



ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ  
ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ  
«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ»

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студентами и преподавателями**

**An impact of Virtual Learning Environments on communication process  
between students and instructors**

Диссертация

на соискание степени магистра

по основной образовательной программе высшего образования

по направлению 390401 «Социология»,

профиль «Европейские общества» / MA «Studies in European Societies»

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Санкт-Петербург

2017

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## **Abstract**

### Virtual Learning Environments in higher education

In recent years, a surge of interest in Information technologies in education has raised. This field is not well researched as it is a young field which has been rising for the last years. As information technologies and virtual learning environments (BlackBoard, Sakai) (and other university systems) are helping in the process of getting education, this particular thesis might be of interest, since it looks deep into these systems and tries to analyze not only virtual connections in these systems between actors of university life, but also tries to explain how does the whole network of different systems affects communication process between them. In order to do that, an online survey will be used to get quantitative information from students, and in-depth interviews with academics and staff responsible for maintaining university systems to get qualitative. One of the steps to informatization was to apply new IT services to the university to make some aspects of student's life easier. Starting with electronic schedule and personal page of a student with just information about passport, level of education and a name, we are moving forward, introducing Sakai and Blackboard, virtual learning environments and management systems to create a better learning and communication field. Currently, my hypothesis, based on a short-survey and personal findings is that those systems are not working in their full potential and some of the basic features, such as communication with students and professors, inquiries and some others are underused, and this might be due to many reasons which this study is also aiming to find. As a conclusion, this thesis presents results of the research, discusses limitations and perspectives of such technologies and possibilities for communication in VLE and VIS.

**Keywords:** sociology, higher education, communication, information technologies, university systems

# Theoretical Framework for studying an impact of VLE on communications in a learning process

## **Concept of VLE: general overview**

The use of new information technologies in the last decade has led to serious qualitative changes in the system of higher education of the world's leading countries. First, the problem of access to quality education has been solved in principle. Regardless of location, host country and time zone, potential students have the opportunity to study in almost any leading educational institution through remote (online) technologies. Second, the main information Resources (lectures, seminars, textbooks, scientific publications) on a mass scale are translated (or already translated) into digital form and are available to remote users on their request. Third, governmental and public organizations, private individuals and corporations have connected to the creation of educational content in electronic form, which has increased the information field many times. Fourthly, Web 2.0 technologies and virtual spaces are becoming more user friendly and do not require special programming knowledge. Finally, the creation of simple and relatively inexpensive peripherals, such as netbooks, iPhone, Kindle, IPOD, Blackberry and the ubiquitous availability of wireless Internet have paved the way for new opportunities for the mass consumer. In particular, in the USA in 2007 at least one distance course was studied by about 4 million students, and the number of new users increases in avalanche. (Allen S., Seaman J. 2008)

Mass introduction of new technologies is accompanied by Serious restructuring in the content and structure of the higher Education. Originally on the crest of a new wave in the many universities, mainly in the Europe and United States, etc. have surfaced. These private universities are oriented towards working professionals for whom the convenience of online learning and a friendly, non-bureaucratic style of communication is more important than the academic reputation of the institution. At present, new technologies are being introduced in the bulk of public and private universities, which allows us to speak about the onset of a new stage in the technological revolution in education. The key in this process is the creation in the university of a virtual learning environment. In this thesis, we will examine how the virtual learning environment of the British University of Warwick and St. Petersburg State University

**Virtual learning environment** is a set of technological and software tools that ensure the conduct of the learning process, regardless of the location of the participants in the process. In turn, it is part of a broader educational management system that includes electronic databases of students and employees, subsystems for registration and financial accounting, educational control, electronic educational resources, library, quality control system, communication resources and much more. (Rovai A., Ponton M 2009)

What is a virtual learning environment - VLE? This concept is extensive, it follows from the concept of "information and educational environment" - the general information space in which the educational process is carried out (in school, university, in the region). Virtual learning environment - the information space of interaction between participants in the learning process, generated by information and communication technologies. Virtual learning environment - a complex of computer facilities and technologies, allowing to manage the content of the educational environment and communication of participants.

Virtual educational environment is a rapidly developing, multilevel and multifunctional system that unites:

- 1) pedagogical, didactic and methodological technologies, specific for the interaction of participants in the educational process;
- 2) information resources: databases and knowledge, libraries, electronic training materials, etc .;
- 3) modern software: software shells, means of electronic communication.

The functions of the VLE: information and training (host usually provide the necessary educational information); Communication (training takes place in a dialogue with the participants in the learning process) and control and administrative (comprehensive measures are being taken to control the level of the zoon and administer).

Virtual education is a process and result of interaction between subjects and educational objects, accompanied by the creation of a virtual educational space, the specifics of which are determined precisely by these objects and subjects. The existence of a virtual educational space outside the communication of teachers, students and educational facilities is impossible. In other words, the virtual educational environment is created only by those objects and subjects that participate in the educational process, rather than classrooms, teaching aids or technical means.

It is important to emphasize that training in the new information space is not antagonistic in relation to existing forms of education and does not deny the existing educational trends. The new naturally integrates into these systems, complementing and developing them, and contributes to the creation of a mobile educational environment.

Let's consider further how the elements of the virtual learning environment are used in the work of distance education.

Let's enumerate the basic capabilities of Distance Learning Systems, which form their basic functional:

- Creation and loading of educational and auxiliary materials. It is necessary to include tools for editing and uploading educational materials, plans, notes, additional instructions, etc. to the educational site. In many Modern DLS, this function is implemented using the Web interface.
- Creating and implementing online tests. Online tests are an effective way of operational control and self-control of knowledge. The storage subsystem can instantly assess the quality of mastering the new material.
- Issue and verification of tasks. Placement and review of tasks on-line greatly simplifies this time-consuming procedure.
- Operational control of progress.
- Forums, chats, videoconferences and other types of networked collective interactivity.

## **Basic elements**

**Students' web-portal** - the main communication channel, connecting the university with students. The University has a Sal-center, where applicants can get answers to all questions by phone. Through the web portal, students become acquainted with information about the programs, specialties and specializations of the college, and also sign up for the courses they are interested in. In addition, the web portal performs an exceptionally important role in mastering students' key academic skills, which we will discuss in detail later. The next element of the

virtual learning environment is **the management system of the training** course (distance learning environment). In the UK, the most popular commercial products are Blackboard, ANGEL, WebCT, D2L, and also based on open source Moodle and Sakai. Since this environment is designed to use Web 2.0 objects, students must systematically have a stable and reliable connection to the Internet. Immediately after enrollment, the student receives a login and password and independently passes the orientation in the Blackboard. In case of problems, he should either look for answers on the student web portal and in the user's manual of the blackboard or contact the technical support service of the college. **Training materials** are ordinary "hard" textbooks published by major university and scientific publishing houses and purchased in the college electronic store. The use of standard teaching materials has significant advantages in comparison with the development of the university own materials. First, publishing houses are difficult to compete. Secondly, for most standard courses there is always a large selection of textbooks. Thirdly, publishers publish not only textbooks, but also ready-made teaching and methodical complexes. They form large professional groups that work in all major areas of science and education, regularly publish and reprint standard texts.

Textbooks are supplemented with methodological materials (tests, explanations, cases, tasks, games, simulators, software), as well as exemplary curricula and programs, lists of additional literature and thematic Web sites, lecture plans, Power-Point slides of presentations for lectures, Often with comments in sound files. At a circulation of the textbook not less than 25 copies. Teachers have the opportunity to order special editions for their courses, including the necessary materials. In most cases, instead of a "hard copy" students can purchase an electronic version of the textbook. In recent years, publishers have begun to see a tendency to shift from the production of textbooks to the creation of electronic educational and methodical complexes. In addition to the textbook, students are encouraged to purchase temporary access to a special website where they can complete

Automated tests and other types of tasks for independent work, as well as view video cases, slide compilations with comments to lectures. All this content (video, audio, texts) they can also get on their mobile devices.

In the conditions of mass use of electronic educational and methodical complexes, the traditional work of a teacher in the development of his own methodological materials is largely meaningless, since it is impossible and there is no reason to compete with what has already been

done on a high professional level of work of the publishing house. Online pedagogy offers distance learning teachers to focus on creating creative assignments that cannot be automated and in which students are required to show knowledge and skills of a higher order than, for example, when working with tests.

**The electronic library** is one of the main elements of Virtual learning environment - is formed both from sources of open access, and subscription full-text databases. In the electronic library ESC students and teachers have access to 60 thousand names of magazines and newspapers; If it does not contain any full-text source, it can almost always be found within the entire SUNY system. Students receive resources online on their home computers. The library organizes the work of a special "virtual methodologist" to help students in real time. In addition to the electronic library, students can study on a student card at any university library of the SUNY system at their place of residence. Students of master's programs and teachers have the opportunity to order online a "hard copy" of the necessary books or articles. If there is no necessary book, it is purchased through the Amazon online store and sent by mail.

Another function performed by the electronic library is the development of necessary academic skills for students, including information search and evaluation, work with primary sources, compilation of annotated bibliographies, implementation of research projects, etc. For this, the library's website hosts the necessary resources, examples, and exercises for independent work. One of the basic skills that a college seeks to immediately teach a student is honesty. To identify plagiarism, online systems are used to verify the authenticity of student work.

**Networking tools for recording, editing and reviewing** lectures are rapidly entering the practice of UK and Russian universities and, probably, in the near future will turn into an indispensable condition for conducting both remote and "ordinary"

Educational programs. Unlike DVDs with pre-recorded and unchanged lectures, new software allows you to record the current lecture in real time, combine video with PowerPoint slides, explanations of the lecturer, additional materials and make

These data are available on the server of the university online. Students can quickly "flip through" the lecture and then return to the most difficult questions, download and view fragments of the lecture on the iPhone, listen to the audio recording of the lecture in mp3 format in the car or on iPOD, ask questions via e-mail. In the subsequent lecture edited by a teacher or an assistant, supplemented by answers to questions asked after the lecture. At present, online



lecture recording facilities are being introduced faster in traditional "on-site" training courses. This is technically easier if you purchase the necessary software and complete the lecture audience with special equipment. In the event that the training course is offered by the university only in a remote format, it is more difficult to organize lecturing. Nevertheless, distance courses actively use resources created as

Universities themselves, and placed in open sources - such as YouTube and iTunesU. It can be assumed that in the foreseeable future, basic lectures on most standard disciplines will be available to users of distance courses (although they are unlikely to be able to ask questions to the lecturer). Initially, universities were skeptical about network lecture resources, but this situation began to change by the time the article was written.

Networked lecture resources are closely adjoined already widespread podcasts (podcasts) and webcasts (webcasts). In the first case, only audio recording of the lecture or seminar is made, in the second one - video recording, but without the possibility of editing and often low quality (for example, recording from a web camera). Initially, after the appearance of these services, many teachers and universities actively experimented with them. But since teachers are not, as a rule, either good speakers or experienced technical specialists, it is more effective to use professionally made podcasts and webcasts, which are currently available on many thematic websites.

**Synchronous communication facilities** (Wimba, Elluminate, WebEx, Flashmeeting, Acrobat, NetMeeting, Skopa, etc.) are now actively used in business to reduce the cost of meetings, as well as in the corporate training system. The skill of free usage of the means of synchronous communication is one of the necessary business competencies in many private firms and public organizations. Employees should be able to conduct electronic meetings, perform simple operations - such as sharing a screen to demonstrate software or work results; Conducting online presentations. For example, Warwick uses the web-tool for internal communication and training. In addition, Elluminate and Wimba are integrated into Blackboard and are used in training courses for seminars and presentations, especially in classes with MBA students. However, despite the progress, **asynchronous communications** are still the main form of interaction between teachers and students in remote online courses, including those, provided by Warwick and SPSU. These include e-mail, discussions, wiki, blogs, e-portfolio; With e-mail still playing the role of a basic tool. College students are working professionals, many of whom are in

different time zones and even countries. This circumstance is taken into account by the designers of training courses, focusing primarily on the use of asynchronous communications.

(Chukhlomin V., Jones O 2007)

At this point, I would like to make a couple of entrances. Advising Russian universities on the application of distance learning, I drew attention to their often-expressed desire to "jump" through the necessary stages. Meanwhile, there are several absolutely necessary prerequisites for the successful application of e-Learning in any organization:

1. all students, teachers, administrative and technical workers must confidently own a computer, use standard software and equipment close to them, have a reliable and permanent access to the Internet,
2. All designated categories of persons should be well acquainted with how to use corporate communication channels (email, electronic bulletin boards, corporate website), there should be a developed culture of information exchange in the organization, and specialists in maintaining information systems should work in the proper order.

Despite the obviousness of these considerations, in fact they are difficult to implement. I will give a simple example. The developed culture of using e-mail suggests that all communications between employees should be based on e-mail. If the employees have even agreed verbally about something - everything should be duplicated by e-mail with copies to all those who need to know about it. Correct copying of messages in the organization is a whole science, because, first, the message should reach everyone who needs it; Secondly, there should not be too much information "noise", since many employees receive hundreds of messages a day.

Further, working e-mail is a working area where its etiquette operates. For example, reading and sorting mail is required constantly (several times a day), answering the inquiries of superiors and colleagues is required immediately, the letters of students - no later than in 1-2 days. In paperless circulation, e-mail is equivalent to a written order for signature. In addition, the organization has the right to view employees' e-mail. If, for example, a complaint has been received from a student, a commission is created that looks at the correspondence. Finally, the organization should have an information security system. It is interesting that these preconditions are not only (and not so much) technological, but also to a greater extent - culturological. It is not enough to buy a computer and connect it to the Internet, we still need to work out the appropriate rules and behavior stereotypes.

It should be noted that in the educational process blogs, wiki, electronic portfolio is compulsorily created in the Blackboard environment. All communications between students and teachers (including testimonials, discussions, correspondence, video and audio recordings) in the college are supposed to be carried out only within the framework of the training course. It is forbidden, for example, to use to communicate with students personal email of a teacher or external resources such as Blogger, Skype, etc. The fact is that after the end of the course the latter is archived and remains available for college staff. If necessary (student complaint, suspicion of plagiarism), it should remain possible to view electronic archives and obtain complete and exhaustive information. The actions of employees in typical situations are strictly regulated and recorded in the catalog.

Of the above asynchronous communications, the least frequently used in business courses are blogs; Much more often discussions (for discussion of cases), wiki (for organization of group projects) and electronic portfolio. The latter appeared relatively recently and, perhaps, require a separate explanation.

In modern conditions, specialists are increasingly required to have samples of their work available electronically. The skill of compiling an electronic portfolio is one of the necessary competencies, for example, a specialist in marketing and advertising. Companies and organizations and even universities create databases of their employees in the form of electronic portfolios.

For example, the certification of teachers of some universities is done using this method. The teacher needs to collect samples of all his works for a certain period (articles, chapters from a textbook or a monograph, copies of presentations at conferences, examples of a conclusion on counterroll work of a student, etc.), a resume, a list of works, an essay with a presentation of scientific and teaching philosophy. Then there are added the results of a survey of students, feedback from students and teachers, the conclusion of the department, the commission of the faculty, the commission of the university, the dean. If necessary, external reviews. During the attestation period, access to this information is temporarily available for teachers of the faculty, various commissions, the dean, the pro-rector, the rector. The portfolio so formed can only be replenished, it grows and spreads and is stored forever. Change it is impossible.

Similarly, the work of other organizations is organized, so students in the college are initially taught to manage the portfolio. They put their resumes and samples of completed work,

confirming their authorship (or personal contribution). It is believed that this measure is also effective in combating plagiarism. It's one thing to present someone else's material in person and then destroy it, and quite another is to place it under your own name on a public resource for an indefinitely long time.

**Virtual worlds** have become widespread in recent years. Many universities, including Warwick and SPSU, bought their "islands" in Second Life. Currently, the concept of using virtual spaces in business education has not yet been sufficiently developed, but students and teachers can use college resources for independent work. Support systems play an extremely important role in distance education. In addition to those already mentioned

Those provided services in SPSU and Warwick are staffed by methodologists, financial aid specialists, first-semester support methodologists, mentor teachers, online tutors.

Students who are just starting on-line training are helped by methodologists in support in the first semester. These are specialists with a master's degree in pedagogy who answer questions over the phone and talk about college, distance education, necessary skills. After the first semester, each student is assigned a curator-teacher. The instructor's workload includes the obligation to assist students in the selection of training courses (usually 30-40 students per teacher).

Online tutors are hourly employees who are hired by a private firm in agreement with the college. Typically, these are senior students or school teachers who have the necessary knowledge and skills, as well as time, opportunity and the desire to work with students online for a small fee. If during the course of a course of study it turns out that the student does not have the necessary knowledge (skills), the teacher can assign him "additional work-up". In this case, the student can not continue training until he or she applies with the received task on the special web-site of the college, where online tutors will work with him (without additional payment from the student).

## Approaches to understanding communications in VLE

### **Reachability, emotions and communication**

#### **Distance Learning System**

##### Definition

Professor A.A. Andreev, analyzing various definitions, comes to the conclusion that "distance learning is a purposeful, organized process of interactive interaction between learners and students among themselves and with learning tools, invariant to their location in space and time, which is realized in a specific didactic system." In accordance with this, he also gives the

definition of "distance education" - a system in which the process of distance learning is realized and the individual attains and confirms the educational qualification.

Professor E.S. Polat defines: "Distance learning is an independent form of learning, in which the interaction of the teacher and students and students with each other is carried out at a distance and reflects all the components inherent in the learning process (goals, content, methods, organizational forms, teaching tools), Released by specific means of Internet technologies or other interactive technologies" In turn, distance education is an education realized through distance learning.

In universities

The University of Warwick and Saint-Petersburg State University has one of the largest university systems in countries, uniting higher education institutions, funded from the state budget of Russia and UK respectively. The initiative to create SUNY Learning Network - one of the first distance learning systems in the world, based on Internet technology emerged long time ago and nowadays we can see specific results of development.

Subsequently, Warwick was one of the first of the universities to switch from the Learning Network to the use of VLE's, a new type of distance education environment that allows the integration of synchronous communications and Web 2.0 technologies. Currently, the university is one of the recognized leaders in distance education in the United Kingdom and is currently among top 10 universities of the UK. It also conducts foreign programs in Western and Eastern Europe, the Middle East and several countries in Central and South America. In total, Warwick trains dozens of thousands of students inside and outside of the campus based in Coventry, UK.

### **VLE as a new medium for communication**

The scientist V.P. Tikhomirov believed that such a medium between actors of university life and new technologies is primarily a system of distance learning and full-time education and there is an inextricable link. With the help of distance technologies, the possibilities of full-time education are expanding, the availability of remote teachers, students and specialists is increasing. The goal of virtual education is the person's achievement in the real world, which can be combined with virtual and other possibilities. Economic literature interprets the virtual

educational environment as the informational content and communicative capabilities of local, corporation and global computer networks, and these technologies are used by participants in the educational process. Teachers and teachers need to constantly improve their professional activities, this is necessary in order to achieve optimal results in pedagogical work. Virtual educational environment is created for effective communication of all participants of the educational process. For the information society, the skills of owning information technologies are necessary and the educational environment in modern conditions must already satisfy the needs of the individual, society, and promote social adaptation in professional development. Domestic and foreign literature considers the virtual educational environment in the works of such scientists as F.F. Andreev, V.P. Tikhomirov, I.V. Kholodkova, A.V. Khutorskaya. Virtual educational environment is a new model of continuous professional development and here the benchmark is on the effectiveness of technology. Information, culture is formed and the formation is based on cultural learning. Scientist A.Yu. Uvarov virtual educational environment is an open educational architecture with the main goals, methods and organizational forms, where there is a woven communication, information and physical space. A.V. Khutorskoy considered that the educational environment is, first of all, the conditions for the development of the individual. V.A. Yasvin educational environment is a system of influences and conditions for the formation of the personality according to the basic pattern.

Learning in a virtual educational environment is an absolutely new education paradigm and it focuses on the functional effectiveness of technologies of information and communications and then forms a special learning culture. Note that within the virtual educational environment, an innovative resource has its advantages and disadvantages. The virtual educational environment is more verbal and non-verbal elements that are needed primarily to convey personal feelings and emotions and this is a sign of effective communication in a virtual educational environment. It should be noted that among the main parameters of the virtual educational environment, the most effective are the presence of feedback and the level of interactivity, linguistic diversity and means of expression, personal orientation. For the participants of the educational process, the availability of technology, its cost and the skills of using technologies are of great importance. An open educational environment arises from the interaction of virtual educational space and centers on the Internet, this environment allows you to revise the curriculum and allows you to assess your knowledge of the subject, because the landmark goes to different points of view. The technological aspect of considering the virtual educational environment is primarily the

information space and there is an active interaction of participants in the educational process, which is a complex of computer tools and technologies that allow to manage the content of the educational environment and communication of participants. For today the computer replaces traditional methods of training, but for this purpose perfect possession not only information but also pedagogical technologies is necessary. From our point of view, a virtual educational environment is a complex system that provides a link between the teacher, students and other members of the training organization. There are new open models of individual learning with the use of resources and opportunities for technology and information and communication. In the new format, education allows to mobilize a virtual educational environment and in today's realities it is a multifunctional system and it contains primarily innovative and traditional technologies and they are specific for the interaction of the participants in the educational process in the framework of, first of all, an open model of individual education. The main functions of the virtual educational environment are informational and educational. Information can be presented in a variety of forms, communicative ie, training with participants in the educational process, control and administrative, various kinds of comprehensive measures for assessing knowledge, skills and habits can be conducted. A virtual educational environment is one of the priority areas for the implementation of continuing education, and the main issue here is the role of the educator in the educational environment. In the new conditions of the educational environment for the teacher, it is important to adapt to such features as a new form of communication, there can be a virtual discussion and an additional means can be a reflection in communication, which certainly raises the level of thinking. A special moment is the individualization of education, where for each participant, for each participant, its own trajectory for innovative work is built, the possible structuring of the educational environment, which is flexible and open, the creation of a new concept and teaching methods. To date, modern technology is a springboard for major changes in continuing education. Summarizing the above, we note that a virtual educational environment is an environment that can implement educational communication at a distance. To date, a virtual learning environment allows you to create innovationist approach to professional development, is primarily the implementation of continuing education and is building a path of professional growth of the student and all of this leads to the educational resources available regardless of the location of the learner, and so on. D. It should be noted that modern education has been built on the use of a virtual learning



environment that is today the main means of communications between the teacher and the student.

### **Potential for VLE use in university science classrooms**

Roth et al. (1996) noted that science educators have often been 'unabatedly enthusiastic about the possibilities for learning with VLE while Linn (1998) suggested that the use of VLE technology is 'often viewed as a catalyst, panacea or solution to limitations in students' science understanding' (p. 265). Not surprisingly therefore, the advances in VLE software and hardware and the introduction of such technologies into universities have been warmly welcomed with a sense of anticipation by many science teachers and science education theorists. Reviews on the uses and potential of VLE in science classrooms are increasingly commonplace in the science education literature (see, for example, Berger et al., 1994; Plomp & Voogt, 1995; Linn, 1998). Typically, authors outline the potential value of the VLE in terms of specific tasks that the VLE, its associated interfacing and, where necessary, other associated apparatus (e.g. probes and sensors) can perform for students. Each of these applications has potential educational value and may be seen as compatible with the broad contemporary goals of science education which increasingly focus on providing students with opportunities to explore and understand workplace applications of science, to develop strategies of investigation, reflection and analysis, and to create and/or refine knowledge. The development of higher-order reasoning encapsulated in such goals, coupled with the goal of increasing students' conceptual understanding of the science they study, are central to reform directions in science education (Bybee & DeBoer, 1994). There is no doubt that VLE have the potential to be used for multiple, valuable purposes in science classrooms. Past use of VLE in university science classrooms and the effect of such use Despite such potential, much of the past research in relation to the learning outcomes resulting from university science students' use of VLE may be considered as generally ambivalent, providing little firm justification for implementing the innovation. For example, Plomp & Voogt (1995) noted that 'the anticipated effects of using new technologies often are not yet supported by empirical evidence' and that in secondary science education, 'the effect of VLE assisted instruction on pupil performance is relatively small' (p. 175). Such findings are also reflective of reviews of specific uses of VLE technology in science classrooms. For example, in a review of the effect of MBL on practical university science, Rogers and Wild (1996) asserted that it was

'easier to describe data-logging activities than to define their benefits to pupils' learning and understanding of science' and that most reports were 'mainly articulated through professional opinion and anecdotal evidence rather than through rigorous examination' (p. 131). In a meta-analysis of 50 published, peer-reviewed articles from the period 1988±95 Weller (1997), building on a previous review (Weller, 1996), noted that over one-third of the studies reported little or minimal advancement of science learning as a consequence of VLE use. Weller's reporting that two-thirds of the studies described positive outcomes may, on face value, be cause for celebration and provide further justification for increasing VLE use in science classrooms. However, Weller carefully elaborated that the majority of the studies in the meta-analysis were comparison studies in which one type of instructional delivery medium was pitted against another ± as he put it leaving unexamined confounding variables and not considering possible rival hypotheses' (p. 4). He also suggested that the studies forming the sample of his meta-analysis had not targeted how teachers and students used the technology for teaching and learning with their predominant focus being on a 'very small number of variables, often assessing dependent variables with one or more post-tests' (p. 5). Importantly, Weller also added that most of the studies 'did not aim to investigate comprehension in the products and processes of science' (p. 5).

The lack of such research into the use of VLE in university science classrooms, like much science education research, is symptomatic of the general lack of studies that focus sharply on teachers' and students' actions and discourse in science classrooms and university science laboratories as suggested respectively by Roth et al. (1997) and Hodson (1990, 1992). Until recently, there have been few fine-grained studies on the use of VLE in science classrooms that closely examined (a) what students and teachers do when they interact with the c VLE technology (b) the reasons behind their actions and=or (c) how teachers' and students' interactions with the technology affect students' learning. Yet, as was foreseen by Weller (1997), recent, longer-term investigations using predominantly qualitative data collection and fine-grained analysis have yielded rich information and provided insights into the ways teachers and students use and interact with VLE technology in the contexts of their classrooms, schools and societies. Constructivist and situated cognition perspectives of education have often informed such research. Research in science education increasingly views classrooms as complex learning sites where multiple variables interact. It is valuable to review the main findings from a selection of these studies and seek to integrate these findings with relevant science education theory to

develop guidelines for the purpose of advancing and enhancing the use of VLE in university science classrooms.

### **Recent research findings**

Roth et al. (1996) reported mixed findings in their study on how a VLE micro-world contributed to students' interactions and their learning of physics concepts as evidenced by changes in students' discourse. On the positive account, they concluded that the microworld could be used to facilitate the negotiation of meaning because the display provided an 'anchor for the conversational topic' (p. 1009). By representing common history for the students the micro-worlds provided students with opportunities to collaborate towards achieving a common goal, to clarify the meaning of ambiguous terms and to focus others' attention on specific aspects of the display. On the negative ledger, these authors found that the VLE divided the physical space, constraining the joint use of the interface, resulting in the exclusion of some group members from the interactions. Hence the level of shared understandings and educational opportunities between the group members was found to vary. Roth et al. (1996) concluded that, on balance, the disadvantages of the use of the technology, in this instance, outweighed the advantages for the teacher and some students in the study. In recent interpretive research, McRobbie & Thomas (2000), found that a teacher introducing MBL into her Year II chemistry classroom did so solely, in practice, to improve the quality of the data that was collected by students from their experiments. The teacher suggested initially that a prime reason for implementing VLE use in the classroom was to enhance students' thinking. However, in class she showed little interest in the development of either students' cognition or any conceptual understanding that may have resulted from the use of the technology, confirming such an interpretation of her actions during interviews. She cited her predominantly objectivist epistemology as a major justification for her teaching practice. Such a finding supports Bigum's (1998) contention that once a technology is put in place it is possible that little interest may be shown in using it for the purposes for which it was originally purchased. McRobbie & Thomas also noted that when the data obtained using the VLE was not of the anticipated quality, the teacher cast aside that data and used idealized data in her discussions with students in relation to the experiments. In this case study, the technology was introduced into the teacher's otherwise unchanged pedagogy and as Salomon & Almog (1998) have suggested, 'when some technology can be assimilated into existing educational

practices without challenging them, its chances of stimulating a worthwhile change are very small' (p. 224). Notably, the students in the study were content to accept such a limited use for the technology as such a use was generally congruent with their broader views and expectations for their education and their understanding of what should occur in their senior chemistry classroom. McRobbie & Thomas found that the students' learning was not advanced through using the computer technology. Their findings highlight the centrality of teacher and student epistemologies and beliefs about teaching and learning in determining the use of the technology. On a more positive note, in research that subscribed to a 'learning as conceptual change' perspective, Tao & Gunstone (1999) found that quality reasoning occurred using CAI, although the effect of the VLE use was uneven across the student participants. Discrepant events within a force and motion micro-world were used to stimulate cognitive conflicts for the students in an attempt to induce them to reflect on the conflicts and try to resolve them. A key aspect of Tao & Gunstone's research was their use of Predict-Observe-Explain (POE) tasks (White, 1988; White & Gunstone, 1992) to initiate the cognitive conflicts with students. Such tasks have been shown to be powerful aids in probing students' tacit and revised understandings of phenomena and for stimulating students to engage in conceptual change. Tao & Gunstone found that a VLE supported collaborative learning environment provided those students who were both (a) cognitively engaged with the learning tasks, and (b) willing to reflect on and reconstruct their conceptions in the light of new encounters mediated by the technology and their interaction with their peers, with 'experiences of co-construction of shared understanding' (p. 39). They also found that personal and social construction of knowledge interacted to facilitate conceptual change but that, while social construction was important, whether or not individual conceptual change occurred was strongly influenced by each individual's learning dispositions. Also, reporting findings in a positive vein, Bell (1998) found that 'with appropriately designed curriculum and software, students were able to construct conceptually-focused arguments about a topic under debate' (p. 1). His research, conducted on the Knowledge Integration Environment, focused on understanding how conceptual change in relation to specific science concepts could be induced via argumentation and debate. Such a perspective regarding the importance of argumentation is becoming increasingly widespread in the science education literature with theorists such as Kuhn (1991, 1993) highlighting the centrality of argument as a means of bringing about conceptual change and seeking to increase the prominence of such thinking in science classrooms. Students were asked to undertake inquiry with the aim of contrasting

theoretical positions concerning the propagation of light. This inquiry involved students' 'interpretation and critique of a set of networked multimedia evidence from both scientific and everyday sources' (p. 5) and their construction and refinement of an argument in support of one of the theories. Although not explicitly stated by Bell, such thinking would have involved students in theory=evidence coordination, another activity for students which is prominent in perspectives proposed for enhancing science education (see, for example, Kuhn et al., 1988; Leach, 1997). A key element of Bell's study included the use of the Sense Maker argument building tool that enabled students, either individually or in small groups, to organize evidence in support of particular statements linked to theories. In this way students' thinking was made visible for the mind for others in the form of the on-screen artefact. Making students' thinking visible is a key element in developing their metacognition, a key determinant of expertise and expert learning (Glaser & Chi, 1988; Gunstone, 1992).

In what might be considered watershed research, White & Frederiksen (1998) reported on the development, in collaboration with classroom teachers, of the Thinkers Tools curriculum and pedagogy. Their package incorporated a constructivist, metacognitive focus and a general model of the scientific inquiry and learning process with computer models and simulations. The Thinkers Tools software embodies 'increasingly sophisticated models for how forces affect motion' (White, 1998, p. 307). Explicit in this research was recognition of the need for students to investigate and learn about the nature of scientific models. Consequently, students were challenged to create conceptually complex scientific models through the generation of new simulation situations and experimental plans aimed at enabling them to test the rigor of their existing models and to construct new models that accommodated their emerging understandings of force and motion phenomena. An inquiry spiral that might be considered as a scaffolder series of POE tasks was used in this research. Responsibility for initiating and managing the inquiry was increasingly turned over to students. Through this pedagogy, students were informed of how scientific inquiry proceeds via experimentation through the successive refinement of models. The metacognitive element of the curriculum took the form of a Reflective-Assessment Process in which students monitored their progress against criteria characterizing good scientific research. White and Frederiksen reported that such integrated use of VLE enabled students to develop conceptual models for force and motion that they were able to transfer to new, real-world situations to enable them to understand those situations. Such an approach helped a wide range of students to learn and was particularly successful in assisting low-achieving students.

White and Frederiksen noted that skilled teachers, possessing a solid conceptual framework for characterizing good inquiry teaching and able to manage classroom conversations, were essential elements of the learning environment. They also noted that some students voiced disapproval of the curriculum on the grounds that there was too much self-assessment and too much repetition.

### **The way forward: propositions and challenges**

This more recent research into VLE use in science classrooms, like other science education research in general, illustrates that not all science instruction is effective, including that utilizing computers. These studies are complex, multi-faceted and not concerned with examining a small number of variables. Rather, they provide insights into the complexity of learning in classrooms where VLE were being used. Before the use of any ICT technology in science classrooms can influence science learning to the extent that it is mooted by pro-information technology advocates, numerous issues relating to the quality of science teaching and learning that are often found in the science education literature need to be addressed. In particular, a reevaluation of the teaching=learning orientations of classrooms' participants are required. Such a call is not new in science education. Assuming that such a challenge can be addressed solely by the introduction of information technology into science classrooms, where past reform agendas have had patchy success, is clearly inappropriate. Simply providing VLE for teachers and students to use in high school science classrooms is insufficient itself to bring about improved science learning. Several themes emerge from the review of such research and these themes can be shaped into guidelines for advancing and enhancing VLE use in high school science classrooms.

Seek a strong theoretical orientation to inform teaching practice in the use of the VLE technology Bell (1998) notes that 'it is still far too common for technological and curricular innovations to be brought into schools without it being a research-minded or research informed endeavor' (p. 3). Technology can provide the means for enhancing students' learning but a sound theoretical basis for teacher and student action is necessary if technology is to be put to such productive use (Salomon & Almog, 1998). On the basis, of this review such a position seems well justified. The recent studies reviewed in this paper typically studied the learning and actions

in those classrooms though constructivist and/or conceptual change lenses and looked for learning being socially constructed between individuals through interaction via language. The value of constructivist orientations in the use of VLE and Virtual systems in general in education has previously been noted by several authors (see for example, Brown, 1992; Salomon & Almog, 1998) with Salomon & Almog suggesting 'a major justification for the employment of VLE is the acceptance of constructivist conceptions and the growing understanding of learning as a social process' (p. 222). Yet as is suggested by McRobbie & Thomas (2000) and other authors (see, for example, Tobin & Gallagher, 1987; McRobbie & Tobin, 1995, 1997; Roth et al., 1997), not all classroom

teachers adopt a constructivist approach to their teaching. From a social constructivist perspective, learning is viewed as a process involving personal mental construction of knowledge on the basis of the individual subscribing to their conceptual structures because they are viable for them, not because they are absolute. Further, such knowledge construction is a social and cultural process mediated by language (Milne & Taylor, 1995) where social interaction is crucial to the learning outcomes. Even Tao & Gunstone (1999), while adopting a conceptual change perspective that has a strong tradition in science education (see, for example, Gunstone, 1994; Hewson et al., 1998), highlighted the importance of students' 'engagements of high equality and mutuality' (p. 53) in their research. It is reasonable to suggest that adopting and promoting pedagogy reflecting either constructivist or conceptual change perspectives can be valuable in using VLE to advance students' learning.

Acknowledge and respond to the importance of using and constructing models in science models and model-based reasoning has been found to be important in the development of science concepts (see, for example, Raghavan & Glaser, 1995; Driver et al., 1996; Gilbert et al., 1998). In the research of White & Frederiksen (1998) a key element of successful student learning was the focus on model creation, review and modification in the light of new evidence. Associated with such use and understanding of models is the development of students' understanding of the processes of science, which Weller (1997) highlighted as lacking in the research he reviewed. Also, related to students' engagement with models is the quality of the VLE software that students are to use. The deficiencies or strengths of the models embedded in software are seldom elaborated or reviewed in science classes, texts or manuals. It would seem valuable for teachers to select software that facilitates students' development and use of model-based reasoning.

Ideally, such software would reflect understandings emanating from the research literature in relation to students' alternative conceptions of phenomena and the often-tacit models that students possess as a result of such alternative conceptions. An example of such software is that developed by Garnett et al. (1998). Their software, reflecting the difficulties students have in understanding chemistry at macroscopic, molecular and symbolic levels (Gabel, 1998), aims to assist students to better understand the particulate nature of chemical reactions. Increase the focus on metacognition in science instruction involving VLE use Metacognition is deliberate, reflective thinking involving the individual planning, monitoring, and evaluating his=her cognitive processes (Brown, 1978; Paris & Winograd, 1990; Bellanca & Fogarty, 1993). People who perform well on complex tasks and who consciously apply their cognitive strategies, are those who possess well-developed metacognitive abilities while unskilled people often fail to use metacognitive strategies (Paris, 1988). The development and enhancement of metacognition has been a long-standing goal of science instruction. The integration, as described in the research of Bell (1998) and White & Frederiksen (1998), of practices aimed at encouraging students' metacognition into the instructional sequences related to students' VLE use was a key element in the success of instruction. Therefore, to maximize the learning that occurs through the use of VLE, practices aimed at enhancing metacognition should be embedded in classroom activities involving VLE.

Thomas (1999) has shown that metacognition can be learned through social interaction. This finding, coupled with the suggestion that 'adequate metacognition empowers the learner to undertake the constructivist processes of recognition, evaluation, and revision of personal views' (Baird et al., 1991, p. 164), highlights the value of adopting a social constructivist perspective and also seeking to foster students' metacognitive development as a means to improving students' learning through VLE use. As White & Frederiksen (1998) suggest, we should look at bringing 'metacognition into the social processes of the classroom' (p. 79). Recognize that VLE implementation and use will be affected by science teachers' and students' beliefs and epistemologies, and develop a focus on teacher and student change issues in relation to technology.

Technology has the potential to enhance changes in instruction in schools (Berger et al., 1994). However, it is first necessary to couch the introduction of VLE technology in



high school science classrooms in terms of changes in instruction, rather than suggesting that science teachers will necessarily change their method of instruction in response to the introduction of VLE. Changes to pedagogy are necessary and changing teachers' pedagogy remains a great challenge in all sectors of education, including science education. Each individual teacher's pedagogy is determined by their referents that are influenced by their beliefs, their goals and the context they teach in (McRobbie & Tobin, 1995; McDonald & Ingvarson, 1995). Van den Akker et al. (1992) suggested that successful integration of VLE into schools would require teachers to deepen their understanding of the potential for VLE use in classrooms, to learn new instructional strategies, and to revise their beliefs regarding how students learn. The necessity for such teacher change is clearly demonstrated in the research of McRobbie & Thomas (2000). Therefore, the questions that have dogged science educators for decades in regard to science teacher change and curriculum change should be prominent in debates about the introduction and use of VLE technology.

The question of how best to bring about meaningful teacher change involving VLE use is perplexing. While authors such as Salomon & Almog (1998) suggest that 'top down rationales do not translate unequivocally into particular pedagogical implications and designs' (p. 223) others, such as Fullan (1992), highlight the value of engaging with the change first and then learning through the process, suggesting that 'in many cases, changes in behavior precede rather than follow changes in beliefs' (p. 25). How to initiate and implement meaningful VLE use in science classrooms, and by whom, requires further consideration and detailed research.

Irrespective of the answers to the aforementioned questions, any form of implementation might still provide the stimulus and opportunity for science teachers to scrutinize their beliefs and pedagogies as they grapple with how best to use the technology. The extent to which this will occur will, in many instances, depend on the extent to which school and social climates encourage and support teachers in their attempts to experiment and be reflective. Therefore, teachers' professional development, already a vexing issue in education, should be prominent in discussions on the effective use of VLE in high school science classrooms. One way the research community can assist teachers is to continue to seek to develop university and school partnerships that are long-term and involve longitudinal studies using action research. As previously noted (Collins, 1992; Bell, 1998), it is most profitable to view teachers as co

investigators rather than as passive players in university and school research ventures. Blueprints for such collaboration can be found in reports on the Project to Enhance Effective Learning (PEEL) (Baird & Mitchell, 1987; Baird & Northfield, 1992) and the Cognitive Acceleration through Science Education (CASE) project (Adey & Shayer, 1994). Both projects resulted in improved student learning and in both projects researchers worked closely with classroom teachers and built discourse with and between them about what constituted effective learning and how such learning might be achieved. While both PEEL and CASE highlighted the need for face-to face interaction between participants as key to their success, Linn & Hsi (2000) have advocated the development of online communities to enable the sharing of information about information technologies and their applications. Whatever means are chosen to initiate, maintain and enhance communication between researchers and teachers regarding the effective use of VLE in science education, there is an overwhelming need to document, critique and report on the outcomes of such communicative enterprises so that 'model' professional development programs can be developed via successive improvements on past attempts.

A further issue that is given scant attention in the literature is the effect of change on students. Research from PEEL (Baird & Mitchell, 1987; Baird & Northfield, 1992) found that students possessed entrenched, confined and conservative conceptions of, and attitudes to, what constituted good learning and that such conceptions and attitudes consequently informed their notions of what counted as good teaching. This finding is congruent with those of other research (see, for example, Baird, 1986; Berry & Sahlberg, 1996). Students' conceptions of teaching and learning are key determinants of students' actions and processes in classrooms. It follows that such conceptions will affect students' use of VLE technology. Research into attempts to change students' beliefs about teaching and learning found this could be a difficult task (Hand et al., 1997; Atkin, 1998; Thomas, 1999). This to some extent may explain the complaints from students noted by White & Frederiksen (1998). While it is essential to consider teachers as integral players in the future use of VLE, it is also necessary to account for and respect students learning and epistemological orientations when embarking on technological innovation. Salomon & Almog (1998) have noted that 'ever-newer technological affordances pull instruction in new and promising directions' (p. 222) but many of these lack purpose or rationale. What this recent research shows us is that the science teachers and researchers who succeeded in bringing about quality student learning using VLE have clear rationales for the use of that technology and

are able to operationalize those rationales for their students. The teacher and students are important aspects of the innovation context. While such a position may seem obvious, as was previously noted, little research had focused on the actions or beliefs of teachers and students in much of the early research into the use of VLE in science classrooms. The evidence emerging suggests that the potential for VLE use in science education is not overstated but that like any other curriculum innovation the implementation of change requires careful thought. In 1988 Linn suggested that 'technological advances can improve science education, and science educators have the opportunity to respond to current shortcomings of science instruction by harnessing technology'. Similar assessments were made in relation to TV and video and the impact that these innovations would have on revolutionizing teaching and learning yet the impact of such technologies on students' school learning has been described by some as unimpressive (Hecht, 1995; Kent & McNergney, 1999). Bigum (1998) has also suggested that 'blind faith in technological progress has not served schools well' (p. 22) with such blind faith limiting 'the ways teachers have for thinking about the complex issues' associated with new technologies. If VLE are to serve as valuable tools for advancing and enhancing high school students' science learning then a broader view of their potential use in terms of what has already been proposed as necessary for improving science education is required. The guidelines presented in this paper reflect such proposals. There are no easy answers involving VLE to the current problems besieging science education. The challenge is to make best use of the affordances provided by the technology while being mindful of, and minimizing the effect of, any possible associated disadvantages.

## Communicative practices and communication barriers between students and instructors in VLE

### **Research program**

Due to globalization, we face many problems together, creating political, military and trade unions. We are uniting for a greater good. So why not to do it in Education? One of the biggest

efforts so far is Bologna process. But it is not a union and it does not create a space for a proper exchange of academics/students or information, moreover in some countries it has created quite a lot of problems with adaptation to new system, for instance, in Russia due to the bureaucracy issues. One could mention Erasmus program but it is criticized for being not that useful in relation on how much money the program takes for itself, and it also does not provide any educational resources or systems. So, we need to create such a system and the internet would be the perfect place. Considering that according to contemporary studies information that we received in previous years from the beginning of known history will be doubled every single year and after that even quicker – we need to systematize what we have, make it easier to create, preserve and exchange information and knowledge. Solution of how to create a proper connection between students/staff/academics is needed to be found, because with proper tools for communication it will be more effective to do educational/academic routine. With a help of modern technologies, it is easier to do, but systems are not perfect and differ from each other among universities from different countries, different cities and sometimes even within one university.

Problem: It is not clear whether VLE has a positive impact on education or negative. It is also not clear how does the communication happen and at what level it affects the whole learning process at university level, whether it is effective or not. How well does the Russian students adapted to the current VLEs and does it need further development or it's on a peak?

**Research question:** How do the Virtual Learning Environments affect communication between students and instructors in Saint-Petersburg State University and the University of Warwick?

To create a ground for a comparison **case study** method was used. Case study is a particular instance of something used or analyzed in order to illustrate a thesis or principle. In our case, those are University of Warwick (UK) and Saint-Petersburg State University (Russia) cases.

#### *Saint-Petersburg State University*

The beginning of the University dates back to 1724 and almost three centuries thereafter, it successfully combines traditions and innovations, research and learning, experience and youth. Today Saint-Petersburg University is one of the leading international centers of science,

education and culture. The discoveries and achievements of the University professors and graduates have become part of the history of both international and Russian science and technology. As it is a state university and one of the most prestigious and big ones, it gets sponsorship from a government as well as from different Maecenas for different purposes, including scientific research and enhancing technological abilities.

### *The University of Warwick*

The University of Warwick is a campus university with a truly cosmopolitan student community. It is one of the newest universities in the UK, which was built in 1965 and also, it is a very technologically advanced university. It gets sponsorship for scientific research and other things from many different organizations. The latest Research Excellence Framework (REF) ranked the University of Warwick 7th in the UK for research, having 19 departments in the top ten in the UK in their unit of assessment based on outputs. The REF also ranked 87% of Warwick's research as 'world-leading' or 'internationally excellent'. Warwick's reputation for research attracts teachers who are among the very best in their fields. They're the teachers who are innovating, who are setting the agenda for others to follow.

**Object of the research:** Students, academics and staff of 2 universities, their involvement in VLE and VIS

**Subject of the research:** Communication in a learning process inside the VLE and VIS

- Tasks:**
1. To learn about the extent of VLE use within the groups of students and professors, to see communication practices in both Universities.
  2. To examine the scope and purposes of VLE usage within groups (e.g., time spent on the system, where and when VLE is being used, styles and modalities of usage) and to identify factors (e.g., gender, age, Internet accessibility from home, computer experience) that might affect this use.
  3. To examine if there are differences in communication practices at SPSU and Warwick.
  4. To reveal and describe barriers of communication in VLE at SPSU and Warwick University.
  5. To identify gender and age differences.

The results of the study will be discussed in the last section of the paper addressing the above-presented focal themes, namely, equity, gender, and integration models of learning processes taking place within and outside the environment.

**Methods of the research:** Mixed; qualitative and quantitative methods. Online survey and Semi-Structured Interview.

1. Online survey will be used to gather basic information on how students see the system. Whether they use it or not, what should be added, changed and etc. This method is necessary because students are supposed to be the majority of users of these systems. For the analysis of the data the SPSS software will be used as it is most popular one for this purpose and convenient to use

2. Semi-structured In-depth interview will be used with academics and staff which is responsible for maintaining these systems. For this data, qualitative analysis will be used

Contrasting qualitative and quantitative research

<i>Section</i>	<i>Criterion</i>	<i>Qualitative</i>	<i>Quantitative</i>
1	Approaches to explanation	Explain individual cases; "causes-of-effects" approach	Estimate average effect of independent variables; "effects-of-causes" approach
2	Conceptions of causation	Necessary and sufficient causes; mathematical logic	Correlational causes; probability/statistical theory
3	Multivariate explanations	INUS causation; occasional individual effects	Additive causation; occasional interaction terms
4	Equifinality	Core concept; few causal paths	Absent concept; implicitly large number of causal paths
5	Scope and generalization	Adopt a narrow scope to avoid causal heterogeneity	Adopt a broad scope to maximize statistical leverage and generalization
6	Case selection practices	Oriented toward positive cases on dependent variable; no (0,0,0) cases	Random selection (ideally) on independent variables; all cases analyzed
7	Weighting observations	Theory evaluation sensitive to individual observations; one misfit can have an important impact	All observations are a priori equally important; overall pattern of fit is crucial
8	Substantively important cases	Substantively important cases must be explained	Substantively important cases not given special attention
9	Lack of fit	Nonconforming cases are examined closely and explained	Nonsystematic causal factors are treated as error
10	Concepts and measurement	Concepts center of attention; error leads to concept revision	Measurement and indicators center of attention; error is modeled and/or new indicators identified

(James Mahoney and Gary Goertz 2006)

**Methods of analysis:** After the Data collection, analysis of a statistic information and documents related to these systems will be used. For these purposes, qualitative analysis and the software SPSS will be used.

**Sample and sampling technique:** Approximately 50 students from SPSU and 50 from WU for online survey will be chosen randomly. 10 academics and staff for semi-structured in-depth interview will be chosen on how familiar they are to the system. There should be 3 groups approx. 3 people in each. The first one – people that never heard of this system or know a bit, the

second one – people that are familiar to the system and use it regularly and the third one – staff which is responsible for running and maintaining the system.

**Place and time:** Russia and UK. Basically, universities where it is possible to get access to the systems or responsible people. In Russia, it is Saint-Petersburg State University, in the UK it's Warwick university (have access to services as an alumni and because acquaintances and possibilities to make an interview with them). Russian systems expected to be simple and exposed therefore not to take more than couple months. UK's ones expected to take up to several months because of complexity and low accessibility of some features and communities of the system (for instance, Journals site due to the paid subscription needed and etc.)

**Theoretical framework:** There are a great number of theories which are applicable for this research. Firstly, communication theories as the connections between academics, students, staff and communication between them is one of the main interests of this research. How do they talk, behave and study inside and outside of the system, how different it is, how well it works from both sides? For instance, "Uses and gratification" theory by Elihu Katz will help to analyze how system tries to adapt to the needs of users. Skinner's Behaviorism theory, where person's prior experience was irrelevant and that a capable instructor can break down any concept, repeat it and any person can learn it, regardless of the knowledge they had before. This may help to analyze the process of communication in general.

**Operationalization of terms:**

VIS. Virtual Information System. It is the broadest term which is related to any system used in a computer. Usually, related to on-line services

ICT. Information Communication Technology. Those technologies are helping to improve communication between actors. They are mostly on-line services.

VLE. Virtual Learning Environment. These are the technologies which exist to create a special place for education purposes at different levels. They only exist on-line (some features possibly can work off-line)

Sakai and BlackBoard systems sometimes called systems for electronic education, the software which is transferring specific educational information between the clients and servers. With a help of the Internet, the information can be shared in a matter of seconds and can improve the network of communication of actor of university life. Management of this multi-level

Hierarchical management system using special software platforms, which in English-language publications are called virtual learning environment (VLE) or Learning Management System (LMS). In publications in Russian, such platforms are usually called distance learning systems (DLS).

## **Case Study approach**

### **General characteristic of case-study method**

Case-study method or method of concrete situations - is a kind of scientific research, the object of which is one or more cases. The objectives of the study are focused on their detailed description, study and interpretation for the purpose of understanding and analyzing the processes taking place in society.

The immediate goal of the case-study method is to analyze the situation - a case that arises in the concrete state of affairs and develop a practical solution; The end of the process is the evaluation of the proposed algorithms and the choice of the best in the context of the problem posed.

The ideas of the case-study method are as follows:

1. The method is intended for obtaining knowledge on disciplines, the truth in which is pluralistic, i.e. There is no unambiguous answer to the question posed, but there are several answers that can compete in terms of the truth; The task of teaching at the same time immediately deviates from the classical scheme and is focused on obtaining not only, but many truths and orientation in their problem field.
2. The technology of the method is as follows: according to certain rules, a model of a concrete situation that has occurred in real life is developed, and that complex knowledge is gained.

Case study can not provide reliable information about the whole class. Nevertheless, it is often useful in the preliminary stages of the study, as this leads to the promotion of certain hypotheses that can be systematically tested for a larger number of cases. Case studies are regularly used in sociological research - sometimes as a preliminary, but more often as a basic research method. In



the latter case, the reason for resorting to this method is usually called a lack of research resources or difficulties in gaining access to the subject of research. Within many case studies, in fact, more than one particular case is being investigated, in order to obtain some idea of the degree of variability of the population under study. Subsequently, these cases are subjected to selection in order to present examples that are considered to be opposites based on theory or prior knowledge. Case studies can provide very detailed data that are difficult to obtain through broader surveys; However, this is achieved at the cost of the impossibility of their full generalization. Case studies are carried out on a single object - a case, which is a certain community, a particular social phenomenon, an activity class or an activity area. Case study relies on the allocation of private units for analysis - personal biographies, individual enterprises, populated areas, types of consumption or labor activity. Organizations or other cases selected for analysis can be compared among themselves, make up classifications. The report on different types of case studies contains descriptions and recommendations, the basis of which is not the calculation of the level of confidence in the data, but the representation of the spectrum of events, types of social practice, and ways of social interaction. Given the specific nature of these field practices and the characteristics of the presentation of the results in a report, article or book, there is a certain system for increasing the reliability of data, which consists in the use of repeated and parallel verification of the reliability of field materials, as well as such methods of collecting and analyzing field materials, Researchers of different sexes, race, age, to avoid unilateral interpretations caused by possible prejudices of the participants in the study.

Various types of case studies are presented in the literature. For example, L. Stenhaus singles out an evaluation (aimed at evaluating effectiveness), an educational and ethnographic case-study. R. Yin offers his classification, in which he names such types as analytical (explanatory) and descriptive case-stage. The descriptive strategy is to find answers to the question "how", and the task is to describe in detail a social phenomenon or institution. In turn, an explanatory strategy is called upon to find an answer to the question "why" and to search for the causes and factors that influence the situation. In this case, the case-study not only allows us to clarify the facts and order a lot of details, but contributes to the formulation of the theory.

Today, the case study methodology is a toolkit developed and widely used in the social sciences. In the domestic science it is used relatively recently, but has already become a source of new ideas and interesting discoveries. A promising direction in the development of this field strategy

was the study of organizations. The experience of using similar methods in the study of industrial enterprises and peasant farmstead is fairly well known.

### **Type of case study: Embedded case study**

When the case is typical, respectively, can provide information on the modal situation in this or that sphere of public life

The corresponding types of case studies are based on the concept of repeatability, consisting in the selection of cases demonstrating either similar results of the study (constant repeatability) or differing results associated with the expected causes (theoretical repeatability). Such repeatability of results, as in experimental studies, makes the conclusions of this study more reliable.

Since analytical generalization is provided in this case, it is necessary to use purposeful sampling when selecting cases. Potentially, the case chosen for this study demonstrates a constant repeatability, and demonstrates theoretical repeatability. This will allow to consider the phenomenon in various contexts and comprehensively describe it. In determining the number of cases of this type to be studied, the minimum sample approach should be used.

The choice between a multi-holistic and multi-component case-stage is determined by the type of the phenomenon being studied and the features of the research questions. In this study, a multi-holistic case-study was chosen that is most acceptable at the individual level and in fact is in many respects similar to the "well-founded theory" strategy.

### **Reason of choice**

For this research, case study of two universities were conducted: The University of Warwick and Saint-Petersburg State University

#### *Saint-Petersburg State University*

Is a classic research university, it is one of the oldest universities in a country and among the two federal universities of Russia (the other one is a Moscow State University). The university is

currently in a process of adaptation to new technologies which are already in use of universities abroad. One of the steps to informatization was to apply new IT services to the university to make some aspects of student's life easier. Starting with electronic schedule and personal page of a student with just information about passport, level of education and a name, we are moving forward, introducing Sakai and Blackboard, virtual learning environments and management systems to create a better learning and communication field. But currently, my hypothesis, based on a short-survey and personal findings is that those systems are not working in their full potential and some of the basic features, such as communication with students and professors, inquiries and some others are underused, and this might be due to many reasons which this study is also aiming to find.

### *The University of Warwick*

Is a modern research university and one of the youngest universities in the United Kingdom. Since the very beginning Warwick was using technologies to help improve communication, the VLE and VIS are part of the university and deeply interconnect in most of the spheres of the university life. It is very technologically advanced university. There are online groups, forums, platforms for managing possibly every aspect of the university life, such as: electronic journals and databases, learning materials, schedules for all events inside and outside of the campus, registration for such events, enrollment, on-line consultation related to the educational process and medical issues, finance sections (related to the tuition fees, accommodation, food and etc.) and many other things which are regulated and funded mostly by university staff including student's union personal.

## Virtual Learning Environments

### BlackBoard

According to the information, gathered from the official website of the SPSU university, Blackboard with the help of modern information technologies provides remote interaction of teachers and students, allows teachers to organize students' independent work, and students - to quickly and efficiently get knowledge and check whether they are well and correctly learned. All Blackboard users have access to it from anywhere in the world via the Internet without installing additional programs on their computers. The Blackboard system does not replace the traditional educational process, but significantly enriches it with additional features.

The choice of the Blackboard system for St. Petersburg State University is determined by the quantity and quality of the means for organizing the work of teachers and students, the correspondence of the educational process used by the technology system to SPbSU, the availability of technical and consulting support for the software manufacturer, including relevant pedagogical technologies, interacting with each other.

The main functions of BlackBoard are as follows:

Features	Effects
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#### For students:

Social learning	To grow an interest in the subjects under study due to the possibility of discussing teaching materials with trainees and teachers as their course or institution, and with interested users from all over the world
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Work together	
Learning materials	Increases the level of mastering the material by providing quality teaching materials in various formats
Other data	
Individual learning trajectories	The level of mastering of the material increases due to the adaptation of the course to the individual characteristics of the trainee

**For instructors:**

Learning materials	The efficiency of training courses is increased through the use of materials previously developed or acquired by the institution
Other data	Improves the efficiency of training courses by using external data sources
Work together	<ul style="list-style-type: none"> <li>- The risk of a "loss" of a student decreases due to his support from other participants in the course</li> <li>- The load on the teacher is reduced due to the fact that trainees can / should seek help from other participants in the course</li> </ul>
Testing and Antiplagiarism	The accuracy of the assessment of students' knowledge is increased due to the use of various control tasks
Competence	The quality of the prepared course improves due to the ability to control the correspondence of the course with the required sets of educational objectives
Individual learning trajectories	The quality of the prepared course improves by taking into account the individual characteristics of the trainees

Surveys	Increases the convenience of analyzing learning activities by using information generated on the basis of system-wide surveys of various categories of users
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### Repository of training materials

One of the key components of Blackboard Learn is the Training Materials Repository, which allows the institution to store educational information centrally in a single file storage. This approach eliminates the need to re-download materials in various training courses and allows you to effectively use the computing resources of the institution.

### External data sources

Blackboard company actively cooperates with world publishers, and also suppliers of various educational content. As a result of this collaboration, the teacher who creates the training course in Blackboard Learn becomes able to quickly build in the learning environment the required materials of Barnes & Noble, Pearson, McGrawHill, YouTube, SlideShare, Flickr, etc.

### Knowledge control

To analyze the learning outcomes in Blackboard Learn, various mechanisms for controlling the knowledge of trainees are built in. For test tasks, the catalogs of course questions can be used, allowing you to quickly create individual tasks for different students, taking into account the required topics and the complexity of the questions. Blackboard Learn also implements individual and group text assignments, which can be checked by the instructor himself or by students according to the criteria set by the teacher.

### Anti-plagiarism

The process of checking the work of students can be quite labor-intensive, especially when it comes to voluminous texts. Built-in Blackboard Learn means of verifying work on the subject of

plagiarism can significantly save the time of the teacher and focus his attention only on the work done by the students themselves. The work is checked on all public web resources, on the local database of the institution's documents, and on the combined database of institutions using Blackboard Learn. Employees of the institution can also use the Anti-Plagiarism tool to check their own documents.

### Competencies

In Blackboard Learn implemented a single catalog of competencies, allowing the institution to explicitly formulate the objectives of training in all areas of training and with any level of detail. Thus, the process of designing training courses can be based on very specific requirements, and any elements of the course can be compared with some set of competencies. Such connections allow analyzing the quality of the provided training material at the level of the course or the whole institution, as well as building reports on the development of the required sets of competences.

### Individual learning trajectories

Blackboard Learn has the flexibility to customize the learning process, taking into account the individual characteristics of the trainees. The contents of the training course can be automatically adjusted to the specific learner, depending on the rate at which he studies the course materials, in what sequence and what results he achieves during the performance of the control tasks.

### Collaboration

The real experience of using the systems of electronic support of training shows that one of the key problems of the organization of the educational process is the lack of motivation on the part of trainees, which, as a rule, is caused by the isolation of trainees from each other. Blackboard Learn solves this problem through the built-in learning environment of the Forums, Blogs, Journals, Wiki and other means of interaction, which are closely intertwined with the course materials and provide for the teacher's assessment. This makes the trainees more thoughtful to analyze the material, ask questions and actively help other participants in the course.

### Surveys

For a comprehensive analysis of the educational services provided by the institution, it is sometimes not enough statistics on academic performance or statistics on the number of training materials prepared. For a full analysis, feedback tools are also needed, which allow you to receive information from all participants in the educational process on the criteria that are of interest to management. In Blackboard Learn, this task is solved through system-wide surveys that can be formed for different target groups in the required time ranges. This approach allows obtaining objective data on management issues of interest, as well as analyzing the dynamics of changes in key indicators for the required period of time.

### **BlackBoard in SPSU**

According to the information, gathered from the official website of the university, The Blackboard is “educational support system” with the help of modern information technologies provides remote interaction of teachers and students, allows teachers to organize students' independent work, and students - to get knowledge faster and more efficiently and check whether they are well and correctly learned. All Blackboard users have access to it from anywhere in the world via the Internet without installing additional programs on their computers. The Blackboard system does not replace the traditional educational process, but significantly enriches it with additional features.

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Now St. Petersburg State University, along with the world's largest universities, has an adequate tool for the development of a modern multifunctional information and educational environment, including electronic information and educational resources, a set of information and telecommunications technologies, appropriate software and hardware, and providing students with complete educational programs, regardless of their location.

At the moment (2012) there is a registration of users of the Blackboard system of St. Petersburg State University. The information technology service of SPbSU ensures the creation of logins



and passwords for all students in St. Petersburg State University, for the teaching staff, pedagogical staff and administrative and management personnel of the university. The first users of the system were teachers and students in the fields of management and jurisprudence.

## **Sakai**

Often the most powerful learning experiences involve collaboration between students and instructors. Whether instruction takes place face-to-face, online or in a blended environment, the Sakai Project supports teaching and learning that is grounded in collaboration, co-creating and open sharing of knowledge. It calls itself “A Uniquely Flexible Learning Environment”, and also says, that each Sakai deployment is unique, as every adopter institution creates its own look, feel and configuration within a standardized, well-structured learning environment. For instructors, the Sakai project offers tremendous flexibility to incorporate a wide variety of learning tools and technology-enabled instructional approaches. Most faculty members and students experience a minimal learning curve getting started with standard features: syllabi, course content, lessons, assignments, tests, and so forth. Sakai’s built-in collaboration suite also encourages team-based learning, flipped classrooms, and other modes of instruction that engage students actively and deeply in the learning process.

How Sakai supports teaching and learning:

It should be noted that the virtual learning system Sakai has a little bit different focus as it is designed to create quality distance courses. The advantages of this program are that it allows:

- 1) work in open source code, i.e. Can be adjusted in accordance with the requirements of a specific educational project; Develop additional modules and freely integrate with other systems;
- 2) organize training in an active form in the process of joint solving of learning tasks, the exchange of knowledge (exchange of files of any formats, mailing, forum, chat, etc.);
- 3) use any assessment system (point, verbal) and monitor the student's knowledge;

4) to make changes to the educational material without a large-scale reprogramming, as it corresponds to the developed general educational standards;

5) use interactive elements of the course, such as:

- wiki, which allows the creation of a document by several users simultaneously using a simple programming language in the browser window, in other words, with the help of the student, they can work together, adding, expanding and modifying the content;
- questionnaires, which are used as elements of a system for evaluating and stimulating learning in virtual educational environments;
- a glossary that allows you to create a vocabulary of concepts used in this course, as well as a dictionary of the main terms of each lecture (practical lesson);
- a survey that is used mainly to conduct voting among students. This type of interactive element can be useful as a quick survey to stimulate thinking or to find a solution in the process of researching the problem;
- tests that allow the teacher to create a set of questions, including multiple, alternative and cross-selection, with a short answer (verbal or numerical). All questions are stored in the database and can be subsequently used again in the same course (or in others);
- sending e-mail copies of messages from forums, feedback from teachers and students. Moreover, there is the possibility of sending e-mail messages to an arbitrary group of course participants.

Varying the combination of the various elements of the course, the teacher organizes the study of the material in such a way that the forms of instruction are consistent with the goals and objectives of specific classes.

It should be taken into account that in order to obtain effective use of virtual educational environments, teachers need to assess the prospects of the learning process. Along with this, teachers should have the competence to work with computer technologies in order to create and post material on the Internet. Consequently, teachers need to undergo special training. Ensuring the program-professional readiness of the teacher to work with the virtual educational environment assumes the increasing role of the teacher in the educational process. The activity of the course leader is multifaceted, it includes the development of the contents of the training course (texts, assignments to them, control) and course management (attendance and

achievement, processing of results). Incorrect use of e-learning can develop students detachment from real life. It is necessary that e-education is rationally integrated into traditional education. It should be noted that virtual educational environments are still not fully understood and are not fully used in the higher education system, especially in Russia, and require further research.

### **Sakai in SPSU**

The Sakai Distance Learning Platform is one of the three most popular free Distributed open source distance learning platforms (the other of the three is the platform Blackboard and Moodle). The development and development of the Sakai platform is a major international project initiated by Several largest universities in the world, which in my opinion initially made Sakai more complex, developed, sometimes more complex platform, oriented both to support Teaching, and to perform the functions of the "electronic campus", "electronic dean's office" of a large University with a lot of specialties, students and subjects. In particular, currently the Sakai platform Approved and used as an official distance learning platform for Educational process at St. Petersburg State University, where the author and lectures. (A.S. Bikkulov 2008)

### **Sakai and Vkontakte**

If the use of e-learning environments to support the learning process is no longer something new and unusual, the use of social networking opportunities is perhaps a relatively rare experiment. At the same time, the experience of combining and simultaneously using these two environments in the process of teaching the subject gave quite interesting results.

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several of the world's largest universities, which in my opinion initially made Sakai a more integrated, developed, sometimes more complex platform, oriented both to support teaching and to perform the functions of the "e-campus" "Electronic dean's office" of a large university with a variety of specialties, students and subjects. In particular, now the Sakai platform is approved and used as an official distance learning platform to support the educational process at St. Petersburg State University, where the author also lectures.

The social network "VKontakte" (also often referred to as "Contact") is a rapidly growing Internet resource, numbering today about 13 million regular registered users and ranking first in terms of attendance among themselves in the Russian segment of the Internet, overtaking Previously leading resource "Odnoklassniki.ru", "My Circle", etc. Such a rise in popularity is likely due to the broader and more convenient resources of the resource for communication - in addition to the standard functions of social networks, you can upload albums of your photos, favorite audio recordings, videos on your page, you can create interest groups, automatically receive information about updates Pages of their friends, those groups in which the user participates, etc. All these functional conveniences make the resource sufficiently alive and constantly updated. Young people (which make up the lion's share of the resource's visitors) practically "live" on it, visiting it several times a day.

Naturally, initially the Sakai platform was used to support the learning process. Within the scope of the subjects read, students used the platform's features such as putting on the resource in electronic form the lecture notes (teaching aids), additional materials for the subject and links to useful resources on the Internet, putting the curriculum and exam questions, posting changes to the timetable, Dates and places of consultations, etc. Also, not very active, but the function of posting practical resources on the resource and notifying them about them was used, followed by the provision on the resource of information on assessments for these practical assignments.

(sakaiproject.org)

We must admit that the nature of the visit of students to this resource was periodically episodic - at the beginning of the semester, students attended the resource out of curiosity, some downloaded all the main published materials. Then the visit was conditioned either by notification of the laid practical tasks, reviewing the assessments, the need to download previously unpublished material, or the need to look at information about planned consultations and examinations. Sakai provides an opportunity to create forums with discussion of any topics

and questions, however, because of the general very sporadic visit of the resource, students rarely used this opportunity and preferred to ask either verbally at meetings or by e-mail. The picture changed somewhat when the students asked to create a group on the VKontakte resource to discuss questions on the subject. Taking into account that the specificity of the read subject required a lot of additional material and the execution of a creative and difficult practical task that could cause many questions in the course of implementation, the proposal was accepted and, as an experiment, implemented without any special hope for effectiveness. Rather, the goal was to create an additional communication channel. In the case under consideration, this was the subject "Information Management", describing the analysis of the use, modernization and implementation of corporate information systems in the organization. The course is taught at the 4th course of the day department of the specialty "Applied Informatics in Arts and Humanities" in St. Petersburg State University. The practical task on the subject presupposed the analysis and development of recommendations on improving the use of information technology on the example of a real company / organization, if the student had such an opportunity, for example, the company's friends or relatives work for him or the student himself earns money. In case of impossibility of using "live" material, students were offered to analyze case-stage material as an alternative to the students - an adapted description of the ambiguous situation in some conditional company (the case study was also prepared based on the experience of consulting a real company). (sakai.spbu.ru)

Taking into account the general communicative and entertaining nature of the VKontakte resource, the created group had to be somehow embedded in the general context. For this purpose, a group with an album with humorous pictures from the field of computer humor, and the first topic of the discussion was a small selection of anecdotes on a computer theme. Of the 20 students of the training group, about 10 people were found in the Vkontakt, by name, surname, etc. An invitation was found to join the group with a message where it was asked to invite other classmates to this group whom I could not find on the resource myself. As a result, the effect of personal connections, which is characteristic of social networks, has worked, and in less than a couple of weeks almost all students of the group joined the virtual group on the subject "Information Management" VKontakte, except for two people who apparently do not use this resource. Before the virtual group Vkontakt initially did not set the goal of duplicating the resource Sakai, - the group was called to maintain a more lively contact with students. Given that this resource was regularly visited by both students and the teacher - any changes or updates to

discussions and group pages were easily tracked without special efforts - the resource allows you to see on the automatically generated page with personal news all the updates of the pages of friends and groups that make up user. And this is one of the most used functions -

It allows you to without any efforts to be aware of all the changes on all lines of communication of the user of the resource. This was an absolute advantage and Saving time for the teacher, because on Sakai, to check if someone asked a question or if someone created a topic for discussion, you have to go to the resource specifically, log in, and go to the discussion section. At the moment, it's rather difficult to follow the updates on Sakai. At the moment, the update distribution works only on the events created by the teacher, and it is rather the new "events" (for example, the creation of a new practical task or the placement of an advertisement). Updates of the discussion topics can not initiate the sending of notices by e-mail, and there is also no analogue of the automatically generated news line on the VKontakte resource either - at the best, new published announcements on subjects, but no more, are immediately visible. During the course, the discussion section at Sakai was visited by the teacher at least once a week or two weeks, but in the overwhelming majority of cases, these efforts were in vain, since updates and questions appeared very rarely during the semester, and at the approach of the exam - with a chaotic frequency.

Most of the students visit the VKontakte resource at least once a week, sometimes more often - mostly to see what news from friends, but at the same time (if available) I saw updates to the virtual group page - for this it was not necessary to go to the page every time - The resource showed these updates in a personal news line about changes in the pages of friends and groups. This was a great convenience, as it saves time and allows you to respond more quickly to questions - usually within a couple of days, a maximum of a week.

Given that Sakai is still an official resource for distance learning support, and for the purity of the experiment, after the first questions began to arrive, the first topics of discussions and answers had to be manually copied to the second resource - that is, if the question was asked in the message or In the group in the contact, the question itself and the answer to it were copied into the discussion section on my subject on the Sakai resource (and vice versa) - thus providing some "synchronization" of the discussions. And in most cases they appeared on the page of the virtual group in the contact, and then copied to Sakai, only once the question appeared on the Sakai resource, and then it was copied into the Contact.

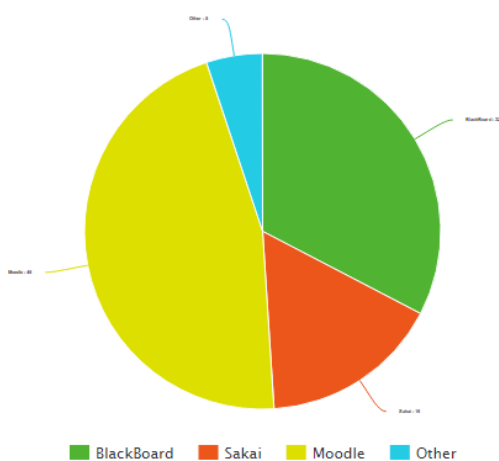
The main conclusion, confirmed by the experience of parallel use of both platforms - the academic platform Sakai is currently optimal for presenting official information on the subject, while the support of live communication is the function that is so far implemented on social networking resources, in particular, Resource V Kontakte.

In the example of the subject "Information Management", the topics of the discussions were specially created both on the Sakai resource and in the Contact, and at first, they were completely identical due to the efforts of the copy teacher. Nevertheless, the important experience and the result of the experiment was the absolute preference for students for the training discussions on the practical task of the virtual group in Contact, in comparison with the possibilities of discussion on the Sakai resource. Students were more willing to use for educational discussions the resource that they already used to communicate in their daily lives, rather than go to a separate site created to support the learning process. It was more convenient for them, they did not require a separate time, due to more rapid answers, they supported the feeling of lively, active communication, so important with remote, mediated communication. On Sakai, this would be possible only if students actively use this resource in everyday learning life (which unfortunately is not the case at the moment) and in the case of a more convenient notification system about updates on the Sakai resource (this possibility is also currently lacking).

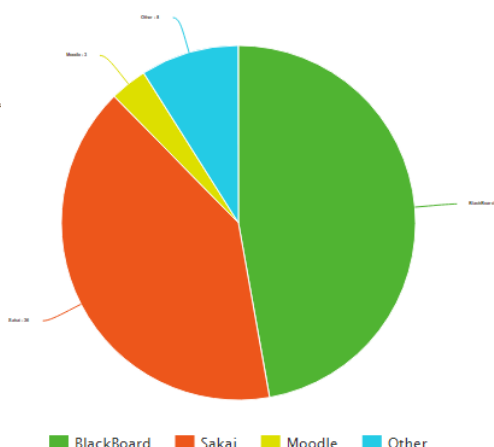
Within the framework of today's reality, if an object requires active remote discussions, it seems convenient to use the functionalities of social networks, which in this case create an additional channel for communication between the teacher and students and complement the academic resource for supporting the learning process.

## Practical impact of VLE on communication between students and instructors at SPSU and Warwick university

Type of VLE in Warwick



SPSU



As we can see from the graph, the majority of Warwick students uses Moodle as it is more popular there, but as it is not a point for a comparison in this research, we can analyze, that Sakai has almost a quarter of the pie in Warwick, and around 33% of the space is taken by BlackBoard. In SPSU almost half of the pie is taken by the BlackBoard and another 40% is taken by Sakai, which makes them two most popular VLE at Saint-Petersburg State University

### What students prefer to communicate with other students

The most popular answer for communication with other students on-line was social network and now, messengers slowly replacing even social networks (more specifically WhatsApp on a first place and Viber on a second for both countries). For Warwick university the most popular answer was still Facebook with 67% (WhatsApp has 24%) and for SPSU the most popular was Vkontakte with 58% (WhatsApp 28%). None of the respondents mentioned VLE in their answer to this question.

### What students prefer to communicate with instructors

The majority of answers from students of Saint-Petersburg State University was “via e-mail” (84%) – the most common and simple way of communication, some students mentioned



social networks and even messengers, but some of the respondents said, that sometimes it is not convenient because you lose the comfort zone of social network, where you can type and post anything as you will need to “keep an eye on what you are doing after you add professor”. For the Warwick university the majority voted for VLE (53%) in which every professor is registered and ready to receive a message, make an appointment or provide specific information.

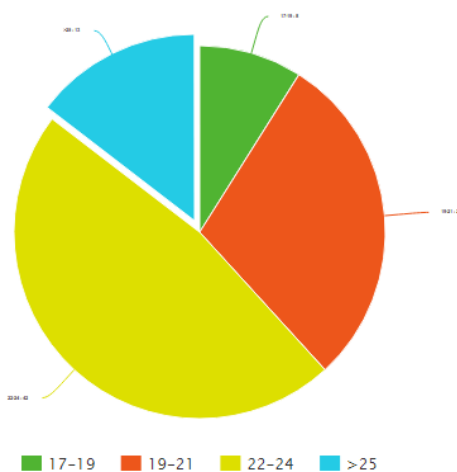
#### Who does the students find important source of information

For both of the universities the main source of information was a university website. Most of the information about any topic of interest secondly checks there (after asking fellow students). However, Warwick students also use VLE to get more specific and person-oriented information, events of particular interest for person, such as: favorite singer on-campus, cricket game on Tuesday or lecture class will be delayed. SPSU students almost don't do that and there is no proper, well-structured platform for it yet.

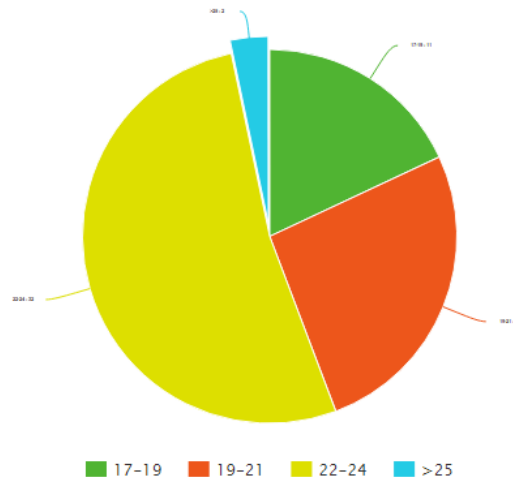
#### How much time students spend in VLE

The average student in Warwick spends approximately 30 minutes a day using VLE, with extremes up to 4 hours a day (those students mostly used them for a distance learning, to watch recorded lectures and sometimes seminars). The average student in SPSU spends less than 10 minutes, mostly, to check the schedule and less often to see grades.

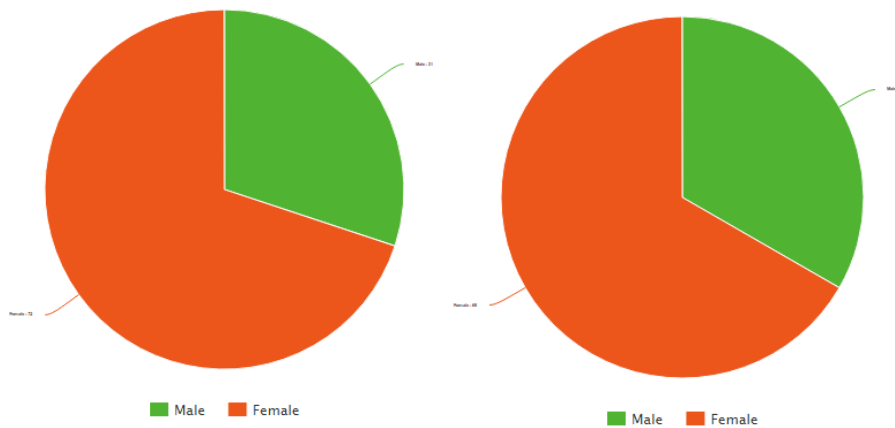
#### Sample by gender and age SPSU



#### Warwick



The age of the respondents in both universities has no big difference. Most of the respondents aged between 22 and 24 and the least ones 17-19 years old in SPSU and just a few respondents aged more than 25 in Warwick.



The pie charts of gender are almost identical with more than 66% of females in both universities and around 33% of males in SPSU and 35% in Warwick.

### Main barriers for communication in VLE

For Warwick university, this point raised questions and sometimes confusion, after some time, minor barriers were found, among those, the most popular one was the personal attitude of an instructor. Depending on a person it was easier to communicate or harder. Some of the instructors are only willing to communicate through VLE and no other options are available. For SPSU the results are quite different. The technical difficulties and features limitation at the top of respondents' answers (84%). Students do not know how to solve problems appearing while using the system and who to contact when they are having one (74%). There was no proper introduction to the system (89%). The structure of the VLE at SPSU is not simple to understand (75%).

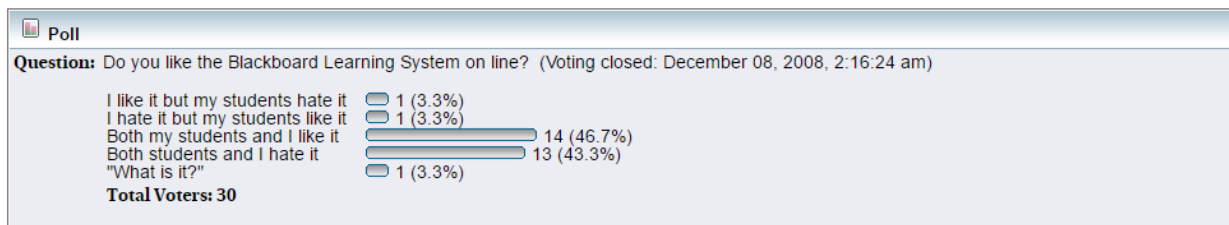
### Is VLE works at full potential at your university

		Warwick	SPSU
18			
19	yes	9	47
20	no	84	18

This can be explained in a complex of reasons: with a culture differences, different approaches to education and technologies, to accept something new and even with an age of university, lack of knowledge on how to work with VLE and no prior introduction to the system might make the experience with a system unpleasant and after that the person will not want to continue to work with it.

## Hate BlackBoard – Love BlackBoard

Here are presented two different views on a same VLE Blackboard at different UK universities (British forums). One of the poll has 30 voters and the second one has around 100 voters. The first one had place in December 2008, and the second one a little bit more recent one, in 2010~



The results of the first poll is mixed, half of the voting instructors (professors at the university) voted FOR this system and half of them voted AGAINST, in a commentary section there were big discussions on whether it's good or bad, but the issue which was quite often to be mentioned was the technical difficulty. In 2008 the BlackBoard system was just in its early development stage and those types of issues were expected, nevertheless it didn't stop many from hating it.

	Positive	Neutral	Negative
Blackboard was a valuable part of the language course	64%	20%	16%
Blackboard was a useful support to material covered during tutorials	60%	22%	18%
I enjoyed doing the tasks	50%	33%	15%
The tasks were useful	62%	27%	8%
I felt comfortable using Blackboard	80%	12%	4%
Having Blackboard as part of the language course was motivating	56%	25%	16%

The second one is survey, showing us usage of BlackBoard at language course at the University of Warwick. The results we see from the table are very different to the results of previous one. For most of the positions respondents answered positively (more than 55% for all of them), or at least neutral. The position which got most negative results is that "Blackboard was a useful support to material covered during tutorials" with 18%. This position mostly depends on a material downloaded previously to the platform and it means, that those negative 18% are more to a personal, responsible for these materials. On the other hand, the least negative votes got the

position “I felt comfortable using BlackBoard” – 4%, and this is more related to the design, technical issues and user-friendliness of the platform, which, since the previous forum-poll in 2008 were drastically improved, therefore creating a comfortable space for learning.

This example perfectly shows us, that the system itself is improving, the technical quality and possibilities are rising and it’s moving from the position of BlackBoard, to a position of instructor and administrator to make the best out of the platform which offers its features.

## **Conclusion**

SPSU and Warwick

**1. The better way is to combine on-line education and auditory one.** The student should be given a choice of the most accessible and convenient form of education, including a combined one, in which full-time instruction is combined with elements of distance education. For example, traditional auditory forms of academic work do not always guarantee a better development of communication skills than with distance learning. And if in-person training is not provided the opportunity to re-study the material of lectures delivered by leading specialists, then distance learning technologies that provide video recording of lectures or the provision of training programs, allow them to work with them at convenient time, if necessary repeatedly returning to repetitions. Many full-time students of higher and professional education combine study with work, and providing them with such opportunities would certainly contribute to greater access to quality education.

**2. To make the most out of the VLE it should be noticed.** According to the gathered data, many of the students didn’t even hear about the VLE. Information on existing VLE in universities and other educational institutions, should be brought to the attention of all persons for whom such resources may be of interest. For example, already now the Russian sector of the Internet network has thousands of educational Web pages, interesting and useful for both teachers and trainees. However, the lack of full-fledged catalogs makes access to these important materials difficult. Joint development of specialized resources by teachers and scientists from

several educational institutions and scientific and methodological centers also contributes to greater awareness (the idea from one of the interviews).

**3. To be effective tool for communication, it should answer demands of the students.** The cost and, accordingly, the accessibility of VLE depend to a great extent on the proper strategy for purchasing, developing and using the software of the educational process. A quality education should use, if possible, the technology of tomorrow. It is very important, that for the right amount of spent money there is a right amount of properly working tools given.

**4. There is a field for an improvement on both sides (Warwick and SPSU).**

VLE in general

**Approachability.** First, according to found theory, students will not need to come to the university for regular classes and for a session. The whole process goes through the Internet. Therefore, the distance from the location of the student to the educational institution (provided the communication works well) is not an obstacle to an effective educational process. Students learn in a convenient place for themselves, on a convenient schedule and at a convenient pace. The only visit is the surrender of the state certification examinations and the receipt of a diploma. According to normative documents, attestation of the future specialist is possible only internally.

**Increasing skills.** Secondly, since the motivation for choosing a student for a particular training course is his real need for specific knowledge, skills and skills that he will apply in practice, the productivity and effectiveness of training will incomparably increase in comparison with other forms of education.

**At Warwick, VLE makes education easier to manage.** Thirdly students often engaged in an individual plan, based on the level of their basic training and their needs. It is quite possible for them to combine learning with other studies or with basic professional activities.

**Computer literacy is needed.** Fourthly, this form of education takes place far from the educational institution, far from teachers and does not imply visual control of teachers behind the actions of students, it will require the children to be extremely motivated, self-organized, diligent, able and willing to work independently. Also, they, need to have a certain starting level of knowledge of computer literacy. But, if the students do not understand something, or they

have any difficulties in their studies, through the forum at any time, at any stage of the training they can ask for an explanation to the administrator, tutor teachers and their classmates. - This is a very important point that fundamentally distinguishes networked learning from correspondence: the student does not remain alone with incomprehensible material, but, like with full-time education, can always promptly clarify all issues.

**For taking the most out of VLE, there should be different courses uploaded.** Fifthly, the distance learning network program traditionally consists of separate courses (modules). General disciplines students learn from the materials laid out in the shell (after which they perform the test work - this can be the performance of the test, problem solving, drafting and protection of the project, etc. Profile disciplines are also initially studied by students in electronic textbooks and programs, but the most important ones Questions of profile disciplines after the general independent acquaintance are sorted out together with the instructor-tutor at consultations and videoconferences. As a control, computer testing systems. The protection of the developed projects and also the traditional forms: examinations, interviews, the protection of coursework, conducted in the videoconference mode.

### **Role of the instructor**

The instructor in such a virtual educational environment must adapt and define his role:

- 1) in the new form of communication - asynchronous "conversation", since the virtual discussion is conducted in a different way (short and concreteness of statements, unambiguous statements become important criteria) and serves as an additional means for developing the ability to reflect in communication, increases the level of logical and abstract thinking of students;
- 2) using modern technologies (for example, project methodology) as one of the theoretical foundations important for the installation of virtual associations for training;
- 3) applying modern principles of education (for example, individualization as a priority in education today, practical orientation as a productive combination of the system of continuing education and professional development with practical skills of students that will allow each member of the virtual community to build its own trajectory for innovative work);
- 4) in creating a pedagogical Internet environment (and VLE), taking into account technological, administrative and financial opportunities;

5) in structuring the virtual learning environment, which should, while remaining flexible and open, adapt to individual differences and take into account the personal needs of students, and this requires the development of a new concept and teaching methodology;

6) in the relationship between virtual associations and various forms of traditional communities for the direction and pedagogical support of the professional activities of these new virtual spaces.

Thus, as the configuration of education changes in the direction of its continuity, innovativeness and priority use of modern technologies, then the education of instructors must be rethought for a new educational environment.

### **Perspectives**

Clear and unified criteria for assessing knowledge for all teachers and disciplines should be developed. I use in the distance education a test system for assessing knowledge is clearly inadequate, it is necessary to evaluate both the independence, activity, development of the learner in the course of cognitive activity. The necessary tests should accompany the current checks with the help of special systems, open for work at any time. Such systems that provide feedback to the teacher - real or virtual, for example, using a system that can be used to solve the correct answer.

How to increase the accessibility of quality education. It is necessary to look at the problem of providing quality and accessible education on the other hand, when all new information technologies are implemented with the aim of improving the quality of education for a limited number of students. This may be due to the development and use of specialized models designed for business games or computer experiments, the use of specialized computer equipment, other expensive technologies and software products. Nevertheless, in this case, it is possible to formulate the principles of their use, which, while preserving the high quality of the teaching, will increase its accessibility.

A virtual educational environment is an environment different from the traditional way of obtaining (providing) education, the nature of educational communication, carried out both indirectly - at a distance, and traditionally - "eye to eye".

Information and communication technologies (media) used in the virtual educational environment are its means, the composition and specific gravity of which varies depending on technological progress, the degree of accessibility to the students, the model of the organization of the educational process.

1. The developed model of the virtual educational environment organization allows to implement the innovative approach in professional development; Realize the continuity of education and build an individual trajectory of the student's professional growth; Carry out professional support of the teacher (teacher), make educational resources available, regardless of the location of the student; Use innovative educational products, integrate the practical experience of the teacher and the discovery of scientists in the field of innovative technologies, etc.
2. An open model of modern education is optimal for solving modern educational problems of continuous professional development using a virtual educational environment, meeting the educational needs of those interested in obtaining this teacher education.

The development of education should be carried out as a transition from a "closed" education model to an open one, based on the use of a virtual educational environment as the main means of communication between the teacher and the learner.





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# Appendix

## Questionnaire

### Communication

What do you use to communicate with other students?

What do you use to communicate with professors?

Would you rather prefer one of these forms of communication?

Where do you get necessary information for the study (e.g. schedule, course materials, inquiry)?

Underline sources which you use to get additional information (e.g. news, events, scholarships)

Underline what type of resources do you usually use to manage your study? (virtual offline, virtual online, physical (paper) university/non-university)

### Virtual learning Environments

What kind of online technologies provided by your home University do you use?

For what purposes do you use these systems?

How well do these systems meet your expectations?

Which of the following words would you use to describe these systems?

How do you think, at what level these systems help you?

Overall, how satisfied or dissatisfied are you with these systems?

### BlackBoard

How often do you use blackboard?

For what purposes do you use blackboard?

Underline features you are familiar with

Underline features you regularly use

For how long you have been using blackboard?

Personal info

What is your age?

What is your gender?

What is your level of education?

From which faculty are you?

Thank you for participation!

## **Appendix II**

### **Interview Guide**

Duration: Approx. 1 hour 5 minutes

Language: Russian (Transcript translated)

#### **Introduction**

Hello. My name is Ivan Zhuk, I am a student of SPSU, conducting research for my MA thesis. The topic is “An impact of VLE on communication process between students and instructors”. Thank you for finding time for this interview. As a student, who regularly uses VLE, your opinion is indeed valuable for this research.

The interview duration will be approximately one hour.

During the interview, all the dialog will be recorded, it will help to preserve all the information and will make the process of analysis easier. Is it okay for you? If you like, this interview may be anonymous, would you like to? If you are ready, let's start!

## **General**

Why did you choose to study at SPSU?

### **1. Online technologies SPSU/Warwick**

What types of online services of the SPSU do you use? (University site, Sakai, BlackBoard, Schedule, etc.)

Why do you use particularly those?

How often do you use each of those?

What words comes to your mind on "Virtual Learning Environment"?

What activities do you perform in the BlackBoard/Sakai? (what is a most used one?)

Where do you get needed information related to News, Schedule, Events, Learning materials, Tasks, Contacts?

Were there any situations when you couldn't get the information you were looking for?

Was it due to the system, or due to the human mistake?

Were there any problems or inconveniences because of that?

How did you solve these problems?

Was there any other person involved or was it just you (staff, students' advice etc.)?

Do you have more positive or negative view on VLE?

How would you rate VLE at Saint-Petersburg State University/Warwick?

### **2. Communication**

How do you communicate with instructors and how with fellow students?

Is it convenient to communicate this way?

How would you prefer to communicate with instructors (maybe face-to-face)?

Did you face any problems communicating with instructors on-line?

How did you solve these problems?

Do you use chats, discussion or commentaries in VLE? (No/Yes – Why?)

Do you prefer to receive paper-materials, or e-materials?

Is it convenient to receive materials via VLE?

What do you think the BlackBoard/Sakai is best for?

### **3. Perspectives**

What do you think of the idea of everything for education gathered in one place?

What would you change or add in BlackBoard/Sakai?

What do you think are the perspectives of the VLE in the SPSU and in general?

### **4. Personal info**

What is your age?

What is your nationality?

What is your level of study?

From which faculty are you?

Thank you very much for this interview! Good bye.

## **Appendix III (miscellaneous)**

### **Research Design Draft**

#### **Personal notes page**

Who: staff, admin, students, academics

What: communication (order rules advice products) relations inside/outside, connections between (different systems)

When: research (2 years) few months Russia + few weeks UK meta. Info/data - last 10 years

Where: Russia (SPSU); UK (LSE, Warwick, Cambridge)

Why: Lack of it in Russia; Fast growing field

How: Online survey; In-depth interview

#### **Abstract Contents**

Abstract

Introduction (10% of words or space)

Review of the background literature (15%)

Design and methodology of the research (15%)

Implementation of the research (15%)

Presentation and analysis of data (15%)

Comment and critique of the outcomes or findings (20%)

Summary and conclusion (10%)

References

Bibliography

Appendices

### **Challenges and how to overcome them**

#### **Information technologies and Education**

1. Awareness of information technologies and systems that exist in Russian and UK universities.

The main problem here would be interviewing part, where I would have to ask academics about systems that are not really well-known. Some of academics do know Blackboard or Sakai, but just slightly about basic functions. Basically, it is possible to overcome the situation by changing the In-depth Interview method to something that sociologist from Herzen University does not know how to call – discussion method? Firstly, we will be talking about the systems that they know and how well they work, what would they change, how useful it is, how often do they use it and etc. After that, I will be suggesting some questions for a further discussion, mostly, about systems that I saw in UK and Germany. What do they think of them, would it work in Russia and what are their expectations and predictions if such a technology will be invented here / current, old one will be changed.

2. Making sociology out of no sociology.

The thesis itself sometimes raises questions about its connections to sociology. Information technologies themselves is individual discipline (is/are?) and Education is a subject of many



disciplines. But I found a way how to overcome this issue – I will be connecting my work with sociological approaches and views. For instance, as much as possible I will gather information and after look at it and analyze through the eyes of sociologist! How does system affect students, how do they communicate in there, what is a relation between students and academics in there and how efficient it is?

### 3. Approachability to people responsible for such systems in UK.

Overcoming of this challenge is yet to be found. The major problem is that as an Alumni of Warwick University I had access to most of the systems of Uni and to the staff, but after 15<sup>th</sup> of March I will be withdrawn from a system and will have to find my own way through the people I know or with help of my charisma through the staff. This is more of a general challenge and solutions for questions will be found later.

## **Fact sheet**

### **Information virtual systems in higher education (Cases of Russia and UK)**

Saint-Petersburg State University is a classic research university, it is one of the oldest universities in a country and among the two federal universities of Russia (the other one is a Moscow State University). The university is currently in a process of adaptation to new technologies which are already in use of universities abroad. One of the steps to informatization was to apply new IT services to the university to make some aspects of student's life easier. Starting with electronic schedule and personal page of a student with just information about passport, level of education and a name, we are moving forward, introducing Sakai and Blackboard, virtual learning environments and management systems to create a better learning and communication field. But currently, my hypothesis, based on a short-survey and personal findings is that those systems are not working in their full potential and some of the basic features, such as communication with students and professors, inquiries and some others are underused, and this might be due to many reasons which this study is also aiming to find.

The University of Warwick is a modern research university and one of the youngest universities in the United Kingdom. Since the very beginning Warwick was using technologies to help improve communication, the VLE and VIS are part of the university and deeply interconnect in most of the spheres of the university life. It is very technologically advanced university. There are online groups, forums, platforms for managing possibly every aspect of the university life, such as: electronic journals and databases, learning materials, schedules for all events inside and outside of the campus, registration for such events, enrollment, on-line consultation related to the educational process and medical issues, finance sections (related to the tuition fees, accommodation, food and etc.) and many other things which are regulated and funded mostly by university staff including student's union personal.

### **Virtual systems in the UK**

According to [topuniversities.com](http://topuniversities.com), universities of the UK are the second technologically advanced following those in the USA, especially the top-tier ones and modern ones: Oxford, Cambridge, LSE, Warwick

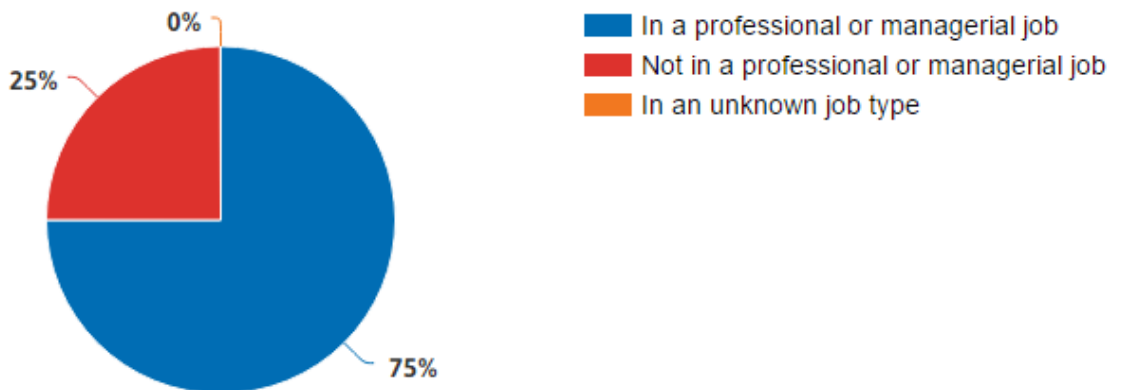
### **Warwick University**

Warwick is one of the youngest universities in the UK, which makes it really easy to "adapt" to the technologies. It is one of the most fast-growing universities in the UK, being in the top 10 for the last few years. Warwick university has a vast network of virtual systems: library, accommodation, lectures and etc, some of them interconnected at some point, some, such as finance, completely standalone.

### **Statistics**

Students from the departments, such as Computers science and Engineering, which are technologically more advanced than others, are more likely to find a job in the modern world full of technologies.

## Employment six months after the course i



In technologically advanced systems it is easier to see what was really done to improve something. Information and news are easier to access, they make sure you won't miss anything (as an opposite to a board, which might be ignored most of the time)

You asked for better learning facilities...

We have invested £20million into a new learning building and refurbishing existing spaces.

You wanted more for your money in our eating outlets on campus...

We introduced a wider range of cheaper food and drink in our outlets

You wanted quality, timely feedback...

E-Submission and E-Feedback systems have been

### References:

topuniversities (URL: <http://www.topuniversities.com/university-rankings/university-subject-rankings/2015/statistics-operational-research>)

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Warwick site (URL: <http://www2.warwick.ac.uk/services/aro/dar/quality/categories/feedback/nss/feedback/>)

- **Social network in education.** Blanka Klimova and Petra Poulouva. University of Hradec Kralove. 2015

At the present stage there is a comprehensive mass introduction of information technologies in all spheres of education. The main goal of informatization of the education system is the transformation of modern information resources and information and communication technologies into the resource of the educational process, ensuring the formation of qualitatively new educational results. The emergence of information and communication technologies could not but affect the change in the management strategy of the educational institution. This means that organizational changes are necessary in all areas of the educational institution, ensuring the introduction of modern technologies in the system of educational, educational, methodical and managerial activities, and the formation of the information educational environment of the institution. In the conditions of active introduction of modern information technologies, the actual need is the formation of ICT competence of all pedagogical workers. This will effectively solve the problems of updating the forms and methods of educational and upbringing activities, taking into account the trends in the development of the information society, the interests and needs of modern children and adolescents.

Recently, educational and scientific social networks began to appear. The social network Facebook has long been recognized as one of the most popular tools (software) for learning and development. The American social network Facebook is used by about 800 million people. Facebook allows university teachers to create courses for students, organizations can create a closed corporate network of employees on the Facebook platform: employees of one company can be in constant communication with colleagues from different branches, publish news of their organization, etc. Approximately the same principle runs MySpace .

This article would help to understand how virtual information systems in universities made their way to higher education and explain how interconnection of information and people helps to create such systems.

- **Concurrent development and cost–benefit analysis of paper-based and digitized instructional material.** David Annand. 2001

Quite a lot of writers - both beginners and venerable ones - are sometimes asked the following question: how exactly is it more convenient to translate their ideas into reality. Everyone eventually makes the final choice - it is known, for example, that Stephen King is more inclined to a computer-based set of texts, and Clive Barker basically creates his Cyclopean works only on paper. There is, of course, a third way - to slander the text on the recorder, and then give it to decryption to an outside person. But these methods are not very common these days, and most authors choose between electronic text editors and a paper notebook.

- **A product review of WebCT.** Jim Clark. Champlain College. 2001

WebCT is designed to ensure that the practice of high-quality learning activities is accessible to all individuals, including those who are particularly in need of it. The US Department of Statistics estimates that 20% of the population has sensory, physical disability, or inability to learn. The legislation of both countries, the United States and Canada, takes into account the importance of establishing accessibility standards for the development of web-based resources.

WebCT uses adaptive technology in accordance with the US Rehabilitation Act, Section 508, effective June 21, 2001.

This article is about WebCT software will show us an example of a successfully used university system and its impact on educational process. Shows the possible features of system which may be used in other systems.

- **Twenty-first century college syllabus. Options for online communication and interactivity**

Jack A. Cummingsa, Curtis J. Bonkb, F. Robert Jacobsc. 2002

Many changes in the business world today are mainly due to advances in information technology, and this has entailed a shift from mass marketing - to a customer-focused, interactive and measurable approaches to integrated communications. Currently, marketers are developing targeted marketing communications to create and maintain relationships with customers in narrowly defined target markets. In addition, the significant development of information and

communication technologies is stepping up the transition to personalized marketing communications, expanding the rights and capabilities of clients, which are now considered not as targets, but as partners in the current relationship. Almost any person who has access to a computer with a simple modem can use the huge information resources provided by the worldwide information network - the Internet.

This study examines Web-based syllabus and paper syllabus and will show the difference in effects on the retention of information.

- **Experiences with reusable E-learning objects. From theory to practice.** Jeanette A. Muzio, Tanya Heins, Roger Mundell. 2005

Educational institution in which the teaching process and training are carried out through the Internet. Materials on the training courses in the virtual school are presented in electronic form and posted on the website in such a way that authorized students can use them. These materials usually include the texts of lectures on the subject, interactive tests and simulators, dictionaries, etc. After reading the materials of the virtual lesson, the trainee performs a number of tasks that are automatically checked by the system, with an assessment. A student can interact with network teachers by consulting on subjects. Network teachers can also monitor and evaluate the learner's knowledge by communicating with him by e-mail, telephone, forum or other technical means of communication. Attestation of students throughout the course is usually carried out in the form of an exam (full-time or correspondence).

Distance course - a special, based on the use of modern information technology, a form of presentation of the contents of the training course. Distance course is the main element of building learning using distance learning technologies

- **SurveyMonkey.com—Web-Based Survey and Evaluation System.** Alan Gordon. 2002  
<http://www.SurveyMonkey.com>

Service is suitable for creating quick polls and questionnaires. The free tariff allows you to include up to 10 questions in a survey and involve up to 100 respondents at a time. Survey

Monkey is good for working with the audience in real time: you can ask a question in a lesson or during any event and show the statistics of answers right in the process of adding them.

The survey, created with Survey Monkey, can be sent to the audience as a link, inserted into a blog or published on Facebook. To quickly give an answer, the participants in the survey should have a smartphone in their hands.

The site of the service gives detailed instructions for creating surveys, but, more importantly, information on how to think about their content. After all, if for you the survey is a study of the audience (its opinions, expectations, level of preparation, etc.), then its co-existence requires a research approach.

This article includes all features of the SurveyMonkey, how those are used by different groups of people, with what purposes and also, there is some statistical information.

- **Exploring student perceptions of group interaction and class satisfaction in the web-enhanced classroom.** Michaela Driver. 2001

There are many reasons why a person can not study in educational institutions. This may be a poor state of health, and considerable distance from educational centers, employment, etc.

Unfortunately, even children due to certain circumstances sometimes do not attend all school activities. To avoid negative developments, not to allow the emergence of "debt" for study, backlog, many parents and guardians use a method such as distance learning in school. At the same time, it is possible to seriously improve the situation in school and a child who regularly goes to school, but does not demonstrate a full academic performance. Using distance learning in school, you can achieve good results.

Such an online school with lectures by experienced teachers, open at any time and working completely free of charge, is able to teach a child a lot of the educational program. He will be able to quickly learn any lesson. And if something suddenly turns out to be incomprehensible, it will only be necessary to re-run the video lesson of this Internet school, and the child will avoid a gap in knowledge. The main thing is that he wants. And it does not matter who needs distance education - an adult or a child. Give the child to understand how important and useful this Internet school can be.

This paper explains interaction between some learners within relatively small groups on-line.

