# Impact of the Use of ICT upon University Students' Approach to Learning a Foreign Language

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**ABSTRACT**

The purpose of the paper is to identify the changes in university students' approach to learning, comparing the results obtained in two studies performed within a period of a decade (in 1997 and in 2007). The research methodology is based on a qualitative approach to learning that views human learning as a meaningful process oriented to the construction of meaning, or, more precisely, on phenomenographic research which distinguishes deep and surface approaches to learning. 527 first year Vytautas Magnus University (Lithuania) students who participated in the first survey in 1997 and 565 first year university students-research participants of the second survey in 2007 were asked to provide their perceptions of the use of ICT upon their learning and English as a foreign language learning and provide their personal meaning of *learning, learning the English language and lifelong learning* conceptions, responding to open ended questions. Students' responses were analyzed following the research methodology proposed by phenomenographic research.

**Keywords**: deep and surface approach to learning, learning conceptions, use of ICT in learning and teaching English as a foreign language.

## 1. INTRODUCTION

The advance of information and communication technologies (hereinafter – ICT) has changed learning and teaching environments in education in various ways in recent years. The impact of ICT on teaching and learning content, methods and strategies, the whole teaching and learning process has been continuously increasing. Experts on education identify the present state of education as a transition from teaching characteristic of the industrial society, based on direct knowledge transfer methods, to teaching and learning which are more appropriate to the information and knowledge society and which are based on constructivist knowledge acquisition methods [27].

The main idea of the new paradigm is that teaching can be improved by understanding how students learn, by examining students' conceptions of learning, i.e. their approach to learning, which at large determines their learning outcomes. Qualitative learning conception states that human learning is meaningful and learning is oriented to the search for meaning. Therefore, it was purposeful to investigate whether the experience of the use of ICT in the learning process and daily use of computers for learning have had any impact upon the change in students' approach to learning.

## 2. POLICY OF ICT IMPLEMENTATION IN LITHUANIA

Computerization of secondary schools in Lithuania started twenty years ago, when a compulsory course on the basics of informatics was introduced in 1986. However, the main Lithuanian policy documents on ICT development emerged a decade later. Numerous documents have been issued and approved by the Lithuanian Government and the Ministry of Education and Science of the Lithuanian Republic on the creation of information society in Lithuania since 2000, which indicate consistent policy to create conditions for ICT implementation in education and ensure the acquisition of ICT skills by the broader society.

The fundamental documents of the Ministry of Education and Science have had an immense impact upon the development of the system for integration of ICT in education in Lithuania. The Strategy for Information and Communication Technology Implementation in Education and its implementation program "Lithuanian School in the 21st Century Information Society" [26, 27] provided a systematic analysis of the activities already being carried out and envisaged the main directions for future. The General Computer Literacy Program [6] based on The Program of the Government of the Republic of Lithuania for 2001–2004 [19], which outlined the development of the information and knowledge based society, and the Implementation Measures of the Program [7], set the purpose to achieve that all society members have competencies adequate to the requirements of the information society. The Students' General Computer Literacy Standard was introduced in 2002, defining general computer literacy as "proper knowledge of Information and Communication Technologies, ability and capability to use hardware and software at the user level" [30].

Outlining the implementation measures of the National Education Strategy for 2003-2012, affirmed by the Seimas of the Lithuanian Republic in 2003 [16], it was stated that the program of ICT implementation is being implemented on national level and that Lithuania has achieved the level of European Union countries with regard to school computerization indicators. The Strategy for the Introduction of Information and Communication Technologies into the Lithuanian Education for 2005–2007 [27] set out the analysis of introduction of ICT into the Lithuanian education system, the mission of the Strategy, the goals, the tasks and the indicators for assessment of the progress. The Lithuanian information society development strategy affirmed by the Seimas of the

Lithuanian Republic in 2005 identified the priorities of information society development. It was acknowledged that insufficient attention to information technologies in higher classes of secondary schools can have negative consequences for learner computer literacy [28].

The Strategy for Implementation of ICT into Secondary and Vocational Education for 2008–2012 [29] among the strengths of ICT implementation names the following facts: computer literacy of the young generation has been increasing, only 1 per cent of learners lack ICT application skills (cf. the EU average is 4%); 97 per cent of schools use computers, 95 per cent of schools have access to the Internet. Though the number of computers at schools is increasing, still we lag behind other countries of the EU in this respect (in Lithuania, 100 learners have 5.9 computers).

The Implementation Measures of the Program of the Government of the Republic of Lithuania for 2001–2004 [7], identifying the situation with development of the information society in the country, indicates considerable changes in ICT implementation in the society, comparing the data obtained in 2000 or earlier and in 2004:

- the number of Internet users has been growing (from 5% of Lithuanian residents in 2000 to 29% in 2004);
- the number of computers in households has been growing (in 1996 – 1%, in 2000 – 5%, in 2003 – 20%, out of whom access to the Internet was possessed by 2% in 1996, 3% in 2000 and 8% in 2003). Significant differences remain between city and the rural residents;
- A growing number of students have computers at home (approx. 60% in cities and approx. 40% in rural areas).

## 3. THE USE OF ICT IN FOREIGN LANGUAGE LEARNING

In light of the above, it was purposeful to explore the first year students' opinion with regard to the use of ICT in learning English as a foreign language in Vytautas Magnus University in Lithuania.

Experts note that the use of ICT in the English language (EL) classroom has mostly depended on the progress of computer technology, certain pedagogical theories and approaches, which were influenced by economic and social changes [32].

In Lithuania, the idea of using ICT in the English language classroom has had a great interest nowadays. Numerous studies, performed by Lithuanian researchers, presented the analysis of investigations into the use of ICT in language teaching. Rutkauskienė and Volungevičienė [23] explored the need of teachers' ICT training in Lithuania; Ričkuvienė [21], Tuomaitė and Miniotienė [33] discussed the changes brought about by ICT and possible problems teachers face using computer technology for language teaching; Rinkevičienė and Zdanytė [22] explored the use of ICT for updating foreign language learning and teaching. Daubarienė and Zdanyte [4] exposed principles of constructivist approach which correspond to learning with ICT. The main principles of constructivism, as summarized by the authors, are context-based learning; conceptual learning through active involvement; learning through collaboration; learners' autonomy and control over learning; learning for personal growth; and learning outcome. In addition, Poškienė [18] revealed the interdependence between language teaching and culture, concluding her analysis of numerous research sources that support the idea that the behaviorist learning environment (teacher-centered), identified as the traditional learning environment, has been changed to the constructivist learning environment (learner-centered) and this shift in approaches has occurred, according to the researchers, because of the use of computers as learner-centered approach has many similarities with teaching with ICT, such as "ownership, choice, individuality, collaboration".

To conclude, the increasing number of ICT at schools, as well as constructivist, learner-centered approach to language learning open up new opportunities for the English language teaching and learning integrating ICT and thus forming conditions appropriate for the information society. Gary Staunch states, "in order to educate students to be life-long learners and successful contributors to the new global market, educators must change the way they teach and the way students learn. We need to remember that if we want to help students achieve a high level of competency and competitiveness, we have no choice but to make technology an integrated tool in the learning process" [15].

## 4. A BRIEF INTRODUCTION OF PHENOMENOGRAPHIC RESEARCH PARADIGM

Phenomenographic research originated in Göteborg University in Sweden in the early 1970s, where a group of researchers, under the head of Ference Marton, performed a phenomenographic research and discerned reproductive and transformational conceptions of learning [10].

Phenomenographic approach to knowledge claims that learning is perception and conceptualization, experience and comprehension of something different than before [13]. Traditional research paradigm explains student's learning as an external objective observer; whereas alternative methods research students' opinions and make conclusions about the learning process on the basis of the students' descriptions and explanations on how they themselves perceive learning, what goals and objectives they seek for and how they attempt to achieve these goals. It is not only a new turn in methodology but it is also a new perspective [5].

The researchers [3. 10. 14. 20. and 25] noticed a qualitative change in students' thinking and the development of more complicated thinking skills while studying at a higher education institution. Students' dual thinking or absolutistic approach to knowledge changes and passes the level of uncertainty with regard to knowledge and beliefs until it reaches a relativistic conception, where knowledge is seen as uncertain and the truth is seen as provisional. At the highest level the students learn to rely on personal values and admit the existence of various alternatives to explain the reality, they understand that personal interpretations allow drawing various different conclusions and that relativism is a rule, not an exception [20]. Thus the student's goal of intellectual and ethical development is ability to make personal and independent interpretations of reality on the basis of relativistic evidence.

Marton's definition of phenomenographic research [11] is often cited in literature on qualitative research: "Phenomenography is the empirical study of the different ways in which people experience, perceive, apprehend, understand, conceptualize various phenomena in and aspects of the world around us".

Marton [12] speaks about the dichotomy between deep and surface approach to learning distinguishing structural and referential aspects of the phenomenon, i.e. each learning concept is comprised of two aspects – 'what' (what we are learning) and 'how' (how we are learning). The approach advocated by Svensson [31] reflects how a student organizes the acquisition of information, whether he maintains the whole structure of the text he is reading, i.e. possesses a holistic approach, or has an orientation towards parts and details and sees the whole as a sum of the parts, i.e. holds an atomistic approach. According to researchers, these two aspects are

intricately intertwined [14]. Phenomenographic research also separates external and internal horizons of each conception.

The learning environment is one of the factors that enhance the formation and sustainability of deep or surface approaches to learning [20]. *Surface* approach to learning is fostered by the following factors: assessment methods which require to reproduce the material or to apply the simplest procedural knowledge; too extensive amount of the teaching material; insufficient feedback; lack of attention to independent learning; lack of interest in the subject; prior experiences in the learning environment that enhanced surface approach to learning. On the contrary, *deep approach* to learning is fostered by teaching and learning methods which create an active and long-term relationship with the teaching material, interest in the subject, place emphasis on the importance and meaning of the new material, arouse clear academic expectations, create opportunities to choose the study method and content, prior learning experiences that enhanced deep approach to learning.

The changes in learning and teaching environments impacted by the implementation of the ICT - modernization of school libraries and development of computer centers at schools, the growth of computers in educational institutions and at home, introduction of ICT into the teaching and learning of various subjects, creation of virtual learning environments, development of education networks, access to the Internet at school and other measures indicate that significant changes have taken place in terms of the use of ICT in education which "ought to facilitate the implementation of the new learning paradigm, the ideas of learning through communication and constructivism" [27]. Therefore, it was purposeful to explore the changes in students' perceptions of learning which proceeds in the changed learning environment.

## 5. METHODOLOGY

The research **methodology** is based on qualitative approach to learning that views human learning as a meaningful process oriented to the construction of meaning, or, more precisely, on phenomenographic research which distinguishes deep and surface approaches to learning.

The **research aimed** at analyzing the university students perceptions about the impact of the use of ICT upon learning English as a foreign language and the changes in students' approach to learning, comparing the results obtained in two studies performed within a period of a decade (in 1997 and in 2007).

The following **research objectives** were raised**:** 1. To analyze the students' self-evaluated experience in the use of ICT in learning and foreign language learning. 2. To identify the students' personal conception of meaning of the following concepts: Learning, English as a foreign language learning (hereinafter, EFLL), and Lifelong Learning. 4. To categorize students conceptions and identify their approach to learning. 5. To compare the students' conceptions and approach to learning in two studies: performed in 1997 and 2007.

**Hypotheses:**

1. The students maintain a positive attitude towards the use of ICT and it facilitates their learning.
2. The students' conceptions of learning have changed in the last decade due to the advancement of technologies and the increased use of ICT.
3. The number of students who have deep approach to learning has increased.

**Research methods:** quantitative research – a questionnaire survey to explore students' ideas about their experience in ICT, the internal consistency and reliability of the questionnaire was tested by Cronbach's Alpha (. 7321); qualitative research into learning conceptions using open-ended questions; expert method; methods of statistical analysis, performed using SPSS for Windows Version 15.0. The following statistical analysis methods were used: descriptive statistics; correlation analysis (Spearman's rho, Cronbach's alpha).

**Research Design**

The article presents the analysis of research findings of two studies, performed in 1997 and 2007.

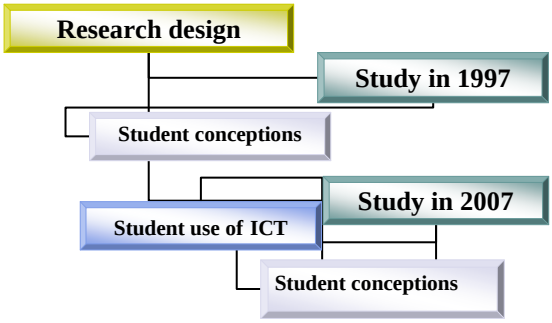


Fig. 1. Research design scheme

The first study investigated university students' conceptions of *learning, lifelong learning and English as a foreign language learning*, and pursued to determine the university students' approach to learning. An open ended questionnaire was used as a research instrument. Students' responses were analyzed following the research methodology proposed by phenomenographic research: analyzing the students' perceptions of the concept, comparing them and identifying the main topics according to different learning conceptions, categorizing them, eliminating incidental comments. Afterwards the categories were revised and modified until the main conceptions were presented. The categories were compared with Marton's learning conceptions and Ramsden's approach to learning typologies. The categories were coded and the data of students' learning conceptions were recorded into the statistical analysis table. On the basis of their conceptions of learning, students were expert evaluated and assigned to two groups of learners: *deep or surface approach to learning* (according to Marton [11], Ramsden [20] typologies of approach to learning). For the purposes of this research the analysis of two conceptions – students' conceptions of *learning* and *the English language learning* – will be provided

The 2007 year study, performed after the advance of the use of ICT both at secondary and higher education institutions and at home, also aimed at identifying students' conceptions of *learning, foreign language learning and lifelong learning*. The qualitative research analysis was carried out along the same lines as in Study 1. The other task of this study was to identify the impact of ICT upon foreign language learning, students' attitudes and experience in the use of ICT; for these reasons a two-part questionnaire survey was designed on the basis of related literature [1] and research problem. It consisted of 40 closed and open-ended questions which allowed to identify the students' demographic data and their perceptions about using computers. The obtained research data were analyzed statistically.

**Participants of the study**

The participants of the study - 527 (in 1997) and 565 (in 2007) first year Vytautas Magnus University (Lithuania) students who

studied English at school and continue learning English at the university as a compulsory non-specialty subject - were chosen by random sampling. As the research participants were first year students there were insignificant differences with regard to their age (age average in Study 1 - 18.83, in Study 2 -.19.79), It is possible to state that the research reflects the attitude of young adults. The majority (67.6% in Study 1 and 78.9% in Study 2) were female students; this approximately corresponds to the general university student population distribution among genders. In both studies the respondents represented all nine faculties of the university, though the faculty of Humanities was represented most frequently (36.8% in Study 1 and 32.7% in Study 2).

## 6. RESEARCH FINDINGS AND DISCUSSION

**Use of ICT**

The impact of ICT upon student learning was not analyzed in Study 1, as ten years ago the number of computers in Lithuanian households was only 1.7% (according to the data from the Department of Statistics at the Government of the Lithuanian Republic in 2008), compared to 42% in 2007. However, the research participants – university students reported higher results: even 98.5% (N=556) of them stated having computers at home. 62.2% (N=351) admitted using computers for their learning every day, 34% (N=192) - two-three times a week and only 3.8% (N=21) - once a month or more rarely. Consequently, the majority of the students reported being proficient (51%, N=288) to fairly proficient (38.3%, N=216) in computer skills; only 3.1% (N=17) admitted being a little proficient and 7.7% (N=43) evaluated their ICT skills as excellent.

Reporting on their perceptions of the impact of ICT upon their learning, the majority (54.2%, N=306) agreed that it had a positive impact as it facilitates and enhances their learning, 44.6 % (N=252) expressed both positive and negative attitude, i.e. ICT use has a twofold impact – positive as well as negative in terms of health, time consumption, isolation from other people, etc. Only 1.2% (N=7) of the respondents reported negatively without any additional comment as to the reason.

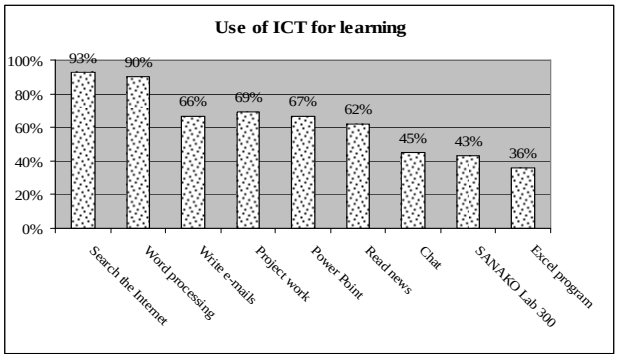


Fig. 1 Use of ICT for learning

Analyzing the most frequently employed ICT functions while learning it was determined that the majority - 92.7% (N=524) search the Internet, and 90.1% (N=509) use word processing programs; more than half of the subjects - 66.4% (N=375) - write e-mails, 69.3% (N=392) use ICT for project work, 66.7% (N=377) use Power Point software, 62.2% (N=351) read news; less than half of the respondents admitted using computers for the following functions: 45% (N=254) chat, 43% (N=243) learn English in the Foreign Language Centre SANAKO Lab 300 (Fig. 1), 35.9% (N=203) use Excel program.

Discussing the use of ICT for learning English as a foreign language it was found that 66.4% (N=375) use ICT for learning English as a foreign language – 15% (N=85) every day; 50.2% (N=284) every week, others – more rarely. 95% (N=537) reported ICT helps them in their English language learning (43.5% (N=246) - "helps a lot", 51.5% (N=291) - "somewhat helps").

Self-reporting about the impact of the use of ICT upon their English language competence development, research participants admitted that it creates opportunities for practice and use of authentic language - 56.3% (N=318) marked it as very efficient', 39.1% (N=221) – as 'somewhat efficient'); even 95.4% see the Internet as very efficient and 'somewhat efficient'(47.7% each) in learning new lexis and acquiring new information; 39.7% (N=224) admit becoming much more independent while using ICT (48.1% (N=272) - 'slightly more independent'); more than one third (34.6%) reported that analysis of various articles and different information found in the Internet changes their perception of reality and life, it thus stimulates their personal growth (with 56.4% (N=319) agreeing slightly).

However, the highest benefit of ICT in learning EFL is seen by the respondents in relation with their future career: 64.9% (N=367) see EFL competence and use of ICT skills as very important for their career, 29% (N=164) consider it to be somewhat important.

The results revealed no significant effect of the impact of ICT use upon the increase in students reading speed and in reading comprehension: students see it as 'somewhat' important - 47.5% (N=268) and 53.8% (N=304) respectively, and only one fifth of the respondents (22.6% (N=128) and 21.4% (N=121) respectively) agree that it is very important. The results do not confirm the research findings for reading speed and comprehension development [8].

**Research into learning conceptions**

Qualitative inquiry into learners' conceptions of **learning and English language learning** focused on the students' descriptions of their conceptions of the meaning of learning. All six categories of the meaning of **learning** described by Saljo [24] and modified by Marton [12] were identified; moreover, the seventh category was revealed *"learning as a key to the future"*, showing the value Lithuanian students assign to learning and the importance it plays in their lives. Comparing the responses obtained in two studies, it is obvious that similar groups of categories can be defined in both studies with differences in the importance attributed to them.

Analyzing the students' **conceptions of English language learning**, eight categories of learning conceptions were identified, four of them attributed to surface approach to learning and four to deep approach to learning. Students perceive EFL learning as follows: *information accumulation in discrete areas (vocabulary, grammar)* – 13.5% in 1997 and only 6.7% in 2007 (e.g."hard work and a lot of homework", "learning English language words, tenses and expressions"); *tedious memorizing of words and rules leading to fear of failure, tension and boredom* – 20.7% in 1997 and 14.6% in 2007 ("you sit and cram, but when it is no longer necessary, you forget", "pushing new words and grammar into your head", "difficult and tedious work".). These two learning categories and the third one that defines EFL learning with regard to a utilitarian aspect (e.g."it is learning the most popular language in the world which is very useful in many professions and particularly working with computers") can be attributed to surface approach to learning which views learning in a quantitative way as a reproductive process. It can be concluded

that the number of first year students who expressed surface approach to learning decreased from 52.4% in 1997 to 37.2% in 2007.

Most respondents (21.8% and 30% respectively) perceive English as a foreign language learning as *applying the learnt knowledge in practice*, in a life situation, communication (e.g. "acquisition of language structures, then attempt to apply them", "active use of language, i.e. speaking, language improvement using the Internet"). This is a transitional conception from surface to deep approach.

Almost equal number of respondents (over 12%) in both studies see English language learning as *the search for meaning and abstract implication, going deeper into the subject* (e.g. "it means I have to be more interested, to study and analyze, not only to perform what is assigned). Students see language learning as having sense; they are involved and experience pleasant associations with learning. Thus, new knowledge is integrated into the learner's existing conception system.

Conception six has a common feature - *learning as a different understanding of reality, i.e.* learner starts seeing something differently. In the context of the English language learning different reality is, e.g. "familiarity with other cultures, joining the world community", "getting acquainted with other cultures, ability to communicate", "interest not only in the language but also in the culture of the language and communication", "a way to become familiar with other cultures", "a possibility to become aware of different traditions and cultures of other nations" as expressed by 5.5% subjects in 1997 and 3.6% in 2007. Here reality (or external horizon [14]) is life beyond the class situation, therefore, the structural aspect of the learning conception becomes an ability to generalize.

Conception seven – *personality growth* - "self-development", "becoming sophisticated", "desire to develop oneself, ambition to reach something more in life" was noted by 4.4% respondents in 1997 and 7.7% in 2007.

Conception eight - "*key to the future*, a possibility to merge with millions of the world people", "a possibility to communicate with the people of the world in the future, defeat of a number of barriers", " a possibility to integrate and become a competent member of the world community" was expressed by only 2.8% in 1997 and 9.3% in 2007.

The latter four conceptions reflect learning understood as a constructive action – search for meaning, interpretation, and formation of a different understanding. These conclusions can be compared with Perry's [17] assumption about intellectual development of students, change in their thinking from dual understanding of reality to relativistic understanding. This particular change in student thinking is considered to be the ultimate goal of higher education.

The research comparison revealed that considerably more students of the second survey held deep approach to learning (47.6% in 1997 and 69% in 2007). More than one third of the respondents (39.4%) mentioned ICT in one way or another while defining their conceptions of learning and EFL learning. The following correlations between different parameters in 2007 study were revealed: a positive correlation was found between students' approach to learning and to the English language learning ($r=.745$, $p<0.01$); between students' approach to learning and the use of ICT ($r=.654$, $p<0.01$) and between the students perceptions to learning and their perceptions about the impact of ICT upon their learning ($r=.630$, $p<0.01$).

## 7. CONCLUSIONS

1. The investigation confirmed the first hypothesis which states that pupils have a positive attitude towards ICT and it helps them to learn. It was found out that almost all research participants had computers at home and used them frequently in their learning for various reasons. The results confirmed the research findings obtained by a number of researchers [1] on the advantages of the use of computers in more than one respect: it facilitates and enhances student learning (admitted by 95% of the research participants in 2007), develops students' ability to learn independently (agreed by 87.8%), analyze information and think critically (86.9%).

2. The survey showed that students definitely like using ICT for English language learning. Most of the respondents (49%) use ICT every week, whereas only 6% use it less than once a month. Moreover, the majority reported that ICT has improved their language skills (reading skills - 95%; grammar - 84%; writing skills - 96%; vocabulary - 98%; awareness about the English culture - 60%; listening skills - 53%) and that they would like to use computer at least once per week. Therefore, it can be concluded that ICT is a very important tool in the English language classroom for promoting pupils' language skills.

3. Qualitative inquiry into learners' conceptions confirmed the second hypothesis: students' conceptions of learning have changed in the last decade and it can be assumed that the advancement of technologies and the increased use of ICT has played a significant role in the change of their conceptions.

4. The findings of the second study revealed that the percent of students who can be attributed to deep approach to learning group increased.

**Significance and limitations of the study**

The significance of this study resides in its attempt to reflect the current situation of the use of ICT by the first year university students and their learning perceptions which constitute their approach to learning. Besides, the data obtained within a period of a decade allow determining some changes in the first year university students' approach to learning.

However, as any other research, our investigation has some limitations. The generalizability of the findings may be limited due to the fact that the population of the first year students in both the studies is different, i.e. it is not a longitudinal study. Besides, the study reflects the situation in one university only. What is more, it is possible only to assume that the increased importance and use of ICT is one of the factors accounting for the change in students' perceptions of learning. Further research is necessary to prove the relationship between the two variables.

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