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THE INTRODUCTION TO E-LEARNING DESIGN TO SCHOOL TEACHERS IN GEORGIA

Master's thesis

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Author’s declaration of originality

I hereby declare that this thesis is based on my own work. All ideas, major views and data from different sources by other authors were only used as reference and/or for research purposes. The thesis has not been submitted for any degree or examination in any other university.

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Abstract

Information communication technologies have significantly changed our daily life and economics; they also promoted welcome changes for new technology education. It can be stated that e-learning is one of the latest and the most common forms of the contemporary business ecosystem. Taking into account the rare use of ICT in the classrooms in Georgian schools, it is highly relevant to address the issues of introducing methods and models of e-Learning to teachers. It is also necessary to point out that the ratio of using ICT tools to succeed is undoubtedly small.

E-learning will be emerging as the new paradigm of modern education in Georgia. Georgia has the potential to catch up the modern way of teaching and learning. The school education is the base of building e-Governance and information society. Early e-learning education can fill the learning gaps and bridge the digital divide that currently exists among Georgian population. Introducing new e-learning frameworks, e-learning styles, educating the educators, reducing the fear of using technology and raising the awareness of the school teachers will benefit the whole country to reach ICT goals. The preparation, mission and vision should be explained and planned considering the needs of both teachers and students.

The findings indicate various motivations and concerns that influence the adaptation of e-learning. It can be concluded that the primary motivations to adapt and continue using e-learning provided by ARCS model are appropriate for school teachers. Among educators, the ICT is highlighted by all the candidates. On the other hand, teachers pointed out the convenience of using the ICT in the classrooms. However, most of them need more training course in ICT to be a proficient teacher. These findings aid in answering the research question and provide useful input for future studies, as the topic is increasingly more important and e-learning rate growth and necessity of using ICT based teaching and learning is being actively requested.

Thesis is written in English and contains 81 pages, 7 chapters, 5 figures and 4 tables.

Annotatsioon

Informatsiooni ja kommunikatsioonitehnoloogia on oluliselt muutnud meie igapäevast elu ja majandust; samuti aitab see edendada oodatud muudatusi tehnoloogia hariduse vallas. Võib öelda, et e-õpe on üks viimaseid ja kõige levinumaid vorme tänapäeva äri ökosüsteemis. Võttes arvesse seda, kui haruldane on IKT kasutamine Gruusia koolides, on olemasolevate e-õppe meetodite ja mudelite tutvustamine õpetajatele väga oluline. Samuti on vaja rõhutada, et IKT vahendite kasutusele võtmise tõenäosus on märkimisväärselt väike.

E-õpet võib pidada Gruusia modernse hariduse uueks paradigmaks. Gruusial on potentsiaali õpetamise ja õppimise kaasajastamiseks vastavalt tänapäeva meetoditele. Kooliharidus on aluseks e-valitsemise ja infoühiskonna loomisele. Varane e-õppe haridus võib täita õppimise lüngad ja digitaalse lõhe, mida praeguses Gruusia elanikkonnas esineb. Et terve riik saaks jõuda IKT eesmärkidele lähemale, siis tuleks teha järgmisi tegevusi: tutvustada uusi e-õppe raamistikke ja e-õppe stiile, harida haridustöötajaid antud vallas, vähendada tehnoloogia kasutamise hirmu ja tõsta kooliõpetajate teadlikkust. Ettevalmistusi tehes ning missiooni ja visiooni luues tuleb neid selgitada ja planeerida arvestades nii õpetajate kui õpilaste vajadusi.

Tulemused näitavad erinevaid motiive ja muresid, mis mõjutavad e-õpe kasutuselevõttu. Sellest võib järeldada, et ARCS poolt välja toodud peamised motiivid e-õppe kasutusele võtmiseks ja selle jätkuvaks kasutamiseks on kooliõpetajatele sobivad. Õpetajate seas on paljud kandidaadid IKT esile toonud. Teiselt poolt on õpetajad välja toonud IKT kasutamise mugavuse klassiruumides. Enamik neist vajab rohkem koolitusi IKT vallas, et olla kogenud õpetaja. Uuringu tulemused aitavad vastata uurimisküsimusele ning annavad panuse edasistele uuringutele, kuna antud teema on üha olulisem ning e-õppe kasvumäär tõuseb ja IKT põhise õppimise ja õpetamise vajalikkust aktiivselt rõhutatakse.

Lõputöö on kirjutatud inglise keeles ja sisaldab 81 lehekülge, 7 peatükki, 5 joonist ja 4 tabelit.

List of abbreviations and terms

IT	Information technology
ICTs	Information Communication Technologies
IST	Information Society Technology
PCs	Personal Computers
OECD	Organization for Economic Cooperation and Development
IT personnel	Information Technology personnel
LMS	Learning Management System
IDS	Intrusion Detection System
TV	Television
CD-ROM	Compact Disc, read-only-memory
LO	Learning objectives
ARCS model	Attention, relevance, confidence, satisfaction
T&L	Teaching and Learning
EU	European Union
UK	United Kingdom
EHIS	Emlyn Hughes International Soccer
UN	United Nations
SMEs	Small and medium enterprises

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1 Introduction

One of the most important starting points of implementing e-Governance is getting the digital education at school. The Government of Georgia intends to have information society that will focus on building e-government and use e-services effectively and efficiently. However, to ensure the high quality of e-Governance it is necessary to introduce e-Learning to school teachers and increase their digital literacy. Beginning with introducing e-Learning to educators to educate them and offer e-learning design, intensive training in-house courses in schools, will raise awareness and motivation of teachers because e-learning is flexible, convenient, immediate, cost-effective and can be tailored to different needs. While The Ministry of Education and Science of Georgia is integrating and bringing new technologies into the project and educational programmes, teachers are supposed to catch up with the most recent technologies and use them in their curriculum to teach the students.

In former Soviet Georgia lots of educators did not grow up with computers and they are thought to be "Digital Immigrants" teaching "Digital Natives" who don't understand each other. The teachers are not getting the digital learning, the preparation training courses regularly they have to work them or it is not compulsory for them. Loads of work, traditional teaching style, and long distance to teachers' house fear of using technology leave teachers without the time and inspiration to learn new technological skills.

Today, schools in Georgia have the internet access, essential software equipment, one so-called an IT specialist, without understanding that large numbers of their employees are unprepared or unwilling to integrate them into their teaching curriculum and use them to their advantages. The students learn how to use the 21st-century devices for online games, chatting and socializing rather than using it for educational purposes. E-learning gets prepared students for a higher level of education and gives a chance to address technical challenges. Also, the school education is an important time to build information communication technologies (ICTs) and foundational skills in traditional public schools. Technology can open the way to new learning opportunities for students today. E-learning is an ongoing process through which we get new skills and knowledge. The goal of delivering a high-quality education to every child in Georgia remains unfulfilled, but

technology presents a vast range opportunity for this to be a reality. E-learning has the overwhelming potential to improve the education system in Georgia and if implemented well with strategies that focus on overcoming these critical challenges, a radical transformation of the school system is possible.

Technology is necessary for practically every aspect of people's lives. This is how humans better equip themselves for new challenges ahead. This is how humans can take advantage of new opportunities. It is through e-learning that people can improve with their jobs. It is how people progress on their various crafts. Learning doesn't just stop when people graduate from school or university. It is something continuous as lifelong learning.

1.1 Thesis motivation

The motivation of the thesis includes my professional background. Having graduated from university, I started working as the English language teacher at the traditional public school. The biggest challenge for me that remains unfulfilled is an integration of ICT in the classroom. It is an enormous unsolved problem over the Georgian Republic and without any hesitation my motivation is on-going. Today, technology is developing and growing in a rapid way. The school is an institution where people must get a proper education and knowledge that will lead their future lives. There are millions of learning gaps, a low self-esteem, social problems, low-income families and most of the parts of the country are the high mountainous regions where infrastructure is not well-developed and the situation leaves teachers without any interest in learning or teaching something new. However, teachers try to follow the national curriculum and teach students according to the requirements.

E-learning can prepare and change the attitude of the teachers, school administrators, students and parents toward learning. Technology has the power to get people involved in learning activities where all students' thoughts and creativity is considered as the primary goal to achieve ICT goals and become successful, proficient users of all e-services offered by the government of Georgia.

1.2 Theoretical background/Literature overview

To begin with students' and teachers' confidence in their digital competence and frequency of ICT-based learning activities, research in the course of recent years has shown the substantial impact of teacher's ability on student accomplishment [1]. Having the necessary skills and knowledge is essential for all educators to use ICT effectively in daily teaching basis and capability to gain students' digital competence.

The digitalization here includes the correct and necessary use of Information Society Technology (IST) for teaching, free time, etc. It is supported by essential aptitudes in ICT, for instance, the use of PCs to recover, store, deliver, present and exchange data, and to

impart and take an interest in synergistic systems using the Internet [2]. The research demonstrates that there is a connection between educators' digital capability and their use of ICT in the classroom. Subsequently, taking part in professional improvement training courses or simulations can altogether impact their ICT use [3].

When educators learn through non-formal methods of training sessions, they feel more confident, blended training and training that identifies with today's classroom settings [4], and interaction effort between educators is an efficient route for such professional advancement to happen [5]. The findings in research show that more involvement in using ICT is emphatically identified with the obtaining of students' digital skills and their trust in using this kind of tools [6]. On the other hand, teachers who teach in schools have not been adequately prepared for the pedagogical use of ICT [3]. Teachers are ordinary users of the Internet and need information in how to endeavor online networking devices for learning [7].

Nowadays, it is recommended online networking methodologies that can encourage technological, pedagogical and authoritative development in the process of educating and learning, along these lines adding to the modernization of frameworks and foundations to meet the difficulties of the 21st century. [8]

Digital technologies have been a key driver behind the profound changes in work organization, production, and society over the last twenty years. These changes have led to what economists characterize as the knowledge-based economy in which the knowledge held by individuals and organizations is critical to innovation and economic and social development. While initial education and training were previously seen as providing the necessary skills and knowledge, require continuous updating of personal and collective expertise and experience - other words lifelong learning.

Lundvall and Borras [9] argue that 'learning economy' is more appropriate term that the 'knowledge-based economy' in articulating in today's agenda where specialized and codified knowledge has a very short lifespan. Hence, it is a capability to learn how to create new knowledge and adapt to changing conditions that will increasingly determine the performance of individuals, firms, regions and countries.

Just as digital technologies have been a key force in driving economic and social demand for new knowledge, they have also been hailed as a potential means for developing a permanent learning infrastructure. E-learning, the application of information and communication technologies (ICT) to curriculum and pedagogy, has been seen as providing universal access to information and providing a new, flexible and ubiquitous learning environment open to all.[9]

1.3 Overview of ICT education in Georgian schools

To fill the ICT learning gaps, [10] Georgia needs a higher education that offers sufficient knowledge, training courses and disciplines. Users need skills to profit from the applications that system developers design sophisticatedly. The first thing to take-up and utilize is, therefore, to create awareness by showing them the advantages of using the existed systems and applications. The users have to be able to use the systems. This can be done through intensive training, workshops or self-explaining documentations. In-house training should already start at school bringing latest technologies to motivate and fulfil the curiosity of smart kids. On the one hand, teachers should be able to bring the ICT skills and utilize ICT in their classrooms during the lessons to achieve more dynamic teaching. On the other hand, learners should be able to use ICT in a secure and responsible manner and exploit the full potential of the new technology without ignoring the risks.

Currently, the infrastructure in primary schools is promising in Georgia. All the first-grade students and teachers of the primary schools were equipped with a netbook in the last three years. The schools are connected with broadband. Schools need devices for electronically supported teaching.

A new curriculum that was established in 2004/5 [10] for general education has switched the ICT skills from and own subject to an integral part of each issue. To improve digital competences of teachers, some training courses are offered to them. If a teacher participates in the training, he/she will get credits as motivation. It is necessary for teachers to renew their licenses of teaching or there is another option to pass an exam. Therefore, teachers are encouraged to learn ICT skills and English language that lead to higher salaries. About 50% of the 65.000 teachers attended the basic ICT skill training and 30% the advanced ICT training. Coach attends courses where they learn the basic IT

skills but also methodologies of teaching and using ICT in the classroom. However, the trained teachers are not usually motivated to utilize their digital skills in the classroom. Despite the fact that teachers are motivated to take up new ICT skills, they hardly use their knowledge of ICT to improve their teaching. There is no assessment of using ICT in the classroom. Teachers have no motivation to take additional task caused by more preparation and being up-to-date by technical professional development.

Furthermore, there is a limited number of IT personnel to support the teachers and students' IT-related technical or problems of connectivity in the classroom. A mid-term range education strategy concerning ICT in schools is missing.

The Georgian teachers can only achieve the potential of ICT if they are familiar with using and develop the new technologies. E-Georgia [10] strategy states that besides improving skills of the general population, particular attention should be given to specific target groups like an elder disadvantaged, low-income families or people living in rural areas. These people usually do not use computers, surfing the internet or working with new technologies. [10]

1.4 e-Learning description

The term [11] e-Learning appeared in the mid-1990s along with developments in the World Wide Web and interest is asynchronous discussion groups. E-learning is formally defined as electronically mediated asynchronous and synchronous way of communication for the goal of constructing and confirming knowledge. The Internet is the technological foundation of e-learning and associated communication technologies. Furthermore, there are two primary applications online and blended learning that form e-learning. Fully online learning is a form of distance education that had its genesis apart from mainstream distance learning. Nevertheless, e-learning is interactive nature; online learning differs from traditional distance learning with its historical focus on content delivery and independent learning.

Transforming pedagogical assumptions and approaches reflected in the theory and practice of e-learning is a new era of distance education. Online learning integrates

independence with strong interaction that overcomes time and space constraints in a way that goes further the technology and tools to access information.

The potential of e-learning to merge verbal and written discourse, unconstrained by time, has caused educators to rethink the opportunities for involving campus-based students in face-to-face and online environments. This meaningful blending of completing face-to-face and online approaches, to meet particular educational goals has been named as blended learning [11]. E-learning in the form of blended learning integrates the best characteristics of online and face-to-face education. E-learning is an open system that combines access to information and purposeful communication into dynamic and intellectually challenging learning community. [11]

1.5 A digital focus in lifelong learning

In addition to the formal education system (kindergarten, elementary school, upper-secondary school, vocational institutions, colleges), lifelong learning also includes in-service education and retraining as well as non-formal and informal education in all its diversity. Georgia should consider the importance of the strategy that will improve the way of learning and teaching.

The Estonian Lifelong Learning Strategy [12] recognizes every individual as a learner – children as well as youth and adults. Learning must become an integral part of a person's active approach towards life, including among those who are older. Teachers are those professionals who guide learning processes and develop learning environments in kindergartens, comprehensive schools, vocational schools, higher education institutions, hobby schools, non-formal and informal education centres, in-service training centres, open youth centres, museums and other cultural institutions. The strategy is a document that includes the most significant developments in the field of teaching. Five strategic goals have been established.

- Change in the approach to learning
- Competent and motivated teachers and school leadership
- Concordance of lifelong learning opportunities with the needs of labour market

A digital focus in lifelong learning - Modern digital technology is used for learning and teaching effectively and efficiently. An improvement in the digital skills of the total population has been achieved, and access to the new generation of digital infrastructure is ensured.
Equal opportunities and increased participation in lifelong learning Equality of opportunity for lifelong learning have been created for every individual.

Modern technologies of digital infrastructure and its usage methodologies will create possibilities for the fast approaches to learning that will increase in getting the quality of better education. Using of digital teaching materials will contribute studying more interactive and will expand possibilities for lifelong learning. If the population is skillful with technology and more capable of innovation that will lead to productivity in the economy.
The goal is to use up to date digital technology in learning in the more efficient way and getting better results, to raise awareness of the population and to make sure to access to the new generation of digital infrastructure.

To integrate a digital culture into the process of learning and all levels of education need to be incorporated into all curricula. New approaches in pedagogy and organization education that are encouraged by technological novices must regularly be approached.

The essential steps must be taken to provide support for the school leadership, educators and students in the field of educational technology. The following activities can be done. ICT learning tools in elementary schools, high schools, and vocational curricula will be updated and measured to make sure that all graduates have a least basic knowledge of digital competences. The requirements of ICT will be tested to the standards of professionalism. The ongoing projects and programs will be prepared and financed, where people will be able to gain and flourish skills in an efficient way. The expected results of these activities will be used as a support for development study program implementation. The training courses will regularly be held, and pedagogical materials will be planned for blending digital technology into the process of learning to raise the digital competence of educators.

Didactics centres at universities will publicize good practice examples; that will enhance digital novices in schools. Also, this process will lead to the innovation networks for educators' staff and schools. Teachers in schools will be supported with educational technology to expand the possibilities that digital age provides in their work. Providing materials for digital learning in schools to support the goals and study achievement results defined in the curricula of schools, the possibility of digital educational material will be provided. It will cover e-textbooks, interactive exercises, accessible teaching materials, teachers' guidelines, and assessing online-based tools. The following activities will be necessary to ensure the outcome. The interoperable system of software solutions will be generated to support educational content development, its evaluation, assessment, storage, delivery and use of learning. With the help of this system, the online resources will be available to access to students and teachers efficient and user-friendly environment. The quality requirements for digital learning resources for all. Also, the conditions for organizing training courses and supplying instructional resources. Support will help to pilot projects, and the primary goal will be to promote a transmission to use e-learning resources in schools, and best practices will be mutual and ongoing. [12]

1.6 Research questions

The central research questions of this master thesis are the following: how to introduce e-Learning design to school teachers in Georgia?

Hence, this topic is not yet extensively covered in Georgian academic literature and employing qualitative research methods can provide a correct understanding of the causes that lead to teacher demotivation. Furthermore, the findings can give useful input for future research that employs quantitative research methods and is suitable for statistical generalization.

From the main research question, the following three sub-questions are deduced:

1. **How to introduce e-Learning design to teachers to achieve (ICT) information communication technology goals?**
2. **How to fill the learning gaps with e-learning frameworks so that robust interactivity and feedback is enabled?**

3. **How to analyse the collected data?**

The case study approach is proposed due to the flexible boundaries of the research method and additionally, to be able to conduct a study within real-life context [13]. First of all, the purpose is, to generate new insight into teacher professional development in information communication technologies and give output for further research. Secondly, to propose a suitable method for data collection that could aid in answering the research question. Thirdly, to suggest appropriate methods to analyse the collected data to give a valid outcome for the research and also respond to the main research question.

All these sub-research questions are investigated in Chapters 3 to 5 respectively and answered with a reference to the existing body of knowledge. The current academic literature and articles written by practitioners help to conclude the findings from the empirical data analysis and execute case-study based research.

1.7 The description of the thesis structure

The thesis structure will be as follows:
Chapter 2 gives a review of the academic literature and introduces several models that are closely related to this research. Also, the case of ARCS model (attention, relevance, confidence, satisfaction) is presented. Chapter 3 introduces the case study design and explains the data sources chosen for this research. Chapter 4 focuses on the data collection stage of the case study. Chapter 5 gives the overview of the data analysis procedures and organizes the findings. Chapter 6 concentrates on the validation procedures and discusses the limitations of the work. Chapter 7 answers the central research question and concludes the master's thesis. Additionally, research implications and future research suggestions are presented.

1.8 Research methodology and research questions

How to introduce e-Learning to teachers to achieve (ICT) information communication technology goals?

Over the last fifteen years, the spread of the Internet and new information communication technologies (ICT) has brought about exceptional access to information and resources. It has transformed the way people communicate, the way the governments interact with their population, and significantly people learn.

The e-Europe 2002 and e-Europe 2005 Action Plans define e-learning as [14] ‘’the use of the new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaboration’’.

The use of the information communication technologies (ICT) is not in itself the goal of e-learning; e-learning has become shorthand in a vision in which ICT-mediated learning is an integral component of education processes and systems. In this scenario, the ability to uses ICT and the Internet becomes a new form of literacy known as ‘’digital literacy’’. Digital literacy is fast becoming an essential for creativity, innovation and entrepreneurship.

Students' and teachers' confidence in their digital competence and frequency of ICT-based learning activities, research in the course of recent years has shown the substantial impact of educator’s ability on student accomplishment [15]. Having the necessary skills and knowledge is essential for all teachers to use ICT effectively in daily teaching basis and capability to gain students’ digital competence.

The digitalization here includes the correct and necessary use of Information Society Technology (IST) for teaching, free time, etc. It is supported by basic aptitudes in ICT, for instance, the use of PCs to recover, store, deliver, present and exchange data, and to impart and take an interest in synergistic systems using the Internet [16]. The research demonstrates that there is a connection between educators' digital capability and their use

of ICT in the classroom. Subsequently, taking part in professional improvement training courses or simulations can altogether impact their ICT use [3].

When educators learn through non-formal methods of training courses, they feel more confident, blended training and training that identifies with today's classroom settings [17], and interaction effort between educators is an efficient route for such professional advancement to happen [18]. The findings in research show that more involvement in using ICT is emphatically identified with the obtaining of students' computerized skills and their trust in using this kind of tools [19]. On the other hand, teachers who teach in schools have not been adequately prepared for the pedagogical use of ICT [3]. Teachers are ordinary users of the Internet and need information in how to endeavor online networking devices for learning [20].

Nowadays, it is recommended online networking methodologies that can encourage technological, pedagogical and authoritative development in the process of educating and learning, along these lines adding to the modernization of frameworks and foundations to meet the difficulties of the 21st century.

To introduce e-Learning to teachers, it is necessary to investigate teachers' and students' use of ICT teaching techniques during the lessons as well as the collaboration between them should be interactive using confidence that is sufficient.

The studies show that lots of teachers are aware with ICT at school for several years but until now some of them use to prepare materials. There is no division between school and home tasks in new approaches. In many teaching environments still exists teacher-centered approach as opposed to the student-centered one by the lack of equipment accessible to all students in the classroom. Digital hardware and material such as projector, software, quizzes, tests and computer simulations are still seldom used by students in the traditional classes. Students use ICT skills often at home rather than at school, and interest of learning becomes spontaneous and self-directed. It is caused because it is not obligatory for teachers to participate in ICT training for teaching and learning (T&L).

Studies show that at EU level, teachers teach around 25-30% of students for whom ICT training is compulsory. [21] Teachers who are engaged in personal development about ICT, they teach around 70% of schoolers at all grades. Even though there are lots of online resources accessible in Europe, they are novelties for educators to get involved in professional development, and only a few schools use these opportunities. Studies show that teachers who are digitally confident and keep positivity about technology influence on learning plan more often ICT teaching activities in the classroom. On the one hand, the operational skills involve teachers using text word processing software: editing movies, pictures, online text, links, and images, downloading and installation of software, etc. On the other hand, using social media skills gives an opportunity to take part in online discussion forums, write blogs, and participate in the social network.

The confidence of the teachers and experiences in using social media services is one of the biggest challenges to exploit them with the help of interactive education tools. According to some studies in OECD countries teachers might be digitally skilled users, it is evident that they cannot exploit their capability and apply the way they educate. There are three reasons to explain this paradox.

The absence of appropriate use of ICT in the classroom.
Teaching profession is dominant culture; that does not depend on a research-based indication to identify methodology and strategies of teaching. The observation shows that teachers have a lack of knowledge in ICT teaching, vision, personal experience and they may not have a clear understanding what technology-based teaching likely to be.

To implement e-Learning in the Georgian schools, the ICT training course is proposed for teachers. It is one of the critical perspectives for the integration of ICT into everyday educational practice, alongside skills in ICT and teachers' utilization of these technological assets. The outcome acquired demonstrate that teachers demand more practical training in the ICT and that they require more training with learners in classrooms. It suggests that the Ministry of Education and Science of Georgia together with Teacher' House should consider these outcomes when developing teacher training plans to produce higher quality programs in thinking with interest from educators.

Initial teacher training has to be overlooked to get teachers ready to use proper technology in the classroom. However, only training is not a satisfactory way to solve the problem; more has to be changed in the frames of social and cultural transformation context as well as teaching practices must be obligatory and useful. Teachers have to be rewarded for their motivation and peer to peer learning method should raise their awareness. Teachers should participate in creating the teaching curriculum throughout the year. All ideas should be gathered and discussed in small groups of teachers. It will lead to collaboration and interaction that is based on achieving the common goals for their professional development. Figure 1 presents proposal ICT training course for teachers (Appendix A.1.)

The figure shows proposal ICT training course for teachers that every teacher should participate in developing their ICT skills. The course is divided into six parts.

- Theoretical content
- Practical content
- Interaction
- Instruments of communication between teachers
- Design
- Learning assessment and evaluation of training

1. The theoretical content identifies knowledge base conduct surveys and interviews on a regular basis to learn more about needs, preferences, and backgrounds of teachers and uses relevant knowledge of the topics to be taught. It is necessary to prepare topics of designing requirements to create the theoretical content of the training. Then the structure of methods for organizing the substance of the training. The quantity using the amount of material to study space and the timeline that training lasts. Considering connections and links with inter-relation between topics and internal and external links that are provided. And finally, the ability to find appropriate formats for delivering them.

2. Practical content includes preparation of the interactive activities called requirements of the design and creation of the activities. After that follows explanation of orientation at the moment of carrying out activities. The practice is necessary for proving useful use of ICT for learning goals. The timeline shows

the implementation of the ICT in the relation to the quantity of the content. And finally, this part needs work in collaboration and cooperation peer to peer interaction between teachers.

3. Interaction is followed by the teacher pedagogic knowledge that a teacher should have while teaching a particular subject to use ICT learning tools. There should be the availability to access teachers. The inter-relation skills for establishing communication, expressing options, critical thinking, reducing fear using technology and contribution between teachers using teamwork.

4. Instruments of communication between teachers should be investigated to ensure technical knowledge that teachers should have for instance necessary ICT skills: E-mailing, chat rooms, social media, forum, blog, Skype, smartphone. Also, it is important to have focused groups, teamwork, pair work and peer to peer learning. After that, these group should gather for consultations, meetings where it would be possible to share the progress.

5. The designing part includes the general information about the course by establishing and providing information about the dates, technical aspects, issues, solutions, difficulties that might appear in the process of learning. The distribution of space and time where it is possible to combine study and work.

6. Learning assessment and evaluation of training includes the creation of different learning assessments for various people that require being concise and using a variety of tools, handouts, online materials by focusing on performance assessment. Therefore, creating the learning assessment to measure teachers' reaction to the training program. After that enabled feedback that gives a real picture of the practice. Finally, analyze training evaluation result to see how the learning gap is bridged.

Childnet International [22] states that programs that are for professional development in the UK suggest that information for both primary and secondary school teachers have not stepped with a development of latest technologies and best practices, that have become all over the place among learners in schools. Although teachers use quite well social

media themselves, they may not realize the educational purposes and possibilities for their students at the same time be aware of risks both for themselves and their learners.

It the education policy offers the scope of the gaining digital skills, another issue is teacher training which is, unfortunately, happening on a voluntary individual demand during a free time of a teacher. The knowledge of ICT is usually at a basic level and of course, it is not enough to get ready students for new social difficulties. Innovation and ICT training is considered to be an urgent need teacher participation in ICT training is very rarely obligatory. Studies show that only around 25-35% students in Europe are taught by teachers for whom ICT training is mandatory.

e-Skills Manifesto states that Trucano [23] says if the investment in ICT is to be maximized for teacher education as it is a critical component. To optimize teacher training he defines several ways in ICT use including:

- Teacher professional development should be planned as a process, not an event;
- Preparing teachers to benefit from ICT use is about more than just technical skills.

Moreover, effective and efficient technical and operational skills are needed by all learners and enable them to have an active role in the digital age. The teachers' professional development in the digital skills is crucial. Teachers urgently need to receive training by changing in skills requirements and specification of the curricula, develop digital skills of learners from giving the knowledge how to code and teaching the Internet security issues.

Two third of teachers in Europe are over 40. It evident that population needs to replace and at the same time re-train almost every teacher in future. Two-thirds of teachers in Europe are over 40 years old [24]. The aging teacher population implies the need to replace and therefore re-train a significant number of teachers over the next decade. It is important to develop the right attitudes towards technologies using raising awareness and opportunities in future careers, together with appropriate skills. It is unrealistic to claim that it is possible to prepare today or tomorrow.

There are areas where the current situation in education system does not meet expectations and where more research is needed. Teacher profession is not attractive

among new generation and graduates. So, attractiveness and getting involved graduates in teaching business (training, age, gender). Teachers in Georgia aged 40+ have the almost right knowledge and are devoted to their job. However, teachers are not being replaced by new graduates. Teachers are not likely to solve the situation due to decreasing number of students especially in rural areas although school should expand choice. To become a knowledge-based society with ICT playing a significant role, Georgia has to ensure it can rely on a sound infrastructure.

To fill the ICT learning gaps, [9] Georgia needs a higher education that offers sufficient knowledge, training courses and disciplines. Users need skills to profit from the applications that system developers design sophisticatedly. The first thing to take-up and utilize is, therefore, to create awareness by showing them the advantages of using the existed systems and applications. The users have to be able to use the systems. This can be done through intensive training, workshops or self-explaining documentations. In-house training should already start at school bringing latest technologies to motivate and fulfil the curiosity of smart kids. On the one hand, teachers should be able to bring the ICT skills and utilize ICT in their classrooms during the lessons to achieve more dynamic teaching. On the other hand, learners should be able to use ICT in a secure and responsible manner and exploit the full potential of the new technology without ignoring the risks.

The students [25] in general education will be able to access to a modern facilities of digitization that supports the process of learning. The goal that seems ambitious is that soon the development of advanced technology, resources, will allow all learners and educators, to use the infrastructure, personal digital devices of the school. The monitoring group will guarantee the digital infrastructure. The use of modern presentation of technologies will be updated in the classrooms. The school principal will ensure that teachers will have the access of personal digital devices. The system of information framework will be modernized and integrated by this context. For instance Emlyn Hughes International Soccer (computer game EHIS), e-diaries, e-learning platforms, digital archives, exam information systems and stores). The personal digital learning environment solutions will be developed for the students for different types of digital devices (laptops, tablets, e-book readers, and smartphones). Those learners who cannot afford themselves acquire personal digital devices and who have specialized digital device needs to a disability will be created a need-based support system.

It is necessary to create assessment models for digital competencies for educators, learners, etc. that will include the formulation of learners' evaluation system for the perception of achievement. For achieving digital competence of students will be assessed at the end of 3rd and 4th stages of school. The models of digital power will be attained. In-service education of teachers will be together with these competency models. To achieve this, lots of partners will work with training institution to accomplish the aims of the "Information Society Development Plan 2020".

'E-learning has the potential to revolutionize the way we teach and how we learn' [26] There are a lot of definitions of e-Learning that can be found in many books such as 'learning facilitated and supported through the use of information and communications technology' [27] e-Learning has the power to develop knowledge, skills and understanding of both a teacher and a student through the use of information communication technologies.

Nowadays, technological developments are changing teacher's role and learning competencies and experiences of schoolers. e-Learning can close the gap for less able, engage students who do not perform well in traditional classroom teaching and learning give an opportunity for increased learning for smart students, and develop skills for independent learning through demonstrated learning experience.

Today, there is a global requirement for getting an education and a gap that is growing between demand and supply. There is no doubt that requirements and type of education differ in different countries. The improved rates of primary school worldwide for both males and females are central to the call for the United Nation (UN). The UN and World Bank have developed the Education for All initiative by using these calls to action as Millennium Development Goals. While achieving a high rate of success primary and secondary schools, are still trying to grow participation in higher education in most developed countries. E-Learning and Open Educational Resources, are likely to address the demand for education, by expanding access to experts, curriculum, and available learning resources.

Online learning appeared in the 1980s and 1990s as a type of distance learning [20]. There were other kinds of distance education technologies but paper-based accordance, later, video or satellite-based along other technologies. The online learning is flexible in a way that transmission occurs through the internet connected computer where learners and teachers do not need to be in the classroom or same place at the same time.
Online learning is a complete package learning experience that supports services that are independent by means of time and location. It works at a small and large scale that gives opportunities to lots of institutions the best quality and updated brand. Figure 1 presents e-Learning offers and benefits (Appendix B.1.)

- Just in time;
- Accessible from any site with the right;
- Equipment; cost-effectiveness;
- Personalization; learner centred learning;
- Contemporary; scalable structure; interactivity;
- Uniformity of content; content updated rapidly;
- Blindness of learning engagement and measurement of program performance.

Nowadays, [28] the formal education technologies are building people's experience and digital skills competencies. We live in a widespread use of devices that have Internet connectivity. In 2014, the penetration rate was 96%, the number of cellular subscriptions is approaching the number of people on earth.28 member states of the European Union's had Internet access while for individuals in the age of 16-24 is 95%. With a penetration rate of 96% in 2014 [28], the number of mobile cellular subscriptions is approaching the number of people on earth. In 2014, 81% of households in the European Union's 28 member states [28] had internet access [28], while 95% of 16-24-year-olds in the EU are regular internet users. Because of the penetration of internet around the world, it is primarily significant for all to be digitally prepared in the use of technologies. If modern gadgets are part of our lives, everybody must be gained with the knowledge demanded using these devices. Meantime, children from very young age go online: Ofcom [29] reports that 93% of all 5-15-year-olds in the UK used the internet in 2013 and 82% of all 5-7-year-olds.

There is a big challenge that exists and still highlights the difference between schools that are well-equipped and have access to the internet and on the other hand schools in rural regions with old devices, computer rooms, poor computer learners and lack of digital skills.
At the same time there are lots of innovations: According to European Schoolnet[3], less than half of children in the EU are in schools that are highly digitally equipped.

Schools are developing after reality in spite of being asked to forecast and research future needs and get ready the youngsters for unexpected demands. The problem of digital divide distinguishes two issues: first of all, the demand for well-skilled workforce in ICT and second of all and the need to raise awareness of the core level of digital skills. The Grand Coalition for Digital Jobs forecasts 825,000 unfilled vacancies for ICT professionals by 2020 while recognizing that by the same date 90% of jobs will require some level of digital skills.

These problems mentioned above are at the core of the European agenda and education has to influence on solving them. In the time, they should be differentiated and accepted by different actions. Meanwhile, these issues should be understood as highly associated with one side cannot be accomplished with the other: Without any hesitation it would be impossible of having top ICT professionals without advancing basic digital skills. “A digital Europe needs digital skills.”

In the fact of finding solutions to the current and upcoming shortage of ICT professionals, it is required to gain basic digital competence. It is a preference for formal education systems to show the need to gain the level of digital skills of all learners and teachers. Learning higher digital skills will let for easier understanding and for many young people to increase their knowledge from basic users to ICT professionals. In some countries, 24-year-olds exceed the total amount of internet users. Despite children grow up in the digital age, but some international studies accept, meaningful digital skills do not always support their understanding and a lack of difficulty. Only 8% of 15-year-olds taking part in the PISA 2009 survey [30] are capable of using the internet efficiently, valuing the integration and suitability of the information. 17% of students did not reach the lowest level of digital literacy in the more recent ICLS report [31]. The same study draws attention to the fact that 25% of students showed a low level of digital literacy in seven out of nine

participating European countries. European Schoolnet 2013 pointed out that young people, at EU level are confident rather than digitally competent users: they demonstrate a familiarity and efficiently use technological devices that are not primarily fall back by evidence of better performance.

Students who use modern devices often at school or home have more positive opinions about the impact of their learning on ICT compared to those students who have low access at school but excellent access and use at home. Two main policy has been approached: the first is to be concentrated on the necessary skills for the utilization of technological devices and the second teaching coding as an available alternative to modernizing the offer from school using digital skills. However, these approaches are not commonly privileged. [32]

As stated in a survey conducted by European Schoolnet in 2015 [33] with Ministries of Education, 16 of the 21 countries that participate in integrating coding into the national curriculum at all levels as national, regional and local. Finland has already included coding in its curricula for 2016. The priority of introducing coding to formal education is fast developing today. For instance, England represented as one of the first EU countries to bring computer programming in both primary and secondary schools compulsory from September 2014. According to the survey claimed that coding is only one of the priorities for adoption and development of digital skills. In the midst of the priorities, countries address the necessity to develop ICT users' skills. Though seeing the tendency as a key of the technical aspects of digital skills. Nowadays, deep understanding that being proficient with technologies demands going beyond technical, operational capabilities and developing in a critical way with the network. Nonetheless, lack of guidance on the competencies that teachers should be developing in schools. Also, comprehensible understanding needs to be wide beyond operational skills, coding, and programming as well as the ability to learn how programs are built and function and be prepared to ''think digitally'' not only using IT thinking but at the same time regarding developing technical awareness accurately.

Bringing in a digital mind-set would engage problem-solving abilities regarding digitalization the opportunity of moving from being users to producers. Most frequently young people are producers of technologies. For that reason, providing them with the

appropriate mind-set for involving with technologies and improved level of skills will assist the progress of moving from basic digital skills to specific ICT professionalization.

2 Research Background

To address and seek the answers to the research questions, it is necessary first to understand the pedagogical principles, its features, and issues. Section 2.1. Introduces the successful implementation of e-Learning. Section 2.1.2. Gives an overview of the developing content of e-Learning and learning objectives. Section 2.1.3 provides information about storing and managing content. Section 2.1.4. Introduces the procedure of packaging the content and Section 2.1.5 contains information about student support. The latter is important to draw final conclusions and aid in answering the research question.

2.1 Successful implementation e-Learning and pedagogical principles

E-learning is another method for educating and learning. [34] In its definition, e-Learning is utilizing all electronic media including the Internet, intranets, extranets, satellite broadcasts, sound/video tape, intuitive TV, and CD-ROM. In the end, e-Learning will finally move towards all out computerization of administering the educating and learning forms by the method of software known as Learning Administration Systems (LMS). E-learning is a genuinely late marvel however the hidden pedagogical standards [34] have not been incorporated. The majority of the educational principles that apply to the today's classroom teaching method use to e-Learning. Be that as it may, these standards should be reached out to suit and give for the quick changes in innovation and technology. Pedagogical standards must frame the very premise for consideration of elements in LMS. Even better, these standards ought to be coordinated into the LMS where each item included is joined by specific rules on the best technique for their effectiveness to impact pedagogical instructions.

2.1.2 Developing Content

To implement e-Learning successfully, [34] it must be stated in strong educational foundations. The educational attributes that are discussed in five parameters are the following: developing content, storing and managing content, packaging content, student support, and assessment.

Implementation of e-Learning in school means changing roles among school teachers. In most cases, teachers are expected to proceed quick transformation and become e-Learning content creators. A lot of hard work at school and income resist any attempt to develop and implement e-Learning. For this reasons teachers must be apply enabled with the right knowledge and be given time for awareness and transformation. It cannot be guaranteed if the teachers will transform and develop e-Learning content. It is very seldom those who understand that the given opportunity to gain new skills and learn, will enhance capable content providers for themselves to get specific knowledge domains. The important role has got the e-Learning environment that must assist organizers to create focused groups or teams by giving the appropriate tasks they think themselves best practice that suits their job. The teachers can be assigned together in teams to develop content. Minimum standards must be provided to meet the minimum e-Learning standards that are rooted. To accomplish it, the content development process must comply to a systematic Instructional Development Methodology that is displayed in Table 1 Instructional development methodology for development and evaluation of e-Learning content. (Appendix C.1). Using a systematic approach to advanced content would confirm the accordance of the learning material with the prearranged learning goals.

The methodology is shown Table 1 occurs to be straight, but it is iterative and collective in practice. Interaction in all functions is done with one another. All the features interact with one another and teams who work on content development will see movements again and again between the functions.

Firstly, the content of e-Learning must be designed and developed in smaller available blocks known as learning objectives (LO). Learning objectives are the small units of instruction that can be taken as stand-alone units of instruction. Because of the more same units and the way it is programmed, tagged, stored learning objectives have enlarged

sharing ability and reusability that is the use of existing assets in some form within the software product development process. Assets are goods and by-products of the software development lifecycle and include code, software components, test suites, designs, and documentation.

As for technological descriptions of learning objectives is coded, tagged, and stored are immediately reachable than pedagogical stories what data should go into one learning objective.

An individual working meaning of LOs established by the creator is one that views LOs as e-Learning proportionate to today's classroom lessons. It is one block of relevant data that learners can get to and disguise in one sitting. Like an iota that has littler segments (electrons, protons, and neutrons), the LO likewise would include a few littler parts. The entryway to an LO is an essential test that figures out if or not the learner has all the necessary aptitudes keeping in mind the end goal to comprehend the substance of the LO. On the off chance that the student does not accomplish the base scores stipulated by the LO, then the learner will be coordinated to an essential LO that instructs all the important learning required to ace the current LO. On the off chance that the learner meets the base prerequisites to take in the current LO, then the student will be put during a time set of test inquiries known as pretest to figure out if the learner needs to take the entire of the current LO, just piece of it, or can skip it through and through. On the off chance that the learner is permitted to take the current LO, then the student is taken to the heart of the LO, the substance presentation habitually scattered with practice things. It is finally followed by a posttest that surveys the learners' authority of the LO's information. At that point, the student is coordinated to the next LO in a grouping.

2.1.3 Storing and managing content

Having constructed LOs, [34] LOs must be allocated a timeframe of practical usability foreordained given the LO's arrangement classification. LOs having a place with specialized classes such as programming ought to be doled out a shorter timeframe of practical usability contrasted with LOs on delicate abilities. An endless supply of the allotted timeframe of practical usability, the LO must be removed the rack. A framework must be established to deal with the distributed work process of substance. The structure

ought to incorporate cautioning the creator that the LO has outlasted its time span of usability. Accordingly, the LO can be sent to a council to be investigated, redesigned, furthermore, reexamined and sent back to the capacity archive to begin the following cycle of its timeframe of practical usability.

The LOs must be labeled with metadata that will later help the procedure of seeking and finding a particular LO. The metadata ought to incorporate points of interest such as name, creator, date, work, aptitude, adaptation, date last modified, and so forth. With the goal that it might be effectively sought by clients.

2.1.4 Packaging the content

Learners and educators ought to have the choice to get to and offer substance as uncovered LOs for 'without a moment to spare learning'. 'In the nick of time learning' from individual [34] LOs might be the best choice to scaffold special performances or information gaps. On the other hand, teachers can offer, and learners can agree to entire courses that are booked to keep running over an altered length of time of time. This sort of learning can occur when the student is looking for individual advancement or vocation progress. Courses are organized by joining various LOs. The LOs can be recovered from the focal store and amassed into a course on the off chance that they have all the intrinsic attributes to permit the coordination.

2.1.5 Student support

Student support is one aspect of e-Learning that is different from the traditional classroom teaching method. The student support can be forwarded on supply and demand basis. In case a student needs or asks for a performance support, they would speak up appropriately and get the necessary or required support. In an e-Learning environment, where students learn as a result of cooperation with set up systems, all available types of issues students are reasonable to face have to be expected ahead to give knowledge features for performance support. There is the best way to do this is by using a framework based on Laurillard’s Conversational Theory. This theory promotes a teaching method and strategy forms on interaction and communication between a teacher and a student; not on the

actions demanded of the student by the teacher. The theory also underlines the need for effective and purposeful feedback.

Students should be allowed to reflect as they interact with the learning material. Students'[34] rate of access should be tracked, and the information used to distinguish between high achievers, average learners, and slow learners. This information can then be used to motivate or positively reinforce learners. [34]

3 Case study method adaption

To validate the proposed theories and to answer the central research question, accurate data collection methods and analysis techniques are employed. The research methodology chapter provides sufficient knowledge of these techniques and technology that are used for conducting the research. It helps to gather data that can generate valid and relevant research outcomes. Chapter 3 answers the first sub research question on how to adopt the right method for the running case. Section 3.1. Gives an introduction to the chosen research method and explains its importance to the working case. Section 3.2. Presents an overview of the case study design. Section 3.3. Discusses the data sources that are used in this research. Section 3.4. Gives an overview of the data analysis procedures that are employed in this research. Section 3.5 concludes Chapter 3.

3.1 Introduction

To proceed with the given case study, the objective of the research and a running case are introduced and explained in this chapter.

Qualitative method is the object of current research and is aimed to delve into the complexity of the problem rather than abstract it away. Thus, the results are richer and more informative. They help to answer central research questions that involve variables that are difficult to quantify (particularly human characteristics such as motivation, perception, and experience). The investigation of software engineering has dependably been perplexing and confusing. The multifaceted nature emerges from specific issues, from the clumsy crossing point of a machine and human capacities, and from the focal

part of the general population performing software engineering assignments. The first two perspectives give all that could be needed complex issues to keep experimental software engineering analysts occupied. Be that as it may, the last component, the general population themselves, presents aspects that are particularly hard to catch. But, examines endeavoring to find human behavior as it identifies software engineering are expanding and, as anyone might expect, are progressively utilizing qualitative techniques [35] Qualitative methods were required to capture and portray these socially built realities. For some social science analysis, qualitative methods are held only for use by interpretive scientists and are not to be blended with quantitative strategies or positivist perspectives. Although, in late decades, researchers in data frameworks, human– computer interaction, and software engineering have started utilizing qualitative methods, despite the fact that the dominating, certain philosophical position of these exploration zones stays positivist [36]. The principal advantage of using qualitative methods is that they force the researcher to delve into the complexity of the problem rather than abstract it away. Qualitative results often are considered "softer," or "fuzzier" than quantitative results. They are harder to summarize or simplify.

Qualitative data are information was shown as content and pictures, not numbers [37]. Qualitative research strategies were composed, for the most part by educational researchers and other social researchers [38], to think about the complexities of humans (e.g. motivation, communication, and understanding).

3.2 Case study design - ARCS model

There are similarities in motivational issues in these settings, despite the fact that there are particular motivational difficulties inside every significant framework. For instance, drop-out rates have a tendency to be higher than in eye to eye settings. Learners regularly feel confined, and levels of learning intelligence are frequently trifling and don't approach the extravagance of contextual investigations and tasks in an eye to eye settings. There are striking individual cases in some Web-based learning frameworks that are teacher driven and in which virtual gatherings work cooperatively, however even in this configuration there are motivational difficulties as to the effective delivery of guideline and strategies for dealing with the virtual learning environment. It is one thing to report motivational difficulties in these settings, yet it is another thing to figure out what to do

about it. For quite a long while Keller has been creating and testing a model to help instructors in a deliberate procedure for investigating learner inspiration and planning motivational strategies that are keyed to particular ranges of motivational issues and incorporated with educating/learning techniques. This procedure was gotten from an extensive review and synthesis of motivational writing that orders the major motivational concepts and theories into four classes relying upon whether their essential region of impact is on picking up learner attention. Setting up the significance of the direction to student objectives and learning styles, building certainty on reasonable desires and moral obligation regarding results and making the guideline fulfilling by dealing with learners' natural and extrinsic results. This procedure is known as the ARCS model taking into account its acronym (attention, relevance, confidence and satisfaction). Taking after a description of this model, is depicted a percentage of the discoveries as to enhancing inspiration in E-learning situations.

Initially, a lesson must pick up and maintain the learner's attention. Research on interest, excitement, and fatigue shows the significance of fusing an assortment of strategies to increase student attention by the utilization of intriguing illustrations, animation or any occasion that presents incongruity or conflict. The second level of interest is stirred by utilizing mystery, uncertain issues and different systems to stimulate a feeling of inquiry in the learner. An extra important part of attention is variability. Regardless of how exciting a given strategy is, individuals will adjust to it and lose enthusiasm after some time. Subsequently, it is imperative to shift one's methodologies and immediate changes of pace.

The second necessity is to construct relevance. Attention and curiosity are fundamental, however not adequate, conditions for inspiration. It is likewise essential for learners to see the instructional prerequisites to be reliable with their objectives, perfect with their learning styles and associated with their past encounters. Having clear goals is an essential part of relevance.

The third condition required for inspiration is confidence. It is an expert by helping learners set up confident anticipations for achievement and to experience accomplishment then under conditions where they credit their successes to their capacities and endeavors as opposed to fortunes or the assignment being too simple or troublesome. Indeed, even

a practical achievement is not prone to expand one's certainty if the individual trusts that the main reason performance happened was a result of good fortune. This class of assurance incorporates probably the most at present well-known regions of motivational exploration, two of which are self-adequacy and attribution hypothesis.

The initial three conditions are essential to set up the motivation to learn and the fourth, satisfaction, is vital with the goal learners should have positive emotions about their learning encounters. It implies extrinsic fortifications, for example, real prizes and acknowledgment must be utilized as a part of an agreement with built up standards of conduct administration and must not detrimentally affect intrinsic motivation. Such things as chances to apply what one has realized combined with individual acknowledgment support natural feelings of fulfilment. At last, an opinion of value or decency is essential. Learners must feel that the amount of work required by the course was suitable, that there was inward consistency between goals, substance and tests and that there was no preference in evaluating. On the off chance that these conditions are met, then understudies are prone not just to have an abnormal state of motivation to learn in the quick setting, yet to likewise have a proceeding with inspiration to realize, which is characterized by Maher as intentional engagement in keeping on adapting more around a given point. Nonetheless, these classifications don't all by themselves disclose what motivational strategies to utilize or when to utilize them. For this, it is useful to use a methodical motivational design process that gives direction in making motivational strategies that match student attributes and needs.

3.3 Data sources -Systematic improvement of motivation in E-learning

The ARCS model contains a ten-stage outline process (Figure 1) for the development of motivational frameworks in work and learning settings. The initial two stages, which are parts of the broad examination segments of the procedure, produce data about business as usual and give the premise to investigating gaps and their causes, which are done in the third and fourth steps. Given these investigations, in the fifth step, one gets ready destinations for the performance improvement project and determines how they will be assessed. There are then two stages in design: conceptualizing inside each motivational class to produce a generous rundown of potential arrangements; choice of the last strategies, which is a more basic and investigative procedure for selecting strategies that

best fit the time, assets and other obliging elements in the situation. The last steps incorporate both advancement and assessment and are similar to another improvement model. Various reports and studies have described and affirmed the legitimacy of this model regarding its conceptual establishment. Methodical change of motivation in e-learning. The ARCS model has likewise been accepted multinational as a method for enhancing learner motivation in e-learning. In a late study utilized the ARCS model as a part of the blend with an efficient needs evaluation procedure to design and implement intercessions that would diminish the dropout rate in a separation learning program. There are successive references in the writing to the side effects connected with dropout. However, the joining by of a requirements appraisal process assisted them in distinguishing the reasons for the issue. These included such things as learners having questions about their online relational abilities, absence of trust in utilizing the DE programming, sentiments of being overpowered and different issues with certainty and importance. Given these outcomes, which were consolidated with an ARCS model examination and outline handle, the agents built up a rundown of focused meditations. These were actualized over a time of three semesters (spring, summer, and fall). The outcomes showed that there were upgrades in both learning and motivational responses in each of the four motivational classes (attention, relevance, confidence, satisfaction). Learner motivation and e-learning design (Appendix E.1.)

3.4 Analysis procedure; Validation of a simplified motivational design process in E-learning.

One of the difficulties in utilizing the full 10-stage process for motivational design is that it can be tedious and works best for massive scale projects. As a method for encouraging deliberate motivational design made an improved approach and tried its viability in a task with 25 educators in eight branches of knowledge at Sendai Daiichi Junior High School in Sendai, Japan.

These educators had been creating PC application and E-learning projects for quite a while as a significant aspect of a showing project supported by the Japanese national government. During the last two years of the project, they were requested to incorporate systematic motivational design into their procedure. The objective of the streamlined methodology was to create in a simple matrix format a build-up of the progressions from

the bigger model. It was designed to guarantee that the teachers would recognize key motivational qualities of the learners, the content area to be taught and the equipment or programming to be utilized. The educators then assessed this data and recommended strategies given recognized motivational issues. Facilitating their identification of motivational tactics, Suzuki provided checklists and tables of potential tactics. This process helped ensure that teachers avoided the inclusion of excessive numbers of tactics or tactics derived from their preferred areas of interest without regard to the characteristics of the students and the situation. An evaluation of the effectiveness of this motivational design process was verified that the teachers were able to use the matrix accurately with only a few entries not being placed appropriately and more than two-thirds felt that it helped them produce a more efficient motivational design. Some teachers had difficulties with the analysis phase, which indicates that this is a critical area to address in training people to use the process.

To encourage their different proof of motivational tactics, Suzuki gave agendas and tables of potential tactics. This procedure is guaranteed that instructors kept away from the incorporation of unreasonable quantities of tactics or tactics got from their favoured areas of enthusiasm without respect to the attributes of the understudies and the situation. An assessment of the adequacy of this motivational design process confirmed that the educators could utilize the network precisely with just a couple of sections not being put correctly and more than 66% felt that it unquestionably helped them create a more successful motivational configuration. A few educators experienced issues with the investigation stage, which shows this is a central region to deliver in preparing individuals to utilize the procedure.

This improved design process was changed and used as a part of two ensuing activities. The first of these was to create and test a model of motivationally versatile PC-based guideline. In the main, expanding on the work of designed and tested a way to deal with motivationally handy guideline. He incorporated checkpoints with an instructional system on genetics qualities for middle school learners. At foreordained focuses students in the primary treatment group got a screen posting a few questions about their motivational attitudes. In light of the reactions, which were compared with actual execution levels, learners would get motivational tactics intended to enhance attention, relevance or confidence. The simplified ARCS model design procedure was utilized to make details

for tactics to be incorporated into the adaptive treatment, which was compared and a full-highlighted treatment containing the greater part of the motivational strategies and a moderate treatment. The outcomes demonstrated that both the adaptive and fully-included treatments were better than the usual treatment and, on many occasions, the adaptive treatment was better than the full highlighted one.

The second augmentation of the simplified design process was in a relatively traditional distance learning the course in which printed materials and multimedia were presented on learners in a few countries who could then utilize Email, contingent upon its accessibility, to speak with the teacher. It was unrealistic to change the materials in this study. However, L. Visser hypothesized that substantial upgrades in maintenance could come about because of enhancements in student support exercises. She adjusted a motivational procedure developed and approved in an adult-education setting in Mozambique. This methodology incorporates the creation and distribution of 'motivational messages' that are sent to learners as indicated by two calendars. The first is an arrangement of settled focuses given expectations of the discussions during the course when these messages may have the most grounded impact. These messages are the same for everybody. The second calendar comprises of individual messages sent to learners when the teacher, or in L. Visser's case the teacher, regards it proper. These messages were through welcome cards, which passed on messages of support, updates, sympathy, guidance, and other appropriate content. To assess the effectiveness of this mediation, she thought about consistency standards in the trial segment of the course to three different parts that did not get motivational messages and she did a qualitative summary of learner responses to different course assessment and feedback instruments.

She didn't get some information about the impacts of the motivational messages to abstain from stimulating attitudes that might not have been available suddenly in the learners' minds. In any case, students incorporated a variety of immediate and backhanded remarks that validated the viability of the messages. Likewise, enhanced consistency standards of 70–80%, which is like traditional instruction, offered clear backing for this use of efficient motivational design. The model has been tested and accepted in a wide range of connections and societies, including instructive and employee training at virtually all intents and purposes all levels and in settings as assorted as Japan, Austria, Mozambique, and Ireland, to specify just a couple.[39]

3.5 Conclusion

The Primary conclusion can be drawn from the research it is possible to implement e-learning settings by systematic approaches to identify the motivational demands to design motivational enhancements of students and teachers that predictably improve student performance. Particularly, ARCS model [39] has been proven in numerous researches to be effective. It is evidential that systematic, holistic motivational analysis of the audience is used in the ARCS model will create motivational tactics, and motivational needs of students.

4 Data collection

This chapter gives an overview on how the data for the running case is collected. The data is harvested from interview answers that are carried out with teachers. Hence this Chapter describes the process of planning, conducting and preparations for interview analysis. Section 4.1. Gives an introduction to the process of data collection and explains its importance to the running case. Section 4.2. Explores the procedure of defining and selecting the appropriate set of participants to the interviews. Section 4.3. Discusses the procedure of collecting and storing the data. Section 4.4. Gives an overview on how the data is being organized for analysis procedures. The Chapter is concluded in the section 4.5.

4.1 Introduction

Having explored the nature and purpose of qualitative research, this paper examines methods of data collection used in qualitative research. There are a variety of methods of data collection in qualitative research, including observations, textual or visual analysis (e.g., from books or videos) and interviews (individual or group). The personal interviewing data collection is used for this research. Interviews are used to explore the views, experiences, beliefs and motivations of school teachers to generate qualitative

data. There are three fundamental types of research interviews: structured, semi-structured and unstructured. In Lincoln and Guba [40], an unstructured interview is depicted as one in which "the inquiries are in the hands of the questioner, and the response rests with the interviewee," instead of an unstructured interview in which the interviewee is the wellspring of both inquiries and answers. In an unstructured interview, the item is to elicit however many data as could be expected on an extensively characterized point. The questioner does not know the type of this data early, so the inquiries asked must be as open-finished as could reasonably be expected. In the compelling, the questioner doesn't make inquiries. However just says the subject to be talked about and allows the interviewee to clarify.

4.2 The Purpose of the research

The purpose of the research interview is to explore the views, experiences, beliefs and motivations of teachers on using information communication technologies (ICT) to achieve e-Learning goals. Qualitative methods, such as interviews, are used to provide a 'deeper' understanding of the given topic than would be obtained from purely quantitative methods, such as questionnaires. Choosing interviews are, therefore, most appropriate where little is already known about the research where detailed insights are required from individual participants.

Choosing the right interviewees for this research is crucial as it clarifies teacher feedback and aids in answering the main research question. Before beginning the interviews, teachers are selected from different public and private schools. It is done by using google hangouts on air. Additionally, before conducting the interviews, the interviewees are asked whether they are familiar with ICTs. All the respondents confirm their contact with ICTs. In total 15 interview requests are delivered of which seven replies. From all the replies, seven agree to participate in the research. It can be stated that the sample size is relatively small, but as the aim of the study is to learn new insights from teachers and not to give statistical generalization, it can be considered acceptable.

It can be concluded that using ICT teaching a demand and it is relevant as it implies all teachers. Therefore, teachers could potentially benefit from using ICT tools in the same

way. Furthermore, it can be stated that by observing the running case within particular teacher narrows the range of reasons for different behaviours.

4.3 Collecting and storing the data

The several software is available that could help researchers to conduct interviews remotely and re-listen to them afterward. Few of the most popular online tools for audio- and video calling are Skype, Hangouts on Air by Google, Viber, and Red Phone. Also, using traditional telephone line is a viable option. Since the researcher anticipates the time for each interview to be an hour and twenty minutes, Hangouts on Air Audio calling is chosen. Hangouts call is proposed to the interviewees as the first option to conduct the interview. All the respondents accept Hangouts are calling and thus interviews are conducted.

Also, all the calls are recorded in mp4 format. It is also notified to the interview participants and a consent is taken before the recording. The collected audio files are then stored in the researcher's personal YouTube channel and then downloaded in the laptop and are available for re-listening purposes. For the recording process a free Hangouts on Air is used.

Conversely, structured interviews are used. The twenty questionnaires are prepared for teachers. The responses are first, recorded in audio formats and later, used for analysis. As the data is stored in audio formats, an appropriate means to prepare the data for analysis should be chosen. Such an interview may simply start with an opening question such as 'Can you tell me about your experience of using information communication technologies in the classroom?' How do you keep your subject up-to-date? And was then progress based, primarily, upon the initial response using google hangouts. It is important to organize the data so that the analysis procedures aid in answering the main research question. Since the data is collected from qualitative interviews, coding the data can be considered appropriate. This helps to get the initial understanding of the data and simplifies the procedure of finding relationships between interview answers and explored theories. Structured interviews were very time-consuming. One interview lasted an hour and twenty minutes.

4.4 Preparing the data for analysis

As the collected data, techniques to organize the data for analysis procedures are employed. In the first stage of the analysis, the audio is checked to make sure it is understandable and suitable for further analysis. Any response that is ambiguous and unclear is rejected. It is important to avoid any errors when analysing the data and drawing conclusions. No interviews as a whole are rejected at this stage.

In the second stage, the audio files are re-listened and transcribed into text files. According to Runeson et al. [41] it is important that all transcripts follow the same format and include all the necessary information regarding the interviews. It means that the interview transcripts formatted in the same way and additionally include notes from the interviews such as date, place, participants name and other relevant details. It is suggested when more than one researcher is involved with the research. Although, the research is conducted by one researcher transcript formats are kept in-line with each other and are accessible for other researchers should be needed.

In the third stage of the analysis, the interview transcripts are categorized and it may be referred to as coding or indexing. Patterns are identified and the relationship between the categories are determined. Additionally, the given code names are defined in the thematic data analysis as suggested by Braun, Virginia, and Victoria Clarke. [42] Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data. It is describing and interpreting involves the searching across a data set to find repeated patterns of meaning. It goes beyond identifying implicit and explicit ideas within the data, and means not simply counting phrases or words in a text. It is useful to capture the nuances of meaning within a data set and it is not wedded to any pre-existing theoretical framework. It can be used within different theoretical frameworks. The data analysis procedures and results are further discussed in Chapter 5.

4.5 Conclusion

Data collection, storing and preparing for the interviews are introduced in this chapter. The importance of choosing the right interviewees for the running case. The interviews are chosen from different public and private schools of Georgia to see a real picture. From

that point school teachers are selected. The selected teachers are then asked to participate in the research. From all the request 7 participants are chosen.

The data is collected through structured interviews that are conducted using Hangouts software and recorded into mp4 audio files. The audio files are kept in the researcher's personal laptop should they be needed for registering purposes.

After collecting the data, it is prepared for the analysis procedures. The data preparation in done in a four-step process. That includes audio quality assurance, transcription processes, coding and lastly interpretations and relationships determination between codes. During the preparation processes, the developed codes, words and phrases act as themes that could be properly analysed. All the responses are coded in this manner. The common themes occurred in the responses are then identified and the organized for data analysis stage.

In outline, the data collection methods utilized in this research assistance and sort out the profitable and essential data from the data collected from the interviewees. This sorted out data helps the information examination techniques and along these lines answering the research questions precisely and dependably.

5 Interviews analysis

This Chapter depicts the procedure of coding the qualitative data gathered from teacher interviews and how these codes are sorted out to give applicable understanding into this research. In this way the investigation of the gathered data helps to answer the main research question. Section 5.1. Gives a prologue to the procedure of data analysis and discloses its significance to the running case. Moreover, concluded sub-research questions are addressed in this Chapter. Section 5.2. Clarifies how the gathered data is composed. Section 5.3. Investigates the primary emphasis of data analysis. Section 5.4. Gives a review of cross-case designs found from the gathered information. The Chapter is deduced in the section 5.5.

5.1 Introduction

The main goal of analysing the interviews is to identify the necessity of ICT (e-learning) and preparation for filling learning gaps in the classroom. Moreover, it is necessary to understand the links between the interview analysis and existing literature and by comparing the findings from school teachers to answer the main research question and additionally give input for further studies.

This chapter describes the data analysis procedures that are related to data coding and organizing. These procedures are necessary to identify the relevant elements of the data to help to answer the main research question. The collected data from the interviews is transcribed and then analyzed by thematic analysis.

Moreover, this Chapter answers the third research question:

How to analyse the collected data?

The design of the study is mainly focusing on the primary qualitative data that comes from the interviews with school teachers. Once all interview answers are examined, and all irrelevant information is removed to ensure that the research maintains its scope of the study, the relevant answers are further analysed. All the interview transcripts are coded. The conclusions drawn from the first iteration are analysed, and this aids in making valid findings for this research. It is anticipated that the results from this study are useful for future research in this field and will add to the existing knowledge about this subject. As the qualitative data is cross-checked with the current literature, it is necessary to understand which codes and patterns contribute to this study and help to answer the main research question.

A 6-phase guide to performing thematic analysis are used, and some of the phases of thematic analysis are similar to the phases of other qualitative research, so these stages are not necessarily all unique to thematic analysis.

5.2 Definition of thematic analysis

In qualitative research thematic analysis is used to examine themes within data. The main goal of the method is organization and rich description of the data set. In the process of analysing data the phrases or words in a text is counted to identify implicit and explicit ideas within data. Coding is the first process for developing themes within data by prior interpretation of important moments.

Qualitative approaches are incredibly diverse, complex and nuanced [42], and thematic analysis should be seen as a foundational method for qualitative analysis. It provides core skills that is useful for conducting many other forms of qualitative analysis. Indeed, Holloway and Todres [42] identify 'thermalizing meanings' as one of a few shared generic skills across qualitative analysis.

A 6-phase guide to performing thematic analysis.

1. Familiarizing yourself with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

Similar to other research methods the process of data analysis can appear in two primary ways inductively or deductively. The researcher uses deductive 'up down' approach. It is more analyst driven. This means that the process of coding is quite specific, detailed and less rich description of the data, more a detailed analysis for some aspects of the data.

5.3 Definition of the theme

A theme captures [42] something important about the data in connection with the research question and represents level of patterned response or importance within the data set. An important issue to address in terms of coding is: what counts as a pattern/theme, or what 'size' does a theme need to be? This is a question of prevalence, in terms both of space within each data item and of prevalence across the entire data set. As research is

qualitative analysis, there is no hard-and-fast answer to the question of what proportion of data set needs to display evidence of the theme for it to be considered a theme. The question of prevalence is revisited in relation to themes and subthemes, as the refinement of analysis resulted in overall themes, and sub-themes within those. Moreover, the 'keyness' of a theme is not necessarily dependent on quantifiable measures but rather on whether it captures something important in relation to the overall research question.

5.4 Benefits

The flexibility is one of the benefits of thematic analysis. Qualitative analytic methods can be roughly divided into two camps. Within the first, there are those tied to, or stemming from, a particular theoretical or epistemological position. For some of these such as conversation analysis [42] and interpretative phenomenological analysis [42], there is relatively limited variability in how the method is applied, within that framework. In essence, one recipe guides analysis. For others of these / such as grounded theory [42], discourse analysis [42] Potter and Wetherell, Willig [42] or narrative analysis [42] there are different manifestations of the method, from within the broad theoretical framework. Second, some methods are substantially independent of theory and epistemology, and can be applied across a range of conceptual and epistemological approaches. Through its academic freedom, the thematic analysis provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet sophisticated, account of data.

5.5 Method clarification

Similarly, Ryan and Bernard [42] locate thematic coding as a process performed within 'major' analytic traditions (such as grounded theory), rather than a particular approach in its right. We argue thematic analysis should be considered a method in its right.
Thematic analysis is a technique for recognizing, breaking down and reporting patterns (themes) inside information. It negligibly composes and depicts data set in (productive) point of interest. Qualitative methodologies are unfathomably differing, complex and nuanced [42], and thematic analysis ought to be seen as a foundational technique for qualitative analysis. Over subjective analysis. For this reason, Boyatzis [42] portrays it, not as a particular strategy, but rather as an apparatus to use crosswise over various

techniques. So also, Ryan and Bernard [42] find thematic coding as a procedure performed inside "major" analytic customs, (for example, grounded theory), as opposed to a particular methodology in its privilege.

5.6.1 Phase 1. Familiarizing with the data and transcribing data

The initial phase of the thematic analysis is to familiarize with the data. At this stage, the date is read and re-read several times. Then by noting down initial ideas to be familiar with the depth and breadth of the content. After that notes are taken and plans are made for coding. The original list is created to gather ideas about what is in the data and what is interesting about them. The data is divided by interviewees and number of questions asked during the interview. Before reading the interview transcripts, and a "start list" is created of potential codes. These start codes include in a reflexivity journal with a description of representations of each code and where the system is established. Table 2 shows noting down initial ideas and preparation for coding. (Appendix F.1).

5.6.2 Phase 2. At this stage initial codes are generated

The second phase in the thematic analysis is generated by an initial list of items from the data set. To organize and gain meaningful parts of evidence with the thematic way that is related to the research question is called coding. The process of coding is done through an inductive analysis to consider the cyclical process in which codes emerge within the process of investigation. The cyclical process is chosen to involve to go back and forth between phases of data analysis several times until the final satisfaction of the themes. The interesting features are coded across the entire data set. Then data relevant is collated each code. After that, the initial codes are produced from the data manually by indicating patterns: notes, data segments: comparing each code together in separate computer excel file. Table 2 shows the data extract and important coded information. (Appendix F.2).

5.6.3 Phase 3. Searching for themes

The third phase is searched for themes. In this step, the codes are examined to combine to form over-reaching themes in the data. The relationships are established between codes and themes and between different levels of existing themes. Themes differ from codes in that themes are phrases or sentences that identify what the data means. They describe an outcome of coding for analytic reflection. When all data have been initially coded and collated then, the data relevant is sorted to each code. The codes are sorted into potential themes. Then all data relevant is gathered to each possible theme. After that, the mind-mapping tool is used for themes. The relationships between codes, themes and different levels of themes are considered as the main point. This phase ends, having a collection of candidate themes, and subthemes, and all extracts of data and the related codes. Table 3 presents the chosen seven themes.

Theme
Essential use of ICT in the classroom
Working in a computer with a class
Motivating a student
Integration of ICT in schools
Rewording system
Importance of e-learning
Filling the learning gaps

Table 3 presents the chosen seven themes

5.6.4 Phase 4. Reviewing themes

The fourth phase requires to search for data that supports or refutes the proposed theory. This allows for further expansion on and revision of themes as they develop. Specifically, this phase involves two levels of refining and reviewing themes. Connections between overlapping themes may serve as valuable sources of information alerts to the possibility of new patterns and issues in the data.

The themes are checked, and they work about the coded extracts.

Level 1. Then the coded data extract is reviewed at this level. All the collated data extracts is read for each theme: Themes are formed a coherent pattern and the entire data set.
Level 2 is generated by a thematic 'map' of the analysis and refinement of the themes. The validity of individual themes is considered about the data set. The mind-map is reflected by the meaning of the dataset as a whole. Figure 4 presents the thematic map of the analysis of the seven chosen themes. (Appendix D.1).

5.6.5 Phase 5. Defining and naming themes

The definition and naming the themes are presented in the final analysis that assisted the researcher in analysing the data within each theme. At this stage, the themes' identification essences are related to each specific theme and entire data. Analysis at this phase is described by identifying which aspects of data are being captured, what and why themes are interesting.

The satisfactory thematic map of the data is ongoing analysis to refine the specifics of each theme, and the overall story of the analysis. The clear definitions and names are generated for each theme. Figure 2 shows developed thematic map, showing three main themes. Figure 5 presents thematic map of three themes and Figure 6 presents the final thematic map, showing two main themes. (Appendix D.2 and D.3).

5.6.6 Phase 6. Producing the report

Having reviewed final theme, the researcher wrote the final report. The validity of the analysis is convincing as the necessity of e-learning is relevant and it can fill the learning gaps. The analysis has concentrated on thematic maps and final two main themes were chosen: 1. necessity of e-learning. 2. Fill the learning gaps. The interviews were held with seven female participants. All names were changed to protect participant confidentiality. In this context, it is worth considering each participants' interview valuable to explore this further, it is helpful to analyse and re-listen and consider this in more detail below. A

consideration of every single word or phrase said by participants helped the researcher to understand this point. Bearing this in mind the report is produced to capture details.

At the beginning of the interview, it was not easy for Nata to explicitly express her experiences. Later on, perhaps when she became more comfortable with the interview process, she was more capable of talking openly about her experiences. Nata experienced using ICT in her class, but she expressed her feelings being frustrated because of school infrastructure.

''We have been distributed PC and without access to the internet. I was using a memory stick to transfer files from one computer to another. We have a big school and the internet that is at school doesn't cover the whole school. I do not have my projector in the classroom, but I was downloading and then showing it to students from the laptop''.

For Tata, being demotivated about school infrastructure made her use ICT two or three times a week that affected her losing motivation.

''If we look at our infrastructure at school, we were using ICT two or three times a week, but I wish we had more technically equipped classrooms because it is essential for future generation''.

Sophie explained that she would feel more relaxed in the classroom if students would work on the computer during a lesson.

''It would be nice if the students would have their netbooks or a teacher should have one PC where he/she can show on the screen using a projector to let kids do online tasks where a teacher can monitor with own PC the students and the process of the lesson. I think this way of teaching would be more enjoyable for students as a technology play a great role in our lives and the students enjoy searching for the information themselves on the internet. The students use computer or smartphones for online games, and we can use them for educational purposes''.

Natia expressed her opinion about filling the learning gaps is quite painful for her as she said:

''I think students will be more interested in learning. E.g., if a teacher would use all information during the lesson and not giving lots of homework to do. We use online links and give home task but still we do not have tool how to assess duties''.

Ketevan stated that e-learning will not fill the learning gap but at the end of the answer she changed her mind:

''I think e-learning will not fill the gaps because we teacher try so much to motivate students, but it does not always work. It depends on their family members as well. Because parents usually do not like hearing about their children's unsuccessfulness (forget to take a book, a pen from home, etc.) because of their life social issues. But I think if students use tablets, for instance, they would never forget them to bring to the class''.

Rusiko explained her attitude toward the necessity of e-learning at school. She has a positive feeling about integrating ICT and e-learning.

'' In my view e-learning saves your time. It is one of the easiest ways of learning because it is not necessary to go to school or university. A person can learn online and create his her comfort zone''.

Medea talks about benefits of e-learning and time-consuming issues.

''I think e-learning has a lot of advantages. Time flies very fast, and a person prefers staying in and save time as he/she can access e-learning from anywhere''.

The essential point is that all teachers think positive about the integration of ICT and they are willing to learn and implement e-learning at school. All of the participants mentioned ICT training as the most essential to use ICT in the classroom because as one of the participant stated:

''First of all teachers must gain the necessary digital skills. I would divide teachers into groups and would examine their knowledge because not all of them are at the same level.

It'd be good if teachers would have these training in-house considering their experience and needs''.

The participants are willing to participate in regular ICT training course to become proficient in ICT-based teaching methods. As one of the participants explained:

''I think it should not be limited. I mean a teacher can plan more effective lessons using ICT. It also depends on the novelties and development of the new methods. I think teachers' house should provide all information and offer not rare but regular in-house training. After that teacher would use ICT regularly''.

The overall results indicate that the participants think e-learning should be utilized in their classrooms. They expressed different opinions and their points of views:

''It is always boring to teach with same methods. It is very effective to use variety, and one of the best would be e-learning. For this, it is necessary to have a personal computer and unlimited Internet access to teach online''.

''It saves lots of resources, e.g., paper, time, it would be good to use the online tests to check the knowledge''.

''I think I would be more developed and up-to-date teacher.''

''E-learning can be a useful tool for those people who have physical problems and cannot attend the classes and they can learn remotely.''

''I think it would be a big challenge for me, and I would be the part of the process for sure.''

''I would connect it to real life situations and use nature as well as projects.''

To sum up the report, it can be stated that e-learning is essential for Georgian population to fill the learning gaps and catch up e-learning requirements and implementation of new methods and approaches in teaching. It would seem, therefore that further investigations are needed in order to generate better understanding of the research. As a matter of the fact teachers are feeling more uncomfortable with school infrastructure and demand to raise questions and the possibility of e-learning design has generated wide interest in teaching and using ICT-based methods. Although considerable ICT training has been devoted to teachers rather less attention has been paid to previous ICT skills, quality,

evaluation, and assessment of teachers it remains unclear whether teacher uses or not ICT in the classroom.

5.7 Conclusion

Data analysis methods are introduced in this Chapter. The process of preparing the data, coding it and organizing it is also discussed, all with the aim of ensuring that the research objectives are achieved while also answering the earlier mentioned research question of how to analyse the collected data. It is an important part of the study as it also helped to respond to the main research question. Additionally, findings from the analysis procedures provide insightful input for further investigation in the field.
In summary, it can be stated that the data analysis methods and execution employed in the research help to organize and summarize the findings. This also aids in streamlining all qualitative information, and ensure that relevant information is used during the analysis stage. Analysing the data in six steps facilitates to move from fresh insight into answering the main research question and helps to formulate specific hypotheses that could be taken into the further investigation with quantitative and mixed methods.

6. Validation and limitations

This Chapter presents the validity of the research and also describes the limitations that are related to this study. This Chapter is necessary to give credibility to the findings and also make it possible to use these finding for future research. Section 6.1. Provides an introduction to the process of validation and limitations of the running case. Section 6.2. Describes all the activities and procedures that are employed for research validation. Section 6.3. Gives an overview of the limitations of the investigation and to which extent the findings can be generalized. Section 6.4. Concludes Chapter 6.

6.1. Introduction

The chapter outlines an overview of the research validations and limitations. The validation process includes various procedures, such as the evasion of subjectivity, to ensure that all participants' views are expressed accurately, with no form of bias by the

researcher. Therefore, this chapter mainly explores various validation procedures that are employed, so as to ensure that accurate conclusions of the findings are made. It is of particular importance, as it aids in ensuring that all interview data is treated by ethical considerations, and there is no form of data tampering.

The later section discusses the limitations of the study. According to Saunders et al., [43] advocates of both the qualitative and quantitative research methods argue on the benefits and the limitations of these methods. As McGuiggan and Lee [44] suggest, qualitative research methodology has certain limitations that should be considered during a research. Therefore, these limitations are also discussed, with the aim of ensuring that the outcomes of the investigation with its boundaries are coherently understood. Limitations such as the number of respondents and the scope of the study are discussed in this section.

6.2 Study Validation

Researchers directing qualitative analysis ought to choose the most proper method to the research question. The methodology for analysis ought to be driven by both hypothetical presumptions and the research questions. The thematic analysis gives the flexible method of data analysis of data. This method of analysis contains a few advantages and disadvantages; it is up to the researchers to choose on the off chance that this method of analysis best clarifies the outcomes. The benefits of the approach are.

- Flexibility allows researchers, in that multiple theories can be applied to this process across a variety of epistemologies
- Well-suited to large data sets.
- Allows researchers to expand the range of study past individual experiences.
- Ideal for multiple investigators.
- Interpretation of themes supported by data.
- Applicable to research questions that go within person’s experience.
- Allows for categories to emerge from data.

Thematic analysis is a moderately precise type of qualitative analysis, which does not require the same point by point theoretical and technical knowledge that methodologies. It is reasonably straightforward to conduct a decent thematic analysis on qualitative data.

In any case, various things can bring about a poor review. In this segment, it is recognized these potential pitfalls, with the expectation that they can be kept away from. The first of these is a failure to analyse the data really by any means thematic analysis is not only a gathering of extracts hung together with practically no explanatory account. Nor is it a selection of extracts with the logical remark that mostly or principally paraphrases their content. The extracts in the thematic analysis are illustrative of the systematic focuses the researcher makes about the data, and ought to be utilized to illustrate/support an examination that goes past their particular content, to understand the data, and tell the reader what it does or may mean. A second, related pitfall is the utilizing of the data gathering inquiries, (for example, from interviews) as the "themes" that are accounted for it. In such a case, no systematic work has been done to identify themes over the whole data set, or understand the designing of responses. The third is a weak or unconvincing analysis, where the themes don't seem to work, where there is a lot of overlap between themes, or where the themes are not inside coherent and predictable. All parts of the theme ought to cohere around a central idea or concept. This pitfall has happened if, contingent upon what the analysis is attempting to do, it comes up short sufficiently to catch most of the data, or fails to give a rich description of one or more parts of the data. A weak or unconvincing analysis can likewise originate from failure to give sufficient case from the data/for instance, stand out only one or two extracts for a theme.

According to Foster and Parker, [42] ‘The ‘‘analysis’’ of the material... is a deliberate and self-consciously artful creation by the researcher, and must be constructed to persuade the reader of the plausibility of an argument'. In so doing, one avoids (the appearance of) what Bryman [42] has referred to as ‘anecdotalism’ in qualitative research / where one or a few instances of a phenomenon are reified into a pattern or theme when it or they are idiosyncratic. It is not to say that a couple of cases can't be of interest, or uncovering; however it is vital not to distort them as an all-encompassing theme. The fourth pitfall is a mismatch between the data and the analytic cases that are made about it. In such an (unfounded) analysis, the cases can't be upheld by the data, or, in the most pessimistic scenario, the data extricates exhibited propose another analysis or even repudiate the

cases. The researcher ensured that interpretations and analytic focuses were predictable with the data extracts.

1.2.1 6.3. Study limitations

It should be noted down that this study has been primarily connected with data collection. The findings of this research is collected by interviewing school teachers. It could be a limitation as it entails a lot of time to gather qualitative data when compared to quantitative studies. Furthermore, the analysis of collected data could also be time-consuming. Furthermore, Saunders et al.[43] posit that qualitative data introduces subjectivity during research. To avoid these limitations, the interview questions are formed based on the research objectives. It helps to ensure that only relevant information is gathered and analysed. On the other hand, the scope of the study is limited to these theories being investigated.

The limitations of this study is the sample size, as only seven teachers are interviewed in total. However, the interview questions are open-ended, which help to ensure that detailed answers are provided. It is assumed that the collection of 7 particular viewpoints serve as valid primary data for this study. Moreover, the interviews are unstructured. Therefore, additional questions are asked to explore the subject in detail.

Since the collected analysed qualitative data acted as the primary information in this research, it must be clarified to which extent the findings are applicable in other settings than in the particular case that is studied. According to Boyatzis and Roulston [42], thematic analysis is a poorly demarcated and rarely acknowledged, yet widely used qualitative analytic method within and beyond psychology. However, the research findings are still useful and relevant for the research.
Lastly, the thematic method of analysis contains a few disadvantages.

- Reliability is a concern due to a wide variety of interpretations from multiple researchers.
- The thematic analysis may miss nuanced data.

- Flexibility makes it difficult to concentrate on what aspect of the data to focus on.
- Discovery and verification of themes and codes mesh together.
- Limited interpretive power if analysis excludes theoretical framework.
- Difficult to maintain a sense of continuity of data in an individual account.
- Does not allow researchers to make claims about language usage.

6.4. Conclusion

This chapter provides an overview of the validation procedures used during the research. Also, applying the validation process of negative case analysis further aids in examining how the findings of this current research relate to what other researchers have discovered or conclusions made in related research domains.

Another aspect discussed in this chapter is the limitations of the study. Firstly, qualitative research has certain limitations, such as the opportunity for researchers' subjectivity to be added to primary data. However, as mentioned, this is prevented by ensuring that the researcher is involved with the interview participants (school teachers) for an extended period, and the interview transcripts are forwarded back to the interviewees so they could confirm that their views are appropriately recorded during their interviews. It aids in removing any form of bias. It is also necessary to highlight that the research is conducted only by one researcher, and the scope of the research is limited.

However, as previously mentioned, these research findings can also be applied in various other related fields to give input on their specific cases.

7 Conclusion

This Chapter concludes the thesis by answering all the main sub-research questions and the main research question. Additionally, the summary of the findings, discussion of the implications and also possible future research is presented. This chapter is important as it gives the answer to the main research question and also binds the research into a complete master thesis. Section 7.1. Gives an introduction to the conclusion and sub research question one, two and three are answered. Section 7.2. Gives a detailed summary of the findings of the study and answers the main research question. Section 7.3. Discusses different implications for this research. Section 7.4. Concludes the thesis by suggesting future research work to be done in the investigated field.

7.1. Summary of findings

The objective of this research was to investigate and introduce e-learning to school teachers whether they use or intend to use ICT-based learning in the classroom with new facilities, to identify the factors influencing this intention, and capture teachers' wider views and attitudes toward the technology, computer use, and alternative means of technology. For this purpose, thematic methods were applied. According to the results teachers who responded to the interviews showed positive means of technology attitudes and recognition of ICT-related problems in terms of school environment, and inconvenience of infrastructure. The school teachers showed strong intention of suing the new ICT methods for their professional development and needs. The factors affecting this intention were found to be primarily the ICT and the attitude toward the e-learning.

Although teachers are not very familiar with e-learning tools, a new dynamic is reflected in their intention to use the new methods and participate in ICT-based training course within the next year. These results may be influenced by the significant changes in the nation's education level. However, it seems that this new dynamic is not shaped solely by various factors. The strong intention of school teachers to use ICT is consistent with their social problems, alternative means of learning attitudes and realization of ICT-related problems.

In this thesis school teachers are explored. As the use of ICT in the classroom is directly linked to their work, questions and it is pointed out that a significant number of teachers are unprepared to teach ICT at school it is necessary to explore one of the possible causes for that problem – inability to retain teachers regularly.

This thesis gives the answer to the research question: How to introduce e-learning to teachers to achieve ICT goals? For answering that question, an exploratory case study methodology is chosen. Specific case study design, data collection, and data analysis methods and procedures are employed. To keep the scope of the thesis, three sub-research questions are deduced and answered accordingly:

RQ1: How to introduce e-Learning design to teachers to achieve (ICT) information communication technology goals?
Gr-Q1. How to integrate the running case with a case study methodology?

The research on motivational design that incorporates the ARCS model continue in new and interesting areas, including researches with regard to motivation and learning, the effective and other motivational effects of animated pedagogical agents and design of effective elements into computer interfaces
It is concluded that in Georgia no research is conducted in this field. Therefore, the exploratory case study methodology is chosen. To generate initial insight from school teachers, who have been retained and who have discontinued using ICT every day, a qualitative user interview with the school is a suitable option. It can be concluded that this method of integrating a running case with exploratory case study methodology is appropriate, as initial assumptions related to a studied phenomenon are unclear, and the aim is to seek new insight, gather ideas and hypothesis for future research.

RQ2: How to fill the learning gaps with e-learning frameworks?
Gr-Q2. How to collect viable data to understand a real picture of using ICT at school?

This question is important because the analysis and findings of the thesis are based on the collected data. Therefore, it is undoubtedly necessary to explore various approaches for

data collection with this particular case. As mentioned, for the primary data, user interviews are chosen. To narrow the scope and reduce different outcomes of the interviews, school teachers are selected from various parts of the country based on their activity that is measured by the method of thematic analysis. It can be concluded that narrowing down possible outcomes to maintain the scope of the thesis is important, and that could be done by observing teachers in the classrooms with pre-determined behaviours that indicate whether teachers use ICT or not.

RQ3: How to analyse the collected data?

Since the research methodology is chosen to be a qualitative case study, the thematic analysis data coding is suggested as a suitable procedure for data analysis. The interviews are recorded, transcribed and then organized into codes. The codes are the primary data for analysing the findings and are explained in six steps.

Firstly, the initial phase of the thematic analysis is to familiarize with the data. At this stage, the date is read and re-read several times. Then by noting down initial ideas to be familiar with the depth and breadth of the content. After that notes are taken and plans are made for coding. The original list is created to gather ideas about what is in the data and what is interesting about them. The data is divided by interviewees and number of questions asked during the interview. Before reading the interview transcripts, and a "start list" is created of potential codes. These start codes include in a excel file with a description of representations of each code and where the code is established.

Secondly, the phase in the thematic analysis is generated by an initial list of items from the data set. To organize and gain meaningful parts of data with the thematic way that is related to the research question is called coding. The process of coding is done through an inductive analysis to consider the cyclical process in which codes emerge within the process of research. The cyclical process is chosen to involve to go back and forth between phases of data analysis several times until the final satisfaction of the themes. The interesting features are coded across the entire data set. Then data relevant is collated each code. After that, the initial codes are produced from the data manually by indicating patterns: notes, data segments: comparing each code together in separate computer excel file.

Thirdly, the phrase is searched for themes. In this phase, the codes are examined to combine to form over-reaching themes in the data. The relationships are built between codes and themes and between different levels of existing themes. Themes differ from codes in that themes are phrases or sentences that identify what the data means. They describe an outcome of coding for analytic reflection. When all data have been initially coded and collated then, the data relevant is sorted to each code. The codes are sorted into potential themes. Then all data relevant is gathered to each possible theme. After that, the mind-mapping tool is used for themes. The relationships between codes, themes and different levels of themes are considered as the main point. This phase ends, having a collection of candidate themes, and subthemes, and all extracts of data and the related codes.

Fourthly, the fourth phase requires to search for data that supports or refutes the proposed theory. It allows for further expansion on and revision of themes as they develop. Specifically, this phase involves two levels of refining and reviewing themes. Connections between overlapping themes may serve as important sources of information alerts to the possibility of new patterns and issues in the data.

The themes are checked, and they work to the coded extracts.
Level 1. Then the coded data extract is reviewed at this level. All the collated data extracts are read for each theme: Themes are formed a coherent pattern and the entire data set.
Level 2 is generated by a thematic ‘map’ of the analysis and refinement of the themes. The validity of individual themes is considered about the data set. The mind-map is reflected by the meaning of the dataset as a whole.

Fifthly, the definition and naming the themes are presented in the final analysis that assisted the researcher in analysing the data within each theme. At this stage, the themes ‘identification essences are related to each specific theme and entire data. Analysis of this phase is described by identifying which aspects of data are being captured, what and why themes are interesting.

The satisfactory thematic map of the data is ongoing analysis to refine the specifics of each theme, and the overall story of the analysis. The clear definitions and names are generated for each theme.

Lastly, on the six phase having reviewed final theme, the researcher wrote the final report. The primary goal of the fifth phase is to write the thematic analysis to put data in a manner that convinces the reader of the validity of the study. Interviews were held with seven female participants. All names were changed to protect participant confidentiality.
It can be concluded that that e-learning is essential for Georgian population to fill the learning gaps and catch up e-learning requirements and implementation of new methods and approaches in teaching.

7.2 Implications

This study explores various concepts and theories around e-learning introduction. Moreover, different methods and activities are introduced that school teachers need to learn and use in daily basis at school. These activities tend to require an understanding of teacher motivations, interests, attitudes, and needs. Additionally, it can be stated that not all teachers share similar characteristics. Therefore, schools, the ministry of education and science, policy makers should make an effort to understand its teachers. It could be done through educating, rewarding, evaluating that is employed in this research. Once a school has an understanding of the motivations, interests, attitudes and needs of its teacher's specific teacher preparation could be applied.
In this regard, focused groups and centralized databases, online training course could be alleviated and turned into motivations via social media channels as well. It could help each teacher to contact other teachers and share experience, views and ideas.

The research tend to focus on teacher motivation and investigation of using ICT in the classroom. Moreover, teachers expressed positive attitudes toward e-learning implementation however, it remains unclear whether they are ready for generating technology in their daily classroom environment. The main reason of being apart from technology is a lack of training and school infrastructure.

7.3 Future work

As teachers feel overloaded they have a particular set of goals and motivations; it can be stated it should be further investigated how to integrate and motivate teachers to use ICT

in the classroom? Proposed motivations, needs should be examined separately and validated with the statistical sample by conducting a quantitative research.

These findings of the research show that the use of ICT and offered e-learning design are considered significant factors for school teachers. Therefore, it is challenging to improve the quality of using ICT in the classroom and introduce e-learning frameworks step-by-step that could rapidly change the attitudes of teachers, and it's hard to ensure the design of the e-learning is accepted by the teachers. These findings open various new research questions, such as: how to motivate teachers to use ICT? Additionally, in line with the other primary motivation: how to evaluate a teacher after ICT training in the classroom? It would be substantial because lots of teachers are trained but they do not use ICT on a daily basis.

There are areas where today's situation in education system does not meet expectations and where more research is needed. Teacher profession is not attractive among new generation and graduates. So, attractiveness and getting involved graduates in teaching profession (training, age, gender). Teachers in Georgia aged 40+ have the almost real knowledge and are devoted to their job. However, teachers are not being replaced by new graduates. Teachers are not likely to solve the situation due to decreasing number of students especially in rural areas although school should expand choice. To become a knowledge-based society with ICT playing a significant role, Georgia has to ensure it can rely on a sound infrastructure.

The useful way of developing e-learning is to set lifelong learning strategy and the accession of information for work tasks which must be sorted out within small and medium enterprises (SMEs) is more unpredictable than the provision of access to courses and learning opportunities in traditional schools. It will presuppose correspondence or direct eye-to-eye contact between people, needs teachers, students, places, and most significant: time for learning and comprehension. E-learning which offers numerous advantages within the process of lifelong learning particularly in the small and medium companies must be solidly embedded with the possibility of lifelong learning.

Broader impact of regulating the school network. The reform of the education system significantly affects most of the previously described challenges in education. Among

other things, the reform has an influence on the distribution of students between vocational and general secondary education, number and attractiveness of teaching positions, quality of teaching and implementation of the new approach to learning, equal access, etc. Since the reform is still underway - in places, changes have been implemented in other areas important decisions are yet to be mad. Georgia has an excellent opportunity to analyse the potential effects of the school network reform and learn from the mistakes.

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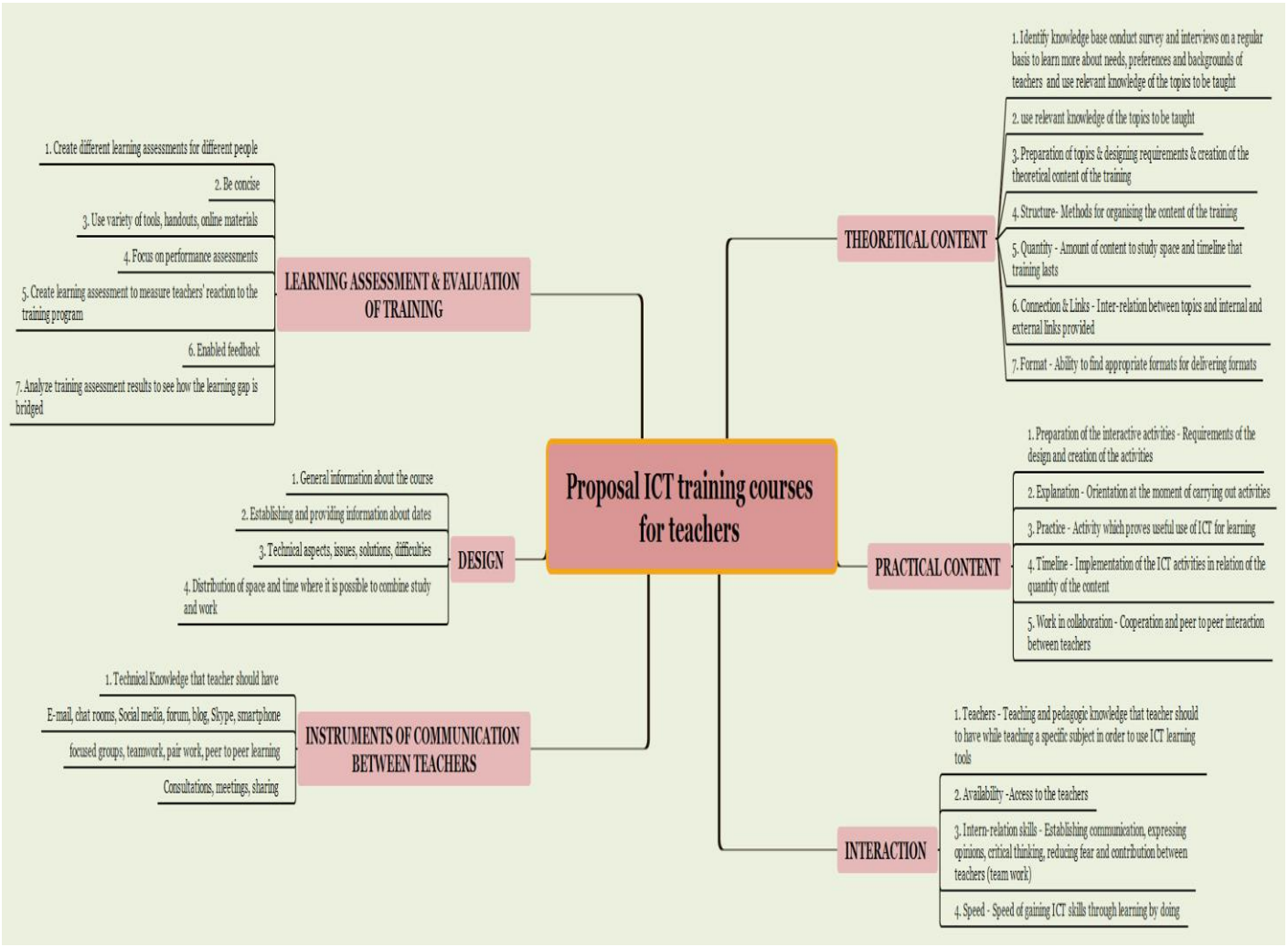
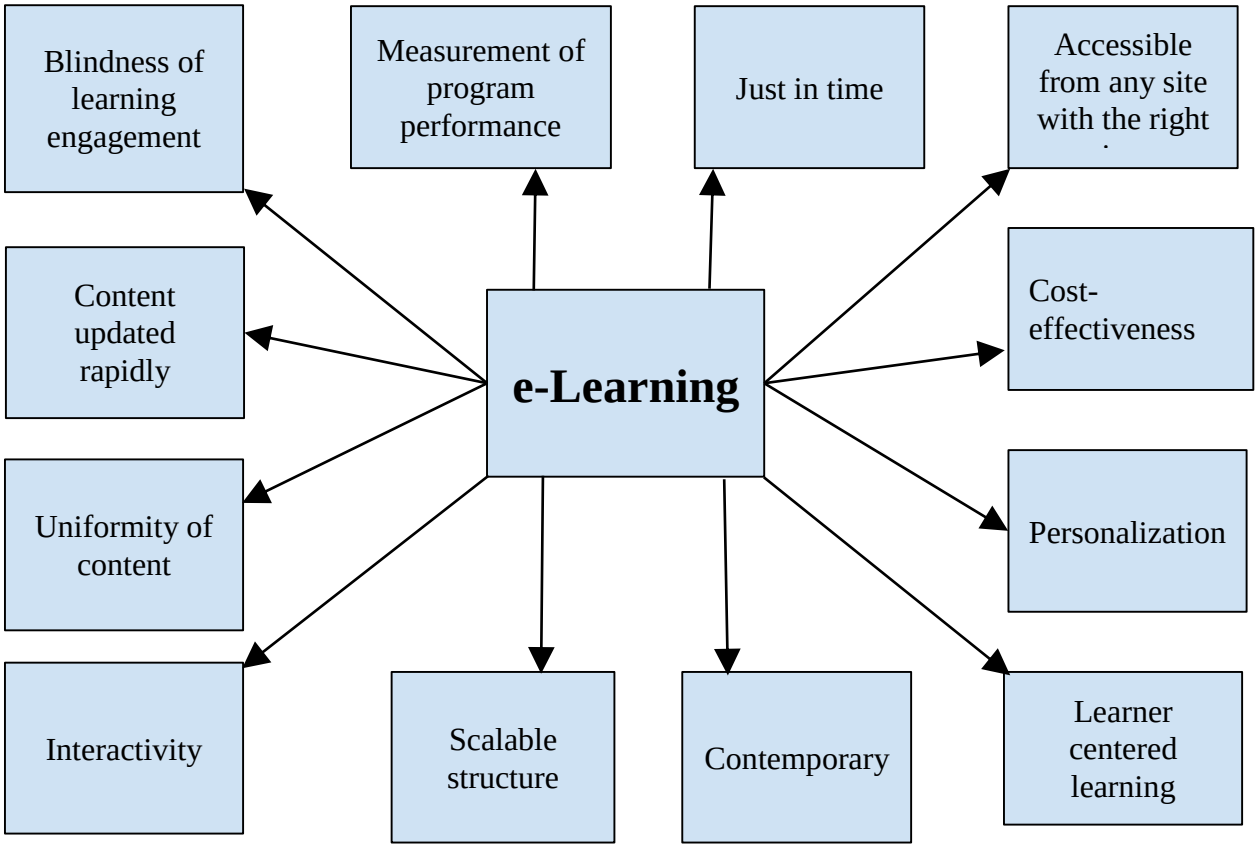
A Appendix

A.1. Figure 1 Proposal ICT training course for teacher



B Appendix

B.1 Figure 2 presents e-Learning offers and benefits.



C Appendix

C.1 Figure 3 Learner motivation and e-learning design Appendix (Source John Keller and Katsuaki Suzuki 2010).

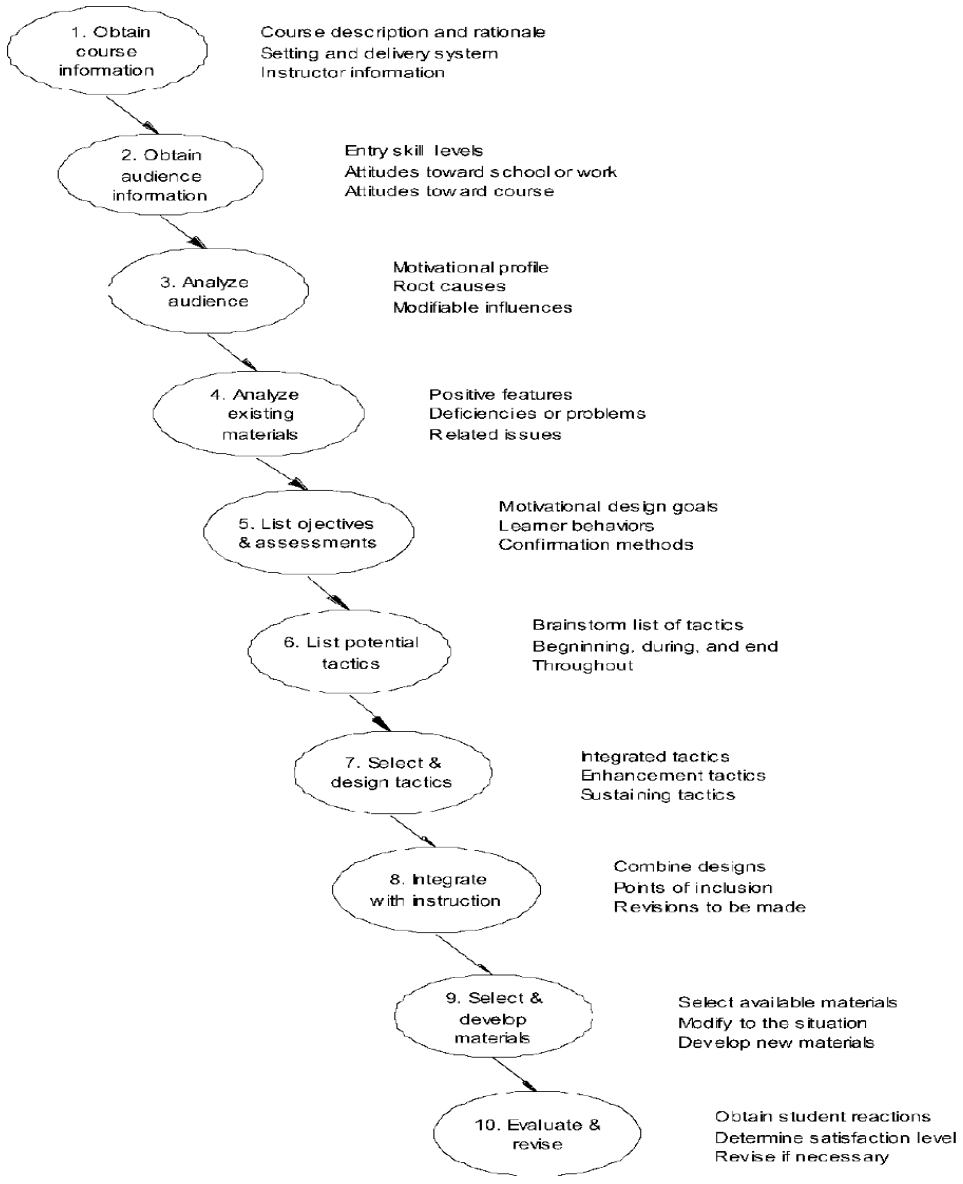
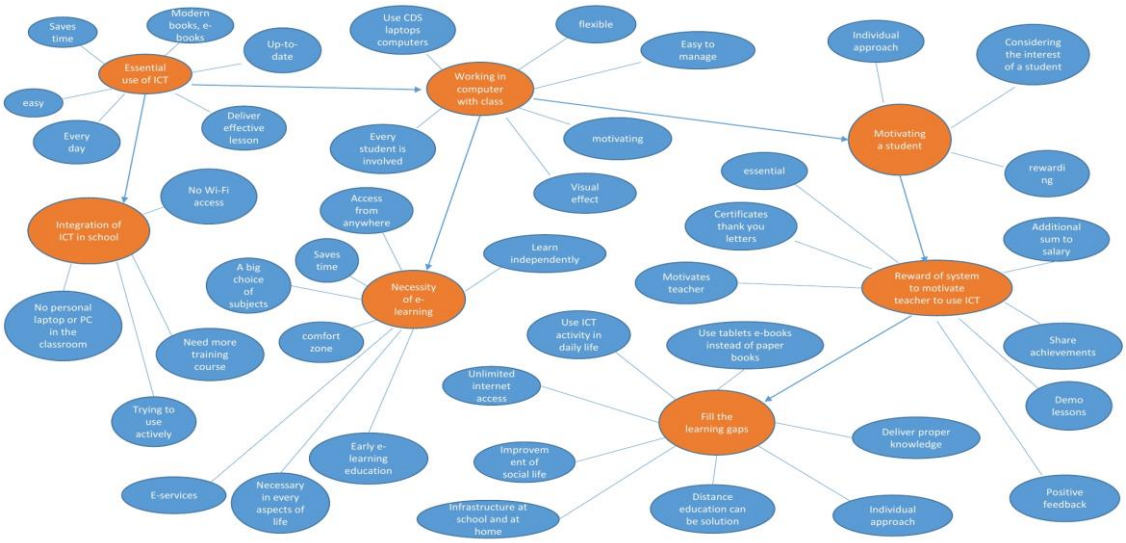


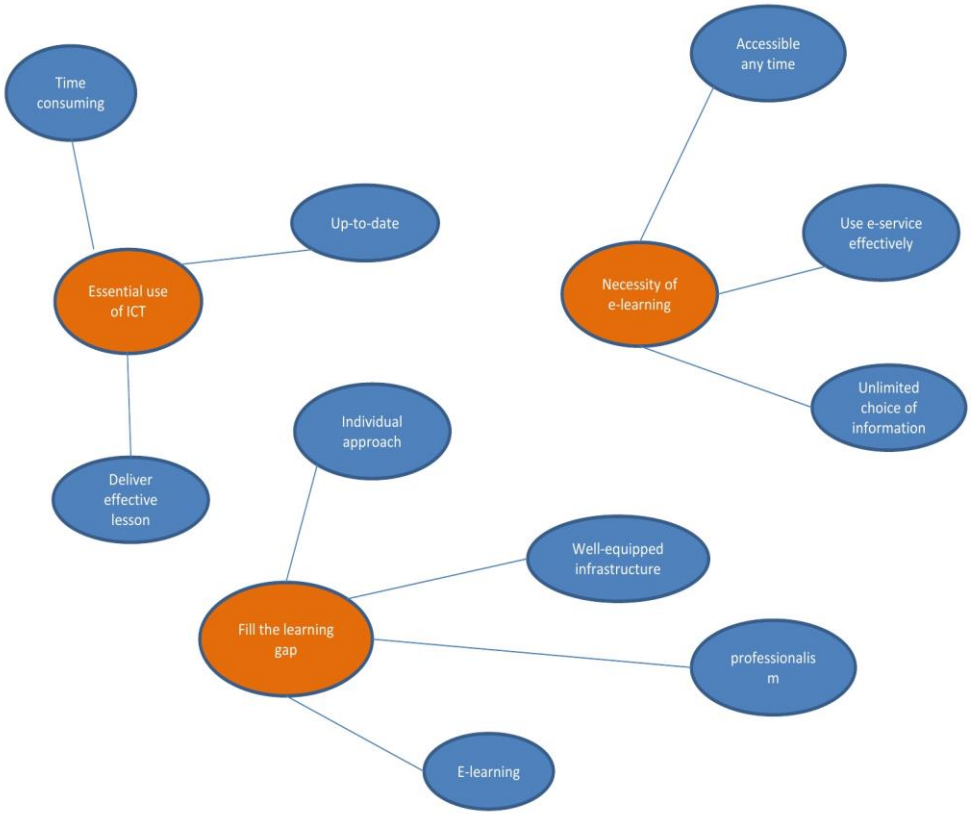
Figure 1. ARCS motivational design process

D Appendix

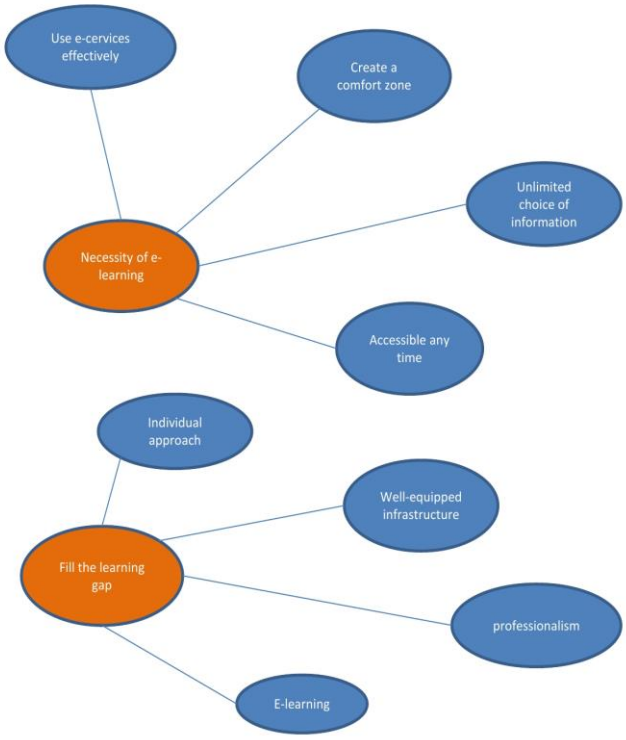
D.1 Figure 4 presents the thematic map of the analysis of the seven chosen theme



D.2. Figure 5 presents thematic map of three themes.



D.3. Figure 6 presents the final two themes



E Appendix

E.1 Table 1 presents instructional development methodology for development and evaluation of e-Learning content. (Source Thavamalar MGovindasamy Successful implementation of e-Learning Pedagogical considerations 2002).

Table 1
Instructional development methodology for development and evaluation of e-Learning content

Phase	Step	Purpose	Activities	Deliverables
Analysis	1. Learner analysis	Identify characteristics of learners	• Define minimum academic qualification target learners should have. • Define personal and social characteristics of learners. • Describe specific entry characteristics of learners.	Learner profile
	2. Task analysis	Determine level of detail and depth of content	• Make a list of general topics to be covered by instruction. • Outline the course content. • Identify the tasks learners should be able to perform. • Elaborate task into subtasks.	Task sheet and information flow chart
Design	3. Defining instructional objectives	Write instructional objectives according to Mager's Format	• Analyze tasks to identify conditions, performance, and standard of performance. • Consolidate the components to write objective statements. • Identify terminal objectives, intermediate objectives, and enabling objectives.	Instructional objectives
	4. Selecting instructional strategies	Select instructional activities and media elements	• Analyze instructional objectives to identify types of learning involved. • Match instructional objectives with Gagne's nine events of learning. • Identify macroinstructional strategy. • Identify instructional activities. • Select media elements and rationalize selection.	Plan on how to achieve instructional objectives

Production	5. Preparation of first draft material	Produce draft material	• Construct a concept map. • Develop and validate Course Evaluation Questionnaire. • Create storyboards. • Transform storyboards into instructional product.	Draft instructional material
Formative evaluation	6. Review by content expert	Gather information about weaknesses and revise draft material	• Administer Course Evaluation Questionnaire (Part I) to content experts. • Revise instructional material.	Revised instructional material
	7. One-to-one trial	Gather information about weaknesses of the material	• Site visit • Select three learners, one high achiever, one average learner, and one low achiever. • Observe the learners' behavior as they interact with the instructional product and respond to items in Course Evaluation Questionnaire (Part III).	List of amendments required to improve the material
	8. Small Group Trial	Gather information about weaknesses of the material	• Site visit. • Select a sample of ten learners equivalent to and representative of the target learners. • Administer the Course Evaluation Questionnaire (Part II) as they interact with the instructional material.	List of amendments required to improve the material
Production	9. Production of the first version of the e-Learning module	Produce the instructional material	• Analyze feedback gathered. • Revise instructional activities, media elements, interface design. • Produce the first version of the material.	First version of the e-Learning module

F Appendix

F.1. Table 2 presents initial noted down ideas and preparation for coding.

Nmae	Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6	Interview 7
Q1	modern books & standards	school gave possibility to think not to use a book at the lesson at all	giving different tasks	modern standard; nice books to teach	using CDs, laptops	used ICT every day	modern books and technology a PC a projector
Q2	use a computer	50% of the lesson is dedicated to use a computer	do not use a computer in the classroom	use ICT mostly every day	we were using ICT 2 or 3 times per week	I was using a memory stick to transfer files	We use ICT very actively at school
Q3	keep lesson plans in the computer	50% of the lesson is dedicated to use a computer	plan lessons and write them on the paper by PPP method	use a notebook	plan a lesson for a week in advance based on a national curriculum in the laptop.	don't write lesson plan	a computer excel file to write lesson plans
Q4	a computer instead of books to visualize a lesson	the teacher should manage and monitor the class with technology.	I don't know what kind of results I would have	individual task	lesson would be very interactive but still with a book	need internet access	cpmputer based
Q5	test online correct and check button	a group work or pair work a kid might not like to participate in the activity	I do not have the method	When students themselves search for something on the internet	a group work or pair work a kid might not like to participate and it can be the problem of communication	can find lots of information on the internet	assess and reward them verbally.
Q6	a video or listen task by showing the movies	myfilm.com where you can find short movies	CD-player at the lesson	excursion and a lesson in nature.	with the help of sound effects	students draw and if it is music lesson they can sing.	everyday PC and basically vidoes
Q7	clarify the interest of the student; I would use computer ICT based topics.	use presentations, quizzes	involve them after classes e.g in the clubs; use social media tools	reward them or grade them. use netbooks	use mostly games	without internet access you cannot use	online games on the screen
Q8	questions to get feedback to check the knowledge	lots of tools for teaching e.g. fairy tales. skill based lessons	individual approach and would use ICT tools e.g the internet	individual approach maybe ICT could play a great role	ICT to get involved students	If wifi some enjoyable tasks	ICT because it gives the opportunity to satisfy any student's needs
Q9	individually go to the student and help	a rewarding method	individually go to the student and help	ask IT teacher and having an integrated lesson	individual approach	individually go to the student and help	weekend task and it should be done online. a demo lesson to show how it works.
Q10	it is about ICT skills of a teacher, requirements, and knowledge.	learned about the standard at the university	doesn't know much about it	does not know much about it but for sure have some knowledge.	does know what skills a teacher should have , but not much about standard.	knows standard as she had at school ICT training.	a teacher have digital competences to teach with ICT.
Q11	We actively try to use ICT in every lesson	The school works as a chain to integrate ICT because every teacher has access to the internet.	school doesn't use much ICT we need more training	Mostly all teacher use ICT at least once a week	use my private laptop because the school did not provide me.	school tries to integrate ICT but unfortunately the internet doesn't cover the whole school.	ICT because we have an ICT as a subject where students create web pages, games

Q12	training is essential in this case in order to use ICT in the classroom	take my kids with whom I had classes. share and talk about how effectively we use ICT with the help of workshops; demo lesson	make it compulsory and reward teachers with some certificates and demo lessons	participate in the training course.	ask for help the school administration to improve the use of ICT	invite good IT specialist or skilled people who are proficient in ICT-based teaching and learning	create a program training for both teachers and students
Q13	rewards could be a prize e.g books, excursions, to offer work as trainer for teachers in future	some gifts e.g memory sticks. certificates, thank you letter	certificates, post their names in the school hall; reward with some additional salary	certificate, or a thank you card. some additional sum to their salaries	show my achievements, a demo lesson	it can be an additional salary & a positive feedback	a certificate, additional sum to the salary
Q14	extra materials or activities prepared for him/her considering the interest	use them as my facilitators by asking them to assist others; ask to give a presentation	ask to assist others by rewarding	give a good grade, ask to give a presentation, to be my facilitator	ask to help the weak students	rewarding and show the plus of the ICT	ask to help both teachers and students
Q15	saves time; the easiest ways of learning; not necessary to go to school or university A person can learn online	saving time to access e-learning from anywhere.	help a student to study independently	technology is growing very fast and of course we have to start implementing it from very beginning at school	it is developed in every aspect of life	The person can have his/her own comfort zone by choosing any subjec he/she wants to study.	all services are online today and not paper-based. In general, all teachers should be actively participating in this process.
Q16	the lesson should be interesting and interactive for the students considering their interests and ICT can do that	show a demo lesson or invite a teacher in the classroom to show how effective	demo lesson, show results using modern way of teaching	the rewarding method	hare my experience using ICT	observe his/her lesson then invite a teacher to the ICT based lesson and give opportunity to compare	a demo lesson
Q17	it should not be limited	every six months	every year. One training should last one week and one per day 4 hours	Once a year or at least 2 weeks and 5 hours per day	once a month	every 6 months	twice a year 4 hours training per day
Q18	how to teach online and use proper skills without a paper book	learn new skills e.g not to use a vocabulary and use online tools	learn methods how to use ICT in the classroom	How to use ICT in the classroom. E.g a blog	to be informed of new resources in the classrooms	learn new approaches of using ICT effectively in the classroom	learn how to set up a web page
Q19	use ICT in their daily life and try to overcome those gaps and fill them step by step	teach all in the classroom and give less homework	improve the social life and use tablets instead of books	teachers should motivate and deliver sufficient knowledge	ICT would fill the learning gaps with the help of individual approach and teachin	distance learning can be solution	ICT can help to fill the gaps
Q20	It is very effective to use variety and one of the best would be e-learning.	It saves lots of resources e.g paper, time, it would be good to use e-tests to check the knowledge	I think I would be more developed and up-to-date teacher	A teacher can use more resources from the internet and bring novelties in the classroom	E-learning can be a good tool for those people who have physical problems and cannot attend the classes and they can learn remotely	I think it would be a big challenge for me and I would be the part of the process for sure	I would use showing short videos. I would connect it to real life situations and use nature as well like projects

F.2. Table 4 shows the data extract and important coded information

Data extract	Coded for
I teach the English language with modern books that includes, reading, writing, speaking and listening exercises and it is created by the modern standards. The students actively participate in all activities. I divide them into pairs, groups and they participate in discussions.	1. modern books 2. modern standards 3. active participation
We use a computer and a projector actively during the lesson e.g. while listening tasks, slide shows. We choose a topic it can be a video and I let the students watch and then ask some questions after watching and also true and false exercises. films are are 15-30 minutes. Sometimes we discuss it by pausing the video and discuss the possible changes in the video.	1. usage of computer & projector 2. watching a vidoe film 3. discussion after watching
First of all, I consider students level then choose the topic the aim of the lesson, what skills I have to develop in students, methods and activities, organize a class. Also, I plan activities in pairs, in groups or individually. Time and resources e.g. a book, pictures, a projector a board, pencils, markers etc. and I keep my lesson plans on the computer.	1. considering level of the students. 2 aim of the lesson 3. skills to develop 4. methods and activities to use 5. pair work & group work 6. keeps lesson plan in PC
I think it would be nice to use a computer instead of books to visualize a lesson. I would insert all my lessons and information in advance in the computer and students would use this information during the lesson in their computers.	1. would use computer instead of books 2. enter all info in PC 3. students would use info in their computers
I would use correct and check button online and I would use tests to assess the knowledge of the students.	1. would use online checking tools 2. assess the knowledge of SS
In this case, I use a video or listening task by showing the movies because I teach a foreign language in order to develop pronunciation and speaking skills.	1. uses a vidoe or listening task 2. develops pronunciation skills
I would first try to clarify the interest of the student e.g. it can be a sport, a car, traveling, animals because there is no person who is not interested in anything. So, I would try to bring the topics that are interesting for a student. Today technology is number one place. Also, I would use computer ICT based topics	1. find out the interest 2. ICT based topics
I use questions to get feedback to check the knowledge. How the students understand the topic and what is the lesson about.	1. uses questions to get feedback
I remember that was a lesson when I showed a movie and before the movie we had a discussion and then while watching I was pausing the movie and was asking questions what was it about and what they would think it would be about. Then I summarized the topic and the movie gave them the knowledge of the given topic. I think the visual effect is one of the best methods of remembering and learning new information. So, I think that a book is necessary but the visual effect has always a positive outcome because it is easy to realize and learn a new topic and students are more involved in learning with ICTs than working with books.	1. used movie screeing 2. used follow up discussion 3. visual effect is the best 4. positive outcome 5. invloved in learning with ICT
There are cases when I individually go to the student and help but sometimes I ask other students to help in pairs or in groups to each other.	1.uses individuall approach 2. asks classmates in pair or group work
I remember we used it during training course but not very deeply but in general I know that it is about ICT skills of a teacher, requirements, and knowledge.	1. knows not very deep
We actively try to use ICT in every lesson because the participation and self-evaluation of the students become very high.	1.actively tries to use ICT 2. participation & self-evaluation is very high
I think that training is essential in this case in order to use ICT in the classroom because first of all teachers must gain the necessary skills and be competitive. I would divide teachers into groups and would measure their knowledge because not all of them are at the same level. It would be nice if teachers would have these training in-house considering their knowledge and needs.	1. thinks training is essential 2. teacher must gain ICT skills 3. devide teachers into groups & measure their knowledge 4. wants In-house training
One of the rewards could be a prize e.g books, excursions, to offer work as trainer for teachers in future. I would listen and discuss with a teacher how he/she is working on developing ICT skills for students. And how effective it is during the lesson. I would also ask a teacher who uses ICT to write one lesson plan and would ask to deliver a role-model lesson for the other teachers to them how fruitful it is to use ICT.	1. thinks reward could be books, excursions 2. offer to a teacher work as a trainer 3. role-model or demo lesson
I would use extra materials or activities prepared for him/her considering the interest of a student. I would ask to share his.her knowledge with others while having pair or group work. But, I think I would be very careful not making other students feeling down seeing a student being as my facilitator.	1. extra material. 2. prepare activities by considering the interest 2. share the knowledge with other peers
It depends on a situation it saves your time. It is is one of the easiest ways of learning because it is not necessary to go to school or university. A person can learn online.	1. it saves time 3. learning online