**Andy’s comments:**

**Currently, you have put too much information in part 1. Actually, in part 1, you just need to give a introduction on the current situation of education in EU, what is the problem, and how to solve it.**

**In part 2, you can talk what have been done by previous studies and how can you do it differently.**

**In part 3, you can use your copany's product as an example to show how you can sovle the problem you have raised in part 1.**

**Situation of education, lack of customized ICT solutions as the origin of these problems, IMAILE to improve this situation**

**What is PLE, problems of existing PLE, how to improve according to IMAILE researches**

**Example of Almerin product**

**The author's name.**

Alexey Panin

**Topic of the thesis.**

Personal learning environment adoption by teachers in primary and secondary schools

**Supervisor (s).**

Dr. Nan (Andy) Zhang  
Assistant Professor,  
Department of Computer Science and Information Systems  
Faculty of Information Technology  
University of Jyväskylä

# SUBJECT

## Situation in the field of education in Europe

According to Lang et al. (2012), the field of Education in Europe confronts several mayor challenges such as early drop outs, financial issues, teachers spending less time with the students due to documentation, the shift into 21st century skills both for teachers and students, low interest in STEM subjects (Science, technology and Math) as well as an increased demand of personalized learning. Apart from this there is a great shift from the traditional school to e - teaching and learning going onwithin the European Education system and the teaching staff need support from technology to manage this shift (IMAILE). On the top of this, European schools at present, especially in STEM subjects, still show a **teacher centric** classroom with primarily teachers using technology, interactive whiteboards and learning management systems (LMS) while the actual trend in education goes towards **student centered** learning where all students have access to devices, digital content and software in a personalized way (IMAILE). Acknowledging these issues, European society has worked together on finding the ways to improve the situation in order to bring a true 21st century school reform.

In order to improve the described situation partners in Sweden, Finland, Germany, Hungary, Austria, Portugal and Spain together has developed the IMAILE project. To provide students with a personalized learning experience in a student - centered way, according to Overby (2011), classroom should become interactive with students working together in groups while teacher is assisting them on the side. The emphasis in this approach is to engage student to learn for understanding and for building their own interpretations (Brown, 2003) rather than for memorizing and reproducing studying material during the test without comprehension of how phenomena really works and can be applied in practice. Moreover, while students are busy trying to find the answers on questions during execution of tasks, teachers have more time for individual support thus learning experience becomes more personalized. IMAILE research indicates, that in order to provide modern learning in a student centric way, such interactive classrooms need the support of ICT personal learning environments (PLE) (IMAILE). To fight challenges of early drop-outs, lack of motivation and increased personalize learning such a PLE should be created which would utilize those technologies which are nowadays in trend of technology enhanced learning like cloud computing, gamification, social media, learning analytics and has a support for informal, blended and lifelong learning.

It is believed that European schools’ actual situation and problems have one common origin – the lack of customized ICT products to be used in classrooms (IMAILE). Even though there exists a great amount of different ICT solutions on the market, in spite of high investments and a market that offers such a variety of products it is still observed a low use of technology to perform innovative teaching and creative learning in the European classrooms (IMAILE). That could be due to ineffective dialogue between demand (European schools) and supply (ICT industries) when second create ICT solutions without careful consideration of teaching staff’ and students’ changing needs. Thus educators, researchers and ICT industries should establish an effective dialogue to build together a truly effective ICT solution which is able to address challenges arised in European field of education. So in order to finally break schools out of industrial age model of education and provide a modern 21st century education, some educators believe that sort of personal learning environment should be created.

## Personal Learning Environment (PLE):

Personal Learning Environment is quite a new concept and it has usually been described as a concept not as a learning environment. In the scholar literature there are attempts of giving a definition of PLE as a learning environment and some of them can be found in the table 1.

TABLE 1 Definition of PLE

|  |  |
| --- | --- |
| PLEs are an outcome of the tools that social media has provided learners enabling them to create, organize, and share content | Martindale and Dowdy, 2010 |
| PLEs are externally hosted (in-the-cloud) Web 2.0 tools and services designed to help students aggregate and share resources, participate in collective knowledge generation, and manage their own meaning making | Dabbagh & Reo, 2011; Dron, 2007 |
| PLEs are tools, communities, and services that constitute the individual educational platforms that learners use to direct their own learning and pursue educational goals | EDUCAUSE Learning Initiative (ELI), 2009 |
| PLEs are systems that empower students to take charge of their own learning prompting them to select tools and resources to create, organize and package learning content to learn effectively and efficiently | McGloughlin and Lee, 2010 |
| PLEs can be perceived as both a technology and a pedagogical approach that is student-designed around each student's goals or a learning approach chosen by a student to match his or her personal learning style and pace | Dabbagh & Kitsantas, 2012 |

An easy to understand definition of PLE as a learning environment can be found also from Wikipedia which moreover largerly conforms ideas about PLEs from scholar literatures and which in used in the official IMAILE document “State of the art in Personal Learning Environments” written by Lang, M. Lounaskorpi, P. Pardo, A. (2012). Thus, in this work PLE refers to the following:

***“Personal Learning Environments (PLE) are systems that help learners take control of and manage their own learning. This includes providing support for learners to:***

* ***set their own learning goals (with support of their teachers)***
* ***manage their learning, both content and process***
* ***communicate with others in the process of learning “***

***(Wikipedia)***

## PLE in IMAILE project (PLEI):

Although general definition of PLE is given, it is still needed to specify what PLE means in the context of IMAILE project. According to information found on the official portal of IMAILE project, the definition of PLEI is the following:

***“The Personal Learning Environment in IMAILE (PLEI) for STEM is an adaptive, accessible, and easy to use solution providing smart services for the realization of personalized learning including individualized learning paths, support of different learning strategies, and intelligent tutoring for primary and lower secondary schools. The IMAILE PLE for STEM shall offer a single access point to repositories of freely available learning content, learning apps, services and tools for STEM education through the application of open standards. Through the provision of own communication and collaboration functionalities and the integration with widely used social media pages, the IMAILE PLE enables students to learn, share and interact with their friends, teachers, and other stakeholders such as their parents. The IMAILE PLE supports bring your own device (BYOD) through the provision of a device and operating system independent solution, and lifelong learning through the integration of an ePortfolio solution.  Overall, the IMAILE PLE for STEM provides a highly motivational environment for formal and informal STEM education.”***

***(IMAILE portal)***

# MOTIVATION

## Importance of PLE

The concept of the PLE has been emerging in recent years via the work of online theorists, researchers, and developers, as the result of the limitations of learning management systems, a recognition of the importance of informal and lifelong learning, and the growth of social software. (Martindale & Dowdy, 2010)

According to IMAILE vision, PLE helps in the following:

* A personalised learning environment increases the students’ motivation and creates a learning situation where they can control their own learning at their own pace.
* It allows students to actively in design their own learning strategies
* PLE enables better contact between student/teacher, and the education is less teacher-centred.
* PLE and modern technology together create a customised learning environment that suits the development of the 21st century classroom.
* The technology of today makes it possible to create PLE solutions which are developed to suit the demands from both teachers and students.
* PLE in combination with technical tools increase the students’ interest in STEM subjects, which is important as there is a growing demand in STEM related professions.
* The young generation of today primarily learn by being interactive. This requires interactive classrooms with personalized ICT solutions.

(IMAILE portal)

### The importance of PLEI:

Pupils of K-12 (primary and secondary schools), for whom PLEI is primarily intended, need support in their studies the most because they are still so unexperienced, not mature and having their heads twisted because of large amounts of new information and choices of professions for the future career. Thus learning support and responsibility of the entire process lies on the shoulders of teachers and parents. New PLEI dares to help teachers in their daily work and give a hand to students and their parents guiding them through the dark forest of education.

A new PLEI should help solving above mentioned challenges because it should meet the following requirements which were defined by IMAILE:

* Create more 1 to 1 meetings between teacher and student in the classroom.
* Reduce teachers planning hours.
* Increase students’ motivation to learn STEM.
* Create a real shift from teacher centered learning to student centered learning ( research shows that lessons in math and science still is mostly teacher-centered, with few opportunities for the students to have influence on their own learning and using digital tool).
* Be applicable to all devices (responsive design for computers, mobile phones, tablets…), our PLE solution should be a tool that can be easily used from the students’ personal devices as well.
* Be applicable to all learning styles according to the Learning and Teaching Styles (Felder & Silverman, 1988): active/reflective, sensing/intuitive, visual/verbal and sequential/global.
* Provide students with a personalised formative feedback and scaffolding, based on their learning paths, needs and styles.
* Reduce the numbers of early drop outs in a long term perspective

(IMAILE portal)

## Problems of existing PLEs:

The world of e-learning and using ICT in education is full of solutions and online environments. Most of them have a long history behind them and have had excellent user experiences reported. The dawn of the social age has driven more solutions, software and services to support learning processes and personalizing the learning. New pedagogies and working approaches have innovated teachers and researches to create their own solutions and vision of PLE.

The challenge of the existing solutions and software to support PLE is two-fold. Firstly the solutions focus on only some of the features that PLE needs and on the other hand they are mostly mended to university users (young adults) who can take the responsible of their own learning.(Lang et al, 2012)

Table 1 shows the analysis of some of PLE technology solutions existing on the market.

TABLE 1 ANALYSIS OF EXISTING PLE SOLUTIONS (Lang et al, 2012)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Source** | **Description** | **Shortcomings** |
| Gooru | http://go.nmc.org/gooru | STEM education research, search, and curation portal that relies on crowd sourcing and collective intelligence | This service is a search engine and not applicable on the target groups Primary and Secondary schools. |
| The Learning Hub | http://go.nmc.org/yokoh | Each student has their own blog that develops into their electronic portfolio and personal learning environment. | This solution does not support teachers and students to assess and select tools according to their learning methods and personalized needs. |
| LTISD Learning Portal | http://go.nmc.org/ltisd | Students have 24/7 access to a webbased learning environment from school, home, and their mobile devices | This is a learning portal learning management system (LMS) and not specific a PLE. |
| The PLAYground | http://go.nmc.org/thepl | Online platform for the curation, creation and circulation of user generated learning activities that encourages children and adults to learn and teach each other. | This solution does not support teachers and students to assess and select tools according to their learning methods and personalized needs. |
| Shared Learning Collaborative | http://go.nmc.org/shared | This project is developing a common data layer and  encouraging independent software vendors to build personalized learning applications for five pilot states in the US. | The project is not a holistic approach. |
| Trail Shuttle | http://go.nmc.org/trail | Self-directed learning platform that uses technology to enable students to build their own learning programs | Not PLE but Learning Management System (LMS). |
| Peda.Net | http://peda.net | Peda.Net is user-based platform, which is building around the personal learning place. It is a PLE platform for students and teachers. | The weakness of online tools, evaluation system and big data collecting still need development. |
| Mentorixx | http://www.mentorix.eu | Mentorixx offers a flexible, dynamic and interactive learning platform, facilitating the process of building internal or external training sessions! Mentorix Learning also includes social networking, where communication is central, to broaden the interaction and learning between staff and trainers. | The interaction with the parents and big data collection are the weak points of the platform. |

The overall conclusion from the scanning for PLE for the K-12 education is that the market doesn’t have yet fully functional PLE–platform to be recommended. The vide implementation of new pedagogies, equipment and methods challenge the market. The new needs from the primary and secondary education students, teachers and parents can’t be answered platform which have been created for universities in the first hand. (Lang et al, 2012)

## Method to improve PLE:

As the analysis above showed, there are great solution already on the market and by combining their features on it is possible to create a vision of the future PLE. And that’s what Almerin does in its activities. Instead of inventing something completely new, Almerin decided to extend the functionality of one LMS solution called Sakai which is the open source. The reasons of choosing Sakai instead of others is not subject of this work and will be left behind the curtains.

According to IMAILE recommendations a PLEI should utilize (all or partly) those emerging technologies which are nowadays in trend of technology enhanced learning:

* Cloud computing
* Wearable technology
* OER
* BYOD
* Blended learning
* Gamification
* Social media
* Learning analytics
* Automated online assistant

Almerin in its development of PLE utilizes most but not all of these technologies but thanks to the fact that new PLE is being developed as a platform **(n-side market)**, it makes it possible to cooperate with third party companies and integrate their solutions into the new PLE which are in their turn utilizing the rest of above mentioned technologies. This way Almerin ensures that all parts of the puzzle are on place and a new PLE is going to correspond to 21st century personalized learning demand.

## Previous studies of ICT adoption in education

There are many researches made to study ICT adoption in the context of education but there is still a gap in the knowledge, namely the PLE adoption in the context of primary and secondary schools.

(give examples of different works)

While new PLE in being developed, it is already clear that the development of it results in innovation and the biggest challenge with a software, and especially with that software which includes something totally new, is to sell it to actual clients. For pupils to be able to get all mentioned above advantages of using a new PLE, it is necessary that schools adapt it in their teaching activities. Thus Almerin clients are actually schools and to be more particular – teachers, who will actually be using the new software and whose opinion has a big weight in schools’ overall decision on whether to take a new ICT solution into the use or not. That’s why the goal of this work is to study primarily teachers in the context of adoption of a new PLE. As a result, this research it is wished to find answers on the basic question of ‘why teachers would want to adapt new PLE in their teaching activities?’ in order for Almerin to use these answers as arguments in their selling campaign.

# Preliminary research questions.

**Why would teaching personnel of primary and secondary schools be willing to adapt completely unknown and commercially distributed PLE (product of Almerin) in their teaching activities while there is a great variety of freely distributed learning management systems (LMS) available on the market.**

* what could motivate them to start using it?
* What challenges teachers experience while using existing tools?
* What issues teachers would want to have solved while using a new technology?

# The research method, if it can already draw.

To be decided with the supervisor. My personal thought is to go with quantitative research method, create a survey and send to several schools.

# A few scientific sources.

* Felder, R. M., & Silverman, L. K. (1988). Learning and teaching styles in engineering education. Engineering education, 78(7), 674-681.
* Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance

of information technology: Toward a unified view. *MIS Quarterly,*

*27*(3), 425–478.

* Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of

information technology: Extending the unified theory of acceptance and

use of technology. *MIS Quarterly, 36*(1), 157−178.

# 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.

**References:**

Brown, K. L. (2003). From teacher-centered to learner-centered curriculum: Improving learning in diverse classrooms. *Education*, *124*(1), 49.

Dabbagh, N., & Reo, R. (2011). Impact of Web 2.0 on higher education. In D. W. Surry, T. Stefurak, & R. Gray (Eds.), Technology integration in higher education: Social and organizational aspects (pp. 174–187). Hershey, PA: IGI Global.

Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. ***The Internet and higher education*,** *15*(1), 3-8.

Dron, J. (2007). Control and constraint in e-learning: Choosing when to choose. Hershey, PA: Idea Group.

EDUCAUSE Learning Initiative (ELI) (2009). The seven things you should know about… Personal Learning Environments. Available from http://net.educause.edu/ir/library/pdf/ELI7049.pdf

IMAILE portal. Available from http://www.imaile.eu/

Lang, M. Lounaskorpi, P. Pardo, A. (2012) State of the art in Personal Learning Environments (incomplete)

Martindale, T., & Dowdy, M. (2010). Personal learning environments. *Emerging technologies in distance education*, 177-193.

McGloughlin, C., & Lee, M. J. W. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. Australasian Journal of Educational Technology, 26(1), 28–43.

Overby, Kimberly (2011) "Student-Centered Learning," *ESSAI*: Vol. 9, Article 32.   
Available at: <http://dc.cod.edu/essai/vol9/iss1/32>