2016

Plovdiv University
"Paisii Hilendarski"
In cooperation with the
METHODS Consortium

Needs Analysis Report of METHODS

Project: Modernization of tEaching meThodologies in higher educatiOn: EU experience for jorDan and paleStinian territory METHODS

Co-funded by the
Erasmus+ Programme
of the European Union

THE METHODS CONSORTIUM

The University of Jordan

Birzeit University

The Hashemite University

An-Najah National University

Palestine Polytechnic University

University of Wolverhampton

Leipzig University of Applied Sciences

University of Deusto

Plovdiv University "Paisii Hilendarski"

Universitat de Girona

World University Service of the Mediterranean

Jordan University of Science and Technology

Bethlehem University

Al-Zaytoonah University of Jordan

Aalborg University Copenhagen

Table of Contents:

I. Background

The present need analysis was done within project entitled "Modernization of tEaching meThodologies in higher educatiOn: EU experience for jorDan and paleStinian territory METHODS". that is co-funded by the Erasmus + Programme of the European Union.

The project aims at improving the quality of teaching and learning at the Partner universities in Jordan and Palestine with cooperation of EU-experience through incorporating technological tools in consistence with pedagogical best practices and by building the capacity of the university to evaluate, develop and design e-curricula to be available on an open accessible portal.

To achieve this objective, the project will support establishing a national Center in both Jordan (in JU) and Palestine (in BZU) which be as a hub for utilizing best practices in ICT in education in both PCs. These Centers will facilitate establishing diverse clusters (pool of staff members from target discipline in Engineering and science faculty with multimedia and educational specialists interested in a certain discipline) from PC universities where an educational specialists will review the proposed learning material in order to ensure compatibility with the standards; and multimedia designers who will design the interfaces, activities, presentation, layout and animation included in the e-curricula.

The project's wider objective is to ensure that universities in Jordan and Palestine are placed in a position to offer quality education compatible with European standards in order to graduate professional leaders who can meet market needs of the country. Its direct aim is to enhance the capacity and enable Jordanian partner universities to modernize educational programmes with state-of-the-art educational technologies.

This objective will be achieved through the following activities:

- Training of University staff lecturers on best practicing of Information Communication Technology (ICT) in Technology.
- Follow-up lecturers to develop Course material based on best practices in utilizing ICT in education.
- Establish well equipped Center for development and modernizing higher educational methodologies. Through providing courses on best practices in utilizing ICT in education.
- Build up hop of knowledge in the center shared by Jordanian and Palestinian universities.
- Center nod to communicate inside and outside University.
- Training of future teacher on best practices in utilizing ICT in education.
- Organize and arrange workshop.
- Mutual visits to Europe.
- Dissemination outcome broadly in Jordanian and Palestinian Universities through portal and workshops.
- Create variable clusters of targeted discipline (medicine, Engineering, science, … etc.) for developing best practices in utilizing ICT in education (This will guarantee sustainability).

All project's partners have rich experience in education and successful track record and active participation in European projects which will ensure that the consortium will achieve METHODS

objective.

II. Specific Purposes

In order to achieve this objective, a present needs analysis report on using ICT and the ICT facilities and infrastructure in Partner Countries is needed. It is accomplished by the help of very well prepared surveys and summarizes the status of the ICT at Jordan and Palestinian Partner Universities. This report will constitute part of WP2 of the METHODS project which aims to analyze and identify different entities to utilize ICT in education, verify the facilities of partners to develop the existing resources in partner universities, and proposed guidelines to develop and update the strategies to utilize e-Learning practices in education.

III. Methodology

The qualitative part of the study was conducted by the project partners, alongside with Palestinian, Jordanian and EU literature analysis and review of strategic documents. The eight Jordan and Palestinian Partner Universities were in the focus of this study. The needs analysis was structured in the following phases:

Literature Study and Desk Research

The aim of this stage was to identify current papers, studies on the ICT and e-learning uptake in university education in the different partner countries as well as at European level, and to identify already existing good practices on ICT use, produced in the university education field.

Stakeholders mapping

In order to assess the status of the ICT at the universities in the partner countries, a survey was prepared by the WP leader and sent to each Partner University to express their needs, experiences and benefits in the use of ICT and e-learning for university education.

All statements in this report are based on the results of qualitative and desk research. Whilst making no pretence to being an extensive scientific study, this report provides a useful overview of the current situation in the Jordan and Palestine.

IV. Limitations of the study

The main limitation to the study is that the quantitative findings are only applicable to the eight partner universities. Nevertheless it is expected to find similar findings or the same barriers if the survey is rolled out in the rest of the Palestinian and Jordanian universities.

Further to this the well known problem with questionnaires is the non-responsiveness, possible low return rates and inappropriate responses exist in the survey process. To overcome it, some

interviews have been used instead.

V. Literature Study

E-learning refers to the use of information and communication technologies (ICT) in different processes of education to support and enhance learning in higher education institutions. This includes the use of ICT technology as a supplement to traditional classrooms, online learning or mixing the both modes (OECD, 2005). E-learning offers institutions and their students the flexibility of place and time of delivering or receiving learning information. Continuing professional development practices in today's fast moving work place environment increasingly involve the use of modern technologies as part of the quest to provide a flexible and responsive learning experience (Smedley, 2010). E-learning is beginning to spread widely all over the Middle East region, as access to different technology forms improves. For example, Qatar is developing and expanding its e-learning facilities (ITP, 2008).

The term 'e-learning' has been applied in different contexts, such as distributed learning, hybrid learning and online-distance teaching (Maltz et al. 2005). In an e-learning environment, a variety of tools and technologies are employed, for example, internet mediated teaching, web-based education, TV and radio broadcast, virtual classrooms and distributed learning (Rosenblit, 2009). Online learning can be more flexible and often involves more technologies, for example, audio chatting, video conferencing and online discussion (Hrastinski, 2008). All these technologies give learners the opportunity to interact with instructors and other learners effectively and flexibly.

E-learning offers additional opportunities for interactivity between students and tutors during content delivery (Wagner et al. 2008). In a hybrid (blended) course, a significant portion of traditional face-to-face class time is replaced by online components (OIT, 2009).

From the students' aspect, e-learning allows the exploration of more flexible ways for learning with reduced need for travel to attend classes. The learning is replaced by interaction opportunities with instructors and other students on an anywhere-anytime-anyhow basis. Hence, e-learning offers avenues for students to continue their learning to acquire new and upgrade existing skills at a time and place of their choice. Zhang et al. (2006) comments that e-learning through interactive video facility allows student to watch any activities conducted inside the classroom and listen to instructors several times if needed. This provides tutors with more ways to interact with students and to provide them with immediate feedback (Brown et al, 2008). Those who adopt advanced technology during the teaching and learning process need to possess a range of ICT skills (Juhadil et al (2007)). This is an essential part of attracting more students and enriching the student learning experience.

VI. Integrating ICT in education through policy and other formal commitments

Educational policymakers are in a unique position to bring about change. But while the introduction of ICT policy is necessary for the change, it is not sufficient to result in its implementation or impact (Tyack and Cuban, 1995). Policies can, of course, fail to succeed and this happens when:

- they are viewed as mere symbolic gestures;
- when academics actively resist policy-based change that they see as imposed from the outside without their input or participation;
- when they do not have explicit connections to instructional practice (e.g. focus on hardware rather than their relationship to pedagogy);
- when they do not provide academics with an opportunity to learn the policies and their instructional implications; and
- when there is a lack of programme and resource alignment to the policies' intentions (Cohen and Hill, 2001;Tyack and Cuban, 1995).

While some policies may fail, identifying those countries that have current active ICT in education policies and/or other types of formal commitments including plans, regulatory provisions or a regulatory institution or body is important for assessing a country's effort to embark on educational reform that implements ICT in education. Data show that Jordan and Palestine possess each of the aforementioned definitions of formal commitments to ICT in education at university level of education. In other words, not only have each of these countries written a policy and plan for the integration of ICT into education, but these countries have also created regulatory provisions and regulatory institutions (or bodies) to ensure that ICT-assisted educational reform takes place and advancement toward established objectives is monitored and evaluated.

While some policies are more successful than others, the case of Jordan has been analyzed and discussed widely in international literature as it is recognized both in the Arab States and internationally as a leader in developing its ICT infrastructure and promoting ICT as a tool to improve human capital, foster economic development and reduce poverty (UNESCO, 2011a). Policy documents related to ICT in education have continuously evolved and been systematically updated, including the National Education Strategy (2004) and an overall policy framework for 2007-2011, which was recently updated. Jordan has systematically set in place a regulatory system through the National Centre for Human Resources Development (NCHRD) to monitor all activities in its reform programme – the Education Reform for the Knowledge Economy (ERfKE).

In contrast, the implementation of a policy for the use of Open Educational Resources (OER) is lagging behind overall. The term OER was coined at UNESCO's 2002 Forum on Open

Courseware and designates "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions (OECD, 2007; UNESCO, 2002; 2012b). However, while policy in the area of OERs is an important precursor for implementation, the Internet requirements of OER can constrain its implementation in a number of countries.

VII. Educational Reforms in Jordan and Palestine

Although education is a highly valued resource in both Jordan and Palestine, and the education sector is strengthened by the participation of many dedicated professionals, access to material resources and new information has limited their ability to explore and adopt emerging best practices in utilizing ICT in education, and to realize the potential benefits offered through technology in the 21st century. Recent reports in both countries indicate that the nation's education system has not been able to achieve a sector-wide shift from traditional methods of classroom-based teaching to an up-dated constructivist approach to student-centered learning. Such a shift would require well-trained staff members who have assimilated current best practices in utilizing ICT in education and are able to effectively integrate instructional technology into their curricula; instructors (and ultimately students) access to information and communications technology (ICT) tools and resources; and classroom environments that simulate 'real world' environments and encourage students to learn and solve problems independently and within teams.

Utilizing best practices in ICT has the potential to "bridge the knowledge gap" in terms of improving quality of education, increasing the quantity of quality educational opportunities, making knowledge building possible through borderless and boundless accessibility to resources and people, and reaching students in remote areas to satisfy their basic right to education. As various ICTs become increasingly affordable, accessible, and interactive, their role at all levels of education is likely to be all the more significant in making educational outcomes relevant to the labor market, in revolutionizing educational content and delivery, and in fostering "information literacy."

ICTs have the potential to improve the teaching and learning process by enabling students to access information and engage in interactive learning experiences that would not otherwise be available to them. In Palestine in particular travel constraints limit access to national and international resources and meetings or conferences where new information and lessons learned are shared are constrained as a result of the on-going political conflict. ICT tools that facilitate virtual participation in such events are an essential resource for updating knowledge and skills, remaining current with emerging best practices, developing networks, and sharing experience and lessons learned.

Unfortunately, the current educational system in both Jordan and Palestine do not adequately prepared to produce the effectively and appropriately educated graduates needed to build

and maintain a productive workforce. The education sector and its institutions are designed according to traditional behaviorist theories, and students are taught in classrooms that do not simulate professional environments, or stimulate learning and innovation. Thus, a paradigm shift in the focus and approach to education is required to achieve a transition from teaching to learning and from the transmission of knowledge to the construction of knowledge. Such a transition will require teachers/professors and students to take on new roles, and to effectively utilize new resources, particularly those IT tools and resources known to be enablers of effective pedagogy.

Universities in partner countries are aware of the possibilities technology has in store for the service of education. Reflecting back on the experiences of the partner universities in using learning platforms to maintain students' access to electronically enabled learning material, it is now evident that much of the learning material that has been posted on these platforms did not comply with any standards for the production of e-enabled curricula. This emphasized the belief that the educational system is still following traditional education methodologies that emphasize learning by memorization of information. The consortium partners believe that building the capacity of partner universities to modernise their education programmes and promote them amongst the young generation of students especially those in engineering science, and technology and to provide a high quality specialist training for professors/teachers will have a significant impact on the future economic development of these countries and on the stability and peace in the region.

Jordan

In response to the need for education reform, His Majesty the King Abdullah II called for a reorientation of education policy to meet the needs of the country and the people. Jordanian higher education institutions played an essential role in this reorientation.

In July 2003, the Government of Jordan launched an ambitious program in the entire Middle East and North Africa region a 10 year multi-donor Education Reform for the Knowledge Economy Program (ErfKE) of which the World Bank provided US$120 million. The goal of the program was to re-orient the education policies and programs in line with the needs of a knowledge based economy, improve the physical learning environment in most schools and promote early childhood education. This first phase of program is from 2003-2009, closing in June 2009. The second phase of the ErfKE for the Hashemite Kingdom of Jordan was from 2009-2015.

The aim of this program is to strengthen and institutionalize the reforms introduced under ErfKE I, with a particular focus on school level implementation and teacher quality. It will strengthen the institutional capacity of MoE in policy, strategic planning and monitoring and evaluation, and improve teacher employment, utilization and professional development policies and implementation. The program will also fine tune the curriculum and student assessment to ensure alignment with the knowledge based economy. Jordan Education Initiative recently received the

UNESCO prize on ICT use in Education.

This pioneering education project in Jordan schools is based on utilizing the power of information and communication technology (ICT) with the proven methods of learning to transform the learning environment in schools. This will impact the higher education in terms of students' competence.

Other developments:

- In 2003, the Ministry of Education (MOE) lead Jordan to become the first country in the Arab world to take clear steps into applying true e-Learning to all its students by deploying EduWave at the Kingdom's main Data Center and to serve over 1.2 million students in Jordan.
- Connecting Jordanians Initiative (CJI): A National Broadband Learning and Educational Network (NBN) has been lunched in 2003 and it will install approximately 5,000 km of optical fiber and several thousand IT-network devices to create one of the most advanced educational networks in the world.
- This network will link Jordan's 3200 public schools, 10 public universities, 23 community colleges, and 75 Knowledge Stations to support the transformation of Jordan's formal and informal education system. Currently, the Jordan Universities Network is connecting the 10 public universities and the Schools Broadband Learning Network has been lunched.
- Jordanian Universities are interconnected to the Internet via a 155 Mbps (STM-1) link.
- The Hashemite Kingdom of Jordan Ministry of Higher Education and Scientific Research National e-Learning Strategy for Higher Education (2007-2010) Knowledge Stations: 114 Public centers with computers, internet, and trainers spreading all over kingdom to provide electronic services to the community and to train Jordanians.
- Jordan Education Initiative has produced 5 e-curricula (Math, ICT, English, Arabic, Science). Since it started in 2003 and it has been piloted in 100 Discovery Schools.
- Jordan is already well endowed with telecommunications infrastructure. A fixed or mobile telephone service is available almost universally in inhabited areas of the country, and penetration has reached more than 93% of households overall.
- Mobile penetration is growing rapidly and reached 64%, mainly due to significant drops in mobile charges.
- The quality and reliability of the telecommunications infrastructure is above global standards.
- Technology Incubators to encourage innovative solution development in partnership with private sector (Yarmouk University, I-park incubators, Jordan Innovation Center, Philadelphia University, JIC – University of Jordan, Al-Hasan Industrial zone)
- Jordanian Universities are connected to centralized integrated e-library system.

Palestine

Despite the large international political support, Palestine's reality has not improved with the Israeli occupation and settlement enterprise becoming more deeply entrenched on Palestinian land. Israel controls the external borders (and therefore the collection and transfer of customs duties for Palestine) as well as internal movement of goods and people with hundreds of checkpoints, a Separation Wall, and more than 500,000 Israeli settlers spread throughout the West Bank. Area C makes up more than 60% of the West Bank and is under full Israeli civil and security control. Jerusalem is entirely cut off from the rest of the West Bank with no official Palestinian representation left operating.

Since the Palestinian education system is exposed to these political, financial, physical constraints and vulnerable to many variables that cannot be controlled, uncertainty has become part of everyday life for a student, teacher, and administrative staff. The Ministry of Education is well aware that many variables are beyond its control. However, the ministry tried to draft the 6-year Education Strategy 2014-2019 (EDSP 2014-19 or Palestine 2020) largely on the basis of factors and considerations that are within its control.

The most vulnerable places in the West Bank are Area C and East Jerusalem where Israel exercises full control over land and people and the educational process is often interfered with and basic rights violated by settlers and soldiers. Thus, in both these areas the ministry relies on direct international involvement and assistance to provide educational services to the least protected part of Palestinian students and teachers.

In this respect one of the three sector goals - Developing a student-based teaching and learning pedagogy and environment as well as main priorities and strategies are as follows:

Main Policies and Strategies:

- Promote a learner-centered education and respect of differences and diversity, and adopt all measures needed in this direction in terms of curriculum development, teacher qualification and provision of appropriate teaching and learning resources.
- Align the education system's outputs with individual learners' needs to allow them to pursue further education or positively engage in the community development process, and to compete at the regional and global levels.
- Conduct a thorough and comprehensive reform of the general education curricula and assessment and evaluation system to equip the students with the 21st century skills.
- Create an appropriate environment supportive of teachers through the profession of education depending on the national standards.
- Enable all students to employ technology to support teaching practices.

Main Priorities:

- Curriculum reform at all levels to address all related challenges and recommendations from external and internal studies and analysis and raise the qualitative level of teaching and learning according to 21st century skills.

- Implementation of Teacher Qualification Strategy Qualification of teaching staff.
- Shift the supervision system practices from command and control to empowerment of teachers.
- Upgrading assessment and evaluation system in line with curriculum reform.
- Enhancing quality of vocational education and to be a demand driven.

VIII. ICT in Jordanian Universities

Nowadays, the Information and Communication Technology (ICT) functionality in each university is implemented by special unit or center called Computer Center (CC).

Vision of CC: Use of ICT in all aspects of the University life to maximize performance, promote academic excellence, enhance productivity, and improve the quality of research.
Mission of CC: The CC is responsible for offering high-quality ICT services to students, faculty, and staff to fulfill the University mission in teaching, research, and community services.

To this end, CC is going to be user-centric providing a technology enabled teaching and learning infrastructure that supports academic excellence, a research computing, and communication infrastructure. A research computing infrastructure is that facilitates research networking. A communication infrastructure is that to enable collaboration and transports multimedia services, a system that improves the ability to access data and information in the workplace, a suite of ICT services and resources to increase the productivity of staff and administrators, to improve the decision making process, and to engage the Universities community with the external constituents.

CC Objectives:

- Establish and enforce policies, best practices, and standards for ICT resources, services, and data.
- Improve the quality of teaching, learning, and research through a more ICT functional environment.
- Automate administrative activities and services performed at all functional levels of the universities to maximize performance, improve the decision making process, and enhance productivity.
- Introduce state-of-the-art ICT infrastructure and technology applications in all activates of the universities.
- Provide means for seamless communication and collaboration within the universities and to the outside world.
- Build an effective technical support system for all ICT services.
- Provide technical consultancy, development, and training in ICT for the universities and the community.

Independence:

- There were no connections among universities, which mean that each university must sustain its responsibilities by itself.
- The idea of centralization is that many ICT functionalities are resided at a one unit to share services and make a one bulk of universities transfer to JUNET.
- The need for a Network Operation Center to operate and manage such huge network was main reason behind creating the Jordanian Universities Network company (JUNet).
- JUNet is a nonprofit company with limited liability founded in July 2003 by the Public Universities.

JUNET Objectives:

- Establish and operate the network that interconnects public Jordanian Universities to support goals of higher education and scientific research in Jordan.
- To provide infrastructure for this network.
- To provide all the necessary components needed to construct and operate the network.
- To provide human resources needed for the continuance of the company.
- To provide information technology services and support for all of the ten universities as needed.
- To design plans and policies needed for the usage of the network.
- To research and implement applications that enhance the services provided using the network to support the goals of higher education and scientific research.
- To sign national and international agreements in ordinance with the company goals and objectives.
- To acquire financial support and necessary funds through grants and loans to achieve the company goals and objectives.
- To develop a common strategy (standards) for network usage and applications.

JUNET Vision:

- To contribute to the development of the Higher Education and Scientific Research in Jordan by providing this sector with quality Network and applications services.

JUNET Responsibilities:

- To concentrate on the common needs, JUNet will be responsible for the following:
- Manage, Operate, and control the traffic on the network and guarantee the quality of service on this network.
- Provide connectivity and access to external networks like the Internet and other similar research networks around the world.
- Negotiating on behalf of the Universities with software suppliers for licenses and services that are commonly used by these Universities.

JUNET Outcomes:

- To concentrate on the common needs, JUNet is responsible for the following:

- All universities are connected now by the same network.
- JUNET is the Internet Services Provider (ISP) for all universities.
- All agreements are negotiated by JUNET as a representative for all universities.
- Integrated Library System (ILS), using JUNET network, the universities libraries now operated by one information system with shared data center.

Jordanian Universities ICT Polices

- Actually there are no joint polices for all Jordanian universities regarding ICT. Consequently, each university has its own policies.
- Currently, Jordanian universities and JUNET are trying to identify a security policy for all of the public universities in Jordan.

In general Jordan's situation in terms of research, development, and innovation is mixed. Authorities are making large efforts in the domain of education, with good results in terms of instruction and a rather remarkable rate of university access in certain disciplines (science, mathematics, and technology). The country possesses 10 public and 18 private universities which constitute an essential element of the basic R&D infrastructure. The ICT student population totals 8,500 at the university level.

In addition, Jordan has a higher proportion of university graduates in technological fields than any other country in the region. Jordan ranked 14th out of 110 countries for the number of engineers and scientists according to the Global Competitiveness Report 2007-2008 (WEF). The number of Jordanians involved in pure R&D activities is low, compared with other countries. Furthermore, university/industry collaboration and R&D expenses are also low.

IX. ICT in Palestinian Universities

In Palestine, education is one of those fields in which the ICT is employed with the hope of increasing the education quality. During the last few years, the Israeli military closure prevented the students and employees from reaching their schools, universities, and institutions easily. Consequently, great attention was given to the ICT sector by the telecommunication company, the Palestinian authority, and the universities. ICT plays a vital role to enable the students to register their courses and to follow their classes on-line over the Internet.

The universities tried their best to make all fields of study available. In 980s, Palestinian graduates from computer and communication areas were leading the computerization of the manual systems in Palestine. At the beginning of 1990, small size companies were created and provided Internet services to Palestinian communities. The coming of the PNA (Palestinian National Authority) enabled the Palestinians to:

- Regain, partially, control over the sector of telecommunication;
- Develop the infrastructure of communication networks;

- Establish the Ministry of telecommunication and Information Technology (MoTIT).

In fact, the Israeli closure and restrictions on the movement of the Palestinian people led to the creation of computerized systems to serve the students.
The development can be summarized as follow:

- Focusing on creating web pages for announcements and keeping the contact between the students and teachers.
- Computerizing the registration process allowing students to register over the Internet, get their transcripts, inquire about their status and grades, and exchange messages with their teachers from home and avoiding the agony of traveling to the universities. Examples: Az-zajel system at An-najah University and Ritaj system at Birzeit University.
- Offering on-line courses to the students during the curfew and closure.

Furthermore, the universities have enhanced their institutions by:

- Establishing the IT centers of Excellence which focus on training the teachers, students, university professors, and employees from different companies on the use of ICT technology. Such centers include:
    - the Korean-Palestinian IT center at An-najah University.
    - the Kawash IT center at Palestine Polytechnic University.
    - In addition, AL-Quds University in Jerusalem, the Arab-American University of Jenin, and other universities have established such IT centers.
- Also, some Palestinian universities have established e-learning units and groups to serve the education process in the universities.

In 1997, the PNA has privatized the telecommunication sector and licensed it to the PalTel Company. PalTel built a modern telecommunication infrastructure able to provide access to all of the familiar digital technologies – mobile phones, e-mail, Instant Messaging, Text Messaging (SMS) and video hook-ups. PalTel has formed groups such as:

- JAWWAL for providing mobile services,
- Hadarah for providing internet services, and
- Hulol for designing and developing educational and other types of software.

Other major players include:

- PITA (Palestinian IT Association of Companies) which combines a total of 65 companies specialized in marketing ICT technologies, developing software systems, telecommunication, consultancies, etc.
- PICTI (Palestinian Information and communications Technology Incubator) with its idea of incubating ideas until it makes a product from the idea and then creating a small business from the same idea.
- The two Partner universities, An-Najah in the north and Polytechnic of Palestine in the

south, are in the process of establishing two such IT Incubators.

In spite of the developments the ICT sector, Palestine still faces many obstacles referred to:

- The Israeli control of the radio frequencies,
- The Israeli prevention of some ICT devices needed for updating technical infrastructure from entering Palestine,
- The prevention of the Palestinians to go directly to the International Network,
- The restrictions on movement between cities, and the fear of the investors to invest in Palestine because of the unstable situation are added to the obstacles.
- In addition, the PNA must dedicate more resources and budget to improve ICT in education.

UNDP was the first to help in entering the Internet to the Palestinian universities. The World Bank supports ICT projects through many programs such as QIF (Quality Assurance Fund) managed by the ministry of education and higher education in order to improve the quality of education at Palestinian universities. Although the German GTZ institution is supporting, mainly, the water projects, yet it has partially supported projects for training employees in IT fields.

X. Infrastructure to support the integration of ICT in educational institutions

The Case of University of Jordan

Facts about the University of Jordan

The University of Jordan (UJ) is the leading institution of higher education in Jordan established in 1962. The UJ took e-Learning and Information and Communication Technology-led development initiative in its vision since 2003, When the Learning Management System (LMS) was integrated into its information system; Blackboard in 2005 and Moodle in 2012. UJ has 20 faculties, 2 deanships, and 17 centers in the main campus in Amman; in addition to 5 faculties in Aqaba branch in southern of Jordan. UJ offers 63 bachelor's, 81 master's, and 30 doctoral programs, in addition to 16 higher specialization programs in Medicine and one in Dentistry. UJ also offers one higher diploma program in ICTE, and 6 professional diploma programs.

In its capacity as a comprehensive teaching, research, and community-service institution, the University of Jordan enables its students to choose from a wide range of programs- more than 3500 different courses are offered by some 20 faculties. Given the global outlook, the progressive thinking, and diverse background, around 1628 faculty members shoulder the responsibility of delivering a quality education to the 37,980 students who currently are pursuing a wide variety of undergraduate and graduate programs.

There are 2,295 international students coming from 63 countries (The University of Jordan, 2012). All programs offered by the university combine traditional academic lecturing with the more liberal methodologies of instruction which are based on dialogue, research, problem-solving, and creative thinking.

Theoretical instruction is further assisted with interactive multimedia teaching techniques and computer-based instructional materials to support, and eventually discard, traditional teaching methodologies. Field work, practical training, and applied research are essential components of most programs offered by the university. For sometime, UJ has been introducing and implementing the principles of Total Quality Management (TQM). With respect to Information Technologies, UJ is very well-positioned. The University of Jordan took e-Learning and ICT-led development initiative in its vision since 2003, When the LMS was integrated into its information system; Blackboard in 2005 and Moodle in 2012.

Additionally, in terms of ICT and e-Learning and Web applications that are used by the university, UJ is typical of the traditional campus-based university keen to capitalize on the benefits of ICT and e-Learning, while also having to move to twenty-first-century online learning for some of its large-scale graduate programs. Preparing a strategic framework for the development of ICT and e-Learning at the UJ confirms that the university had recognized that ICT and e-Learning needed to be developed with appropriate pedagogical and learner-driven underpinnings. For this reason, the Deans' Council at UJ has established an e-Learning Office, which resides in King Abdullah II School for Information Technology, on November, 2012. The move into the newly constructed e-Learning Office adds an exclamation point to this development.

The renovation of classrooms and laboratories at the UJ campus and the learning center at UJ, are creating an environment where the infrastructure is now available to support the integration of e-Learning technology into classroom instruction. Moreover, the University of Jordan is placing an increased emphasis on online learning. Institutional initiatives have led to create online courses scheduled for 2012.

The University of Jordan has chosen the effective use of e-Learning technology as one means to ensure continuation of its traditional strengths in teaching and learning. This direction is made explicit in the University of Jordan Vision Statement for e-Learning: University of Jordan embraces an e-Learning-centered approach with integrated technology, accessibility, and personal attention, resulting in quality learning and student success in a technology-driven future.

The existence of e-Learning Division located at the Computer Center, e-Learning Office located at Faculty of Information Technology, and Atheer Long Distance Center located at the Faculty of Educational Sciences reflect the University vision where it envisages an environment where the use of information and communications technology is regarded as an integral part of the university everyday practices and administration management.

UJ acknowledges the potential of ICT to impact on learning outcomes for all students and the work

habits of all staff. UJ ICT and e-Learning mission is to provide quality education that is accessible anywhere, anytime. Also to promote and support the effective use of technology in the curricula through improvements in existing programs and the creation of new technology opportunities for students, faculty, and the community.

The University of Jordan ICT Facilities Report

- **What is the name of your University?**
  - The University of Jordan

- **What are ICT facilities are use for various operations and services in the university?**
  The University of Jordan has several ICT facilities includes:
  - E-Learning Office which is located at King Abdullah II School for Information Technology.
  - Competency Center which is located at King Abdullah II School for Information Technology.
  - Atheer Distance Learning Center which is located at School of Educational Sciences.
  - Students.com for Online Examination facility which is directed by Computer Center.
  - Computer Labs located in each faculty at the university which are directed by Computer Center.

- **To what extent has the use of ICT helps student's access information resources?**
  University of Jordan offer several information resources to the students at UJ for undergraduate and graduate students includes:
  - WiFi Internet access all over the campus.
  - e-Library which provides an online resources and databases.
  - Online registration including registration with smart phones applications.
  - Students Portal where students can access it to download several license software and programs.
  - e-Learning platform (Moodle) to access courses materials and conduct online quizzes.
  - Faculty Members Website which provide to students access to interactive materials related to their courses.
  - Email accounts to all students so they can communicate with their instructors and get the needed information.
  - ICT labs allowed easy access for the Internet and various library resources.

- **What are the obstacles students face in using ICT facilities in their university?**
  Students at UJ may face several obstacles related to using ICT facilities at the university; some of these obstacles are:
  - Limited bandwidth capabilities.
  - Access computer labs just during the official working hours; so the graduate students who pursue their academic programs at evening time could not get an access to some ICT facilities.

- Mostly, up to date software for various use.
- Not enough PC devices available.

- **What is the current state of ICT at your university – Strengths, Weaknesses, opportunities, and Threats Analysis?**

  - **Strengths:**
    - Up-to-date software.
    - Wireless Internet access all over the campus.
    - Access the university's library and courses materials including e-Book from any where any time 24/7.
    - Availability of labs.
    - University belief in the importance of ICT in education.
  - **Weaknesses:**
    - Limited users' access.
    - Limited Online Grades System access form off-campus due to security purposes.
    - Computer labs at a number of faculties at the university have out-of-dates PCs and software.
    - State of the art hardware and software.
    - Internet is not available everywhere inside the campus.
  - **Opportunities:**
    - Cooperation with private sector in terms of ICT equipment and IT related training.
    - Cooperation with European Commission via international research project to get experiences related to ICT.
    - Get ICT funds and grants from sponsors at national and international levels to achieve our goal of having a smart campus.
    - Get an ICT training at state of the art centers.
  - **Threats:**
    - Financial issues.
    - Obsolete hardware infrastructure.

  - **Is there a clear ICT policy at your university for integrating ICT in education?**
    - No; actually there is no real implementation of ICT policy at the university. Therefore, we might need a workshops about this topic.

  - **How the institutional cultural at your university influences ICT Strategy?**
    - In general, the institutional cultural at our university has a positive attitudes towards ICT utilization. Thus, it has a positive impact of ICT strategy. However, there are as number of faculty members who resist using ICT in their instruction, hence it could influence ICT strategy in a negative manner.
    - Focus is still on books and papers materials.

- **Is there any copyright issues raised by faculty members at your university due to ICT utilization?**
  - The answer is 'Yes" due to not obeying copyright regulations by limited number of instructors and students. During an e-Learning training session which held at our university last week (May 10th, 2016), several faculty members who attended this training raised a concern about their e-Content which they upload to the course Website; they afraid that their own online work will be plagiarized.

- **Are ICT facilities available at your university for students use?**
  - Yes.

- **Do students at your university readily deal with ICT facilities? If yes, please explain where? and how?**
  - Yes; students at our university readily deal with ICT facilities at:
    - ✓ Library for searching online resources.
    - ✓ Computer Labs for conducting courses projects and online registration.
    - ✓ Students.com facility for conducting online exams.

- **How often do students at your university use ICT facilities for leaning?**
  - Daily bases during university opening hours; but in general, rarely.

SWOT Analysis

- **Strengths:**
  - His Majesty high interest in and support of the ICT sector.
  - Highly educated staff.
  - Using most recent technologies.
  - Well established ICT infrastructure.
  - JUNET as a hub service provider.
  - ICT helps students study subjects using a wide range of sources.
  - Most students are ready to learn new skills.
  - ICT prepares students for the world of work.
  - The development of students' skills to use ICT for their lifelong learning activities.
  - ICT helps both students and instructors realize that teaching and learning are interactive processes.
  - The instructors have the chance to plan short, timed, tightly focused activities.
  - The instructors see the main difference between a traditional and computer-based lesson (saving time, motivating students).
  - ICT helps students with disabilities.
  - Most instructors have ICT skills.

- **Weaknesses:**
  - Limited budgets/financial problems/lack of financial support.
  - The experts' relocation (migration).

- In general, R&D is not efficient yet in Jordan.
- Lack of communication between the private sector and researchers in the universities.
- Lack of institutional vision.
- ICT is used for teaching only some subjects (Informatics, Mathematics, Biology, Statistics, Bookkeeping, Typing).
- Some instructors hesitate to use ICT.
- Not enough resources/computers for each classroom.

- **Opportunities:**
  - His Majesty high interest in and support of the ICT sector.
  - International cooperation and support for the ICT sector.
  - Highly qualified and innovated graduates.
  - Strong ICT market and investments.
  - Political stability of Jordan.
  - Students have a chance to present their work in a way that suits them.
  - Integrate ICT with all subjects, so this could replace or be combined with traditional teaching methods (blended learning).
  - Encourage active cooperation of university and businesses, public and private sectors, as well as the local community and Government bodies, in computerization.

- **Threats/Challenges:**
  - Jordan, despite showing impressive improvement in the education system, still needs to fix some of the persistent problems in ICT sector.
  - With the rising growing youth population, Jordanian government has to ensure that the quality of education and level of skills imparted can help the new generation to compete effectively in the national and international arena.
  - Lack of instructors in the ICT sector.
  - Governmental funds transfers to universities have declined from JD 60.4 million in 2004 to JD 52.6 million in 2007 and JD 45 million in 2008.
  - International financial crisis.
  - Jordan does not involved yet in the ICT H/W industry.
  - Cost.
  - Training.
  - Damage.
  - Distractions.
  - Safety/security.
  - There is no framework or regulations to govern ICT practices and quality assurance procedures in Jordan.
  - There are no policies or in place Intellectual Property Rights to protect ICT content authors.

The Case of Jordan University of Science and Technology

Facts about Jordan University of Science and Technology (JUST)

Jordan University of Science and Technology (JUST) was established in1986 in the northern part of Jordan. It has 11 faculties including 52 academic departments. The number of graduate and undergraduate students currently enrolled in the university exceeds 26,000 students; about 25% of them are from more than 50 countries, with more than 800 faculty members. In 2011, Jordan University of Science & Technology (JUST) has begun to make its mark in the QS World University Rankings which, in return, placed JUST at 601+ according to the QS World University Ranking System. JUST has been ranked 301 according to the following indicators: academic reputation, reviews by recruiters who hire JUST graduates, faculty student.

JUST has established the Academic Development & Quality Assurance Center (ADQAC), which aims at improving standards of teaching and learning at JUST. Three programs from JUST were the first Jordanian ABET accredited programs.

Using ICT was one of the priorities of JUST. Thus, the establishment of the Computer and Information Center aimed at achieving this priotity. The Computer and Information Center (CIC) is responsible for offering high-quality ICT services to students, faculty and staff to fulfill the University mission in teaching, research, and community services. To this end, CIC is going to be user-centric providing a technology enabled teaching and learning infrastructure that supports academic excellence, a research computing infrastructure that facilitates research and improves our competitiveness, a networking/communication infrastructure that enables collaboration and transports multimedia services, a system that improves the ability to access data and information in the workplace and, a suite of ICT services and resources to increase the productivity of staff and administrators, to improve the decision making process, and to engage the University community with the external constituents

http://www.just.edu.jo/Centers/ComputerandInformationCenter/Pages/default.aspx

The University of Jordan ICT Facilities Report

<u>Computer and Information Center</u>

The Computer and Information Center at JUST has been providing the University with an excellent and rapidly expanding Information and Communication Technology (ICT) infrastructure to accommodate the growing administrative and academic needs. The University computing facilities comprise of over 3000 personal computers, a server farm, Gigabit and wireless Ethernet networks that span the entire campus, VoIP infrastructure, and an Internet connection of 200 Mbps. Network security is managed through Firewall, IDS, Corporate Anti-virus system and other tools. There are four Video conferencing systems that are able to cover different classrooms and halls.

The current Management Information System (MIS) covers all administrative departments including Student Information System, Human resources, Finance, Engineering workshops, Inventory and Supplies, Student Affairs, Graduate studies, University centers, Library, electronic exams section, and others. Our students, faculty, and staff can have access to several online self-

services through our portal. The University has clear policies and regulations for regulating ICT usage.

The University is currently running several projects including deploying active directory, single-sign-on using identity server, online help desk, learning management system, and operation and management systems.
The Computer and Information Center was established in 1987 to provide the following services:

- Automate the administrative activities at the University
- Provide the necessary computing and networking facilities to students and faculty staff members including support
- Responsibility of choosing the best technology in software, hardware and networking to be used at the University
- Maintenance of all personal computers and related software and devices
- Maintaining the communication services at the university and related sites
- Training University staff members
- Provide consulting and computing services to the local community

The responsibilities of this center increased since that time, because of the growing demands on using the IT in teaching and research, as well as using the computers and information technology in the administrative departments of the University.

ICT facilities used for various operations and services at JUST

Several ICT facilities that are used in JUST to enhance the teaching style and help the students and the instructors as well. Some of these facilities are the free computer labs that are equipped with all needed software for different studying programs, online exam equipped with nearly 750 computers, Wi-Fi coverage nearly all over the campus, E-learning system, and smart boards in some classes, virtual classroom capability, and video conferencing rooms.

The extent at which the use of ICT help student's access information resources

JUST has online services that enable the students to do almost everything using the online portal with their credentials, such as registration, online payments, request for transcripts, withdrawals, and nearly all kind or requests for the students. In addition to that, we have lunched an application for various kind of smartphones that enable the students to use their services and this application also has the push notifications feature.

The obstacles facing students in using ICT facilities at JUST

The students nowadays are well educated with the ICT services especially after the breakthrough of the smartphones that almost 90% of the students do have smartphones. I think there is no obstacles for the students to use the ICT services

SWOT analysis of ICT at JUST

The ICT mainly consist of two main parts, the infrastructure and the online services. The infrastructure of JUST has been upgraded recently and its now equipped with core switches and distribution switches with capabilities of 10Gbps traffic with a strong network security setup. Regarding the online services, as we mentioned earlier, nearly all possible kind of the online services are already available for the students, and we always keep computerizing all procedures to be fully paperless university.

ICT policy at JUST

JUST is working now with some courses with a large class size to use the virtual classrooms. In addition to that, we do have another project that uses the technology of Microsoft office MIX that will transfer the lecture notes along with the instructor voice and his/her hand written notes into a single video file (size of 45-60 MB) with almost 45 min long. This video file will be available to the students in the cloud with some permission provided by the instructor to his/her students in the class. We have done a sample course as a pilot project and now we are working to distribute this over several courses.

Influence of institutional culture on ICT Strategy at JUST

JUST has a good portion of the faculty members that are considered to be young faculty members that are already an IT oriented in their teaching style. Moreover, the senior members of the faculty members started few years ago to use the ICT in their teaching style

Copyright issues at JUST

JUST follows all the copyright policy provided the Deanship of Scientific Research at JUST

Do students at your university readily deal with ICT facilities? If yes, please explain where? And how?

Yes, they have full access to the free computer labs and they can used the installed software and programs, they also have the E-learning resources available 24/7 and they can share files and questions with the instructors. Moreover, some students require virtual machines for their senior lever projects, and we do grant them the access for these virtual machines even from their homes via VPN.

How often do students at your university use ICT facilities for leaning?

University students nowadays are IT oriented and they use their smartphones a lot. JUST has a counter on some services showing the last login for the students on E-learning for example, at least 80% of students access their E-learning portal daily.

The Case of Al-Zaytoonah University of Jordan

Facts about Al-Zaytoonah University

Al-Zaytoonah University of Jordan (henceforth, Al-Zaytoonah) was established in 1993 after receiving its license and general accreditation by Decision No. 848 on March 6, 1993. Instruction began on September 6, 1993, and since then Al-Zaytoonah has witnessed considerable progress, at both the infrastructure and academic levels. It now includes seven faculties, encompassing 20 undergraduate specializations and five graduate programs.

There are 300 faculty members of various ranks distributed among the seven faculties of the University. These faculties are Art, law, Science and Information Technology, Economy, Nursing, Pharmacy and Engineering. In addition there are 80 teaching and research assistants and lab technicians, beside 210 administrative employees.

The number of students enrolled at the University in the academic year 2015/2016 is 7500, of whom 6,060 students are Jordanian. The non-Jordanian students come from Arab and foreign countries. Jordanian and non-Jordanian students are admitted according to the regulations set up by the Ministry of Higher Education & Scientific Research.

2.1 Available Facilities

2.1.1 University Presidents' Building

It was constructed to meet the university's need for a base where plans for academic excellence are drawn and going guidelines are launched to provide a quality education to our students. The building features offices of the president and the Board of Trustees, a conference hall, a visitors' hall the Personnel Department, the Office of the Chief Clerk, and the Public Relations Departments.

2.1.2 Faculty Buildings

- Faculty of Arts
- Faculty of Law
- Faculty of Economics and Administrative Sciences
- Faculty of and Pharmacy
- Faculty of Nursing
- Faculty of Science and Information Technology
- Faculty of Engineering and Technology
- Laboratories and Workshops

The campus includes academic faculty buildings with a distinctive architectural designs that suit their surrounding natural environment and educational purposes for which they have been constructed.

2.4 Service Buildings

- Library
- Sports Hall
- Main Restaurant
- Computer Center
- Admission and Registration Department

- Engineering and Maintenance Department

2.4.1 Computer center

The Computer Center was established in the year 2000 to carry out all technical activities in support of Information Technology to all colleges and departments at the University and to play a major role in improving the overall performance of the University IT services to students and academics. By that the computer lab has provided an educational server for each faculty to conduct its e-learning programs to include exams, assignments and lectures.
The center provides a free internet connection for students and staff, which makes access to knowledge very easy. Students may also use e-books as well as in lecture rooms. Online interaction between students and faculty members are also available through modern facilities.

The Case of Hashemite University

Facts about Hashemite University (HU)
The e-Learning unit at the Hashemite University has success story and an example in the field of e-learning. In 2007 the e-Learning unit has been established in order to provide the infrastructure and the sources of the electronic systems of education and training required by the improvement and development of the educational process at the Hashemite University supported using modern technology strategies. The HU e-Learning seeking to provide educational materials electronically, so that the learner can review and learn from them; either combined with traditional learning as in compound learning or distance learning, at any time and place fits to the learner. The HU e-Learning unit has adopted concurrent education which provides direct interaction between students and their teachers, systems, and software necessary for the preparation and development of educational materials, and advanced systems for recording lectures in all its activities and made available for students where they can be browsed and viewed using the Internet anytime, anywhere. The unit is equipped with a advanced wireless computer network and contains several personal computer equipped with sophisticated laboratories designed for the purposes of e-learning. The unit is provided of infrastructure that enabling to provide a suitable environment for Culture and electronic work and it is strive to provide the appropriate educational environment to facilitate the task of the student to obtain information necessary to raise the scientific and technical competencies and skills. Also located in the centre a servers in a global specifications and standards to embrace different e-learning systems. The centre were established three laboratories equipped with modern computers, electronic devices, and display processing. They were uploaded by e-learning software and e-learning tools with a capacity of 36 computers per lab. In addition to a student's lab with a capacity of 208 computers. An office was established to oversee the e-Learning and Learning Materials Design Systems.
HU E-Learning Unit Strategic Plans:
The HU e-learning unit has four plans of action already in place:

- The deployment of the necessary infrastructure and equipment for sparking the growth of e-learning.
- Specific training at all levels and particularly for teachers and trainers.

- The creation of the necessary conditions for the development of quality educational contents and services.
- Hastening the networking and cooperation at the national level.
- One of the key difficulties encountered when shifting from traditional learning to the adoption of technologies in learning – e-learning – is the lack of rigorous measurements to assist the administrators' initiatives in the process.

HU E-Learning Unit objectives:

- Provide a high-quality education to remote areas, and persons with special needs.
- Develop criteria and standards of excellence in e-learning, which can be utilized at the national and regional level.
- Increase the independence of students in education and encourage communication and cooperation among them.
- Increased interest between the faculty in e-learning and to help them communicate with each other.
- Facilitate the management of educational material and methods of evaluation and assessments.
- Provide a browsing of these resources and their supporting systems.
- Increase the quantity and quality of educational resources available at the university.

HU e-Learning unit currently offers interactive electronic lectures inside and outside the university at the regional level, also presents technical and advisory services to all national institutions. The Unit holding an intensive courses in the e-Learning, preparing, and developing electronic materials within the continues training program for faculty members in the university. The Unit was hosting an international experts to hold specialized workshops in this area, it has been training 60% of faculty members and administrative education in e-Learning software through several training sessions held at the end of each semester. The Unit means in scientific research in the field of e-learning and the development of appropriate standards to adjust the academic quality of e-learning.

HU E-Learning Unit Systems:

It is available at the unit set of global systems of systems and software necessary to manage the e-learning process including:

- **Educational Administration material system**: an integrated global system for the management of educational materials, which enabling the faculty members to upload the educational materials on the main server and update them, also it can quarterly business presentation, examinations, and the results first hand, and they can communicate directly with students through windows dialogue and electronic letters and generalized.
- **Recording lectures system**: an integrated global system for recording lectures electronically and scheduling and link them with the management of educational materials system. So that it provides the students an effective way to return to lectures and attend at any time. The system also provides the students the possibility to download these lectures and stored on their own computers. The number of lectures that have been recorded since the establishment of the center more than 200 lectures, a continuing rise each semester.

- **Electronic Authoring System:** this system is characterized as an easy to use, provides users a comprehensive creative environment to produce a rich with educational content in various educational methods, and increase the effectiveness of educational content.
- **Educational material electronic development System**: the system is aimed to displaying courses material in a simplified manner in collaboration with colleges. So that more than 25 different courses were developed by using this system, the courses which produced by the system: Military Sciences, traffic safety, environmental science, telecommunications and agriculture skills. Now the centre currently working on developing hypertext integrated in the National Education according to the university plans.
- **E-examinations Management System:** This system meant to create exams electronically via prepared in coordination with the subject teachers, identify activated and delivery to students in laboratories across the LAN and then extract the results and delivered to the faculty members. The unit conducted quarterly examinations for subjects at a rate of 100 exams distributed quarterly to all faculties of the university, the compulsory level exams in English and Arabic language and computer skills to all university students, and exams to recruit new staff and develop faculty.

HU E-Learning Unit Community service initiatives:
The Unit took the initiative to set up an electronic material for traffic safety in support of the traffic strategy, presented his readiness to provide training courses for managers and teachers within my school initiative, expressed its readiness to computerize some electronic materials, and currently thinking about constructing Graduate program in "Diploma in Education Technology and Electronic Education" prompt to all who wish to satisfying his desires and the development of the education system as institutions of education and the ministry of Education.

E-Learning tools and Training in HU E-Learning Unit:
- Conducting training sessions on how to use Learning Management Systems such as Moodle and Blackboard.
- Conduct a training on" Virtual Class Room".
- We have around 3000 PC distributed in different labs at the faculties.
- We have a video conference room.
- We start using a blended learning since 2009 for university courses.

What are ICT facilities are used for various operations and services in the university?
- E-Learning unit.
- Center of information and telecommunication
- Computer Labs located in each faculty which are directed by Computer Center.

To what extent has the use of ICT helps student's access information resources?
- WiFi Internet access all over the campus.
- Electronic services such as e-Library, Online registration, Students and faculty Portal.

What are the obstacles students face in using ICT earingfacilities in their university?
- Limited bandwidth capabilities and lack of infrastructure.
- Not enough PC devices available.

What is the current state of ICT at your university – Strengths, Weaknesses, opportunities, and Threats Analysis?

- **Strengths:**
  - Up-to-date software.
  - Wireless Internet access all over the campus.
  - Academic members graduated from USA, Europe and Australia belief of the importance of ICT in education.
- **Weaknesses:**
  - Old PCs of some of the faculties labs.
  - Internet is not available in some of old buildings.
- **Opportunities:**
  - Private sector might offer a help in term of providing incubators.
  - European Commission such as Tempus and Erasmus + might help to get experiences related to ICT and eLearning.
- **Threats:**
  - limited budget.
  - hardware infrastructure.

Is there a clear ICT policy at your university for integrating ICT in education?

Not yet.

How the institutional cultural at your university influences ICT Strategy?

We have thought of using ICT that will affect the learning process. Also, due to increasing number of students, the ICT will help in reducing pressure in halls and other university infrastructure.

Do students at your university readily deal with ICT facilities? If yes , please explain where? and how?

Students can use library and computer Labs to search for books as well as to use the registration systems.

How often do students at your university use ICT facilities for leaning?
Usually and they often access the university website through their smart phone.

The Case of An-Najah National University

Facts An-Najah National University (ANNU)
Technology is used at ANNU as support to the teaching and learning process. To varying degrees the teachers use PowerPoints, recorded classes, Moodle courses, one Mooc course, electronic testing, learning video design. All technology practices are based on voluntary initiatives by faculty through the e-learning center. Technical support is provided during working hours from 8-

3:30 through phone calls or class visits by technicians.
Technology utilization is not practiced on large scale. It can be expanded by increasing the number of users and improving the quality of utilizing technologies y training faculty on using technology to support use of specific methodologies and/or using it to increase active learning opportunities for learners.
This document provides data on ICT functions, infrastructure, legal and ethical frame, faculty and student attitudes, training needs, and technology needs.

Technology Uses at ANNU

Recorded classes:

Faculty members choose to record classes (40-45 hours).
The recorded classes can be accessed by:

- students on and off campus
- regional and international audience

The quality of recorded classes needs to be improved. Training on using recording technologies is needed and training on recorded lecture delivery is also important.

Moodle Platform

Moodle platform is adopted across disciplines. Materials, links, videos, powerpoints, forums, polls are added for learner use in and outside classrooms.
Training is needed on Moodle course design, forum design and e-assessment practices. Leading online discussions is also a training need for Moodle users.

Electronic tests

1st and 2nd year multi-section, multi-instructor classes are tested electronically and question banks are established and fed with questions every semester.
Teachers need training on the technical and pedagogical side of test design to cover lower and higher skills in the tests.

Infrastructure

- Computer labs: 1 in most departments
- There is increasing demand by instructors on using ICT tools. It is often the case that the computer lab does not cater for the needs of faculty members in each department.
- Smart boards: Available in only a few faculties
- Many departments remain without access to smart boards
- Video conference facilities: Access to VCRs can be arranged by booking.
- Internet connection is available on campus though wireless connection is still not available in many buildings or in the open areas.
- The majority of learners have access to internet from home. It is very rare that students face difficulties in accessing internet from home.

Attitude:

Faculty attitude as revealed in the surveys we conduct are overall positive towards utilizing

technology in education. The new generations are much more enthusiastic than the older generation in this regard. Results of ANNU faculty surveys could tell much about their attitude. They can be inserted here by baseline study team.
Student attitude fluctuates and this fluctuation depends on whether the students see the value of using technology in their classes. Bad practice seems to sharply decrease motivation in many cases. Results of ANNU student surveys could tell much about their attitude. They can be inserted here by baseline study team.

Legal/Ethical frame
There is a clear policy against copy right violations but the problem seems to persist in class design. Many courses are not open for public use because they still have copy right problems. Training and perhaps course evaluation is much needed in this area.

Strengths
- The center for teaching and learning provides Academic staff with professional development training in ICT integration. Examples on ICT integration package are: PowerPoint Design, Forum Leading Discussion, Group management on Trello, Interactive powerpoint based classes, etc.
- E-learning center provides Technical support for ICT practitioners. The center is responsible for training and administration of e-learning based classes.
- Availability of Institution policies which is Blended learning 1+2
- Availability of clear assessment policy: 30% e-based tasks
- Technical support available during working hours 8-3:30

Weaknesses
- Low quality ICT practices in some cases
- Connecting use of technology to support a specific methodology like problem-based learning for example.

These two need quite a lot of work to guarantee good practice in utilizing technology on campus. Good practice will maintain positive attitude especially with the learners.

Infrastructure needs
Smart rooms would help much enhance existing infrastructure on campus to increase access by faculty to technology infrastructure especially in departments which are under equipped. We look for these equipments in each room:
- Wireless projectors
- Smartboards
- laptops
- Internet connections
- LCD screens
- Cameras

Conclusion

We expect to improve performance in ICT utilization through the Methods project by:

- More carefully planned utilization of technology to support methodology
- Exposure to ICT good practice by trainers to be trained in this project
- Supporting infrastructure in limited access departments
- Designing model courses which purposefully exploit technology to support learning methodology.

The Case of Birzeit University

Facts about Birzeit University (BU)

Computer Center provides maintenance and technical support services to the university . These services are provided through user support department and technical field support department, the center seeks to provide services that support business at the university and fit users' expectations.

Maintenance and technical support requests are received through Email (helpdesk@birzeit.edu), ritaj (https://ritaj.birzeit.edu/tickets) also the internal phone (5008 and 2271). User support department receives these requests and transfers it to the technical field and support department if needed .

User support department staff provide applications with needed technical support. This department considers the first support line , it is trying to solve problems directly via phone or E-mail. Also they direct these requests to the technical field and support department staff when needed, to ensure the continuity of laboratory work.

We found that we have 2300 computer in our university , 1200 of them are laboratory device, distributed according to the next table:

Building	Employees Devices	Laptops	Labs	Total
Arts Building	85	15	120	220
Presidency	30	12	0	42
Law Inst.	40	12	10	62
Law Extension	18	2	18	38
Al-Maktom	39	8	15	62
Library	28	2	71	101
Business and Economics Building	64	8	64	136
Clinic	8	1	0	9

Graduated Studies Building	3	8	0	11
Museum	4	0	0	4
Engineering Building	120	17	187	324
Science Building	93	14	46	153
Said Khoury Building	69	40	0	109
Nursing Building	32	36	0	68
Education Building	50	19	25	94
Najad Zenni	12	3	26	41
Faculty of Information Technology	40	7	186	233
Ritaj Lab	1	0	150	151
Media Center Building	52	6	70	128
Bahrain Kingdom Building	37	6	30	73
Baramki Building	66	24	0	90
Students' Affairs & Workshops Building	28	0	0	28
In-House Guards Building	6	0	0	6
Physical Education	8	0	0	8
Al-Massa Building -Center for Continuing Education			32	60

The technological resources which shown in the previous table can be separated as following:

Laboratory and devices:

The following table shows computer labs according to buildings and the number of devices:

Building	Laboratory - room number	Number of devices
Baramki Building	**Baramki Building**	150
Al-Masri Building	303	31

Statistics exclude laboratories and devices that overseen by teaching Assistant (3 laboratories\ 21 device)	**305**	31
	307	31
	403	31
	402	28
	405	31
	407	17
Masrouji building-Media Institute	**301**	16
	306	13
	309 Radio Laboratory	9
	401	11 Mac
Masrouji building-Media Department	**11**	18
	014 Photography Laboratory	12
Said Khoury Building - Public Health Institute	**224**	29
Said Khoury Building - Center for Development Studies Library	002	9
Nursing Building	**217 Electronic Library**	20
	200	17
Business and Economics Building	**121**	20
	122	20
	123	23
Science Building	018	21
	016	27
Arts Building	230	17
	231	17
	232	19
	233	17
	018	31
	002	45
	101(Laboratory for persons with disabilities)	10
Bahrain Kingdom Building - Sociology Department	**231**	18
Bahrain Kingdom Building - Women's Studies Institute	123 (Library)	6
Yusuf Ahmed Alghanim Library Building	**204**	14
	236	31
Education Building	**306**	27
	305	)Laptops(14

	French language department laboratory	6
Engineering Building	125	25
	126	26
	231	30
	334\A	20
	334\B	21

Closed technical support requests:

The following table shows the distribution of accomplished maintenance requests according to buildings until the date of the report, but we have to mention that some requests are unregistered because of the lack of commitment in the service request procedures. Furthermore they are not recorded by the employee when they are busy:

#	Building	Closed Tickets count
1	Aziz Shaheen	3384
2	Jeraisy	2143
3	Baramki	1919
4	Al-Masri	1450
5	Engineering	1427
6	Said Khoury	1391
7	Since	857
8	Qattan	698
9	Al-Bahrain	632
10	Bamiah	584
11	Nursing	581
12	Al Maktoum	486
13	Masrouji	359
14	Law Inst.	248
15	Al-Ghanim	210
16	Naseb Shaheen	189
17	Engineering workshop	182
18	Najad Zenni	143
19	board of trustees	138
20	Clinic	136
21	Kamal Nasser	94
22	physical education	83
23	Security	81
24	Darwaza	17

25	Najad Zenni	14
26	Staff dormitory A	4
27	Staff dormitory B	3
28	student dormitory	2
29	Book Store	1
30	Electricity	1

Sectors:

The university has been divided into sectors, each sector has a technical Officer to facilitate the management of technicians and to provide technical support quickly. The following table shows current distribution for technicians on sectors.

Motaz Saba'neh	• Nursing Building • Drugs Factory Building • Masrouji building • Said Khoury Building • Bahrain Kingdom Building (with Ahmad Baarat)
Mohammad Abbas	• Jeraisy Building • Graduated Studies Building • Clinic Building • Museum Building
Muhannad Al-Joulani	• Engineering Building • Students' Affairs & Workshops Building • Science Building (with Amer Jafar)
Abd Al- Razak Khrosha	• Ritaj Laboratory • Baramki Building • House Technical Support In Building
Ahmad Baarat	• Aziz Shaheen Building • Physical Education Building • Bahrain Kingdom Building (with Motaz Saba'neh)
Mohammad Baarat	• Al-Masri Building • Najad Zenni Building • Bamiah Building

The result:

In 2011 there was 18 employee in computer center, 4 of them are maintenance employee (Mohammad Al-Helou, Motaz Saba'neh , Sameh Awad , Tariq Al-Dgamin). According to League Council, 10 of laboratory staff has been transferred from different colleges to computer center (Raul Rabe' , Abd Othman , Alaa Mohammad , Alaa Al-Turk , Abd Al- Razak Khrosha , Muhannad Al-Joulani , Amr Al-Salimi , Mohammad Abbas , Ahmad Baarat , Sameer Diab). So the number of maintenance staff became 14 and the total number of staff became 28. At that time, the university owns no more than 1500 computer.
Other employees were transferred to other departments. Now, in computer center the technical and field support stuff consist of 8 employees (Sameh Awad, Ahmad Baarat, Mohammad Baarat, Mohammad Al-Helou, Motaz Saba'neh, Mohammad Abbas, Muhannad Al-Joulani, Abd Al- Razak Khrosha). The total number of computer center staff is 27, we have more than 2300 computer in the university, many new building and colleges besides to additional services that computer center provide.

The Case of Bethlehem University

Facts about Bethlehem University (BU)
BU provides various facilities to its students, teachers, researchers, and staff. It constantly seeks different ways to improve the available ICT resources and tools through seeking grants, partnerships and raising funds to keep its facilities up-to-date.

1. Classroom technology

Since last year, all of our classrooms provides the minimum needed tools for our students and teachers to use ICT in their teaching and learning activates. A typical classroom has:

- Desktop computer with internet connective
- LCD Projector with Projector screen
- Sound System with speakers, sound mixer, and microphone (if needed)
- A solution to connect mobile devices, iPads, and laptops to the LCD projector and sound system of the classroom.
- Different software as needed by the different departments.

2. Computer Labs

The university has several general purpose computer labs in addition to specialized ones. There are four general purpose computer labs with 200 PCs with full access to internet and various types of software. Students and teachers can walk-in the lab and use any available PC. Two of the labs are sometimes used for lecturing purposes where hands-on sessions are needed by teachers and students. Computer Lab supervisor and several student assistants are available to provide basic support and advice to any student who needs it. All labs are equipped with Laster printers with a printing accounting system. Color printers are also available in one of the labs.

Two additional labs are available for our students who margin in our CIS program. One of the

labs is used for networking and programming courses, while the other one is used for operating system courses, as well as for group work on projects and research.

3. Instructional Technology Unit

Students and teachers have also access to the facilities, equipment, and support of our ITU at the University Library. The objective of this unit is to provide support, training, and advice on the use of instructional technology, digital media, and media production in their teaching and learning activities. Different types of equipment are also available for borrowing such as video cameras, still photo cameras, and audio recording equipment. The unit also provides 18 computers to be used for video editing and media production. The unit also hosts a small video recording studio, and two audio recording rooms that can be used by all.

The Unit provides services to our students who would like to use media to enhance their learning activities and project, as well as to faculty members who would like to improve their teaching though the use of technology and media. One-to-one or group training sessions are also offered by the Unit to students and faculty.

Teachers can arrange to borrow a group of iPads from the ITU to be used in Class then returned after.

4. University Library

With the recent renovation project for the University Library, it became a state-of-the-art, environmentally friendly information and technology center of learning that emphasizes the relationship between life inside and outside the classroom. The open and inviting design, along with a high-tech, collaborative environment makes the renovated library a gathering place of students, faculty, and visitors to research, study, and learn.

The new Library provides 12 discussion rooms equipped with furniture, large screen display, and different type of connections to connect laptops, mobile devices, and media players. The rooms provide students and teachers with a space to share, collaborate, and innovate. General purpose computers are also available for students to use in the open areas.

The Library has also introduced a new equipment lending program where students and teachers can borrow laptops and/or iPads to be used on campus (at library or in classrooms)

5. ICT Resources for Students

Each student at Bethlehem University has access to the following tools and resources

- Email account
- Local Home drive
- Google Apps for Education
- On-campus internet
- Online databases offered by the Library to research and access thousands of resources and books
- Access to our LMS platform (Moodle);

6. ICT Resources for Faculty Members

Each faculty member has an access to

- Computer in his/her Office
- Email account
- Local Home drive
- Google Apps for Education
- On-campus internet
- Online databases offered by the Library to research and access thousands of resources and books
- Access to our LMS platform (Moodle)
- ICT support and training by the Technology Infrastructure and Support Unit (TIS)

Current use of ICT in Education

Most faculty members at BU utilize ICT to some extent in teaching. The majority of them use PowerPoint presentations and YouTube videos in classroom to present concepts and ideas. The majority also use emails as a way of communication with their students, 40-50 teachers currently use our LMS platform mainly to share resources with our students in term of uploading material and sharing links. Very few of them actually use it for communication and collaboration between students.

Some teachers utilize digital media for teaching and learning. They use it to introduce concepts, theories, and practical experience to our students. They also ask their students to use digital media to present their understanding of the subject in a creative way.

SWOT Analyses of ICT at Bethlehem University

Following is a summary of the current status of ICT at Bethlehem University:

- **Strength**
  - Good quality and up-to-date facilities available for students and teachers
  - Good ICT infrastructure and resources offered by the ITS Office
  - Qualified, cooperative, and motivated IT staff providing quality services and support to the University Community
  - Classrooms equipped with needed technology tools.
  - Various type of online resources available for teachers and students
  - Renovated Library provides a stat of the art facilities and resources utilizing ICT

- **Weakness**
  - Slow Internet connection. Internet prices in Palestine are high. Therefore BU is not able to increase the internet bandwidth available to its students and teachers.
  - Some of the ICT equipment has been used for years and need upgrading.
  - Good number of our faculty members have very little experience and knowledge in utilizing ICT in teaching and learning.
  - Faculty and students are not fully aware of all the ICT tools and resources available to

them.
- Classroom space design and class session structure hinder efforts to integrate ICT in education.

- **Opportunities**
  - With more ISPs entering the Telecommunication market in Palestine, Internet process has been and expected to continue to go down. This will enable BU to increase the bandwidth available to our teachers and students, thus enable them to better utilize the wide range of online resources in their teaching and learning activities.
  - Students are now more ICT ready and are increasingly using technology devices in their daily lives. Students are now more open to use ICT in their learning at BU and other Universities. Students are expecting teachers to utilize ICT in their teachings, thus forcing most teachers to learn and use ICT.
  - BU established and restructured the ITS Office to better serve and enable faculty and students to use ICT.
  - There are some success stories of utilizing ICT at BU that need to be built on
  - More partnership and grant opportunities are available now that will enable BU to improve its ICT facilities and capabilities.
  - Use online resources and LMS to support in class teaching.

- **Threats**
  - Teachers are not motivated to use ICT more effectively in their classes.
  - Funds are not available to sustain and support the various ICT facilities and resources.
  - Training and development opportunities are not available for faculty and staff on integrating ICT in education.

Integrating ICT in education: Opportunities and Challenges

As it is clear from the above SWOT analyses, there are some good opportunities that can help infusing ICT in education, as well as some challenges that need to overcome.

Bethlehem University Administration has made it clear, through its strategic plan and new academic standards, that integrating ICT in education is a goal and a must. The Administration fully understands the importance of integrating ICT in education effectively on our students and our academic programs. The administration believes that utilizing ICT in education will offer our students a new and enhanced learning experience, increase their knowledge and skills in the subject, as well as equipping them with necessary ICT skills to enter a highly competitive job market.

The administration fully supports any effort by a faculty, staff, or an office to enhance the use of ICT in education, by encouraging them to seek partnerships and grants to support their efforts.

On the other hand, the majority of our faculty members are not ready to fully integrated ICT in their teaching activities. The reasons for this fact can be summarized as follow:

- Faculty members are not fully aware of the possibilities and benefits of utilizing ICT in teaching and learning. A good number of our faculties consider using PowerPoint presentation or playing videos from YouTube as the only way of using ICT in education. An increasing number of faculty members are seeking different tools and ways of integrating ICT in education, but the numbers and efforts are still small.
- Faculty members lack the technical skills and knowledge to use ICT. This is becoming less common among new faculty members, but it is still an issue.
- Teachers and not motivated to use ICT because of the lack of a clear incentive system for doing so.
- Some faculty members consider the short teaching session periods as an obstacle for utilizing ICT.
- Some faculty members say that they don't have the time to learn new IT skills. In addition to the fact that using ICT will take more time and effort from them. Faculty members are used to teach using their own way, so why change now. This goes back to the issue of not having an incentive system to award those faculty members who actually use ICT and new teaching methods.
- Lack of sufficient ICT support staff and ICT training discourage faculty members from integrating ICT into their teaching activities.
- Less common reason for faculty not to use ICT is the fact that they feel that using ICT in teaching diminish their role as teacher and jeopardize their control over the teaching and learning process.

As for students, the majority of students are open to using ICT in their learning process. They are using ICT in tier daily life, so there is no reason not to use it in education. Actually, some students even demand from their teachers to utilize ICT more. They sometime offer help and ideas on using ICT tools to accomplish tasks.

Overall, the integration of ICT in teaching and learning is viewed positively by the administration and students of BU, but not as such by the majority of our faculty members.

The Case of the Palestine Polytechnic University (PPU)

Facts about Palestine Polytechnic University (PPU)

Mission:

- To graduate qualified labor forces able to make a positive change and fulfill the needs and requirements of the community in scientific, technological, and research fields.
- To provide innovative ideas and solutions.
- To strengthen the role of the scientific research and development in accomplishing sustainable and substantial national growth.
- To attract qualified and ranked human resources.
- To reform the university environment and atmosphere.

Main objectives:

- Assuring quality in academic programs.
- Assuring quality in administrative issues.
- Encouraging the scientific research.
- Communicating efficiently with local community.
- Achieving full financial self – dependency.
- Enhancing the university atmosphere and the extracurricular activities.

PPU is fully equipped with computer labs, video-conference rooms, multimedia labs, intranet, network connection, course management system, etc. All these facilities and tools are utilized daily by students and teachers to conduct up-to-date and advanced collaborative teaching and learning.

The Palestine Polytechnic University ICT Facilities Report

1. What ICT facilities are used for various operations and services in the university?

At the Palestine Polytechnic University (PPU), there are four main educational and training centers that the ICT in higher education namely:

- 1-The computer center (CC)
- 2- Fawzi Qawash Center of Excellence in IT Center
- 3- Center of Excellence in Teaching and Learning
- 4- Center of continuing education and training

The centers are equipped with different computer labs and ICT facilities with:

- Software for different studying programs
- More than 1000 computers around the campus
- Wi-Fi coverage around the campus
- 2 Video conferencing rooms
- E-learning system, smart boards in some classes,

2. To what extent does the use of ICT help students to access information resources?

- On line registration and withdrawals
- The grading systems and faculty evaluation are on line.
- The students are capable to receive notifications on their email accounts from all departments at the university
- Most of the students at the PPU have smart phones they can use to access any information
- Faculty Members Website which provides to students access to interactive materials related to their courses.
- Some faculty members creates special close groups on Facebook for the courses they teach to provide the students with interactive materials related to their courses.
- The library services available for students to search on line for books and references

3. What are the obstacles students face in using ICT facilities in their university?

The ICT tools are not available in all classrooms. Many teachers lacks the required experience to use ICT. Some students are not welling to use ICT in teaching and learning. Some software are not update on time. The internet is not fast sometimes.

4. **What is the current state of ICT at your university – Strengths, Weaknesses, opportunities, and Threats Analysis?**

- **Strength:**
  - The university administration belief in the importance of the ICT in higher education
  - The infrastructure which is available at the PPU, IT center and teaching and learning center
  - The Young faculty who are ICT oriented in teaching style.
  - About 2400 students out of 6500 students at the PPU, are enrolled in the college of engineering and technology, they use ICT extensively

- **Weakness:**
  - The internet interruption and frequent power failure because the university is located near the industrial zone
  - There are more than one campus location at the PPU

- **Opportunities:**
  - The ERASMUS+ is very good opportunity for funding ICT projects to develop the Utilization of ICT at the PPU
  - Networking with international universities is good opportunity for transfer of technology to the PPU
  - Cooperation with private sector, NGO and local industry will support the use of ICT in higher education at the PPU
  - The availability of 6 MSc programs, two of them in informatics and computer will support the utilization of ICT at PPU

- **Threats:**
  - The Israeli Occupation and control over the West Bank puts limitations on the mobility of staff and students to other countries to develop their skills in ICT.
  - The large number of students in classrooms and limited spaces for the students on campus is a major threat.
  - Financial problems and limited resources is a threat for utilizing ICT at the PPU.

5. **Is there a clear ICT policy at your university for integrating ICT in education?**

   Yes. The PPU policy supports the employment of Technology, ICT and internship.

6. **How does the institutional cultural at your university influence ICT Strategy?**
   - Many senior faculty members started to employ ICT in their teaching
   - The new rule at the PPU require that all faculty members must attend workshops at teaching and learning center at the PPU. The workshops are offered by master trainers and concentrates on teaching and learning pedagogy and how to employ technology in teaching.
7. **Are there any copyright issues raised by faculty members at your university due to ICT**

utilization?
The deanship of scientific research has strict rules in copyright issues. Also, all software used at the PPU are licensed.

8. **What ICT facilities available at your university for students use?**
All infrastructure of the ICT is available for the students. Some of these facilities are listed in the following table:

Item	No.	Type
Servers	14	DEL and HP , Rack system
Switches	300	HP
Wi-Fi Access Point	50	Motorola
PC	1000	Different Brands
Mac , Laptop and Tablet	200	Different Brands
SMART Screen	10	Different Brands
Data Show	170	Epson and Optima
Digital Camera	8	Full HD (1000/80)
Printers, Scanners	300	HP, Cannon, Lexmark, Samsung
E Card-Copying Machine	2 (Registration Department, Deanship of Student Affairs)	
Languages	V C++, Assembly, Java, PhP	
Operating Systems	Microsoft Windows Server 2003 &2008, 2012 (R2), Unix, Linux, Windows 10 & 7	
Software	Office 2013, 2010, SPSS, CAD, Corl Draw, Math Lab, An Soft, Opnet, NS2 & NS3, SPSS , AutoCad	

9. **Do students at your university readily accept ICT facilities?**
Yes , The students have full access to the free computer labs. They can use the installed software and programs. At the PU the majority of the students own Laptop computers and smart phones which enable them to access information necessary.

10. **How often do students at your university use ICT facilities for leaning?**
They use the ICT facility frequently and almost on daily bases, especially the E-Learning course

The Number of Full Time Academic Staff in Colleges:

College	PhD holders	MSc Holders	Teaching Assistants
Engineering and Technology	30	25	40
College of Administrative	10	6	2

Sciences and Informatics			
College of Information Technology and Computer Engineering	12	20	20
College of Applied Sciences	12	15	20
College of Applied Professions	3	15	20
College of Graduate Studies	15	-	-

It should be noted that in each college there are approximately similar number of part time academic staff.

The Socio Economic Context of the PPU

The role of the university in society is not limited to granting academic degrees and academic grades for students enrolled in the various faculties of the university, but extends to play a vital role in all the segments of the society and sectors including public and private institutions.

The community service has become one of the main tasks of the University, which aims to develop the expertise, potential faculty members, equipment of laboratories and workshops, and all the capabilities of the university in the service of society as a whole in line with the vision and the mission of the university.

Palestine Polytechnic University is a lead institution in community service, and this is reflected in the slogan it carries: A university that serves the community. In order to reflect this slogan into reality, PPU has established a number of research centers, service centers, departments, and units which all work as bridges between academic colleges and administrative departments in the university on one hand and specific targeted groups in the local community, on the other hand. This is apparent through creative, non-conventional, and non-traditional ideas that significantly contribute in supporting the community development and enhancing the national economy.

The university has achieved a great success so far in the field of community service and developmental capabilities by raising the level of sensitization and dissemination of community service culture among its members. Along with this success, those services have generated financial incomes which have helped the university achieve its goals and move one step further towards fulfilling its vision.

In the future, we look forward to more effectiveness in stimulating scientific research at the university in order to serve the community, raise the level of the academic curricula of the various disciplines, and be able to address the future developmental needs of the local society as well as the regional and international needs.

The community service centers at the PPU are as follows:

- Continuing Education Department
- IT Center of Excellence
- Industrial Synergy Center
- Vehicles Testing Center
- Stone and Marble Center

- Center of Occupational Safety and Health and Environmental Protection
- Technical Consultancy and Specifications Department
- Center of Excellence in Teaching and Learning

The Palestine Polytechnic University is Non-Profit Organization. It has its own financial entity and sometime receives donations from local businesses and from international government through the ministry of higher education at the Palestinian Authority (PA). However, the whole budget of the university consist of the tuitions fees from the students. The average annual fees for each student (for Avg. of 40 credit hours per academic year) is about 1400 Jordan Dinar ($ 2000 US), and the total number of students is about 6400.

Also, the university offers different services to local community through the 7 centers mentioned above and collect fees for the services, such as:

- The Vehicle testing center offers testing and certification for new and old Vehicles before licensing from the ministry of transportation. The PPU has signed a MoU with the ministry of transportation for testing all vehicles before they issued any license for vehicles.
- The Technical Consultancy and Specifications Department, offers services in civil engineering and testing, in electrical engineering and in mechanical engineering to the local community for certain fees.
- The department of continuing education and training at the PPU, offers training courses and 2 years certificate in many applied specialization for local society, they usually charge fees for any training course or workshop.
- The center of Fawzi Qawash for IT offers courses and training in IT, software, programming, languages, operating systems, networking, etc, for interested groups in the local society and usually they fees for the training course and services.
- The center of Stone and Marble at the PPU offers services to the Union of Stone and Marble in Palestine in stone testing and characterization, and usually collect fees for each test.
- The center of excellence in teaching and learning offers workshops and seminars for teachers in schools and colleges in methods of teaching, course design, assessment, critical thinking, and community based teaching methods (CBL), and sometimes they charge the participants.
- The Center of Occupational Safety and Health and Environmental Protection, offers training and services for local community in the area of health and safety and environmental protection. They have different types of equipments for air testing, water testing, fire protection tools. The center collects fees for training and other services.
- The industrial synergy center usually offers services to the local industry specially in solving different problems. They have different MoU with the union of leather industry, the union of metal industry, the union of Diary Industry.

The approximate monthly salary bill at the PPU is about 450,000 Jordan Dinar ($700,000 US), in addition to other expenditure for infrastructure and running monthly costs.

XI. Conclusions and Recommendations

Despite the fact that Jordan and Palestinian Universities are distinguished in the quality of teaching and research, their utilization of e-Learning is still in the early stages and the project work may face many challenges in this regard. The Universities have excelled in some areas related to

information technology but still they have many challenges to face as well. In what follows, we will try to summarize the survey results, identify the challenges and outcomes, to be adopted in the project, as well as to outline the recommendations and the available opportunities to be exploited.

Conclusions and a Summary of Survey Results:

- The quality and reliability of the ICT infrastructure covers global standards. ICT infrastructure in the Partner Universities is well established and in a right path but still need more assistance to meet the current operational needs.
- The Universities have robust, standards-based information technology network infrastructure, including hardware, software, and applications for intra-university connectivity and global connectivity through the Internet.
- Some Universities have invested in e-Learning tools (Moodle, and Content Development tools)
- E-Learning experience is immature in all Universities and it is scattered among some departments/faculties without consistency. There is no broad awareness of e-Learning beyond some departments and narrow academic circles. The current e-Learning efforts are largely run individually by faculties or for piloting purposes.
- There is no shared vision of e-Learning. Some decision makers see e-Learning as a luxury form of education, a replacement of faculty, a way to reduce budget deficit, etc.
- There is no common definition of e-Learning as they range from using computers for learning to purely distance learning.
- There is no common understanding of the benefits of e-Learning. Some see it as a lesser form of education (when compared with traditional classroom based, teacher or professor-led instruction). Very few academics see the potential it can bring to improving the quality of education, and increasing the reach and breadth of educational opportunities.
- There is no holistic or coordinated/collaborative approach to e-Learning that considers the cost of PCs and Internet access.
- There is no broad adoption of international web-based training development standards.
- There is no large-scale production of courseware. Universities rely on pilot projects that do not follow web-based training standards.
- There is a lack of content developer or little evidence that content developers are trained in instructional design, learning theory and instructional technologies. Despite the fact that there are skilled human resources, there is no source for training e-Learning course developers and instructional technologists.
- Most of the content being developed does not leverage e-Learning instructional design.
- There is no cooperation/collaboration between subject experts, content developers, and instructional technologists
- There is no framework or regulations to govern e-Learning practices and quality assurance procedures.

- There are no policies or in place Intellectual Property Right (IPR) to protect e-Learning content authors. There is no knowledge and understanding of the copyright laws and the legalities of using materials owned by others and protecting the materials that academic create.
- There is a lack of skills for self-paced learning.
- There is a lack of cooperation/collaboration between Universities and private sector in e-Learning.
- There is no e-Learning "leader" with enough influence to realize inter-university cooperation and collaboration.
- E-Learning needs commitment and leadership support from University presidents, deans, and departments' heads.
- Huge investments and efforts need to be made to provide the infrastructure and content to address university required courses and to build capacity in e-Learning.

Challenges and Recommendations

Partner Universities have accomplished numerous steps in their move towards embedding e-Learning appropriately using ICT technology to transform education into a learner-centric system and to foster innovation and excellence in teaching and learning. However, we envision that there are still several goals that have to be addressed in this aspect. We can summarize them under the following categories:

- **To enable Partner Universities to adopt new approaches to e-Learning that provides courseware and knowledge management and facilitate widening access to learning.**
  - To establish two national centers of excellence for e-Learning that will be responsible for sharing/exchanging e-content, development tools, professional expertise and best practices. That will underpin a new initiative for transforming computer centers in Universities into data centers and to establish a higher education data centers.
  - To develop e-Learning material for the common university requirements at the Jordanian and Palestinian Universities. To urge Partner Universities to collaborate in producing e-content for shared University's courses.
  - To encourage Universities to establish instructional design and development programs to help faculty and staff in improving their practices using technological resources and methods of delivery and to help in course design and enhancement. To promote sharing of highly qualified subject experts among Partner Universities.
  - To ensure that the development of e-Learning is considered at a strategic level within the universities and academic departments and that universities' management allocate resources to implement the e-Learning strategies.
  - To make available incentives, opportunities, and models for strengthening support and motivating faculty and staff to encourage e-Learning initiatives.
  - To assure shared responsibility among Project Partners and to oversee initiation, co-ordination, controlling proceedings of the e-Learning initiatives.

- To encourage strategic management of Intellectual Property Right (IPR) in order to exploit e-learning.

- **To support Partner Universities in their strategic planning with a holistic approach to embedding e-Learning including implementation, administration, and change management.**
  - To promote organizational change and technological risk management addressing high-level issues regarding pedagogy of e-Learning, strategic e-management, and the cultural challenges of change.
    - To transform the existing ICT centers or to establish new centers for e-Learning that will be responsible for developing and sharing e-content, implementing and disseminating best practices.
    - To help Universities to establish an organizational structure and functionality for the e-Learning centers to ensure full support from the Presidents, Deans, and Departments' heads.
    - Disseminate best practices through seminars, workshops, and online opportunities.
  - To empower faculty and staff to provide learning opportunities that can be enriched, extended later on.
  - Provide academic and technological support to enhance student learning.

- **To create a culture and awareness for eLearning.**
  - To increase eLearning awareness among senior management, deans, department heads, and academic staff.
    - Conduct a series of e-Learning awareness presentations and training sessions to senior management and staff.
  - To ensure readiness and openness of higher education institutions to disseminate information in a comprehensive manner, the readiness of management to invest in developing a robust infrastructure, and the readiness of instructors to design learner-centered curriculum along an ever-expanding continuum of students needs.

- **To establish a robust integrated virtual learning environment that aims at providing equality of opportune for all able to benefit.**
  - To provide and sustain appropriate physical and technical infrastructure to access e-content and to meet staff and student needs and expectations. This includes using all the Universities' administrative and technological capabilities to deliver and manage e-Learning.
  - To help in building learning architectures that will coordinate e-Learning with the rest of the organization's learning efforts. This includes building synergies with classroom training.
  - To establish formal mechanisms for the effective piloting and evaluation of e-Learning tools and techniques.

- To provide supporting mechanisms for faculties, staff and students.
- To ensure a reliable, high-speed access to the Universities' networks and portals including access from off campus.
- To provide fully accessible, interactive, online library services and resources.

- **To assure the quality of e-Learning and its impact on students' teaching, learning and assessment experience.**
  - To support the establishment of guiding framework and regulations governing e-Learning practices and quality assurance procedures.
  - To ensure that online student learning services are consistent with face-to-face student learning services. Such services include lecturing, discussions, problem solving, homework, in-class assessment, and more.
  - To promote good practices in the use of technologies to support quality and standards in e-Learning, with specific reference to key issues such as quality models, evaluation frameworks, metrics and embedding with benchmarking against international standards for quality in e-Learning

- **To promote learning and educational technologies research that focuses on student learning rather than on technology and on faculties and staff development.**
  - To identify and disseminate new ways of improving the effectiveness and efficiency of learning, teaching and assessment, including the use of learning technologies.
  - To use learning technology to promote learning as a student centered activity and to equip students with the required skills.
  - To explore the use of appropriately-designed learning technology in formative and summative assessment.
  - Develop and implement appropriate e-Learning systems/mechanisms to support students' personal development and planning.
  - To engage business, industry, and professional bodies in the content development.