by the end of 2016/2017 academic year is high, so I will do my best to make it happen.

## 2 LITERATURE REVIEW

### 2.1 Key abbreviations

ICT – information and communication technology

LMS – learning management system

### 2.2 Key definitions

Before going more in detail into the context of the research, it is important to give definitions of core terms, namely to explain what is meant under ‘adoption’ and ‘ICT integration’ throughout the entire study.

Rangaswamy & Gupta, (2000) describes **adoption** as the decisions which is being made each time by individuals when they consider taking up an innovation. Similarly, Rogers (2003) defines adoption as the decision of an individual to make use of an innovation as the best course of action available. Rogers (2003) argues that the process of adoption starts with initial hearing about an innovation to final adoption. For the purpose of this study, Rogers’ definition of adoption is used.

In contrast to Earle (2002) who linked **ICT integration** with the concept of wholeness, when all elements of the system are connected together to become a whole, Williams (2003) described it simply as the means of using any ICT tool (Internet, e-learning technologies, CD ROMs, etc) to assist teaching and learning. For the purpose of this study, Williams’ definition of ICT integration is adopted.

## 2.3 Categories of factors influencing ICT adoption and integration into teaching

Buabeng-Ando (2012) made a literature review of those studies which were done to find out factors influencing teachers' adoption and integration of ICT into teaching. The literature review was done so that at first factors which positively influence on teachers' adoption of ICT were reviewed followed by factors which have negative effect. The summary of positive factors is presented in table 1. Identified factors have been categorized according to the framework of Sherry & Gibson (2002) who claimed that technological, individual, organizational, and institutional factors should be considered when examining ICT adoption and integration.

TABLE 1 Factors positively influencing teachers' adoption and integration of ICT into teaching (Buabeng-Ando, 2012).

Level	Factors
Personal	Teachers' attitudes ICT Competence Computer self-efficacy Gender Teaching Experience Teacher workload
Institutional	Professional development Accessibility Technical support Leadership support
Technological	Technology is perceived by teachers as better than previous practice; consistent with their existing values, past experiences and needs. Technology is easy to use.

From the same work of Buabeng-Ando (2012), table 2 collects findings of those several studies which have conducted empirical research on factors (barriers) that discourage the use of ICT by teachers. These factors (barriers) have been categorized in teacher-level, school-lever and system-level barriers as suggested by Balanskat, Blamire & Kefalla (2007).

TABLE 2 Factors negatively influencing teacher's adoption and integration of ICT into teaching (Buabeng-Ando, 2012).

Level	Factors
Teacher-level	Lack of teacher ICT skills Lack of teacher confidence

	Lack of pedagogical teacher training Lack of follow-up of new Lack of differentiated training programs
School level	Absence of ICT infrastructure Old or poorly maintained hardware Lack of suitable educational software Limited access to ICT Limited project-related experience Lack of ICT mainstreaming into school's strategy
System level	Rigid structure of traditional education systems Traditional assessment Restrictive curricula Restricted organizational structure

As it is possible to see from table 1 and table 2, there are various of factors positively or negatively affecting on adoption and integration of ICT into teaching. Table 2 can be considered as a derivative from the table 1 as the table 1 consists of general factors which actually could have both positive or negative effect on ICT integration into teaching depending from which perspective to look at them. Buabeng-Ando (2012) used two frameworks for categorization of influencing ICT adoption factors suggested by different studies. Sherry & Gibson (2002) suggested rather general framework while Balanskat, Blamire & Kefalla (2007) focused specifically on educational context while actual meaning between these two frameworks stays the same. 'Personal level' factors in educational context could indeed be called 'teacher level' factors, 'institutional' - 'school level' and 'technological' - 'system-level'. Throughout this study while speaking in general, terms suggested by Sherry & Gibson (2002) will be used while if going more in education specific context, categories of Balanskat, Blamire & Kefalla (2007) are then used instead.

### 2.3.1 Theories explaining personal factors

There has been done various of studies on explaining personal factors influencing ICT adoption in different contexts and in education particularly. Moreover, several educators have proposed different models and theories for that. Among the core ones it is worth noticing technology acceptance model (TAM) developed in the work of Davis (1989) and which is according to Lee, Kozar, & Larsen (2003) is the most widely used theoretical model when attempting to explain technology adoption, and UTAUT which appeared as an outcome of review of eight dominant theories used in explaining technology acceptance and innovation adoption, developed in the work of Venkatesh et al. (2003). Undoubtedly, personal factors are crucial to understand because despite of the nature of the context,



any adoption ends up in personal adoption of ICT tool by that person(s) who is supposed to use it. But as Buabeng-Ando (2012) through performed literature review pointed out, particularly in education there are other factors as well influencing ICT adoption and integration like school-level and system-level factors which have been studied significantly less. This study focuses on school level factors in order to fill out this gap to some extent.

## **2.4 Different levels of educational policies influencing school level factors**

If to consider school level factors influencing on ICT adoption and integration into classroom, it is possible to notice that these factors in their turn have own factors positively or negatively affecting on them. In this study it is claimed that these factors are influenced by different levels of educational policies. Before going into different levels of policies, it is important to give an overall definition of what is meant under word 'policy' in this study. According to Cambridge dictionary, the word 'policy' means "a set of ideas or a plan of what to do in particular situations that has been agreed to officially by a group of people, a business organization, a government, or a political party". Another reputable Oxford dictionary gives a definition of the word 'policy' as "a course or principle of action adopted or proposed by an organization or individual". In this study, considering an educational context, the word 'policy' means "a plan or a set of rules, norms and recommendations that has been agreed to officially by a competent educational authority and which aim to give official regulations, guidance or recommendations just as for all educational institutions within certain region so for all members within particular educational unit".

Every school apart of school level or local policies is also influenced at least by national-level policies of that country where a school resides. In some cases, if a country is a member of some bigger organization or a union, e.g. European Union (EU), then the whole country is also influenced by union-level educational policies. Kozma (2008) argues that it is less likely that individual school and classroom innovations will be sustained without the guidance of national policies and the resources of corollary programs. From another hand, Tondeur et al (2008) claims that "it is local policies which do reflect to a larger extent what happens in the classroom" because as according to Kennewell, Parkinson, & Tanner (2000), if teachers share the values expressed within a school-related policy and understand the implications, this policy is able to influence practice. This study is not arguing with the first claim, but rather will exclude the factor of national and possible union-level policies completely in order to focus solely on school-level policies to subsequently test the second claim.

The research of Tondeur et al (2008) verified the claim of local-polices reflecting to a larger extent what happens in the classroom in the **context of primary schools of Flanders** (the northern part of Belgium). He concluded that indeed the adoption and actual use of ICT in classroom clearly related to actions taken at the school level which are in their turn defined in the local polices. But the proof of the claim got from the research of primary schools of the part of Belgium does not give the opportunity to say with a big assurance that the same will be true in the context of primary or even secondary schools of other countries. Thus, to cover this **gap** to some extent, this study will focus on schools in Finland, particularly on **Finnish secondary schools**, in order to test the same claim. Finland is chosen to be the country of the research due to personal interest of the researcher and certain limitations of getting data from secondary schools of any other country.

While considering Finnish schools, three level of polices can be identified which have direct or indirect effect on school level factors of ICT adoption and integration into teaching. Among those are EU-level educational polices since Finland is a member of this union, national-level polices and school-level polices. For the purpose of this study it is enough to point out that EU – level and Finnish national level educational polices do support and do encourage ICT use in classrooms (Kozma, 2008). But while studying schools in the same EU country, particularly in Finland, **these factors become irrelevant** because they stay the same for all Finnish schools, particularly secondary ones. If so, it is interesting to see is there still a difference in ICT use in classrooms between these schools or not. And if yes, it has to be connected somehow to the local variables of each particular school because as according to Tondeur et al (2008), “schools are considered to differ with respect to performance level, innovation capacity, and contextual characteristics”. In order to increase possible influence of local factors, this study will check if there are differences in ICT use in classrooms between secondary schools located in big cities and in small towns of different parts of Finland.

**Another gap** what this study attempts to fill in is that Tondeur et al (2008) studied the adaption and integration of ICT meaning **general use of computers** for different purposes but not any specific computer-based or even web-based technology. Since the year of 2008, the general use of computers in education became very broad and well-known and presently there is no need to study that, it already became sort of a fact. Thus this study will concentrate particularly on learning management systems (LMS) as emerging and becoming more popular in some institutions ICT tools, on their adoption and integration into teaching of Finnish secondary schools. LMS is a software application for the administration, documentation, tracking, reporting and delivery of electronic educational technology (also called e-learning) courses or training programs ([Wikipedia](#)). These systems, apart of being used inside of companies to deliver electronic content to employees, are widely used in the context of schools as well for wide range of

purposes. The particular interest on LMS's and their adoption and integration into teaching is because there is a great shift going on in education from traditional school to e – teaching and learning (Lang et al., 2012) and it is said that systems like LMS or LMS based might have certain effect and support this movement what is very important and interesting to study.

## 2.5 Core and supplementary technologies

For the successful adoption and integration of ICT in classroom, it is not enough just to briefly mention use of ICT in school-level policy, it should be explicitly described in there and assigned to a certain role. According to Collis and Moonen (2001), technology in schools is being used in two different ways:

- “core” technology based on what all major activities in the teaching-learning process are built
- “supplementary” technology, the use of which typically occurs through a bottom-up approach via pioneer teachers who tries to make use of the potentials of new technologies or which occurs due to initiative of students.

Moonen (2008) argues that a general policy can become successful only when the use of technology moves from the complementary to a more core aspect. Thus it is interesting to investigate whether or not the ICT technology which is being used widely by teachers of the same school has been specified as a core technology in school-level policy.

**TODECIDE: could this be included into the method part?**

**Further studies:** how system-level factors influence ICT adoption and integration into teaching.

How geographical loc and social economy resources influence the usage of ICT in classrooms

To answer this I study ...

Find place with different social econ factors

Research design and research context and research question should be considered together.

### 3 METHODOLOGY

#### 3.1 School improvement approach

This research is in line with the work of Tondeur et al (2008) and is going to describe the state of the art regarding ICT school policies in Finnish secondary schools also with respect to **five areas from the school improvement approach**. According to Creemers (2002), it is a practice- and policy-oriented approach to strengthen schools' capacity for change management what is crucial to address major factors affecting ICT adoption (Phillips, 2005). The reason of why school improvement approach is selected over school effectiveness is well justified in the presented paper. According to Tondeur et al (2008), these factors, which are described in the table 3, entail the development of a local school policy in order to guarantee the establishment of the necessary conditions supporting the continuous change processes what ICT integration is considered to be. Table 3 in addition to listing these five key factors from the school improvement approach, also links them specifically to school policies stimulating ICT integration in the classroom. A small disclaimer what Tondeur et al (2008) gave about these five factors was that despite the existence of differences in school improvement approaches, there seems to be a general agreement on this basic set of factors.

TABLE 3 Five areas of local ICT policies from a school improvement approach (Tondeur et al, 2008).

School improvement	Local ICT policies
Clear goals and systematic strategies for educational change	Development of an ICT plan facilitating comprehensive ICT integration and fostering an environment towards the realisation of the vision in the ICT plan
Strong leadership to guide change efforts	Leadership to effectively direct the process of ICT integration

Profession development and support for the implementation of reforms	Support and training to ensure ICT integration
(Self) evaluation systems for monitoring change processes	Evaluation to monitor the integration of ICT and guide ICT planning
Networking and exchange of good practice with other schools working on the same reform	Cooperation to create between-school communities for the dissemination of ICT-related knowledge

### 3.2 Composing of a questionnaire

## **4 RESULTS**

## **5 DISCUSSION**

## **6 CONCLUSION**



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