ECOLHE

Empower Competences for Onlife Learning in HE

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Digital Technologies in HE: from the European vision to the university governance

Greece Case Study. Patras University

Authors:
Stylianakis Vassilios
Perivolaris Panagiotis
Organisation: PATRAS UNIVERSITY

Project Scientific Director: Stefania Capogna
Date: 30/11/2021
Version: Final Published

Erasmus+

ECOLHE - Empower Competences for Onlife Learning in HE | 2020-1-IT02-KA203-079176
Co-funded by the Erasmus+ Programme of the European Union

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

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INTRODUCTION

In Greece, Higher Education (HE) is provided by Higher Education Institutions (HEIs). They are self-governed Legal Entities of Public Law and are supervised by the Ministry of Education and Religious Affairs. There are 23 in total HEIs (Table 1) and the School of Pedagogical and Technological Education (ASPETE). In addition, higher education includes the Higher Ecclesiastical Academies-AEA (Athens, Thessaloniki, Ioannina and Heraklion Crete) which train executives of the Orthodox Church in Greece and military schools, providing education while awarding degrees equal to those of HEIs.

Table 1: Greek HEIs

	HEI Name	Founding Year	City
1.	National and Kapodistrian University of Athens	1837	Athens
2.	National Technical University	1837	Athens
3.	Agricultural University of Athens	1920	Athens
4.	Athens University of Economics and Business	1920	Athens
5.	Aristotle University of Thessaloniki	1925	Thessaloniki
6.	Panteion University of Social and Political Sciences	1927	Athens
7.	Athens School of Fine Arts	1930	Athens
8.	Pireaus University	1938	Pireaus
9.	University of Macedonia	1948	Thessaloniki
10.	Patras University	1964	Patra
11.	Ioannina University	1970	Ioannina
12.	Democritus University of Thrace	1973	Komotini
13.	Crete University	1973	Heraclion
14.	Technical University of Crete	1977	Chania
15.	Aegean University	1984	Mytilene
16.	Ionian University	1984	Corfu
17.	University of Thessaly	1984	Volos
18.	Harokopio University	1990	Athens
19.	Greek Open University	1992	Patra
20.	University of Peloponnese	2000	Tripoli
21.	University of Western Macedonia	2002	Kozani
22.	International Hellenic University	2005	Thessaloniki
23.	School of Pedagogical and Technological Education (ASPETE)	2002	Athens
24.	University of west Attica	2018	Athens

PART I: LITERATURE ANALYSIS: THE DESCRIPTION OF THE NATIONAL FRAMEWORK

Introduction

In Greece the legislation concern Nasional Qualifications Framework (NQF) is formed by the Greek parliament and by the ministry of education and religion affairs. National Organisation for the Certification of Qualifications and Vocational Guidance (E.O.P.P.E.P.) [1] has responsibility for the implementation of NQF in all levels of education. E.O.P.P.E.P. develops and implements the National Accreditation & Certification System for non-formal education, including initial and continuing vocational training and adult education, and provides scientific support to Vocational Guidance & Counseling services in Greece. E.O.P.P.E.P's principal fields of activity and responsibility are:

Providers and Educational Framework:

- Accreditation/Licensing of Providers of non-formal education (Free Studies Workshops (EES), Private Vocational Training Institutes (IIEK), Vocational Training Centers (KEK), Special Centers for vulnerable social groups)
- Accreditation of Occupational Profiles
- Accreditation of Curricula (in terms of standards and specifications)

National Qualifications Framework (NQF)

- Development and implementation of the National Qualifications Framework (NQF) in correspondence with European Qualifications Framework EQF & National Coordination Point for EQF (NCP)
- National Reference Point for ECVET
- National Centre for EUROPASS in Greece
- Equivalencies & Occupational Rights for VET education title holders

Certification of Qualifications:

- Development of the National System for the Certification of Qualifications
- Accreditation of Vocational Training & Certification of Vocational Training Institutes (IEK) graduates
- Certification of qualifications of "Trainers for candidates for car & motorcycle driver's license"
- Certification of teaching qualification of Trainers for Adults of non-formal education
- Certification of private security personnel
- Licensing of Providers for the certification of qualifications & Providers for computer skills certification

Vocational Guidance and Counselling

- Scientific and technical support of vocational guidance and counselling services
- Networking of providers and vocational guidance professionals
- Career development for youth & adults
- National Centre of Euroguidance
- National delegate in the European Lifelong Learning Guidance Policy Network (ELGPN)

Quality Assurance (QS) in LLL

- Cooperation in the development and implementation of the National Framework for Quality Assurance in LLL
- National Reference Point in EQAVET

The following sections present the legislation concern HE (Higher Education) in Greece focusing in the laws and directives concern the harmonization of NQF with EQF, the implementation of QS in education upon European experience, the laws concern the finances of universities, which micro-policies are followed in HE and finally the best practices used in order to achieve optimum results in both educational and administrative perspective.

1. THE NATIONAL LEGISLATIVE FRAMEWORK

The National legislative framework referred to HE is composed by two main acts. The first one is Law 1268/1982 (G.G. 87/A/16.7.1982) [2] which was reformed by the second act Law 3549/2007 (G.G. 69/A/20.3.2007) [3]. Both set the general principles concern the function of HE institutions their role in Greek society, their administrative structure, their finance support by Greek state and the restructuring and creation of schools and departments. In addition, set guidelines about academic studies in all levels (Bachelor, Master, PhD). The changes that act [3] set are summarized into the following ones:

- Ensuring the financial and administrative self-government of HEIs (Higher Education Institutions).
- Social Accountability of HEIs.
- Strengthening the self-government of HEIs, by providing the possibility of their operation through internal regulations.
- Academic asylum.
- Enhancing transparency in the activities of HEIs.
- Redefining the goals of HEIs.
- Support to young students, by providing financial assistance (interest-free educational loans) to those who come from weaker incomes, and reciprocal scholarships for those who provide work at the university.
- Rationalization of the procedures for the election of faculty members among teaching staff.
- Dealing with the negative effects of indefinite study, by introducing its maximum duration.
- Upgrading the quality of HE by establishing conditions for the establishment of new schools.
- Free provision of an academic book per lesson and obligation to provide bibliography and study guides by teachers in each lesson.
- Tax exemption issues for donations to universities in proportion to cultural institutions.

In 2011 another act Law 4009/2011 (G.G. 195/A/6.9.2011) [4] define the structure, operation, quality assurance of studies and internationalization of higher education institutions, more specific the changes which were made into previous acts are summarized into:

- Redefinition of academic freedom and the role of HEIs.

- Regulatory framework of HEIs self-management.
- Structure of HEIs.
- Management boards of HEIs, schools and departments.
- Evaluation and transparency in HEIs.
- Teaching and administrative staff affairs.
- Studies affairs in all levels (Bachelor, Master, PhD).
- Cooperation of HEIs with research centers.
- Curriculums in foreign languages.
- Students affairs.
- Finance of HEIs.
- Quality assurance and certification in HE.

With the above act, Greece acquires a national accreditation system supporting HEI, to develop stable programmes of growing academic and professional quality. Accreditation is an external evaluation process based on specific, predetermined, internationally accepted and ex ante published quantitative and qualitative criteria and indicators, all harmonized with the Principles and Guidelines for Quality Assurance of the European Area of Higher Education. Some minor changes and redefinition of some topics were made by Law 4076/2012 (G.G. 159/A/10.8.2012) [5] which addressed in management matters of HEIs.

The organization and operation of the Foundation for Youth and Lifelong Learning (I.NE.DI.VI.M) [6] and the National Organization for the Certification of Qualifications and Vocational Guidance was defined by Law 4115/2013 (G.G. 24/A/30.1.2013) [7]. According to Law 4115/2013 which contains recent institutional changes that have decisively shaped the Foundation's modern identity, the Youth and Lifelong Learning Foundation's mission is to:

- Implement lifelong learning programmes/projects
- Implement youth programmes/projects, emphasising youth innovation, mobility, transitions and career growth
- Manage all issues regarding student care services, catering and accommodation facilities (educational welfare).

To implement its actions and projects associated with its activities, the Youth and Lifelong Learning Foundation plans, prepares studies, carries out research and develops the relevant supporting material.

The Law. 4310/2014 (G.G. 258/A/8.12.2014) [8] is setting the National Research Strategy, Technological

Development and Innovation furthermore implements the National Council for Research and Innovation (NCRI) [9]. The National Council for Research and Innovation (NCRI) is the supreme advisory body for the formulation and implementation of the national policy for Research, Technology and Innovation. The Council is appointed by and reports directly to the Minister of Education, Research and Religious Affairs. The Council's secretariat is provided by the General Secretariat for Research and Technology. The Chairman, vice-Chairman and members of the current Council were appointed by the Alternate Minister of Education, Research and Religious Affairs in

December 2016. Also sets the guidelines for research funding. Some of the articles of the above act are modified with Law 4386/2016 (G.G. 83/A/11.5.2016) [10].

The final two acts are Law 4485/2017 (G.G. 114/A/4.8.2017) [11] and Law 4777/2021 (G.G. 25/A/17.2.2021) [12]. The first one resets the institutional framework of HEIs and regulates postgraduate studies matters. The second one sets criteria for the introduction to HEIs from high schools and reform HEIs asylum among others. These were the basic acts concern HE in Greece with a short presentation for each of them. All the acts about HE are presented in the Table 2 below. The other acts which are shown in the Table 1 but not described above are adjustments and modifications of the basic acts.

Table 2: Greek Legislation for HEI

Act	Description
Law 1268/1982 (G.G. 87/A/16.7.1982)	On the structure and operation of Higher Education Institutions
Law 2083/1992 (G.G. 159/A/21.9.1992)	Modernization of Higher Education
Law 2683/1999 (G.G. 19/A/9.2.1999)	Ratification of the Code of Status of Public Civil Servants and Employees of N.P.D.D. and other provisions
Law 3205/2003 (G.G. 297/A/23.12.2003)	Salary arrangements of officials and employees of the State, N.P.D.D. and OTA, permanent officers of the armed forces and their respective members of the Hellenic Police, the Fire Brigade and the Coast Guard and other relevant provisions
G.G. 220/A/3.11.2008	Standard General Internal Regulations for the Operation of HEIs
Law 3528/2007 (G.G. 26/A/9.2.2007)	Ratification of the Code of Status of Public Civil Servants and Employees of N.P.D.D.
Law 3549/2007 (G.G. 69/A/20.3.2007)	Reform of the institutional framework for the structure and operation of Higher Education Institutions (reform of Law 1268/1982)
G.G. 1466/B/13.8.2007	Implementation of the Credit Transfer and Accumulation System, Procedure for checking the legality of appointment after election or development and permanence of University faculty members
Law 3685/2008 (G.G. 148/A/16.7.2008)	Institutional framework for postgraduate studies
Law 3794/2009 (G.G. 156/A/4.9.2009)	Regulation of issues of the university and technological sector of higher education and other provisions
Law 4009/2011 (G.G. 195/A/6.9.2011)	Structure, operation, quality assurance of studies and internationalization of higher education institutions
Law 4076/2012 (G.G. 159/A/10.8.2012)	Higher Education Institutions and other provisions
Law 4115/2013 (G.G. 24/A/30.1.2013)	Organization and operation of the Foundation for Youth and Lifelong Learning and the National Organization for the Certification of Qualifications and Vocational Guidance and other provisions
Law 4186/2013 (G.G. 193/A/17.9.2013)	Restructuring of Secondary Education and other provisions

Law 4218/2013 (G.G. 268/A/10.12.2013)	Ratification of the Legislative Content Act "Urgent regulations for the implementation of the Public Revenue Collection Code" (AD 176) and other provisions
Law 4264/2014 (G.G. 118/A/15.5.2014)	Exercising commercial activities outside the store and other provisions
Law 4283/2014 (G.G. 189/A/10.9.2014)	Establishment and organization of a National Policy Council for Education and other provisions
Law 4301/2014 (G.G. 223/A/7.10.2014)	Organization of the legal form of religious communities and their associations in Greece and other provisions within the competence of the General Secretariat of Religions and other provisions
Law 4310/2014 (G.G. 258/A/8.12.2014)	Research, Technological Development and Innovation and other provisions
Law 4316/2014 (G.G. 270/A/24.12.2014)	Establishment of a dementia observatory, improvement of perinatal care, regulations of matters within the competence of the Ministry of Health and other provisions
Law 4327/2015 (G.G. 50/A/14.5.2015)	Urgent measures for Primary, Secondary and Higher Education and other provisions
Law 4368/2016 (G.G. 21/A/21.2.2016)	Measures to speed up government work and other provisions
Law 4369/2016 (G.G. 33/A/27.2.2016)	National Register of Public Administration Executives, ranking structure, evaluation systems, promotions and selection of supervisors (transparency - meritocracy and efficiency of Public Administration) and other provisions
Law 4386/2016 (G.G. 83/A/11.5.2016)	Arrangements for research and other provisions
Law 4405/2016 (G.G. 129/A/13.7.2016)	Ratification of Council Decision 2014/335 / EU, Euratom on the European Union's own resources system and other provisions
Law 4415/2016 (G.G. 159/A/6.9.2016)	Arrangements for Greek language education, intercultural education and other provisions
Law 4473/2017 (G.G. 78/A/30.5.2017)	Extension of the term of office of the single-member and collective governing bodies of the HEIs
Law 4485/2017 (G.G. 114/A/4.8.2017)	Organization and operation of Higher Education, arrangements for research and other provisions
Law 4777/2021 (G.G. 25/A/17.2.2021)	Introduction to Higher Education, protection of academic freedom, upgrading of the academic environment and other provisions

All the above Laws shape the national framework for Greece concern the HEIs, but none of them define a national policy regarding the digital enhancement in HE. The HEIs as self-governed Legal Entities are free to determine their strategies and the way that education will be held in each institution separately. The Greek state is responsible for HEIs funding and it is at each HEI disposal to choose which digital tools and technologies will

embed to carry out its digital transformation. Even with COVID-19 pandemic which make digital transformation of HEIs urgent, especially in the field of distance learning, there were no guidelines by the Greek state relating to how lessons and examinations should be held. Each HEI has the responsibility to organize and set the regulations for academic work within its jurisdiction instead.

2. PROFESSIONAL DEVELOPMENT

In Greece, there is no University Faculty or Department with the sole purpose of providing initial education to the academic – teaching staff. However, a PhD title as well as the relevance of the candidates' doctoral thesis or research work to the cognitive field of the position announced constitute the formal qualifications required from the candidates in order to pursue teaching or research work in HEIs (Higher Education Institutions).

Law 4009/2011 pertains, inter alia, to issues of appointment and advancement of the academic – teaching staff. According to the said law, HEIs' Teaching and Research staff belong to the following ranks: professors, substitute professors, assistant professors and lecturers.

In addition to the three above-mentioned academic staff categories, adjunct professors are employed by institutions under a fixed-term contract governed by private law lasting from one to three academic years and subject to renewal without however exceeding five academic years overall.

Adult Trainers, as well as other levels staff, receive initial education at HEIs and are required to have educational aptitude. After their educational aptitude is recognized and certified by the National Organization for the Certification of Qualifications & Vocational Guidance (EOPPEP), adult trainers are registered in the Trainers Register.

At national level, E.O.P.P.E.P. is responsible for:

- Providing scientific and technical support to the relevant stakeholders in the Ministries of Education and Employment in designing and implementing a National Policy on Guidance and Counselling.
- The development of communication and coordination of actions taken by private and public counselling and guidance service providers, aiming at the improvement of existing services.
- The education, initial and continuous training of counselling and guidance practitioners, in collaboration with/or supplementing those provided by current training services in the relevant Ministries of Employment and Education.
- Defining the conditions and rules under which guidance and counselling services should operate, the relevance and adequacy of counselling and guidance practitioners' qualifications and keeping the relevant registers.
- Designing and implementing actions of counselling and guidance supporting the work of counsellors and of lifelong support of citizens for development and career management.
- participating in the formulation of standards, rules and procedures for quality assurance consulting services and guidance under the National Quality Framework for lifelong learning.

At European level, E.O.P.P.E.P. is:

- The National Euroguidance Centre, member of the Euroguidance network, with the support of the Lifelong Learning Programme,
- The national body representing Greece in the European Lifelong Guidance Policy Network – ELGPN, established by the European Commission in 2007.

Target Groups benefiting from E.O.P.P.E.P.'s work:

- Counselling and vocational guidance practitioners, career development practitioners in education, training and employment in public and private sectors.
- Public and private stakeholders providing counselling and vocational guidance services in the areas of education, training and employment.
- Interested citizens (school and university students, parents, the unemployed, professionals etc that seek information about counselling and vocational guidance services and learning, employment and mobility opportunities.

All members of the Greek society as potential beneficiaries of quality counselling and vocational guidance services at regional and national level.

The "Foundation for Youth and Lifelong Learning" takes all the necessary steps for its employees' professional education and continuous vocational training, which also includes Adult Educators.

3. NATIONAL SYSTEMS OF ASSESSMENT AND QUALITY ASSURANCE IN HE

Published on Eurydice (https://eacea.ec.europa.eu/national-policies/eurydice)

Quality assurance in higher education was established for the first time by virtue of Law 3374/2005. A single, nationwide ongoing evaluation process is established, was aiming at stock-taking, analyzing and systematically assessing teaching and research work, study programmes and other services of HEIs. The same Law established the Agency for Quality Assurance and Accreditation in HE (ADIP) which is the competent body for implementing Quality Assurance in HE.

By Law 4009/2011 "Structure, function, quality assurance for studies and internationalization of HE Institutes", Greece acquires a national accreditation system supporting HEI, to develop stable programmes of growing academic and professional quality. Accreditation is an external evaluation process based on specific, predetermined, internationally accepted and ex ante published quantitative and qualitative criteria and indicators, all harmonized with the Principles and Guidelines for Quality Assurance of the European Area of Higher Education (ESG 2015) . Recently, ADIP has been renamed Hellenic Authority for Higher Education (H.A.H.E.) under Law 4653/2020.

3.1 Responsible bodies

3.1.1 Hellenic Authority for Higher Education (H.A.H.E.)

H.A.H.E is an autonomous body supervised by the Ministry of Education and Religious Affairs. Its mission is to assure high quality in higher education. In this framework, H.A.H.E.:

1. contributes to the development and implementation of the national strategy for HE.
2. Is responsible for the allocation of grants for HEIs.
3. Evaluates and certifies the quality of HEI operation.

H.A.H.E. has to ensure the transparency of its operation. It publishes on its website the activities conducted and decisions made in the context of its mission. In order to fulfill its mission, H.A.H.E.:

1. Maintains an integrated information system interconnected with the HEIs and the Ministry of Education and Religious Affairs, this system aims to extract and manage the data necessary to achieve its objectives.
2. Participates and/or collaborates in/with international networks, bodies or organisations that carry out activities related to its mission. H.A.H.E.
3. Takes into account and implements standards and guidelines set by the European Network for Quality Assurance in Higher Education (ENQA).

The Board of H.A.H.E.

The Board is composed of the President, Vice-President and professors of Higher Education Institutions from Greece or abroad. Regarding H.A.H.E.'s mission for developing and implementing national strategy for HE, the Board makes the following proposals to the Minister of Education and Religious Affairs for:

1. the National Strategy program for Higher Education.
2. the programme agreements between the Ministry and the H.E.I.
3. the establishment, merging, division, abolition, renaming of HEIs and their individual departments/units.
4. for suggestions to assure continuous high quality in higher education.
5. for the measures to enhance HEI's internationalisation.

Regarding H.A.H.E.'s mission for allocation of public grants to HEIs, the Board:

1. Makes proposals for the allocation of the annual overall grant budget to HEIs to the Minister of Education and Religious Affairs; twenty percent (20%) is allocated based on each institutionquality and performance indicators.
2. Proposes the allocation of staff in HEIs to the Minister of Education and Religious Affairs.
3. ensures the transparency of the HEIs grant criteria and indicators.
4. collects and analyses from the HEI the data necessary for achieving its objectives.
5. systematically monitors HEI's graduates' transition to the labour market.
6. Entrusts researches and studies related to Authority's work.
7. Recommends to the Minister the current criteria and allocation of grants.

8. Exercises supervisory control to the operation of all H.A.H.E. departments, committees, working groups and other bodies.

The Board for Evaluation and Certification (SAP) of H.A.H.E.

The Board for Evaluation and Certification is composed of the Chairman of the Board of the Authority (H.A.H.E.), members of the Academic/Research Staff of HEIs, from various academic fields, a student representative and a Chambers' representative.

The Board for Evaluation and Certification:

- Evaluates the HEIs and their individual academic and research departments and certifies if they meet the selection criteria for first, second and third cycle programs,
- Certifies every five years (at the latest) the quality of:
  - the internal quality assurance systems of HEIs
  - curricula of the three cycles of higher education, lifelong learning, distance learning, elearning and the cooperation programs with other educational or research institutions in Greece or abroad.
  - certifies the new curricula prior to their implementation following relevant request by the HEI or academic unit.
  - performs thematic evaluations of HEIs and their individual academic units related to internationalisation strategy, gender equality, access for persons with disabilities, integration of graduates into the labour market, HEI's environmental footprint, ensuring academic environment, development of e-learning and lifelong learning programs, development of digital skills for the students and HEI staff.
  - publishes a certification and evaluation guide on the implementation on the HEI evaluation and certification procedures.

Additionally, the Board for Evaluation and Certification:

1. Sets up, plans and coordinates the External Evaluation and Certification Committees (EEAP).
2. Keeps up and updates the Registry of Independent Experts and the Registry of Students consisting of students members of the Quality Assurance Units (MODIP) of HEIs.
3. Collects the necessary HEI's data in collaboration with MODIP and keeps up the evaluation and certification register.
4. Carries out studies and researches related to the Authority's mission.
5. Supports the HEIs and their individual academic and administrative units in designing quality assurance and certification procedures, establishes, organizes, improves, standardises and publishes in advance the relevant procedures, criteria and indicators, within the framework of the European Standards and Guidelines of the European Higher Education Area.
6. Decides to postpone or suspend the evaluation and certification of a specific curriculum or internal quality assurance system, if the relevant request for evaluation or certification is not supported by the required information material and the necessary documentation.

3.2 Quality assurance unit (MODIP)/internal evaluation

The Quality Assurance Unit (MODIP) is the responsible body in every HEI for the coordination and support of quality assurance processes. In particular, MODIP is responsible for:

1. The development, organisation, operation and continuous improvement of the institution's internal quality assurance system.
2. The coordination and support of evaluation processes of academic units and other services in the institution
3. The support of external evaluation and accreditation of study programmes and of the institution's internal quality assurance system, following the principles, guidelines and directions of the Hellenic Authority for HE.

For all afore-mentioned objectives, the Quality Assurance Unit (MODIP) cooperates with the H.A.H.E. It develops an evaluation information system and it is, also, responsible for systematically monitoring and uploading anything relative to the evaluative processes and outcomes on the institution's webpage. MODIP is set up by a decision of the institution's Board it consists of the Rector, or one of its deputies as President, five HEI professors; it also consists of one representative from each personnel category with a voting right, when issues of the respective personnel category are discussed other members include one representative of undergraduate students and one representative of postgraduate students and doctoral students, if any, as specified in the Organisational Charter.

3.3 Approaches and methods for quality assurance Evaluation and Certification of Quality

The certification of HEIs and their individual units/departments, curricula and internal quality assurance systems is a quality assurance procedure which is based on specific, predefined, internationally accepted and pre-publicised quantitative and qualitative criteria and indicators.

Specifically, the purpose of the certification is to assure that an institution, an individual academic unit, a curriculum, or an internal quality assurance system complies with the minimum quality criteria set by the H.A.H.E. These criteria are also in line with the principles and guidelines of the European Higher Education Area. Ensuring the quality of HE promotes the increase of the efficiency and transparency of the overall HEIs work.

Thematic evaluation is a quality assurance procedure for higher education, composed of systematic, documented and detailed evaluation. It aims to highlight and record the work of HEIs or their academic units by using objective criteria, as well as critical analysis and identification of existing weaknesses and gaps related to their academic profile, goals and mission. Thematic evaluation reports are posted on the Authority's website.

EEAP, appointed by H.A.H.E. assesses whether AEI or an academic unit meets the quality criteria for first, second and third cycle curricula, the curriculum quality and the institution's internal quality assurance system, based on predefined criteria. It also looks into the points and elements taken into account by the board for Certification and Evaluation, and, when needed, visits the respective HEI or the academic unit.

EEAP evaluates:

more than one curricula, particularly if completion of one is a prerequisite for admission to the other;

1. The relevant curricula or internal quality assurance systems of the various institutions.
2. The new curricula before their implementation.

Within the certification procedure, EEAP prepares a certification report submitted to the Board for Evaluation and Certification, in order to issue the certification Decision. During the thematic evaluation process, EEAP draws up an evaluation report with recommendations to HEI or the academic unit. The above reports are posted on H.A.H.E.'s website.

3.4 Evaluation and Certification Criteria

The general criteria for certification of study programmes include the:

- Academic character and direction of the curricula
- Learning outcomes and pursued qualifications and their demand by the labour market
- Structure and organisation of the curricula
- Quality and performance of the teaching assignments
- Numerical strength of the teaching staff
- Quality of research of the academic unit
- Link between teaching and research
- Link between curricula and skills and the labour market needs
- Quality of supporting services, such as administration, libraries and student care services
- Expected digital skills acquired through the curricula.

The general criteria for the accreditation of internal quality assurance systems of HEIs include, primarily, the following:

1. Establishing clear and specific objectives to ensure the continuous improvement of the quality of the curricula and supporting services of the institution.
2. The process of policy planning, effective organisation and the process of decision making on continuous quality improvement.
3. The process of policy implementation for continuous quality improvement.
4. Evidence-based quality improvement.

3.5 External Evaluation and Certification Committee / External evaluation

The External Evaluation and Certification Committee (EEAP) is a five-member panel consisted of 3 independent experts from the Registry of Experts, one student representative and one professional association / chamber representative. The external evaluation and certification carried out by the EEAP follows the completion of the internal evaluation procedure taking into account the relevant HEI's/Academic unit's internal evaluation report. In order to verify internal evaluation's elements, EEAP takes into account the findings after carrying out a site visit to the HEI/academic unit. The external evaluation is completed after issuing the external evaluation and certification report.

The external evaluation and certification draft report is prepared by the EEAP and is notified to the HEI/ academic unit, which may submit its comments within specified time. If no comments are submitted within the deadline,

the draft report shall be deemed to have been accepted by the University/the academic unit. The final external evaluation and certification report, accompanied by the internal evaluation report, is submitted by EEAP to the Board for Evaluation and Certification (SAP) for taking a certification decision or other relevant action. The external evaluation shall be completed within four (4) months of the submission of the internal evaluation report to SAP.

3.6 Digital Tools for Quality Assurance

As far as now there are two digital tools used for Quality Assurance:

- Electronic questionnaires on teaching assessment completed by students
- Electronic questionnaires on issues related to education and research completed by academic staff members

The process of Accreditation of Undergraduate Study Programs has already been completed with very positive results for the majority of the Academic Units of the University of Patras. The Internal Evaluation Team (OM.E.A.) is set up following the decision of the General Assembly of each Department of the University. OM.E.A. is responsible for coordinating and conducting the procedures of internal evaluation of the Department as well as the collection of all the data which is needed for the process and submission of the Annual Internal Report. The Annual Internal Report, in particular, is the annual survey and recording of the educational and research work that is carried out by the Department. This is the primary and constantly repeated process, which provides the information and data needed for the Internal Evaluation Report that is drawn up every four years. The Internal Evaluation Report is based on the quality analysis and comparative assessment of the four-year indicators and provides the basis for the External Evaluation Report. The Accreditation Reports and Certifications of the Academic Units, as well as detailed information about Quality Assurance at the University of Patras, are available at: http://modip.upatras.gr.

4. NATIONAL FINANCING PROGRAMS

Published on Eurydice (https://eacea.ec.europa.eu/national-policies/eurydice)

Within the budgetary limits of the Ministry of Education and Religious Affairs HEIs funding includes, in particular, the operating costs and the expenditure of the Public Investments Program, whereas other resources of HEIs are:

- Income from the institution's entrepreneurial activity or private assets.
- Income from investment grants.
- Donations, endowments and bequests.
- Other resources.

In the framework of the National Strategy for HE, the draft planning agreements between the state and the institutions and the rules for allocating public funding HEIs are financed by the State in order to accomplish their mission and, in particular to:

- Develop and support educational and research activities and objectives.
- Develop infrastructure and equipment.
- Improve the services provided.
- Coordinate the academic, educational and research activities of a HEI with the equivalent.
- developments in foreign institutions and especially with the developments and prospects in the
- European Higher Education (EHE) and Research Area.
- Promote knowledge and high-level specialization through funding Post Graduate Studies
- Programmes.

National strategic programme for HE-Draft planning agreements. Every four years, the Minister of Education approves the National Strategic Programme for HE that primarily, involves midterm objectives, guidelines, investment plans, programmes or individual actions of national policy for higher education and may be specified on an annual basis. The National Strategy Programme for Higher Education is implemented through HEIs.

Within the context of each HEI's strategic planning and the National Strategy for HE draft planning agreements are drawn up between the HEI and the Ministry of Education and Religious Affairs taking into consideration each HEI's:

- Operational costs.
- Investments.
- Staff.

The aforementioned agreements are implemented annually. The Hellenic Authority for Higher Education – HAHE (former Hellenic Quality Assurance and Accreditation Agency-HQA) plays an important role in the above process, as, within its mission to ensure high quality in higher education, it assures the transparency of the criteria for HEIs' funding. HAHE also recommends the National Strategic Programme for HE, the programme agreements with each HEI and the distribution of the total annual budget for HEIs' funding to the Minister of Education and Religious Affairs.

Under the existing legislative framework (laws 4009/2011 [3], 4485/2017 [4] and 4653/2020 [5]), public funding of HEIs is distributed on the basis of objective criteria and indicators:

1. 80% of HEIs' regular funding is distributed on the basis of:
   - The total number of the students enrolled per study programme.
   - The estimated annual cost of studying per student for each study programme.
   - The duration of the study programmes.
   - The institution's size and geographical spread.
2. 20% of HEIs' regular funding is distributed on the basis of the qualitative indicators and indicators of achievement each HEI chooses to be evaluated on. These indicators are:
   - Quality and effectiveness of the educational process, which is evaluated on the basis of the numerical relation of graduates to newly enrolled students

- The assessment of the educational services provided made by students
- Professional status of graduate absorption.

Research activity, which is mainly evaluated on the basis of:

- The number of members of research personnel receiving funding by the European Research Council
- The number of Excellence Centres in research.
- The number of teaching and research staff holding posts in central administration bodies of international academic or research organizations or international scientific companies.
- The number of publications per professor.
- The number of citations per professor.
- The number of participations per professor in international competitive research programmes of the European Union and other international organizations
- The number of participations per teaching staff as coordinators in competitive research programmes of the European Union and other international organizations.

Internationalization, which is mainly evaluated on the basis of:

- The number of foreign students in proportion to the total number of the students enrolled.
- The number of students attracted to the institution through European educational programmes.
- The number of students studying abroad through European educational programmes.
- The number of cooperation agreements with other higher education institutions in Greece or abroad.

The sources of financing for the Post-Graduate Studies Programmes are:

- The HEIs Budget.
- The ordinary budget or the Programme of Public Investment of the Ministry of Education and
- Religious Affairs.
- Donations, benefits, bequests and any form of grant of public or private entities Income from
- Research programmes.
- Revenues from participation in E.E. or other international organizations' programmes.
- Revenues from the Special Accounts for Research Funds (ELKE) of the HEIs.

The operation of Post Graduate Programmes without tuition fee charges, counts on the plus side when funding HEIs with funds from the budget of The Ministry of Education. As far as HEIs funding for conducting research is concerned, the institutions are beneficiaries of the Operational Programmes that are co-financed by the Greek State and EU Structural Funds, according to the related regulations and directives.

What is more, the management and employment of funds derived from scientific research, education, training, technological development and innovation is undertaken by the Special Account for Research Funds (ELKE) which is established and operates in each HEI. These funds may come from different sources such as the Programme of Public Investment as well as private resources like the exploitation

of intellectual property rights or publications. (L. 4485/2017 [4]).

4.1 Financial autonomy and control

HEIs are Legal Entities of Public Law, mainly financed by public resources. Hence, their administrative mechanism is based on the legislation governing the public sector. At the same time, in the framework of full self-administration established by article 16 of the Constitution, HEIs can use their discretion broadly in choosing and configuring the most appropriate means, at their judgment, in order to realize their mission and support their goals and are responsible for managing their own resources.

The Hellenic Authority for Higher Education (HAHE) oversees on a yearly basis and evaluates the course of implementation of the planning agreements of each HEI and suggests their amendment to the Minister of Education and Religious Affairs.

HEIs draw up the annual report on the implementation of draft planning agreements and submit it to the Hellenic Authority for Higher Education and the Minister of Education and Religious Affairs. The procedure of the report's approval by the Minister of Education and Religious Affairs is completed within three (3) months following its submission.

If a HEI fails to meet the qualitative indicators and indicators of achievement on the basis of which it has chosen to be evaluated, then the grant that the HEI does not receive, as a consequence of its evaluation, will be allocated among the other HEIs.

Every HEI may set up a private legal entity in the form of a public limited company which shall use and manage the institution's own resources in whole or in part, excluding state funding. The Court of Auditors checks precautionary the legitimacy of the HEIs expenses, but never their purpose. The Special Account for Research Funds (ELKE) are subject to a review at least every year by chartered accountants that draw up a report on ELKEs' financial management and review and submit it to the Minister of Education and Religious Affairs, the Minister of Finance, the Directorate-General for Financial Control of the Ministry of Finance, the Court of Auditors, the HEI's Senate and the Committee of Inquiry of the ELKE concerned. The Directorate-General for Financial Control of the Ministry of Finance may conduct exceptional checks.

Fees within public HE according to the Greek Constitution, HE is public, offered exclusively by the State and free of charge. Therefore, admission and enrolment in all HEIs and attendance at the respective studies are offered to all students free of charge.

However, tuition fees for postgraduate students may be charged for particular Postgraduate Studies programmes by decision of the Department's General Assembly and the Senate. Students of the Hellenic Open University [6] pay fees and the students of the International Hellenic University [7] contribute financially to the operational costs of Postgraduate Programmes. The amount of such contributions is fixed by a joint decision of the Minister of Finance and the Minister of Education and Religious Affairs, based on the Senate's opinion.

5. UNIVERSITIES MICRO-POLICIES

In Greece, as it mentioned before, HEIs are self-governed Legal Entities of Public Law and are supervised by the Ministry of Education and Religious Affairs. For that reason, each HEI is responsible for the formulation of its own policies. The Institutional framework of the University of Patras is summarized in Table 3

Table 3: The Institutional framework of the University of Patras

Act	Description
Ministry Decision 2581/1.4.1993 (G.G. 530/B/15.7.1993)	Transfer of responsibilities - Signing of Documents to the Heads of Services, Secretaries of Schools and Deans and Secretaries of Departments of the University of Patras
Presidential Decree 63/1999 (G.G. 71 / A / 8.4.1999)	Organization of Administrative Services of the University of Patras
Ministry Decision 63557/B1 (G.G. 1062/B/14.7.2004)	Approval of the internal regulations of the University of Patras
G.G. 3899/B/25.10.2019	Internal Regulations of the University of Patras
G.G. 1832/B/13.5.2020	Completion of the Internal Regulations of the University of Patras
G.G. 677/Υ.Ο.Δ.Δ./28.8.2020	Certificate of election of Rector and four Vice-Rectors at the University of Patras
G.G. 4022/B/21.9.2020	Rector Decision "Definition of areas of responsibility and competencies in the elected Vice-Rectors of the University of Patras
G.G. 630/B/17.2.2021	Completion of the Organization of administrative services of the University of Patras (p.d. 63/1999, A 71) for the transitional period until the establishment of the Organization of the Foundation according to the provisions of par. 2b of article 7 of law 4485/2017 (A 114)

Universities internal regulations define the operation of the HEIs and define maters such as:

- Legal form, Emblem and Stamp, Mission and Goals.
- Organization of the internal operation.
- Conduct of election procedures and appointment procedures in the collective institutions.
- Collective institutions (Senate, Rector's Council, General Assembly of School, Schools Deanery, Department Assembly, Department Board of Directors, Department's Sector General Assembly).
- Academic Units.
- Undergraduate Studies – Undergraduate Studies Regulations.
- Recognition of ECTS points.

- Regulation of examinations.
- Student Issues.
- Foundation Staff Issues.
- Quality Assurance.
- Disciplinary Procedures.

The University of Patras, for example, is administered by: the Rector, assisted by the three Vice-Rectors (one for Strategic Research Planning and Development, one for Academic Affairs and Personnel and one for Financial Planning and Development), the Rector's Council and the Senate.

The Senate of the University, consisting of representatives of the entire academic community, is the highest policy-making collective body of the University setting the overall policies. The Rector convenes the Senate, chairs its meetings, sets the agenda, and also represents the University at the highest level. The Rector's Council is the highest executive body.

The University consists of four Schools, one more is under establishment, with twenty-two Departments. Each Department corresponds to a University discipline area and is the basic academic unit whose study programme leads to a specific degree. Departments covering relative discipline areas constitute a School, which has mainly co-ordinating authority. The Departments are divided into Divisions corresponding to smaller and distinct parts of the major scientific discipline of the Department. The General Assembly of the School is the decision making body at the School level, the General Assembly of the Department at the Departmental level and the Division General Assembly at the Division level.

Each academic unit has its own hierarchical and decision-making structure. There is a hierarchical relation between the four ranks of institutional structure concerning leadership and decision-making, with the institution at the top; The Rector and the three Vice-Rectors; The Dean of the School; The Chairman of the Department; The Director of the Division.

The Rector represents the University at the highest level. The Head of Registry oversees all Administrative Units and Services. The overall administration mechanism and administrative staff is under the supreme authority of the Rector.

The organisation of the Administrative Services consists of seven Directorates and one sector, grouped in two Directorates General, one Directorate, which is concerned with student health and well-fare activities, counselling services, accommodation and food. The Library Service, which is a decentralised service, the Secretariats of the collective decision making bodies of the University, the Employment Advisory Office, the Industrial Liaison and Innovation Office. Also, the decentralised units of the Schools and Academic Department's Secretariats.

Regarding university administration's announcements, there is an Information Portal of the central Administrative and Technical Services which aims at the daily information of the academic community, as well as the external collaborators of the University, from the central administration of the Foundation. For Patras University the portal address is *http://www.admin.upatras.gr/*.

5.1 Rector's Council

The Rector's Council is a collective governing body of Higher Education Institutions. Its mission is to deal with each Institution's multitude of issues promptly and flexibly. The Rector's Council is responsible for the following matters:

1. Proposing strategies to the Senate for the Institution's development at local, national, European and international level and for shaping it profile in the context of its mission.
2. Drafting the programming agreements, based on which the Institution's development directions are determined in the Senate.
3. Drafting and reforming the Institution's annual regular financial budget, the final financial report, and the ones corresponding to the public investment program
   - submitting them to the Senate for approval
   - supervising the implementation of the Senate's relevant decisions.
4. Proposing the Organisation and the Institution's Internal Regulation drafts to the Rector, brought to the Senate for approval.
5. Proposing to the Senate the establishment of committees to study or deal with issues that fall within its responsibilities.
6. Observing the compliance with the laws, the Organisation and the Internal Regulation.
7. Tackling issues related to the Institution's administrative services and deploying administrative staff in them.
8. Proposing the Departments' distribution and redistribution faculty staff to the Senate.
9. The budget allocates the funds to the educational, research and other activities of the Institution in the framework of the respective program planning agreement.
10. Suggests to the Senate the distribution and redistribution in the Departments of the faculty members.

The Rector's Council meets once a week provided there are matters to be discussed. All decisions are brought to the Institution's Senate within a month's period.

5.2 Senate

The Senate supervises the overall institution's operation in compliance with state laws as well as each Institution's internal regulations. It forms the Institution's educational and research policy, its strategic planning development and report on its regular activities. The Senate comprises of the following members:

- The Rector
- The Vice-Rectors
- The Deans of the Faculties
- The Heads of the Departments

Student representatives at a percentage 10% of the total number of Senate members (both undergraduate and graduate students are represented by at least 1 student respectively). The student representatives of the above case are selected by voting, along with their alternates, through the process of a consequential, unanimous vote

cast in secret, as regards the members of the relevant category of the students of the University, upon a single ballot paper, addressed for a one – year term.

Three (3) representatives, one for each category of Special Educational Staff (S.E.S), Laboratory and Teaching Staff (L.T.S.) and Laboratory and Technical Staff (L.T.S.) (they are elected for a 2-year period of representation and they can be re-elected for one more term of office)

One (1) representative of the administrative staff of the institution (they are elected for a 2-year period of representation and they can be re-elected for one more term of office)

The representatives of students and administrative staff are selected by voting, along with their alternates, through the process of a consequential, unanimous vote cast in secret, as regards the members of the relevant category of the staff of the University, upon a single ballot paper for each category, addressed for a two – year term, besides the possibility of re-election for an additional term.

The Senate runs legally even though representatives of all the above categories (5, 6, 7) have not been elected.

In conclusion, the Senate has all the responsibilities and tasks as prescribed in article 13, (2) of the Law 4485/2017, in addition to the individual provisions, not only of the previously mentioned legislative act, as amended and in force, but also of the Organisation and the Internal Regulation of the Educational Institution, respectively.

5.3 Schools and Departments

Each Department corresponds to a University discipline area and is the basic academic unit whose study programme leads to a specific degree. Departments covering relative discipline areas constitute a School, which has mainly co-ordinating authority. The Departments are divided into Divisions corresponding to smaller and distinct parts of the major scientific discipline of the Department. The General Assembly of the School is the decision making body at the School level, the General Assembly of the Department at the Departmental level and the Division General Assembly at the Division level.

5.4 Strategic Plan of Patras University

https://modip.upatras.gr/sites/modip.upatras.gr/files/uploaded_page_files/strategy-greek.pdf

The basic strategic objectives of the University of Patras include:

1. High level education in all sectors and levels of study
2. The production of high-level research, based on international standards and the linking of research and innovation to production
3. Promoting and recognizing excellence and innovation
4. Strengthening extroversion and international presence
5. Constantly improving the financial soundness, accessibility and efficiency of management
6. The investment in human resources and the development of the University in cognitive subjects
7. Maintenance and development of infrastructures
8. Updating its rules of Procedure

9. Student Care
10. Quality Assurance

The following are the strategic objectives and the individual coherent actions for their implementation in the context of the safeguard policy quality of the Foundation.

5.4.1 High level education in all sectors and levels of study

- Update, upgrade and customize programs studies in current research directions internationally and in depending on the local and national needs of the economy and society.
- Upgrading the content and teaching methods in courses of all Academic Units, with emphasis on utilization of new digital tools and technologies IT and communications, promoting critical thinking, innovative approach and creativity by students in all cognitive objects.
- Establish procedures for the annual review of programs studies by the Departments and the award of a diploma supplement.
- Upgrading, updating and standardizing all academics through the adoption of case-specific regulations (indicative: regulation of postgraduate studies and doctorates studies, regulation for the recognition of Erasmus courses, performance of ECTS credits and score assignment, regulation postdoctoral research).
- Establishment of a Center for the support of teaching and learning, in order to inform teachers about new methods and teaching techniques.
- Development of the cooperation of the Quality Assurance Unit (MODIP) with the Internal Evaluation Teams (OMEA) of Departments through the establishment of special evaluation committees in level of the Deans.
- Creation of a Training and Lifelong Learning Center (KEDIVIM) and promoting actions to provide continuing education and training to citizens across the country through programs for life education and e-learning.
- Upgrading the participation of students in its assessment educational work provided through its universal application electronic completion of evaluation questionnaires, ensuring comparison with data from previous years, and ensuring student participation and introduction of open-ended comments and questions.
- Support and continuous upgrade of student quality upgrade the role of the counselor-teacher for continuous support of students in their studies and operation special office for the subsequent educational and professional
- their orientation.

5.4.2 The production of high-level research, based on international standards and the linking of research and innovation to production

- Continuous recording and monitoring of research performance at the level of cognitive objects and Departments, in relation to them indicators of research results (publications, reports, research achievements).
- Promotion of interdepartmental and interdepartmental research collaborations, participation in recognized international research networks.

- Research collaborations with recognized Universities and Research centers. Systematic collaboration of the University with the productive potential and linking research with production.
- Dissemination of the research achievements of the researchers of the Foundation and their efficient utilization by its productive potential country.
- Annual report of innovation and productivity with the aim of making permanent (Patras IQ).
- Development of two-year vocational training programs.

5.4.3 Promoting and recognizing excellence and innovation

- Award of the excellent graduates of the Departments.
- Provision of scholarships to excellent students for their continuation their studies at postgraduate level.
- Strengthen the research programs of young researchers and members of the teaching staff.
- Rewarding research teams with high ratings and recognition of their research work.
- Ethical reward of teachers with continuous high level evaluations of their teaching work by students.
- Highlighting the work performed (educational, research, academic) in academia and society.

5.4.4 Strengthening extroversion and international presence

- Strengthening the international presence of the institution through systematic effort to collect, record and supply
- data in the international ranking lists of higher education institutions training (rankings) with the aim of upgrading his position Institution in the international rankings.
- Creating strategic partnerships (MoUs) with academics institutions of international scope for joint training actions and training (summer schools, cooperation with undergraduates and postgraduate programs), utilizing the potential of the Foundation in the social sciences and humanities with parallel utilization of its privileged geographical position University of Patras.
- Establishment of foreign language study and doctoral programs co-supervision with Institutions of international prestige.
- Promotion, strengthening of ties with the graduates of the Foundation (alumni) and their utilization through the creation of relevant website and social media.
- Participation of the Foundation in development actions and events promotion at local, regional and national level.
- Enhancing student mobility by utilizing actions Erasmus (+).
- Connection of the University with the society and its promotion as lever of development of the local community and the country in educational and cultural level.

5.4.5 Constantly improving the financial soundness, accessibility and efficiency of management

- Upgrading the quality, operation and organization of Administrative Services and improving quality and conditions of work.

- Undertaking actions and initiatives for the efficiency and transparency of the Administration.
- Continuous upgrade of the "Digital Leap" through which it is the integrated integration of all individual teachers is possible, to financial and administrative functions of the Foundation.
- Financial planning and utilization of resources with the aim of ensuring the soundness of the Foundation and society.
- Development and expansion of the infrastructure of the Foundation, streamlining the use and upgrading the buildings infrastructure.
- Attracting financial resources for individual support with emphasis on postgraduate scholarships of the students.
- Promotion of educational actions and initiatives for one standard eco-friendly University.
- Development of initiatives and conditions, in order to ensure the accessibility of people with disabilities.

5.4.6 The investment in human resources and the development of the University in cognitive subjects

- Claiming the announcement of all faculty positions, in all levels, when on person is retiring.
- Claiming new faculty positions.
- Allocation of positions with strict objective criteria.
- Encouragement of the Departments for updating their knowledge of objects and claiming positions of scientific staff.
- Increase the staff of administrators and proposals for executive positions, which serve modern needs.
- Creation of new Departments in the existing schools.
- New Schools that will contribute to its further development University.

5.4.7 Maintenance and development of infrastructures

- Maintenance of infrastructure by exhausting the National funding.
- Possibilities for reconstruction of new buildings through state funding and donations.

5.4.8 Updating its rules of Procedure

- Creation of updated rules of procedure.
- Creation of a new Organization and Organization Chart services.

5.4.9 Student Care

- Monitoring the procedures for the implementation of the rules feeding and housing of eligible students
- Monitoring of the Departments for the observance of the obligations to students
- Monitoring the students for the observance of their obligations.
- Adherence to undergraduate and graduate programs studies and teaching hours.
- Adherence to the schedule of teaching semesters, exams and oaths.

5.4.10 Quality Assurance

- Towards the realization of the Vision, the Mission and the Strategic Objectives, the University of Patras through its decisions its institutions and in the context of evaluation procedures (internal and external evaluation of Academic Credits and Institution, as well as certification of the Curricula) develops the necessary procedures for its continuous improvement quality of the work and services of the Foundation. Central instruction which support the quality assurance procedures is in accordance with current institutional framework (Law 3374/2005, 4009/2011, 4485/2017) and G.G. 410,12.2.2018, the Quality Assurance Unit (MODIP) of the Foundation.
- Optimization of evaluation procedures in order to achieve them objectives set by the academic units and the Foundation. Coordination and support of evaluation procedures for academic units and other services of the Foundation.
- Systematic monitoring and dissemination of results and internal and external evaluation procedures.
- Development and continuous optimization of information system regarding evaluation procedures for management and dissemination of the data of the operation of the Foundation.
- Organization of the Internal Quality Assurance System.
- Support for external evaluation procedures and curriculum internal certification quality assurance system of the Foundation, in the context of the principles, guidelines and instructions of the Safeguarding Authority and Quality Certification (ADIP) in Higher Education.
- Close cooperation of MODIP with its management bodies University of Patras to address the difficulties and the problems encountered in the implementation of procedures under the Foundation's policy.

6. BEST PRACTICES

6.1 Digital Services

6.1.1 Institutional Account

The Networking section of each HEI provides user accounts to all members of the academic community. These accounts are required for the use of all telematics services provided by HEIs as well as for the use of the services of partner organizations. More specifically, users have the right to access, for example, the following services:

- Email
- Virtual Private Network (VPN)
- Wireless Access (Eduroam)
- Microsoft Imagine
- IBM SPSS Statistics software
- Microsoft Office 365 Education service
- Service G Suite for Education

- Academic Repository
- Personal Digital Certificates (PKI)
- Online File Storage
- Virtual Machine Service (VM)
- Assistance Office DA
- Erasmus + Platform

6.1.2 Remote Teaching

During COVID-19 days remote teaching became essential for HEIs. Several meeting platforms are used such as Zoom, Microsoft Teams, WebEx. Furthermore, asynchronous learning platforms such as e-class and e-class Exams. In addition, Virtual Private Network service is used which offers the possibility to the users who are outside the physical network of the university to access it and the services that it offers through a secure virtual connection.

The methods of teaching that are used are determined by each teacher independently. The majority use blended methods of learning, that translate into the traditional lesson in the classroom (which can be in nowadays helded by an online meeting platform) completed with the use of e-class asynchronous platform. With e-class teachers are able to put exercises, project, test for homework and for evaluation of student's progress. Some other use game methods, for example the Kahoot platform, in order to evaluate if the audience is following and understand the presentation of the lesson.

The drawback of distance learning is that students are exhausted watching so many hours a screen and eventually will loose their focus and do something else rather than pay attention to the lesson. Furthermore, the evaluation procedure is not as inviolable as it should be. Even with the cameras open it is very difficult, if not impossible to check many faces at the same time and students will find a way to cheat at the end. Some methods used for secure the evaluation procedure are:

- Use of multiple choice questions.
- Limit time for solving an exercise.
- Use of two cameras, one sowing the front and the other the desk of the student.
- Use of IP address check, in order to exclude that students are in the same space.

As it mentioned, teachers have the responsibility for organize the lesson and evaluate the students. Current there are not formal guidelines to determine the way of remote teaching in Greek Universities. Each teacher, according with its needs use whatever method finds out that suit him.

6.1.3 Remote Administration

Electronic Secretariat

The Student Life Cycle Management Subsystem covers the entire study cycle, offering the students of the University electronic one-stop services at each stage of this cycle. It is focused primarily on serving undergraduate and graduate students and secondarily on the faculty members of the University.

Staff information application

In the first phase of implementation the service offers access to:

- The monthly payroll of the staff from January 2012 until today.
- The annual payroll.
- Their phone number accounts.
- Call analysis of their phone numbers.

Alumni Social Network

Every graduate can maintain his personal profile on the website, join the alumni groups as well as communicate with other alumni.

In addition, other digital administrative services which widely used are the Information system of the Quality Assurance Unit, Meeting Room Booking System and digital protocol.

6.2 LifeLong Learning

Each HEI can operate with supervision of KEDIVIM Lifelong Training Centers. The main purpose of these centres is to design, organize and operate lifelong training programs in a wide range of fields as technology, administration, health, humanities, education, art etc. Distance and blended learning are the main methods for the programs implementation they are always looking for new attractive methods and approaches for the improvement of adults education, training and employment. The instructors and the coaches of the programs are academic and scientific staff and also high level colleagues from the private sector and the industry. The available human resources, the infrastructure and the technological equipment render the Center as one of the most powerful services of HEIs.

6.3 Internship Office

The main objective of the Internship Office (IO) is the continuous upgrade of the quality of education offered to the students through an Internship Programme (IP). The benefit for the interns is that they gain work experience during their studies which is very important for their professional career ahead, while the benefit for the institutions is that the Internship Programme contributes to the outward-looking orientation of the Departments of the HEIs and to a more substantial interaction with businesses.

6.4 Portal of administration's announcements

The Information Portal of the central Administrative and Technical Services aims at the daily information of the academic community, as well as the external collaborators of the University, from the central administration of the Foundation. Patras University Portal's web page is *http://www.admin.upatras.gr/* .

6.5 Quality Assurance

In general, the Quality Assurance framework in Greece HEIs, the indicators and evaluation criteria used refer to the quality of the:

- Teaching work

- Research work
- Curricula and syllabi
- Rest of the services (administration, student care, infrastructures TPE, transparency in handling financial resources, etc).

Quality Assurance constitutes one of the strategic priorities for the University of Patras, and its main objective is to pursue continuous improvement of quality in Education and Research. The University of Patras is the first Higher Education Institution in Greece to recognize the importance of quality assurance and to conduct a pilot external evaluation in December 1999, in the context of the processes outlined in the Rectors Summit – CRE (The Club of Rectors of Europe).

Subsequently, in October 2018, it became the first Higher Education Institution in Greece to certify its Internal Quality Assurance System (IQAS), in compliance with the Hellenic Quality Assurance and Accreditation Agency (HQA) Quality Standards as well as the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG 2015). Based on the existing legal framework, the Quality Assurance Unit (MODIP) of the University of Patras is the central coordinating body of all institutional Quality Assurance and Evaluation processes (Greek G.G.410/B/12.2.2018).

In collaboration with the Internal Evaluation Teams (OMEA) of the Academic Units, the Quality Assurance Unit deals with:

- Electronic questionnaires on teaching assessment completed by students
- Electronic questionnaires on issues related to education and research completed by academic staff members
- The Annual Internal Reports of the Academic Units
- The Accreditation Reports of the Academic Units
- External Evaluation Reports

The process of Accreditation of Undergraduate Study Programs has already been completed with very positive results for the majority of the Academic Units of the University of Patras. The Accreditation Reports and Certifications of the Academic Units, as well as detailed information about Quality Assurance at the University of Patras, are available at: http://modip.upatras.gr.

PART II: FIELD RESEARCH: THE NATIONAL CASE STUDY

Introduction

The field research includes interviews with decision makers, academic bodies and three focus groups, the first one consists of professors the second one of researchers and PhD students and the third one of administrative staff. The main objectives of the research were the collection of data regarding the digital transformation of the university, the current status of operation and the vision that responders have for the future operation of universities with the adoption of digital tools and modern learning practices. The research tries to capture all the above in three main dimensions, organizational, teaching and cultural.

1. DECISION-MAKERS: MAIN RESULTS

The first part of the national study includes in depth interviews with policy makers in Greece HE. The interviews include three people with significant role in their field. The first interviewer is in a heading position in National Telecommunications Committee, the second is Scientific Counsellor at IEP (Institute of Educational Policy) and the third is the responsible contact person of Erasmus Plus projects of ECE department. Their point of view is presented in the following sections.

1.1 Warm-up part: Vision of Digital Transformation in HE

The vision of digital innovation in HE follows the main strategic document "Digital Transformation Strategy 2020-2025" [13], which sets priorities for the digital transformation, as well as goals to develop the digital skills of Greek society - at all levels and ages. Regarding the transformation into practices the main policies so far are:

- Upgrading/merging of Technological Institutes (2018)
- Changes to internal governance of HEIs (2017)
- Expansion and enhancement of the Hellenic Agency for Higher Education (2020)
- Committee for National Dialogue for Education (2015)
- Expert Committee on the Economics of Education (2017)
- Reform of funding mechanisms for universities (2020)
- Reform to facilitate funding for research and development (2020)

Developing a digital teaching and learning policy that clearly and relevantly reflects the support for high quality education, for the development of the digital skills of the academic community, the stimulation of innovation in the institution, the provision of a framework for the issuance of certified digital qualifications and for the validation of the acquired digital skills (e.g. MOOC courses) that are reliable, multilingual and can be stored in professional profiles (e.g. CV EuroPass). In addition, there should be a clear policy for social media use in the university.

- Changing the teaching methods with new that promote the students' digital skills and abilities as well as their flexibility of thinking.
- Creating a new team structure consisting of both teaching and administrative staff from various in-house departments as well as external consultants and experts from fields such as learning and knowledge, research in leading areas such as AI, blockchain, etc., marketing and communication and, of course, business digital transformation, software architects and User Experience Design specialists.

The institutions will focus to the digitalization needs and the digital maturity in order to to design functional and viable digitalization solutions:

- Development of top strategies and practices aimed at introducing and applying digital technologies in education.
- Support ongoing development of digital literacy skills for the entire academic community.

- Adjusting, modernizing educational forms and practices to take advantage of new digital technologies. It is useful to have digital tools and apps, support content and access to e-learning platforms, a hub of interactive open educational resources.
- Development of career guidance methodologies focused on the needs of the students, correlated with the skills needed.
- Optimization of study offers to support of employability. Working with industry partners.
- Improvement of existing digital platforms such as open class and Moodle e-learning platform.
- By using analytics, the university can support and improve academic performance, employability rates, student progress and student retention.
- Exploiting innovations in the field of new technology in order to improve the educational process.
- Reinforcing cyber security by adopting appropriate safety measures and accreditations.
- Launch of artificial intelligence pilot projects.
- Leverage cloud technologies to drive innovation.

1.2 Central Part: Digital Transformation Policies

Regarding the EU standards for quality assurance Greek Universities have implemented ECTS in graduate and postgraduate level studies. ECTS is applied to support student mobility between higher education institutions. The course catalogues, Learning Agreements and Transcripts of Records help the recognition and transfer of credits earned by students during a mobility period abroad.

The policy actions follow the "Digital Education Action Plan (2021-2027)" of European Commission and "ENHANCING DIGITAL SKILLS and JOBS IN GREECE, "National Action Plan 2017 2020".

The objectives of the National Coalition are:

- Promoting the cooperation between all parties in order to introduce actions with the aim of enhancing digital skills. The goal is to address the issue of the digital skills gap in every sector of the Greek economy and society.
- Enhancing the dissemination of EU policies on digital skills in Greece. The organisational structure for the Coalition is the responsibility of the department of Digital Economy, Investments and Digital Skills / Directorate of Digital Strategy of General Secretariat of Digital Governance and Simplification of Procedures.

The challenges of digital innovation in our Higher Education System are summarized into the following sectors:

- Leadership and Governance
- Organisational Capacity: Funding, People and Incentives
- Measuring Impact
- Teaching and Learning (digital platforms such as Moodle etc and methodologies)
- The Internationalized Institution
- Preparing and Supporting students

- Knowledge Exchange and Collaboration
- Digital Transformation and Capability
- Development of career guidance methodologies focused on the needs of the students, correlated with the skills needed.

Note: With law 4763/2020 introduces a National System for Education and Training which develops along the lines of levels 3, 4 and 5 of the European Qualifications Framework (EQF). LLL structures included in the formal education system are Second Chance Schools (SDE) and Institutes of Vocational Training (IEK). The reform provides for the creation of post-secondary non-compulsory schools for ages between 16 to 23 (ESK and EPAS) which will be included in the formal education system.

- Lifelong learning Centres (KDVM) and colleges are part of the non-formal education system.

Continuing Education for University Staff

In Higher Education a kind of continuing training has been established by means of sabbatical leaves for attendance at research centres and Universities. Emphasis is given to the international presence of faculty members and this has to do with the ongoing decision for their development or election in conjunction with their overall teaching and their overall scientific and research activity.

Strategies through which the central system supports universities

The strategies for adoption the guidelines are among others:

- Implementation of the European Education Area strategy (Removing barriers to learning and improving access to quality education by 2025.
- Funding opportunities (give essential information on the wide range of funding opportunities the EU provides for training and education).
- Higher education mobility (studying abroad offers students excellent opportunities to expand their skills and broaden their horizons).
- Erasmus+ (Erasmus+ is the EU's programme to support education, training, youth and sport in Europe).
- Adoption of the European Credit Transfer and Accumulation System (ECTS) which is designed to make it easier for students to move between different countries.

Actions for the development of digital transformation

The actions should be related with:

- Newly established regional and local bodies may help improve local capacity and responsiveness.
- Restricted autonomy may limit universities' capacity to address students' and communities' needs.

The investments should be focus on:

- Digital infrastructure (network and e learning platforms), digital tools and apps, support content and access to e-learning platforms, a hub of interactive open educational resources.
- Support ongoing development of digital literacy skills for the entire academic community.

- Development of career guidance methodologies focused on the needs of the students, correlated with the skills needed.
- Optimization of study offers to support of employability. Working with industry partners.
- By using analytics, the university can support and improve academic performance, employability rates, student progress and student retention.
- Exploiting innovations in the field of new technology in order to improve the educational process.
- Reinforcing cyber security by adopting appropriate safety measures and accreditations.
- Launch of artificial intelligence pilot projects.
- Leverage cloud technologies to drive innovation.

1.3 Closing Section: Strengths and Weaknesses of Current Digital Policies

Strengths:

- Provision of digital infrastructure has reached a good level when looking at European averages
- Policy work increasingly focuses on the quality of learning, educators training and student competence building.

Weaknesses:

- Disparities between regions persist in terms of the provision of digital infrastructure.

2. ACADEMIC BODIES: MAIN RESULTS

For Academic Bodies perspective three in depth interviews were held with the Dean of Polytechnic School, the President of Electrical and Computer engineering Department and with the Director of Telecommunications and Information Technology Division. Their answers are summarized in the following sections.

2.1 ICT Culture

The vision for establishing ICT culture is to make the best out every available legal technology. The current conditions made all university personnel familiar with the latest solutions which may be further examined in the years to come, depending on the legislation.

UP took every possible effort to carry out the tasks related to students' studies, at all levels. Lessons and exams were performed with all possible safety precautions. Teachers, researchers, administrative staff and students adjusted very quickly to the new conditions. The same applies to various organizational processes. Some deadlines had to be extended, however. The goals of the institution remains more or less the same which among others are to providing the best possible education and skills which will follow graduate students in their professional career and the best possible connection with market needs.

At organizational level no major changes have been made during the pandemic years. Digital hop was implemented years before the pandemic, providing to staff and students digital tools such e-secretary (progress), eclass, digital signatures etc.

In teaching, asynchronous platform eclass have been used for almost two decades before, but the pandemic force the implementation of synchronous online teaching changing the way of teaching procedures. (extensive use of meeting platforms, use of game platforms etc.). A new platform for examination purposes was created (examseclass).

2.2 Leadership, Planning and Management

All opinions converge that integration of digital technologies, at the beginning cause some problems because it was a new way for teaching and for management procedures but after a while institution staff get used to it and the use of these tools improve their work a lot.

O.K. marks that: *"Our teaching staff and the students, reacted quite well and after some initial problems the integration over the new digital technologies was smooth. The adoption of digital signatures, electronic meetings, and other modern means was very practical and is expected to be extended in the future."*

On the other hand, the organizational structure was not changed. Only the communication processes were affected. The Institution issued directions every time it was necessary, through university email or other forums established towards this end. This was done either through text or by videos created by our academic staff. However, more work should be done in that part.

Regarding policies and guidelines for the Academic Bodies that central government provide, all follow the directives and documentation of the European Union which transformed into practices with national laws.

K.S says: *"The national guidelines were explicit and quite easily followed by university."*

However, there are problems related to the technical infrastructure. Sometimes academic staff or students do not have reliable broadband connections. In some cases, they don't even have the necessary equipment. The nature of interaction from a distance makes it also difficult to identify those involved causing problems in lessons end especially in examinations.

Educational activities are carried out through online technologies made available by the Ministry. Administrational and research activities were done in a mixed way with controlled presence and online technology. Third mission was affected though, because it was difficult for the stakeholders to come into contact with university and they had other priorities during this difficult situation. But in general, the adoption of digital innovation was rather smooth end the various malfunctions we're mostly attributed to technical problems.

2.3 Quality Assurance

Since the introduction of digital innovation has not finished yet it is rather early for the quality control system to give us a formal evaluation. The quality control system performs evaluations during and after some necessary time allowing for the stabilization over the operation. The evaluation of the promotion of educational Innovation processes are expected to take place in the next months. Monitoring the curricula is done implicitly by our Academic Bodies procedures. The vast majority of the students it is observed that is digitally skilful.

2.4 Scientific - Research work

Regarding the vision of digital transformation, all notice that big part of UP is of technical nature. So digital procedures were already encompassed, and they were also part of scientific research.

N.A says: *"Digital Innovation will play an even bigger part in the future, but it has to be studied carefully how this will be done."*

Regarding concrete applications, UP has contracts with major software providers and with scientific publishers for free access. For communications reasons various available tools are supported, like traditional electronic communications, zoom, WebEx, social media.

2.5 Technology Transfer and Service to Society

UP supports the society and the entrepreneurial activities in adopting digital innovation by participating in Innovation projects and by providing them skilled scientific staff. Moreover, is looking for the best possible way the collaboration with major companies of Greece market in order to give the opportunity to students to practice their profession and transform their knowledge into work.

2.6 Learning and teaching

There are programs accessed by all academic staff, to support teaching procedures, like e-class, and to handle administration procedures like Progress, for the students to interact with the various administrational or teaching units. New platforms and tools and methods are examined in order to enrich teaching and learning procedures. To accomplish all that directives and manuals are issued and online seminars are also held. For the administrative stuff there is an ongoing procedure with continuous seminars.

2.7 ICT Resources and Infrastructure

Some of the major tools which used in teaching and administrative process are:

- Progress (e-secretary)
- eclass and examseclass (for teaching and examination)
- webres (monitoring projects and payments)
- Digital signature
- Online meeting platforms (Zoom and Microsoft Teams)
- TeamViewer (remote access)

Bandwidth of the hole network infrastructure should be increased because the working load especially during peak hours forcing the system to overload and fail. At the beginning that issue was intense but as time goes by it getting better. There are not any methodological guidelines for using teaching digital tools but, in general, the transition from traditional procedures the digital ones was smooth. It is expected that this will also hold in the future. Critical issue is the access of all stakeholders to these modern technologies. A possible solution would be the support by establishing common premises where stakeholders could get this access. Regarding the

development plan, O.K. notice that: *"These premises already exist. An effort is underway to expand them so they're more distributed."*

2.8 SWOT

Strengths

- Extend use of digital platforms and tools for teaching and administrative procedures.

Weaknesses

- Need for better and state of the art equipment do provide reliable services.
- Funding that central government provide though it is not negligible is not enough for fully digital transformation of HE.
- More personnel should be hired in order to provide support in teaching and administrative procedures.

Technological tools are very helpful in administrational procedures but can only play a complementary role in teaching activities. They should not replace human interaction which is the base of any educational system. Students should come into direct contact with their tutors and with one another. Socialization of students is as important as the accumulation of knowledge.

3. FOCUS GROUPS: MAIN RESULTS

The third part of field research include three focus groups:

1. Professors.
2. PhD Students and Researchers.
3. Administrative Staff.

3.1 Professors

In the research participated six professors of the department of Electrical and Computer Engineering. They all focus that the best way for keeping up to date their skills is self-training and sometimes seminars which held by university. Also, they notice the use of digital platforms such e-class and digital tools such Zoom in more intense during the pandemic years. Some of their thoughts are presented in the following sections.

3.1.1 Warm-up Section: Digital Innovation and Technologies

Digital innovation in higher education can do a lot. But its implementation requires a lot of effort (tedious effort) from instructors, because it is not just a use of technology in education (e.g., recorded lectures or widespread use of asynchronous platforms like eclass), but indeed requires innovation in order for the student to acquire more and substantial knowledge. Otherwise, the use of classroom and chalk on the blackboard (nowadays, markers on a whiteboard) is much preferable. Digital innovation includes enhanced visualisation tools (videos), synchronous online lecture with streaming and access to students outside the university, pre-recorded lectures, computer-based examples that students can solve/run on their laptops or PCs in the lecture theatre.

In the question what is digital innovation ML tries to define it saying:

"*… I firstly asked for the definition of digital innovation. I readily found it through Internet – is it still a digital innovation? What I found is not really a definition, but it works: Digital innovation means innovating products, processes, or business models using digital technology platforms as a means within and across organizations. Without this definition, I was really confused, because, for instance, computerization of the payroll exists for many-many years in our University - since my entrance (in the beginning of 80's). To distinguish digital innovation in the context of a university, we should concentrate on processes…*"

The University of Patras has digitized the services in a unified way, which are offered to both students and staff (Professors). The integrated system is called Digital Hop and includes several platforms. One of them (called PROGRESS) is used to handle the educational process. PROGRESS supports both students and Professors in storing grades in each course and providing relevant statistics. Combining this facility with digital signature simplifies the entire student grading process. Previously, Professors had to print and sign several pages of each exam period with the students' grades in each course, and even submit them in person to the Secretariat of the Department, for security reasons. Also, announcing the results of the exams to the students was a time-consuming process, while now, when the grade of a student is registered in PROGRESS, the student is automatically notified by sending a message. Moreover the student can register to courses online and monitor his/her progress course by course and semester by semester. Furthermore, include synchronous online lectures (due to COVID-19 pandemic), computer-based lab exercises.

ML also notice that: "*The student exchange process under the Erasmus_Plus EU. program is a very complex process, which can now be easily followed thanks to a special digital platform / innovation, where all documents are stored and the process of scoring and selecting students in order to go abroad takes place transparently throughout the academic community. Even the recommendation letters are issued online and stored in the digital platform.*"

A challenge to all that is the creation of a sufficiently fast internet access for students and staff to have uninterrupted lecture, because during the pandemic year the rapid increase of telecommunication load has brought the system beyond the limits of its operation.

3.1.2 Organizational Dimension

There were seminars organised centrally by the Rectorate, on how to use "digital innovation". People were reacting rather positively or very positively. University Professors were trying to get information on what are the most convenient platform to be used for distance teaching, given that the Rectorate had adopted several distance teaching tools. Of course, there were several other tools which they could be adopted, but the selection decision process was urgent (the selection was based on the current experience at that time). It is worth mentioning that the students were no problem in using the one or the other platform, because there was no important differences either in the installation process or in the computer working environment among the adopted platforms. Online meetings have also allowed more staff to attend (e.g. when they are on business trips).

Digital innovation enhanced collaboration between teachers and researchers because programming/scheduling was required on a daily / weekly basis. In research, there was the disadvantage of empty sessions, because in

many cases the scheduled agenda could not be followed due to lack of some data (data production delay). The good thing is that each task (research or teaching) could be measured and evaluated in relation to time. In teaching there was no disadvantage in terms of programming. However, a teacher's workload has increased significantly, because in many cases the teacher has to answer individual questions in writing. Furthermore teachers have adopted online teaching and learned how to use pen/tablets for synchronous teaching. It has also encouraged giving seminars remotely to a university abroad (this is also useful to researchers for improving their CV).

3.1.3 Teaching practices and digital technologies

Distance teaching via Internet, has given the opportunity to take advantage of the Internet. It does not matter what specific tools are used; the fact is that the Internet is available with all its resources. Therefore, as we use the calculator to do arithmetic, we can use the Internet to solve a system of equations or even a complex optimization problem that someone else has solved and made the related software public available. Thus, the use of Internet changed the philosophy of the exercises. There is no merit to have exercises where the students must provide the appropriate values of input parameters of a mathematical formula and get the output value by using a calculator. It is much more important for a student to be able to find the same formula in the Internet and understand how to use it.

GK notice that: "*I've received very positive feedback from students regarding the synchronous online teaching. Students can also use the relevant software (e.g. Matlab) from their computers during the lectures and implement their algorithms on the spot. I could also provide co-host access to individual students in order for them to share their screen and demonstrate their project/code to the rest of the cohort.*"

Criticalities / Constraints

The problem mainly observed on the side of the students. They complain that they cannot be concentrated on the computer screen, e.g. 6 hours a day. Instructors, on the other hand, complain that it is very problematic and not pleasant, at all, to talk so much in front of a computer screen without a real audience. This is especially true when the "virtual classroom" includes many students and therefore it is not practical, at all, to have feedback.

3.1.4 Professional Development

Some main results are that it is not enough for distance teaching, slides (PowerPoint) to be presented in the same way that they are presented in the (real) classroom. The students can get much more knowledge, when the instructor devotes the necessary time to prepare appropriate slides, i.e., based not only on images but also/mainly on video. Otherwise, it is too difficult to have better education results from that that teacher has when he/she uses the chalk on the blackboard.

The latter is especially true when the course contains mathematical analysis (formulas).

Experienced Professors / Researches, with a deep knowledge of what they teach, can give effective lectures, no matter what means they use, what tools they use. In case of a distance teaching however, they must devote much time to prepare new transparencies which include short videos.

ML says: "*Grasping the opportunity, I would like to say that I used to teach in the classroom by using both PowerPoint presentation and writing on the blackboard with a piece of chalk. When I was forced to go through*

Internet (because of the pandemic), I had to enrich the PowerPoint presentation by adding new transparencies. However, in order to save time, I included as transparencies copies of my handwritings. It is worth mentioning that discussing with some very good students, after the exams, and asking for commenting on the distance teaching, they told me that most of all they enjoyed my transparencies with my handwritings."

Teaching staff should undergo relevant training, not only on how to use modern digital technologies in learning and teaching, but how to best approach learning and teaching, and the interaction with students, in the first place.

GK notice: "*As I have teaching experience in a UK University, I would like to share the fact that it is mandatory for UK Lecturers to attend a part-time 2-year training programme for learning and teaching that covers both digital, methodological and socio-relational skills.*"

For teachers, it seems that the acquisition and effective use of digital innovation depends to a large extent on the specific topic (content) of the course. Digital innovation is advantageous for teaching certain subjects, such as telecommunications systems, while classical teaching is more suitable for subjects such as mathematics. In order for the latter to be taught effectively based on "digital innovation", a huge effort is required from the teachers in the production of effective teaching material / resources. Although distance education / learning has been practiced at Open Universities for many years, teaching materials / resources used need significant improvements.

- There is no doubt that bureaucracy and logistics are being simplified.
- Within a specific organization (such as a university) central training models and pedagogical teaching methods could be offered. This facilitates the widespread use of digital innovation.

As far as the timing is concerned, the current pandemic situation was the main reason for the introduction of digital innovation. The penetration of digital innovation in recent years (since 2019) has increased to a very high degree in Greece, especially in the public sector / services (not only in the educational sector).

ML notice : "*…as a person who can understand the difficulties in developing online application forms, I can characterize amazing the extensive development and use of online application forms in so many different sectors. To the best of my knowledge, all public services are offered online in Greece."*

To keep up to date professors are based mainly on self-training, because no sufficient training or support is offered by university. Sometimes younger professors provide peer tutoring to elderly professors who have difficulties in using modern digital technologies.

3.1.5 Best Practices

- UP established the eclass system for many years and professors have extensive experience in this asynchronous education system. However, eclass needs further exploitation.
- In synchronous online lecture with streaming and access to students outside the university, the use of ZOOM seems to be preferred over other related tools. This is due to its simplicity. ZOOM is used all over the world especially for video conferencing. For teaching, they notice that some improvements are needed.
- There is no suitable tool for remote examination, as revealed during the months of the COVID-19 pandemic.
- Enhanced visualisation tools (videos),

- Pre-recorded lectures
- Computer-based examples that students can solve/run on their laptops or PCs in the lecture theatre.
- Use of Kahoot.

Two are the main points that are missing from the university:

1. Support staff that can assist in training and using digital technologies
2. Academic collegiality (for sharing good practices)

3.1.6 SWOT

Strengths

- Use of digital platforms and tools.
- Use of games in teaching procedure.
- Use of software tools during the class.

Weaknesses

- Lack of equipment.
- Lack of personnel.
- Lack of sufficient funding.
- Lack of culture.
- Bureaucracy.
- Insufficient bandwidth for online teaching.

Opportunities

- Digital transformation of teaching.
- Introduction of new practices.
- Introduction of virtual laboratories.

Threats

- Difficulties to focus on a computer screen for many hours.
- Difficulties to understand the state of the audience.
- Difficulties to examination procedures.

Moreover during the pandemic there was an extensive use of Integrate blended teaching (remote and on-site), encourage in this way foreign students to attend our courses (have to be taught in English – another important aspect since both teachers and students in Greece need to adapt to it).

UP has intervened in the use of digital innovation by covering the cost of use of several digital technology tools centrally. The results/effects of these interventions are cost savings, while offering the tools to university departments that did not use them. Also digital signatures have very positive effect.

Limits / Risks and Opportunities that governance has faced in your HEI's digital innovation

- Bureaucracy: e.g. 7 academics need to sign an document (e.g. PhD examination report) and if one of them does not have a digital signature, everyone needs to sign by hand. Governance should find a way to resolve it.
- Although students seem to embrace modern digital technologies, a minority does not want to receive teaching material in English or attend the lecture in English, something that will encourage Erasmus students to join or students from abroad to attend a lecture that is given in an online synchronous manner.
- Teaching staff number is limited and most of the teachers are close to retirement, which does not motivate them to change/improve the way of teaching.

3.2 PhD Students and Researchers

That section presents the perspective of PhD Students and researchers of the Department of Electrical and computer Engineering of UP. Generally, they find the idea of digital transformation attractive, and they focus in the lack of efficient resources and training for the use digital tools in full scale. Moreover, bureaucracy and funding are major drawbacks to equip themselves with necessary equipment. Another drawback which is mentioned is that teaching procedure is not well adjusted yet to distance learning environment. The following sections present their opinions and thoughts concerning digital transformation in HE.

3.2.1 Warm-up Section: Digital Innovation and Technologies

Digital innovation is a natural consequence which is forced to happened rapidly during the pandemic. It will help in changing students' learning experiences and also increasing students' success making process more accessible to students.

The idea of digital innovation in HE can be addressed in the following topics:

1. Enhanced digital tools in learning procedure such as videos, interactive boards, smartphones.
2. Making virtual classrooms using applications such as zoom, webex, microsoft teams.
3. Use asynchronous platforms for education.
4. Make virtual laboratories using virtual reality.
5. Creation of mixed classes in which some students can be present, and some others watch the lesson from distance.

At the UP, digital innovation is expressed through access to state-of-the-art research software, which is constantly enriched and updated, through access and past work of the University in the electronic repository of the library, but also in the modernization of procedures and level of teaching (distance learning through platform, electronic delivery of projects and assignments, etc.). Furthermore, asynchronous platforms e-class end e-class exams are used for teaching and examinations respectively. Also, in pandemic conditions were lessons held from distance platforms such as zoom used for the realization of lessons. Other digital tools used are webres.com which refers to realization from distance all the bureaucracy documents of research foundation needed, progress.gr which is in fact a digital secretary tool. Digital signature could also be considered as a digital innovation.

The use of technology in both learning support and research work is crucial. For students, it represents an additional tool for their academic work. It also helps to better value the work of teachers and researchers by making their work both more accessible and more visible. Before the pandemic, digital tools were used as supplementary material for students and for administrative issues. During the pandemic, they were extensively used for working and communication. The teaching is done through an electronic platform but also the meetings with other researchers are carried out with modern programs (e.g. Microsoft Teams) that allow the interaction and the share screen which facilitates the process.

I.X and P.X notice that*: "For the last 20 years I have been using digital technology to communicate with students, researchers and colleagues. The degree of interaction sharpens their critical reasoning skills and puts their knowledge into action. That is, one can share information and knowledge to more recipients and in a more constructive way."*

3.2.2 Organizational Dimension

The pandemic forced a rapid deployment of digital tools in everyday life, consequently both for educating and administrative issues.

- The courses were held via zoom.
- The administrative meetings were also held digitally.
- The problems that have occurred are:
- Overloading of systems, therefore slow network speed

A lot of bureaucracy reduced with the use of digital platforms, but these platforms are relative new so a lot of problems occurred and a lot of work was still needed to be made in close. Also, laboratory teaching procedures and assessment methods have not yet been adequately adapted to meet distance learning.

P.X. notice that: *"Quite several people working at the university are unfamiliar with the current technological developments in digital applications and there is a constant demand for training. There is also often a concern of whether communication and dissemination of knowledge using digital technology is as effective as it was, using traditional methods."*

In nowadays teacher should use extensively tools such as progress for publishing students grades and e-class for making announcements, assign projects, talk with students via chat, or put an exam. Therefore, the organization of the lesson is changed compared with the old days. Teacher can watch students' progress more closely and locate and solve problems at their beginning. Students can reach the teacher more easily with the use of modern communication tools. The organization of the teaching is now changing from the traditional teaching inside a classroom into a mixed teaching which combines an extensive use of e-class platform. The skills that a teacher should have are the very good knowledge and use of these tools.

A.A. says*: "Digital innovation has also added to the role of researchers in organizing and arranging teaching and supervising assignments, as it is a new process and efficient ways of communicating at every level have not yet been found."*

3.2.3 Teaching practices and digital technologies

In teaching through distance learning, the student should be encouraged even more to participate in the course in order to have more interaction and interest. Eclass is a asynchronous platform which used for many years combined with traditional class teaching. During the pandemic class lessons were replaced by meeting platforms, such zoom. Zoom gives the opportunity to realize polls from which the teacher can find out if the students are understanding the lesson and in what level. During the lessons some teachers put exercises in order to locate any difficulties that students face and most important to give the students the opportunity to have a small taste of the examination and their level of knowledge at this point. Digital technologies changed the way of work, reforming teaching methods and of course the communication with students. For example, virtual meetings are held for passing their questions.

I.X. and P.X. which were the most experienced members of the group mention that: "*We have been using digital technology to my teaching for the last 20 years. Some examples: use of e-learning platforms for teaching (and/or learning) that takes place through the Internet, presentations with optic/acoustic demonstrations, simulation*

They haven't changed our way of teaching…"

The main problem is the accessibility for the students. For example, some of them are not able to pay high bills in order to have a fast internet connection and many times are forced to be offline due to bad connectivity. A possible solution is the state to promote cheap fast internet for them. Furthermore, there are not some formal main guidelines concern the way of digital teaching and mostly the way of how examination should be held and the lack of interaction, there should be forums that allow students to formulate their questions asynchronously.

Fatigue is much greater for the students in virtual classrooms. From a point a lot of them are distracted and surfing in net rather than watch the lesson. The advantage of using e-class is the fast and from everywhere accessibility that they had in their homework, announcements, and grades.

3.2.4 Professional Development

Regarding the learning goal in Higher Education, the main skills that teachers / teachers must have, depend on the learning goal. If the goal is to achieve a level of learning in both analytical and productive use of scientific data, teachers should provide interrelated activities through the interdependence of the internal data structure and encourage students to make explanations, interpretations, predictions, ratings. To reorganize and transcend the surface structures of their data. Knowledge will therefore become more important because it will be channelled into the management and resolution of problematic situations. In this respect, the innovative use of digital technology should reinforce the teaching methodology that should be guided, in any case, by the above objectives. Skills in the use of digital tools are, of course, required. For example, if the goal is to present to the students the results of a scientific experiment, you must be able to present it either in real or virtual conditions.

Teachers tend to use in e-learning the same techniques/activities/skills they use when teaching groups of students in traditional classroom. They need to build a connection with students to keep them engaged and on task and should provide interrelated activities through the interdependence of the internal data structure. Skills in the use of digital tools are, of course, required.

Deep learning of all the tools that digital platforms provide and the use of them in an extensive way should be carried out. Furthermore, it would be nice to find optimum ways for mixed teaching, for example a lesson could have one or two hours of traditional teaching and then using tablets or cell phones students could answer some questions concern the lesson that they just watch. Also, the teacher should have an open camera and encourage both students to have less impersonal teaching and use extra equipment (e.g. pen) to be more direct and effective in explaining something when needed.

The use of innovative digital tools for the effectiveness of teaching is certainly influenced by various factors such as:

1. The bureaucracy required to make a decision to integrate a new digital technology in education (e.g. special licenses for handling digital personal data, approval procedures for expenditure relating to digital equipment or its maintenance)
2. The culture of education that characterizes an institution (e.g. use of traditional methods by the majority, universal acceptance or reservation of innovative technology).

But the most important factor is the current needs of each era and our ability to adapt to any new situation (e.g. what the COVID pandemic has brought)

Concerning professional development all the members of the group respond that is self-training and the use of Internet.

3.2.5 Best Practices

Digital innovation is limited to the use of eclass digital platform, zoom or WebEx for distance teaching and the use of some gamification methods for some courses. Some ideas are the use of interactive share desktop and live problem solving and questions, the development and use of virtual or augmented reality environments instead of a real laboratory stuff. Some restraint for using these practices are:

- Lack of sufficient resources in personnel and material.
- Effluent of proper funding by the government.
- Collaboration among teachers/tutors in the transferring teaching practices.
- Insufficient network quality.

3.2.6 SWOT

Strengths

- Students easily attend to their courses from any location

Weaknesses

- Lack of physical presence makes it difficult to exchange ideas
- Lack of equipment and personnel.
- Delay in approvement of funding.
- Culture.
- Lack of fast internet connection.

- Examination procedures.

Opportunities

- Creation of virtual laboratories. However, remote laboratories need to be redesigned so that the equipment of a laboratory to have full remote control.

Threats

- Lessons are not interactive and students get more easily bored.
- There are not formed guidelines and procedures for distance learning.

3.3 Administrative Staff

Administrative staff in HE plays a very critical role because as they called to provide support not only to students but in teachers as well. Their responsibilities are to provide a stable and operational management in the department that they belong to. That includes a lot of paperwork in order to equip the department with the necessary materials (consumables for pcs, equipment for the laboratories, etc.), to provide all administrative paper documents that students or teachers need (certifications, diplomas, management documents etc.). The following sections present their perspective of digital innovation and transformation in HE.

3.3.1 Warm-up Section: Digital Innovation and Technologies

In the questions of how they perceive digital innovation and how it modified their way of working so far all the opinions converge to the following:

- Communicating with students and providing services to them via support tickets.
- Automated system for grade reporting.
- Automated system to determine whether students satisfy degree requirements (sometimes these are complex due to electives that belong in multiple modules/sections).
- Being able to provide diplomas with a digital signature. Many tasks can now be completed using computers instead of printed records, but there is still a lot that can be done.
- Something that has helped is the ability to perform a lot of my tasks from home.

3.3.2 Organizational Dimension

In organization level all agree that there was a lot of progress before the pandemic, as a lot of services were held using a digital intergraded system (digital hop), which simplify their working tasks. With platform called PROGRESS students are able to register in a semester and courses that they want to follow without any physical interaction with secretary staff. Overall, introducing the ability to perform various tasks via computers is positive. The only difficulty is that sometimes the new tools/applications are not very well designed or the documentation is not very well written. They all agree that there was not any remarkable change in their definition roles.

3.3.3 Teaching practices and digital technologies

Their experience so far is positive but there are still some drawbacks (which are presented in next sections) that should be explored and solved. Though technology is a great help in their work (One particular example is the

ease of extracting statistical information about grades, graduation rates, etc. from the student/grades databases), reducing a lot of paperwork time, sometimes all agree that due to system failures or bad and complicated design of some tools, it is a drawback for them. Bad design is something that should be fixed and also the institution should provide them an adequate training via seminars.

There are still some cases where one needs to deliver actual hard copies of documents to various offices (mostly relating to the office that handles research funding). All agree that they would like to be able to do everything using digital signatures.

As it mentioned before digital hop was an innovating step for UP. Distance learning (teaching) through platforms such as ZOOM, Skype-for-Business / Teams and WEBEX is widely used. The student exchange process under the Erasmus_Plus EU. program is a very complex process, which can now be easily followed thanks to a special digital platform / innovation, where all documents are stored and the process of scoring and selecting students in order to go abroad takes place transparently throughout the academic community. Even the recommendation letters are issued online and stored in the digital platform. Of course, the digital innovation at the University of Patras has been greatly accelerated by the pandemic.

3.3.4 Professional Development

For staff that provides support to research groups, skills in accounting and financial planning are essential, in addition to organizational and communication skills, since they usually help in organizing workshops. For administrators, good communication skills, computer literacy (e.g. ECDL level or above) and time management skills. Aside from the standard skills required for the job, it's very important to focus on security and privacy (e.g. GDPR) issues.

All in group notice that bureaucracy is still a problem because tasks that shouldn't take too long end up very time consuming. Barring an overhaul to the relevant bureaucratic regulations, it would help to have additional resources in personnel. Self-Training and seminars which are available are the ways of keeping themselves up to date.

3.3.5 Best Practices

Below is a list of best practices used in administrative work.

- Using Zoom or Microsoft Teams platforms for online meetings.
- Using TeamViewer for remote control in order to help their colleagues.
- Digital Signatures and digital certifications.
- Progress digital secretary platform.
- Webres digital platform for monitoring and store data concern projects and payments.

Restrains in all that is incomplete knowledge and operation of all the possibilities that these platforms could provide, their complexity sometimes and the overloading of the system due to high workload. For the first some seminars and training would help. System failures were more extensive during the pandemic as all the personnel was forced to work remotely.

3.3.6 SWOT

For the SWOT analysis the opinions converge to the topics bellow.

Strengths

- Reduce paperwork and bureaucracy.
- Reduce of workload and working time.
- Ability to work from distance.

Weaknesses

- Poor design of some platforms.
- System failures.
- Bureaucracy still exists.

Opportunities

- Reducing bureaucracy.
- Developing new more effective and user friendly tools.

Threats

- GPDR issues.
- Network limitations.
- Network safety.

Moreover, R.D. notice that: "*The biggest threat in the implementation of digital innovation is a feeling of inertia that exists sometimes. It is important for the leaders of the university to encourage the implementation of digital innovation and to not hesitate to assign funding to these areas.*

I only have experience in the Engineering school. Typically, professors in Engineering are well-versed in new technologies and do not hesitate to try out new tools and ideas, so this is positive. I think it would be a good idea to encourage university-wide adaptation of techniques and processes that have been shown to work."

Concern the pandemic effect in administrative and teaching process G.T says: *"With respect to administrative activities, the pandemic made it necessary to develop ways to work effectively from home. I believe this should be expanded with a target towards streamlining the administrative tasks and reducing bureaucracy. With respect to teaching, in my opinion it is much more effective to have classes in person and not online. However, there are several digital technologies that can be used to enrich the teaching process."*

4. STUDENTS: MAIN RESULTS

Introduction

The student questionnaire was sent mainly to the students of Electrical and Computer Engineering Department and was notified to other departments of Patras University as well. The number of total responses was 115 which is an adequate sample to extract useful conclusions regarding the following topics:

- Teaching and Learning Process : 10 Multiple choice questions (5 Level Likert scale)
- Students' Experience : 17 Multiple choice questions (5 Level Likert scale)
- Students Learning Outcome: 9 Multiple choice questions (5 Level Likert scale)
- Profiling: 9 Multiple choice questions
- Customize Section: 3 Multiple choice questions (5 Level Likert scale)
- SWOT Analysis: 4 Short open questions

The five level Likert scale is coded as in the Table 4 below.

Table 4: Likert Scale Codification

Modality	Code
Strongly Agree	5
Agree	4
Neutral or uncertain	3
Disagree	2
Strongly Disagree	1

4.1 Sample Profile

The total number of responses was 115 in which 42,61 % was female and 54,78 % male, also a 2,61% did not want to declare its gender. The vast of responses was came from ages between 20-25 and attending year greater than three years. That is reasonable because the majority of responses became from polytechnic school which has a five year studies program (with integrated Master Degree). Looking closer to students profile we observe that they enter the university with an average school degree grade of 16,35 from which a 25% is below 14 and a 25% is above 19. Noted that one answer excluded from the results because was out of grade range scale. Concern their performance at university studies so far we observe that their average exam grade is 7,1 with a 25% to be below 6,4 and a 25% above 7,8. Noted that five answers seems to be extreme looking the box plot chart but they are not excluded from the results. Also a 72,17 % declares that is in progress with the exams with the remaining 27,83 % that they are not. Moreover, we notice a bit confusion regarding the degree program that they follow. A 53,04 % declares that follow a Master degree while a 46,96 % declares that follow Bachelor degree. That confusion probably resulting from the integrated Master that polytechnic schools provide in Greece. Knowing that, a lot of students respond that they follow Master degree studies, which is not a wrong answer after all. Finally the majority of answers became from the field of Electrical and Computer Engineering. All the

results are summarized and presented in Tables 5-11 and Figures 1-9. For the analysis and the creation of charts Minitab 17 was used.

Table 5: Gender of Students

Gender	nº of Students	% of Students
Female	49	42,61 %
Male	63	54,78 %
Other	0	0,00 %
I do not want to declare	3	2,61 %
Total	**115**	**100 %**

Figure 1: Pie Chart of Students Gender

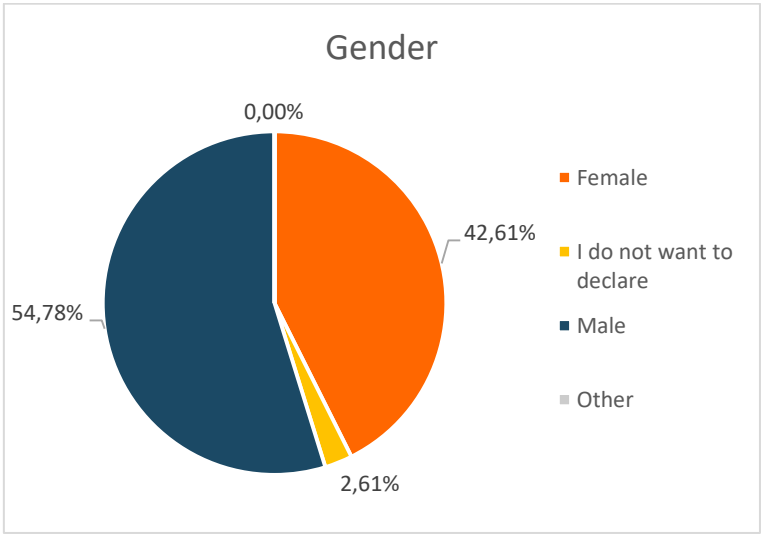


Table 6: Age of Students

Age	nº of Students	% of Students
17 - 19	5	4,35 %
20 - 22	57	49,57 %
23 - 25	44	38,26 %
26 or more	9	7,83 %
Total	**115**	**100 %**

Figure 2: Pie Chart of Students Age

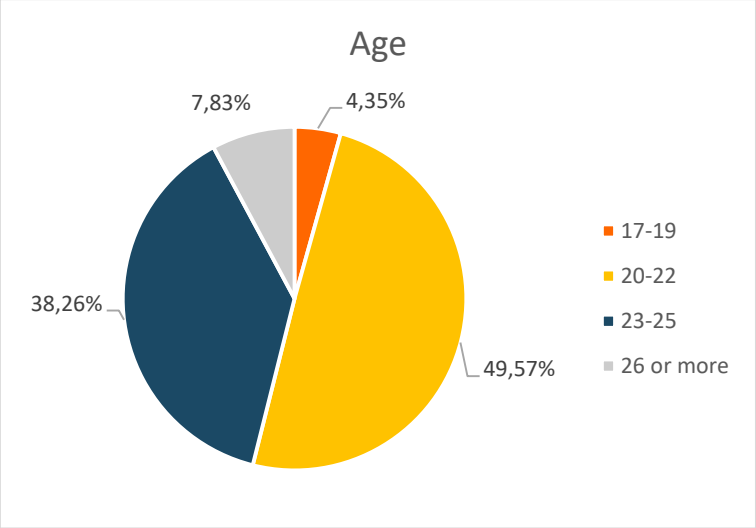


Table 7: Descriptive Statistics of Students Performance

Descriptive Statistics	School Degree	Av. Exam Score
N	114	115
Missing	1	0
Arithmetic Mean	16,35	7,101
St. Deviation	2,698	1,141
Min	12	3
Q1	14	6,5
Median	16,15	7
Q3	19	7,8
Max	20	10

Figure 3: Histogram of Students School Degree

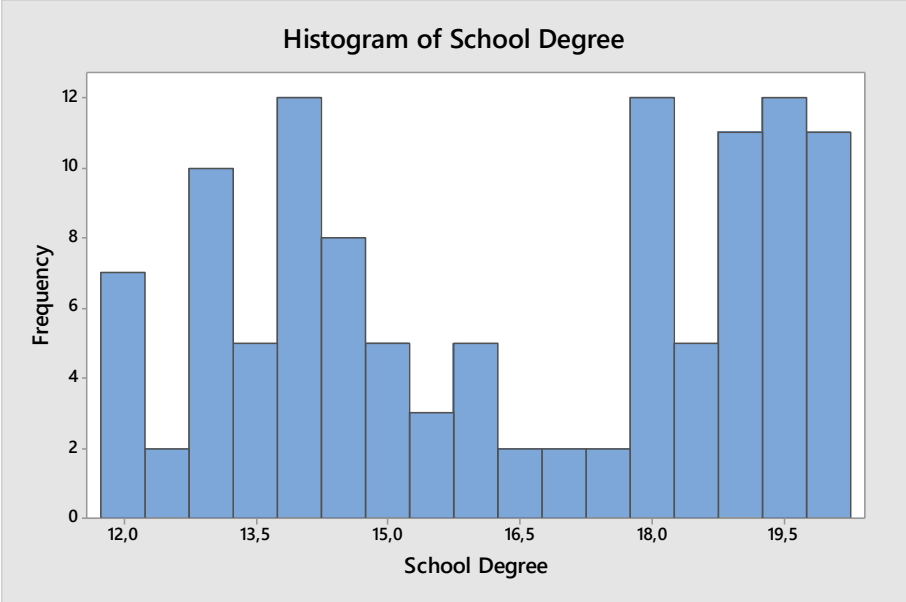


Figure 4: Box Plot of Students School Degree

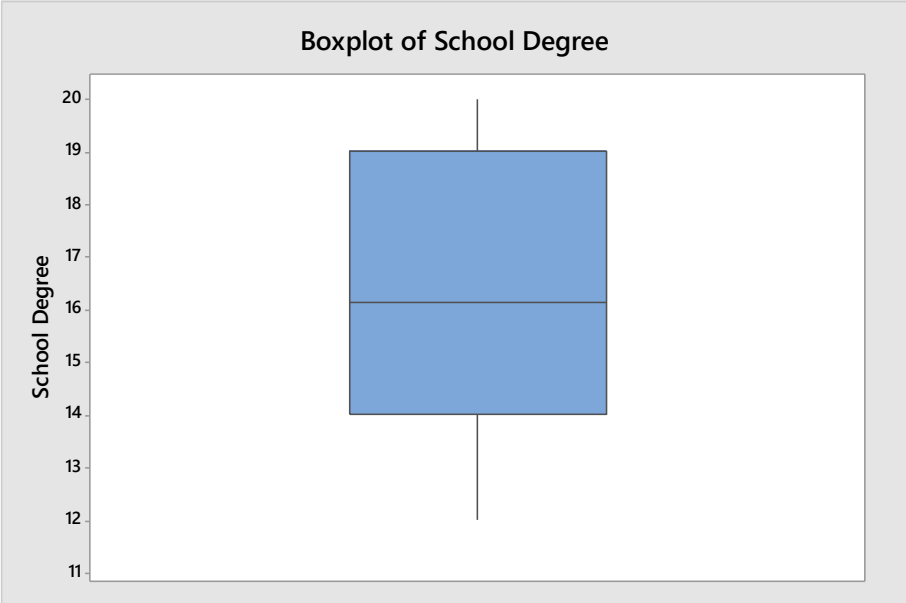


Figure 5: Histogram of Students University Performance

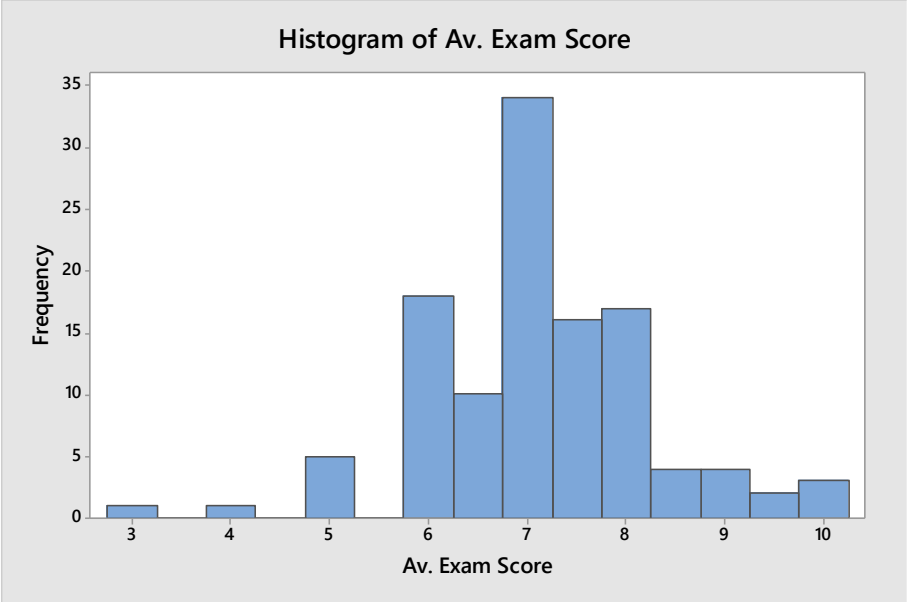


Figure 6: Box Plot of Students University Performance

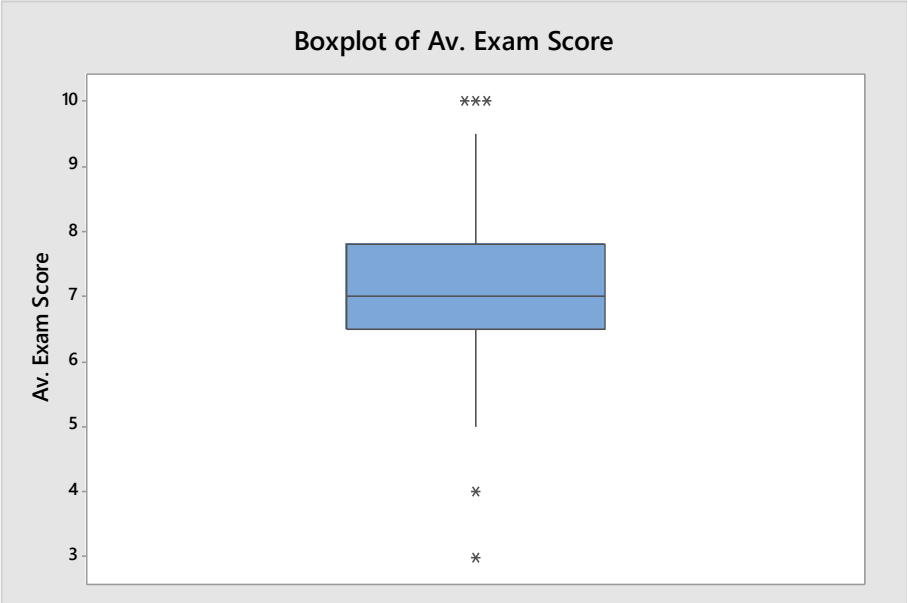


Table 8: Attending Year

Attending Year	nº of Students	% of Students
First Year	7	6,09 %
Second Year	10	8,70 %
Third Year	7	6,09 %
Other	91	79,13 %
Total	**115**	**100 %**

Figure 7: Pie Chart of Students Attending Year

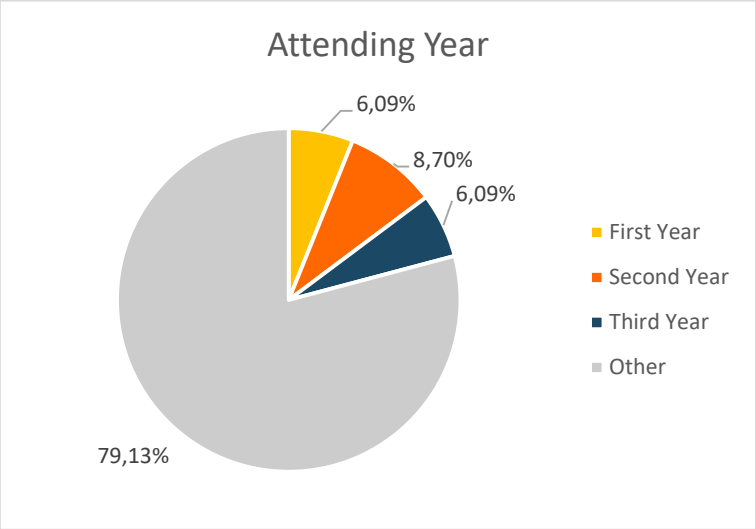


Table 9: Progress with the Exams

Progress with exams	nº of Students	% of Students
Yes	83	72,17 %
No	32	27,83 %
Total	**115**	**100 %**

Figure 8: Pie Chart of Students Progress with the Exams

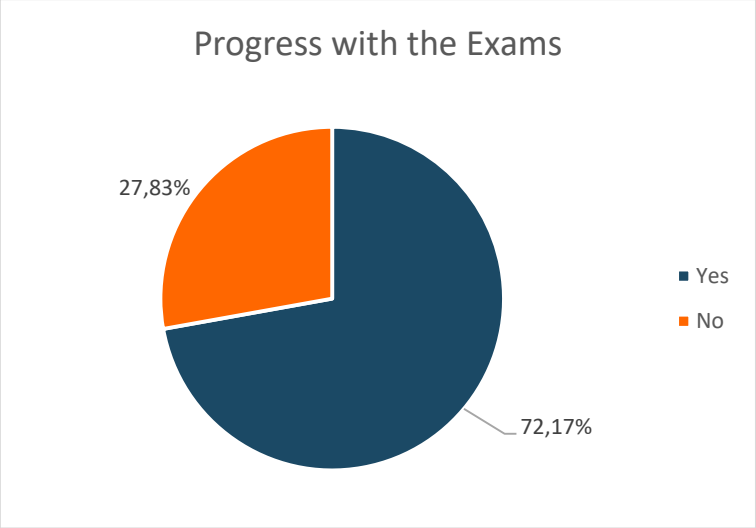


Table 10: Attending Degree Program

Attending Degree	nº of Students	% of Students
Bachelor Degree	54	46,96 %
Master Degree	61	53,04 %
Total	**115**	**100 %**

Figure 9: Pie Chart of Students Attending Degree Program

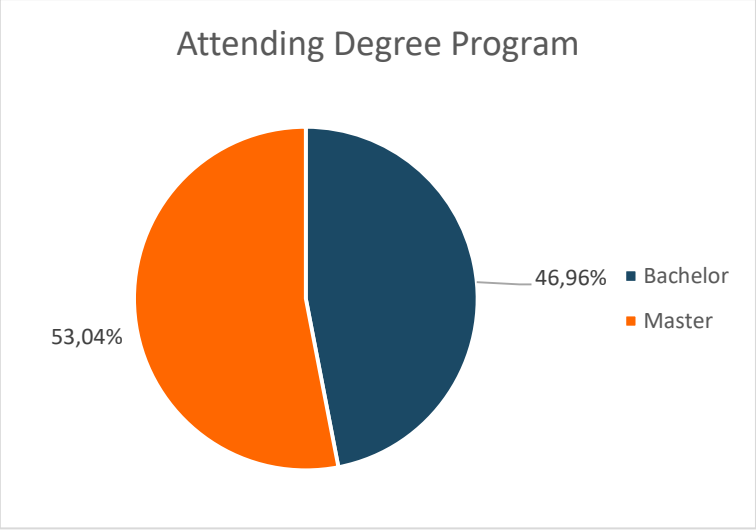


Table 11: Field of Education Studies

Field of Education Studies	Responses	%
Aetiology, diagnosis and treatment of disease, public health, epidemiology	2	1,74%
All areas of mathematics, pure and applied, plus mathematical foundations	3	2,61%
Analytical chemistry, chemical theory, physical chemistry/chemical physics	8	6,96%
Economics, finance and management	1	0,87%
Electronic, communication, optical and systems engineering	48	41,74%
Environmental studies, demography, social geography, urban and regional studies	1	0,87%
Evolution, ecology, animal behaviour, population biology, biodiversity	1	0,87%
Genetics, population genetics, molecular genetics, genomics, transcriptomics	3	2,61%
Immunobiology, aetiology of immune disorders, microbiology, virology	1	0,87%
Informatics and information systems, computer science, scientific computing	16	13,91%
Materials synthesis, structure-properties relations	7	6,09%
Organ physiology, pathophysiology, endocrinology, metabolism, ageing	2	1,74%
Physical geography, geology, geophysics, meteorology, oceanography, climatology	1	0,87%
Product design, process design and control, construction methods, civil engineer	14	12,17%
Structure, electronic properties, fluids, nanosciences	7	6,09%
`Total	**115**	**100,00%**

4.2 Teaching and Learning Process

To extract conclusions regarding Teaching and Learning Process the questionnaire include 10 questions. The results from each question are presented with the following codification:

To foster students' learning, in the classes, the teachers:

1. TL_P_1 : Use game elements or educational games.
2. TL_P_2 : Use visual or digital resources and tools.
3. TL_P_3 : Use conceptual maps.
4. TL_P_4 : Use class group activities.
5. TL_P_5 : Use case studies.
6. TL_P_6 : Use lab experiments and simulations.
7. TL_P_7 : Stimulate debating and peer assessment.
8. TL_P_8 : Invite guest speakers.
9. TL_P_9 : Assess students' prior knowledge to orient personalized learning.

To assess the knowledge:

10. TL_P_10 : Students take innovative tests (quiz, game, playing role, speech, etc.) during the classes.

The analysis and the extraction of results has held using the Minitab 17 software. Frequency distribution is presented in Table 12 while Histogram for each question is presented in Figures 10 and 11. Figure 12 depicts the box plots of the questions and Table 13 presents their descriptive statistics.

Looking deeper to the responses we observe that the responses covered all the spectrum of possible answers, as standard deviation is close to one, with the majority of students to have a neutral to positive stance about teaching and learning process, as the average arithmetic mean throughout all the questions is 3,57 which is also depicted in histograms in figures 10 and 11. An overall look also reveals that a 25% in all responses is positive or strongly positive except questions TP_L_2 (Use visual or digital resources and tools) and TP_L_6 (use lab experiments and simulations) in which the 75% declares positive and strongly positive. On the other side in the question TL_P_1 (use of game elements) the 25% is negative or strongly negative. Notice that in the box plot diagram some negative responses are out of range, but they were not excluded from the analysis. If we exclude them then the overall positive stance of the students will be greater than current one.

Summarize these results about teaching and learning process at UPAT we conclude that all the methods which mentioned in the questions are used. Attention and improvement should be in the use of game elements, to the personalized orientation of learning, the use of conceptual maps and the use of class group activities as in these items the number of neutral responses is large but still beneath the positive evaluation.

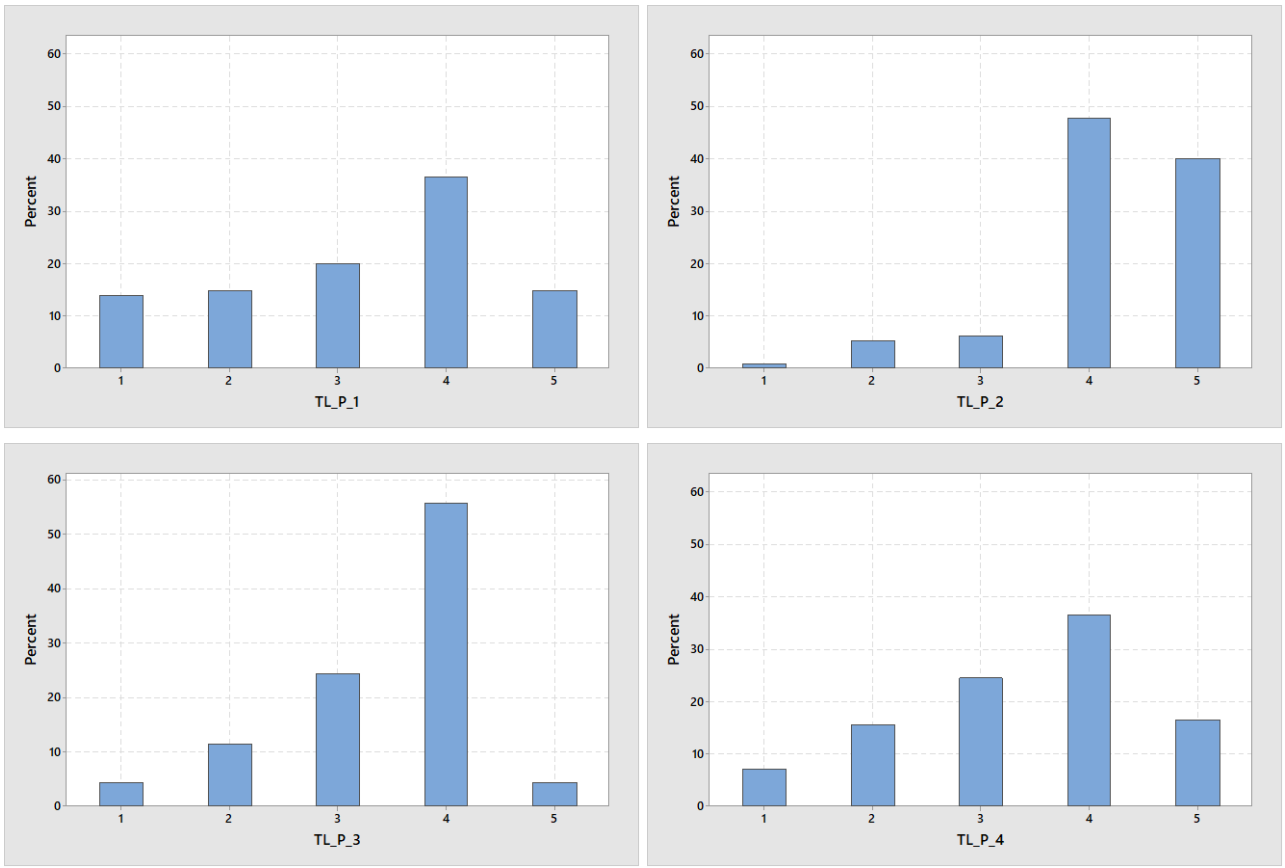
Table 12: Frequency Distribution of Teaching Learning Process Questions

	TL_P_1		TL_P_2		TL_P_3		TL_P_4		TL_P_5	
Modality	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	16	13,91%	1	0,87%	5	4,35%	8	6,96%	2	1,74%
2	17	14,78%	6	5,22%	13	11,30%	18	15,65%	8	6,96%
3	23	20,00%	7	6,09%	28	24,35%	28	24,35%	31	26,96%
4	42	36,52%	55	47,83%	64	55,65%	42	36,52%	58	50,43%
5	17	14,78%	46	40,00%	5	4,35%	19	16,52%	16	13,91%
Total	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**
	TL_P_6		**TL_P_7**		**TL_P_8**		**TL_P_9**		**TL_P_10**	
Modality	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	4	3,48%	6	5,22%	11	9,57%	7	6,09%	7	6,09%
2	9	7,83%	14	12,17%	12	10,43%	18	15,65%	20	17,39%
3	11	9,57%	29	25,22%	26	22,61%	30	26,09%	24	20,87%
4	49	42,61%	54	46,96%	51	44,35%	36	31,30%	49	42,61%
5	42	36,52%	12	10,43%	15	13,04%	24	20,87%	15	13,04%
Total	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**

Table 13: Descriptive Statistics of Teaching Learning Process Items

	TL_P_1	TL_P_2	TL_P_3	TL_P_4	TL_P_5	TL_P_6	TL_P_7	TL_P_8	TL_P_9	TL_P_10
N	115	115	115	115	115	115	115	115	115	115
Missing	0	0	0	0	0	0	0	0	0	0
Ar.Mean	3,24	4,21	3,44	3,40	3,68	4,01	3,45	3,41	3,45	3,39
St. Dev.	1,27	0,84	0,91	1,15	0,86	1,05	1,01	1,14	1,16	1,11
Min	1	1	1	1	1	1	1	1	1	1
Q1	2	4	3	3	3	4	3	3	3	3
Median	4	4	4	4	4	4	4	4	4	4
Q3	4	5	4	4	4	5	4	4	4	4
Max	5	5	5	5	5	5	5	5	5	5

Figure 10: Bar Plot Learning Process Questions 1 to 6



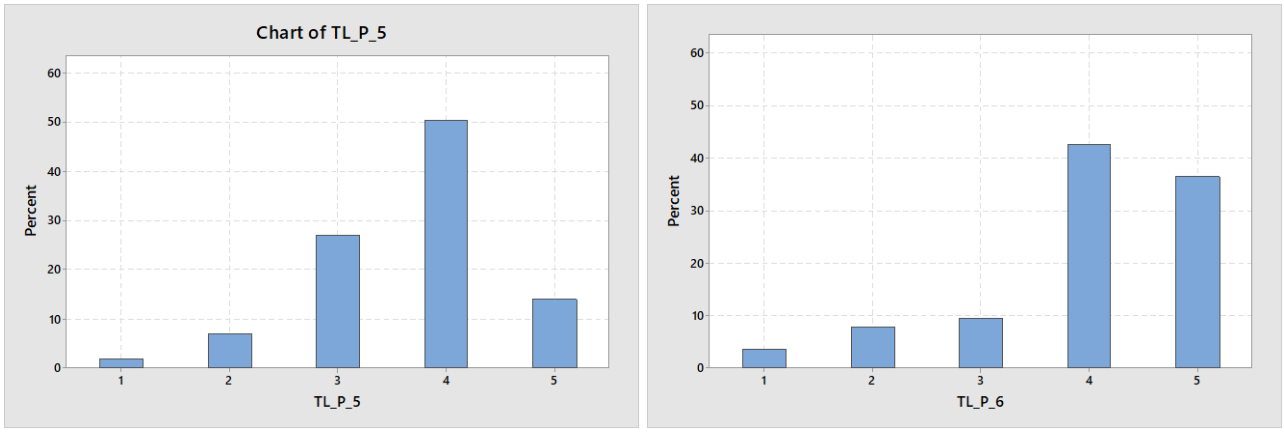


Figure 11: Bar Plot Learning Process Questions 7 to 10

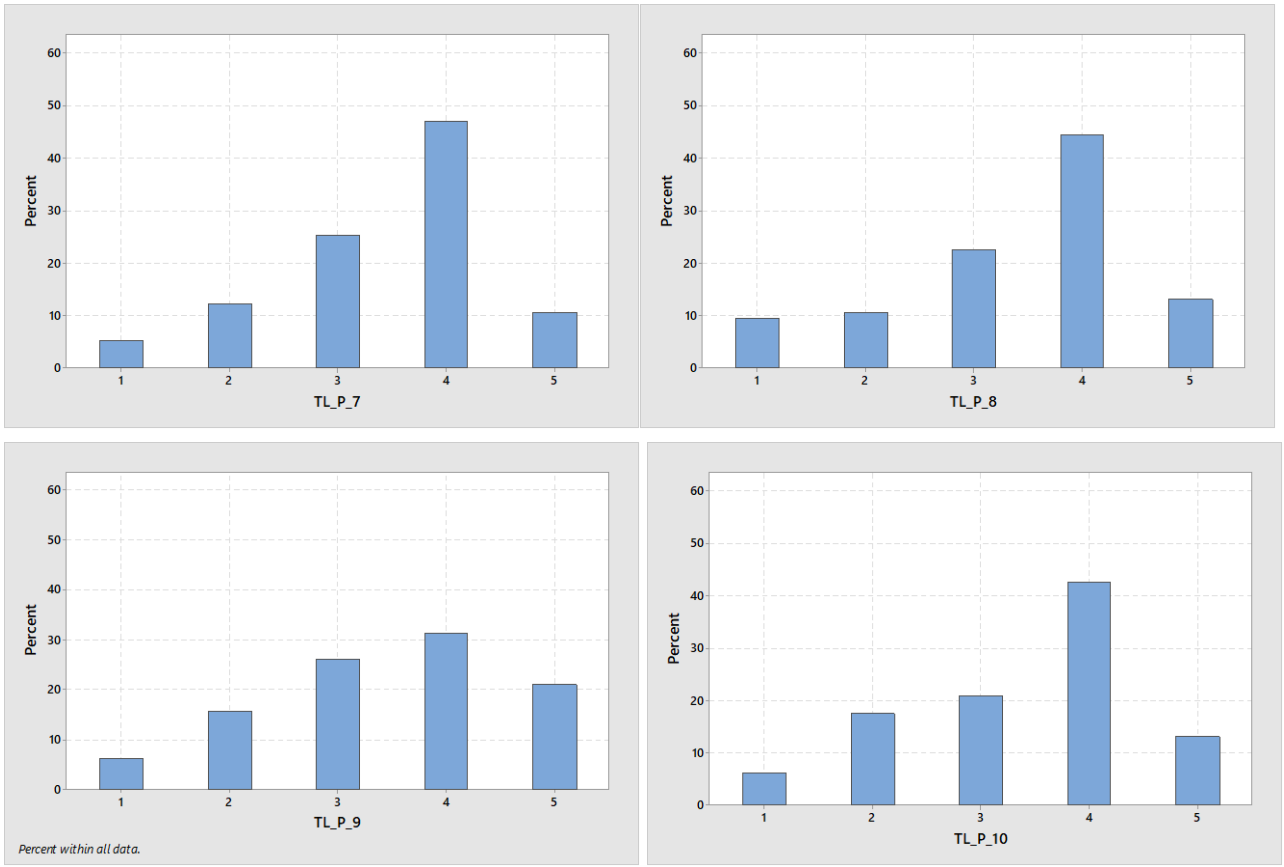
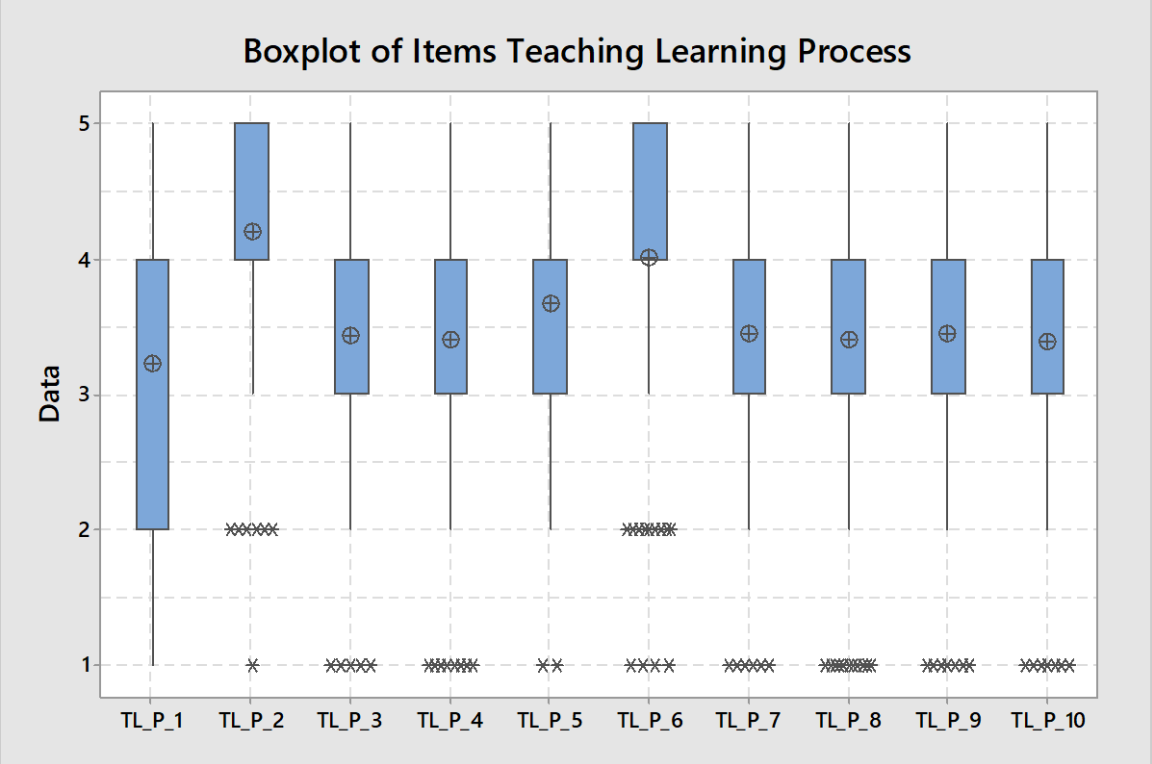


Figure 12: Boxplot of Items Teaching Learning Process



The following tables (14 and 15) present a cross data analysis. Major variations concern teaching learning process observed if the data separated according two different categories, according to attending degree and according to students' age. Noted that most responses were at the age between 20-25 so any conclusions will concern these ages.

Looking at Table 14 were data are separated according to attending degree we observe that students who follow master course they are more positive in the use of game elements than students who follow bachelor course. More specific in the question about the use of game elements a 21,73% of master students strongly agree while bachelor students percentage is only 7,41%. The answers were pretty much the same about agreement and neutral stance.

In the question concern the use of digital tools the overall agreement is similar with master students to strongly agree in higher percentage with the bachelor students to agree in higher percentage sowing that digital tools are used in both courses.

In question about the use of case studies, master degree students are strongly agree in very high percentage (21,31% strongly agree and 52,46 % agree) while bachelor students stance is rather keep a positive to neutral or uncertain stance, sowing that in higher level degrees teachers prefer to assign more projects to their students.

Pretty much the same depicted in the question concern debating with master students to agree or strongly agree in an overall higher percentage while a part of bachelor students disagree with that. Noted that uncertain or strongly agree students percentage is approximately the same for both categories with bachelor students to keep a slightly bigger neutral stance.

In table 15 data separation according to students age is presented. Looking more closely we see that ages between 20-22 are agree in higher percentage 43,46 % against 27,27% in ages 23-25 which disagree with that in 20,45%. As far the question about group activities ages 20-22 are strongly agree in 22,81% while ages 23-25 only in 9,09% and keep a neutral or uncertain stance. Finally the question about the use of digital tools finds the majority of ages to agree or strongly agree with ages 20-22 to strongly agree to a greater extent than ages 23-25.

Closing the section about teaching and learning process in UPAT we conclude that students have a neutral to positive stance answering the suggested questions. More attention should be paid in the use of game elements, the use of class group activities, the personalized knowledge orientation, and the innovating test inside the class. Also same teaching procedure methods could be used in the same extent in both degree programs but that has to do also and with the nature of the degree. Master students have take more case studies because they point to a specific area more deeply while bachelor students are learning the basics and general of their field of studies.

Table 14: Data Separation According to Attending Degree

Attending Degree / Use Game Elements	Strongly Disagree	Agree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	14,81%	18,52%	20,37%	38,89%	7,41%	100,00%
Master	13,11%	11,48%	19,67%	34,43%	21,31%	100,00%
Total	13,91%	14,78%	20,00%	36,53%	14,78%	100,00%

Attending Degree / Use Digital Tools	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	0,00%	7,40%	5,56%	51,85%	35,19%	100,00%
Master	1,64%	3,28%	6,56%	44,26%	44,26%	100,00%
Total	0,86%	5,22%	6,09%	47,83%	40,00%	100,00%

Attending Degree / Use Case Studies	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	1,85%	9,25%	35,19%	48,15%	5,56%	100,00%
Master	1,64%	4,92%	19,67%	52,46%	21,31%	100,00%
Total	1,74%	6,96%	26,96%	50,43%	13,91%	100,00%

Attending Degree / Stimulate Debating	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	3,70%	18,52%	27,78%	38,89%	11,11%	100,00%
Master	6,56%	6,56%	22,95%	54,10%	9,83%	100,00%
Total	5,22%	12,17%	25,22%	46,96%	10,43%	100,00%

Attending Degree / Innovative Tests	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	7,41%	22,22%	14,81%	38,89%	16,67%	100,00%
Master	4,92%	13,11%	26,23%	45,90%	9,84%	100,00%
Total	6,09%	17,39%	20,87%	42,61%	13,04%	100,00%

Table 15: Data Separation According to Age

Age / Use Game Elements	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	60,00%	0,00%	20,00%	20,00%	100,00%
20-22	15,79%	7,02%	19,30%	43,86%	14,03%	100,00%
23-25	13,64%	20,45%	22,73%	27,27%	15,91%	100,00%
26 or more	11,11%	11,11%	22,22%	44,45%	11,11%	100,00%
Total	13,92%	14,78%	20,00%	36,52%	14,78%	100,00%

Age / Class Group Activities	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	20,00%	40,00%	20,00%	20,00%	100,00%
20-22	7,02%	21,05%	12,28%	36,84%	22,81%	100,00%
23-25	9,09%	11,36%	34,10%	36,36%	9,09%	100,00%
26 or more	0,00%	0,00%	44,45%	44,44%	11,11%	100,00%
Total	6,96%	15,65%	24,35%	36,52%	16,52%	100,00%

Age / Use Digital Tools	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	0,00%	60,00%	40,00%	**100,00%**
20-22	0,00%	3,51%	7,02%	43,86%	45,61%	**100,00%**
23-25	2,27%	9,09%	6,82%	47,73%	34,09%	**100,00%**
26 or more	0,00%	0,00%	0,00%	66,67%	33,33%	**100,00%**
Total	**0,86%**	**5,22%**	**6,09%**	**47,83%**	**40,00%**	**100,00%**

4.3 Students' Experience

To extract conclusions regarding Students' Experience the questionnaire include 17 questions. The results from each question are presented with the following codification:

Based on my experience, I believe that:

1. SE_1 : Students are at their ease to each other.
2. SE_2 : Students are respectful towards each other.
3. SE_3 : Locations is functional to my needs of studying or staff contact.
4. SE_4 : The faculty organization/structure is clear to me.
5. SE_5 : Announcements from the administrative staff are clear.
6. SE_6 : The administrative staff is prompt to support students' needs.
7. SE_7 : Teaching staff is empathic.
8. SE_8 : Teaching staff provide the student support that I need.
9. SE_9 : Teachers are engaged in the teaching process.
10. SE_10 : Teachers are digitally competent.
11. SE_11 : Teaching materials are not too difficult to understand.
12. SE_12 : Teaching materials are appealing.
13. SE_13 : Lessons are available to students remotely on the internet.
14. SE_14 : Lessons catch my attention and stimulate my curiosity.
15. SE_15 : Technology and learning portals are effectively used.
16. SE_16 : ICT Tools and platforms are intuitively used.
17. SE_17 : I'm overall satisfied with my choice to study at this University.

The analysis and the extraction of results has held using the Minitab 17 software. Frequency distribution is presented in Table 16 while Histogram for each question is presented in Figures 13 through 15. Figure 16 depicts the box plots of the questions and Table 17 presents their descriptive statistics.

Looking the results at box plot of figure 3 a neutral to positive stance is observed in eleven of the seventeen questions except questions SE_4, SE_6, SE_8, SE_13, SE_14 and SE_15. Again, standard deviation is close to one in all responses, so the answers cover all the spectrum of possible options. Generally, students are again neutral to positive about their experience of studying at UPAT. Looking at the histograms in figures 13 and 14 we observe that positive response is the most frequent in almost all the questions and followed by neutral which in some items has most answers. Another look reveals that a 50% declares that is satisfied with his choice to study at UPAT, that the lessons are available remotely on the internet, that their teachers are digitally competent, that location of UPAT is closed to their needs and that students are respectful through each other. The items with large number of negative responses concern mostly the function of the institution which students declare that they are not familiar with and that they need more support from teaching and administrative stuff. The efficiency of digital tools has also a lot of negative responses which reveals the necessity for an efficient digital transformation of the institution. Also, we observe that the teachers should pay more attention to their courses to catch the attention and stimulate the curiosity of their students.

Summarize so far, students are overall happy with the experience of their studies in UPAT (noted that the survey took place during the pandemic lockdown function of the university) and that they are fond of the use of digital tools Lack of knowledge concern the institution organization and function is another factor that should be paid attention as students are not familiar with them. Finally, teachers should provide more support to their students and make their courses more appealing. In tables 18 to 22 data of students' experience are separated according to attending degree, gender, and age respectively.

In the first question of table 18 which is about students ease with each other an overall neutral to agreement stance is observed. Bachelor students agree in a greater percent (50,00%) than master students (36,07%) with the last to keep neutral or uncertain stance bigger than bachelor students. Most of the students believe that they are respectful with each other, but the neutral or uncertain stance should not be unnoted. Both categories have pretty much the same opinion according to the results.

Students do not have a clear view about faculty structure or organization. An overall 23,48% declares that the structure is not clear while another 25,22% is neutral or uncertain. Master students seems to have a better picture as positive responses are more, but the percentages are rather close with that of bachelor students.

Remote lessons on Internet availability brings bachelor students to agree in a higher percentage (42,59%) than master students (31,15%). An explanation for that is the lockdown conditions which took place with some of the lessons in master courses to held in situ because the number of attending students is very smaller than bachelor students. Noted that a 19% is neutral or uncertain with distance learning procedure.

The use of ICT tools finds responders to be neutral or uncertain in both categories. One reason for that maybe the lack of knowledge concerns the ICT tools that are available according to tools that currently used. Master students seems more positive but the agreement and strongly agreement cumulatively opinions are in both categories pretty much the same. Ages 23-25 seems to agree slightly more than ages 20-22 which disagree in a 26,32%. The neutral or uncertain stance dominates in both categories.

Most positive responses observed in the use of learning portals for master degree students but a large amount of responses was negative or neutral in both categories showing the lack of sufficient use of learning portals in

the teaching procedure. Data separation according to age reveals that ages 20-22 disagree or are neutral with ages 23-25 to keep a neutral to positive stance.

In table 20 a combination of gender according to teacher's stance is presented and the satisfaction for choosing to study at UPAT. About the first question which asks if teaching stuff is empathic females seem to have split opinion providing almost same responses between disagreement and agreement with most answers to be neutral. Males on the other hand seems to find that teaching stuff is empathic providing the most answers between neutral and agreement. In the few answers of students which don't want to declare a sex a strongly agreement is observed. Ages of 23-25 find teaching stuff more empathic than ages 20-22 with both categories to keep a neutral to uncertain stance.

In the next question split decisions continued for females as they declare their agreement and disagreement that teachers provide support with same percentage and close to that a neutral stance is observed. Most of males on the other hand respond positive in that question with a not negligible percentage which declares that they are not. Most of the students which does not declare sex is negative.

Males seem more satisfied for their choice to study at UPAT and that is depicted in the percentages of table 20. Females seem to be more confident for their choice as they have more strongly agree responses. The last group of gender respond equally between neutral and strongly agreement. Ages 20-22 seems more uncertain about their choice while 23-25 are satisfied with their choice.

Age 23-25 finds teaching materials not to difficult to understand while ages 20-22 finds them difficult. That result was expected because as students progress with their studies they gain experience and learn better and constructive methods for reading.

Table 16: Frequency Distribution of Students' Experience Questions

	SE_1		SE_2		SE_3		SE_4		SE_5	
Modality	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	0	0,00%	2	1,74%	2	1,74%	4	3,48%	5	4,35%
2	11	9,57%	10	8,70%	15	13,04%	27	23,48%	23	20,00%
3	50	43,48%	35	30,43%	39	33,91%	29	25,22%	30	26,09%
4	49	42,61%	55	47,83%	53	46,09%	47	40,87%	41	35,65%
5	5	4,35%	13	11,30%	6	5,22%	8	6,96%	16	13,91%
Total	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**
	SE_6		**SE_7**		**SE_8**		**SE_9**		**SE_10**	
Modality	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	7	6,09%	7	6,09%	8	6,96%	4	3,48%	6	5,22%
2	25	21,74%	17	14,78%	29	25,22%	15	13,04%	14	12,17%
3	41	35,65%	48	41,74%	27	23,48%	42	36,52%	34	29,57%
4	34	29,57%	34	29,57%	41	35,65%	46	40,00%	51	44,35%
5	8	6,96%	9	7,83%	10	8,70%	8	6,96%	10	8,70%
Total	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**

	SE_11		SE_12		SE_13		SE_14		SE_15	
Modality	n	%	n	%	n	%	n	%	n	%
1	2	1,74%	3	2,61%	8	6,96%	6	5,22%	11	9,57%
2	23	20,00%	17	14,78%	24	20,87%	24	20,87%	27	23,48%
3	39	33,91%	42	36,52%	22	19,13%	32	27,83%	35	30,43%
4	41	35,65%	41	35,65%	42	36,52%	47	40,87%	36	31,30%
5	10	8,70%	12	10,43%	19	16,52%	6	5,22%	6	5,22%
Total	115	100%	115	100%	115	100%	115	100%	115	100%

	SE_16		SE_17	
Modality	n	%	n	%
1	6	5,22%	3	2,61%
2	21	18,26%	12	10,43%
3	47	40,87%	30	26,09%
4	37	32,17%	48	41,74%
5	4	3,48%	22	19,13%
Total	115	100%	115	100%

Table 17: Descriptive Statistics of Students' Experience Items

	SE_1	SE_2	SE_3	SE_4	SE_5	SE_6	SE_7	SE_8	SE_9
N	115	115	115	115	115	115	115	115	115
Missing	0	0	0	0	0	0	0	0	0
Ar.Mean	3,42	3,58	3,40	3,24	3,35	3,10	3,18	3,14	3,34
St. Dev.	0,73	0,87	0,85	1,01	1,09	1,02	0,99	1,11	0,92
Min	2	1	1	1	1	1	1	1	1
Q1	3	3	3	2	3	2	3	2	3
Median	3	4	4	3	3	3	3	3	3
Q3	4	4	4	4	4	4	4	4	4
Max	5	5	5	5	5	5	5	5	5

	SE_10	SE_11	SE_12	SE_13	SE_14	SE_15	SE_16	SE_17
N	115	115	115	115	115	115	115	115
Missing	0	0	0	0	0	0	0	0
Ar.Mean	3,39	3,30	3,37	3,35	3,20	2,99	3,10	3,64
St. Dev.	0,99	0,95	0,95	1,19	1,00	1,07	0,92	0,99
Min	1	1	1	1	1	1	1	1
Q1	3	3	3	2	2	2	3	3
Median	4	3	3	4	3	3	3	4
Q3	4	4	4	4	4	4	4	4
Max	5	5	5	5	5	5	5	5

Figure 13: Bar Plot Students' Experience Questions 1 to 6

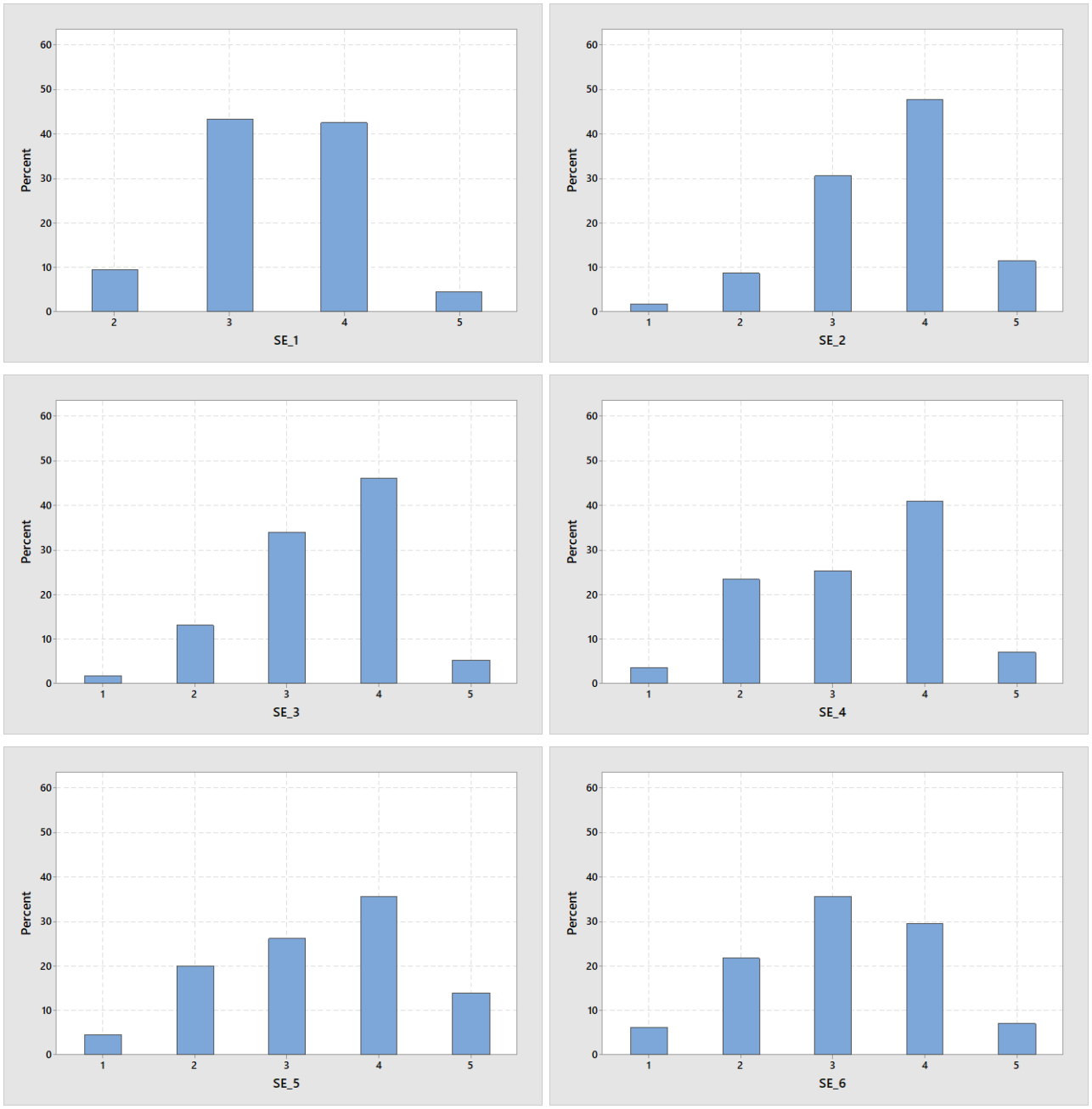


Figure 14: Bar Plot Students' Experience Questions 7 to 12

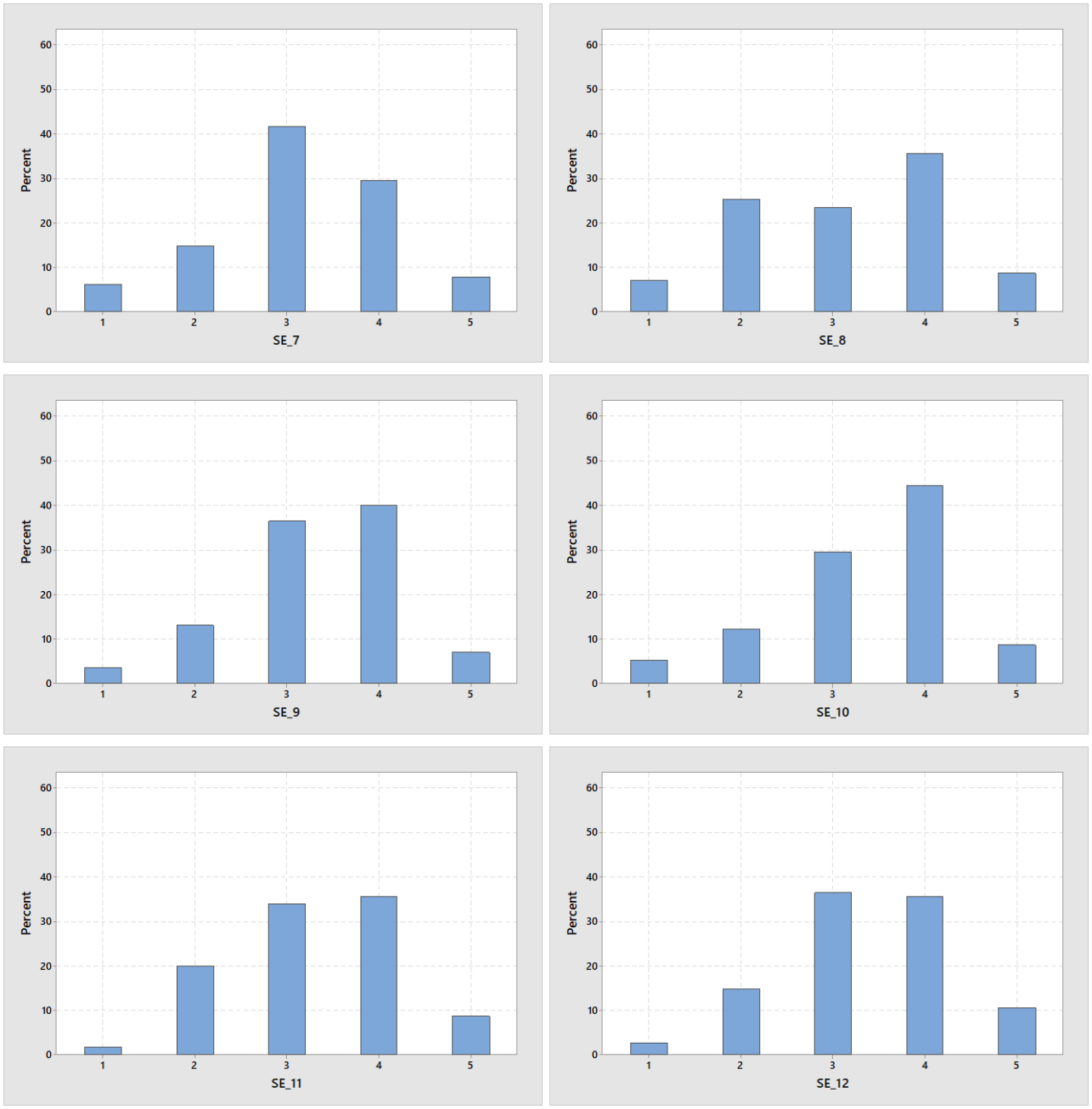


Figure 15: Bar Plot Students' Experience Questions 13 to 17

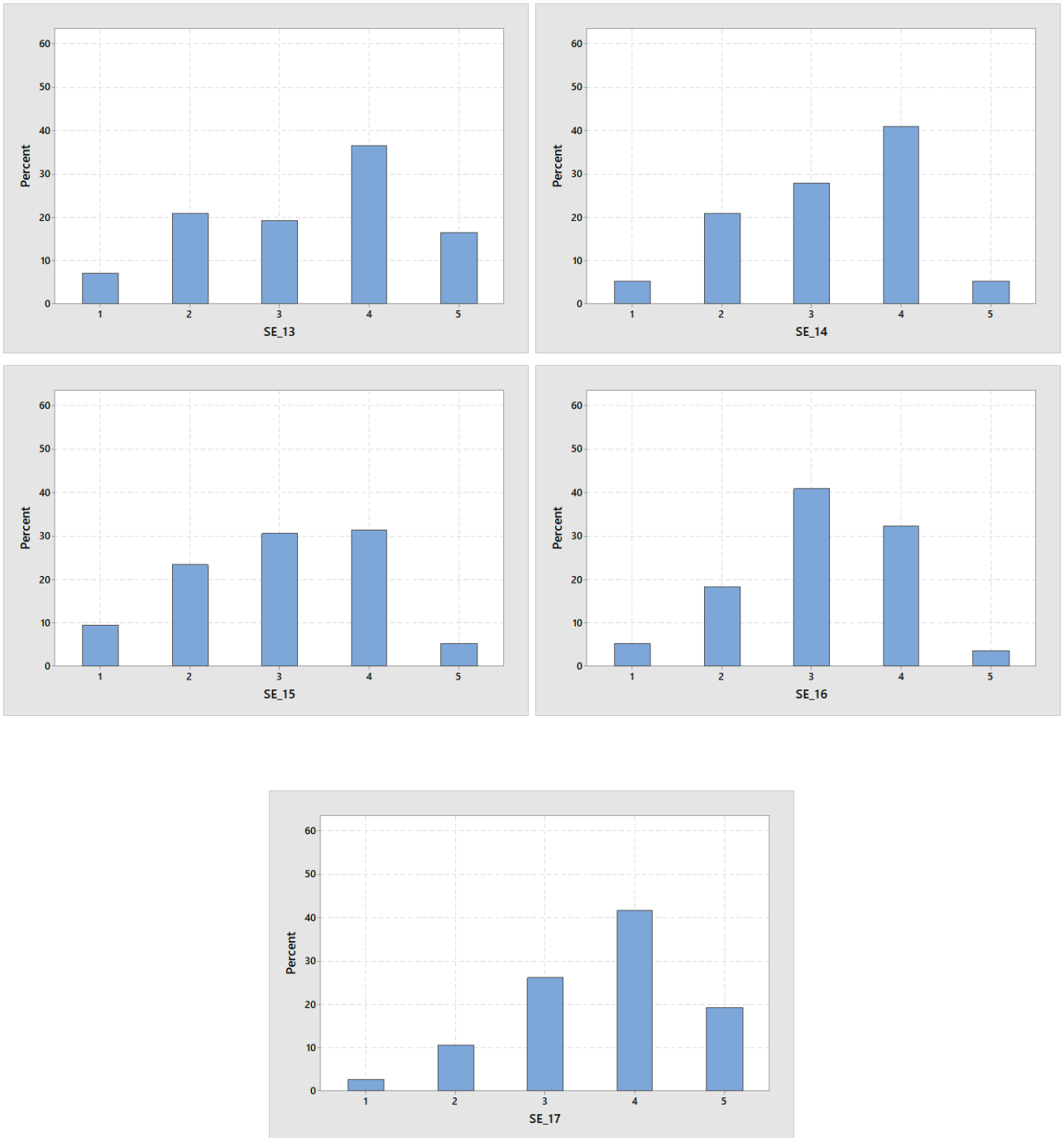


Figure 16: Boxplot of Students' Experience Items

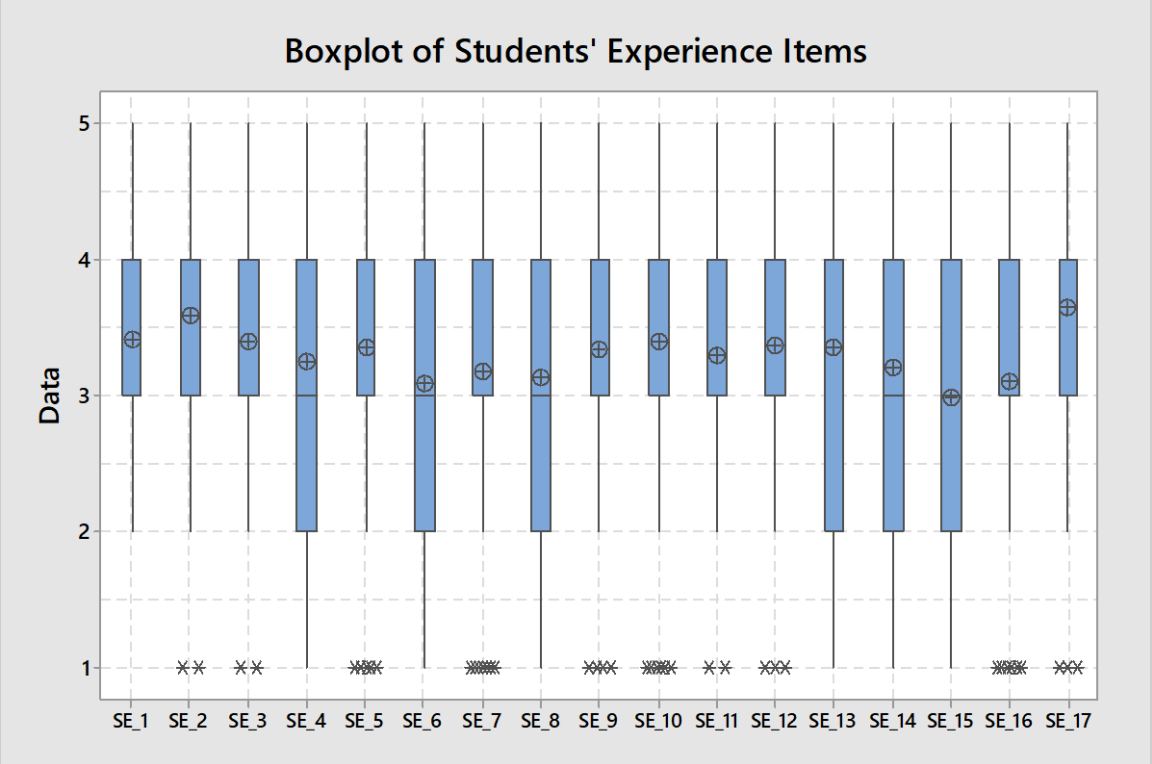


Table 18: Data Separation According to Attending Degree

Att. Deg. / Students are at their ease with each other	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	0,00%	9,26%	37,04%	50,00%	3,70%	100,00%
Master	0,00%	9,84%	49,17%	36,07%	4,92%	100,00%
Total	0,00%	9,57%	43,48%	42,60%	4,35%	100,00%

Att. Deg. / Students are respectful with each other	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	1,85%	11,11%	27,78%	48,15%	11,11%	100,00%
Master	1,63%	6,56%	32,79%	47,54%	11,48%	100,00%
Total	1,74%	8,70%	30,43%	47,83%	11,30%	100,00%

Att. Deg. / Faculty structure	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	1,85%	27,78%	25,93%	38,88%	5,56%	100,00%
Master	4,92%	19,67%	24,59%	42,62%	8,20%	100,00%
Total	3,48%	23,48%	25,22%	40,87%	6,95%	100,00%

Att. Deg. / Remote Lessons on Internet	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	7,42%	12,96%	24,07%	42,59%	12,96%	100,00%
Master	6,56%	27,87%	14,75%	31,15%	19,67%	100,00%
Total	6,96%	20,87%	19,13%	36,52%	16,52%	100,00%

Table 19: Data Separation According to Attending Degree

Att. Deg. / Use of ICT tools	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	5,56%	20,37%	38,89%	29,63%	5,55%	100,00%
Master	4,92%	16,39%	42,62%	34,43%	1,64%	100,00%
Total	5,22%	18,26%	40,87%	32,17%	3,48%	100,00%

Att. Deg. / Use of learning portals	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	11,11%	25,92%	31,48%	25,93%	5,56%	100,00%
Master	8,20%	21,30%	29,51%	36,07%	4,92%	100,00%
Total	9,57%	23,48%	30,43%	31,30%	5,22%	100,00%

Table 20: Data Separation According to Gender

Gender/ Teaching stuff is empathic	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	8,16%	24,49%	38,78%	22,45%	6,12%	100,00%
Male	3,17%	7,94%	46,03%	36,51%	6,35%	100,00%
Don't declare	33,33%	0,00%	0,00%	0,00%	66,67%	100,00%
Total	6,08%	14,78%	41,74%	29,57%	7,83%	100,00%

Gender/ Teachers provide support	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	6,12%	28,57%	30,62%	28,57%	6,12%	100,00%
Male	4,76%	23,81%	19,05%	41,27%	11,11%	100,00%
Don't declare	66,67%	0,00%	0,00%	33,33%	0,00%	100,00%
Total	6,96%	25,21%	23,48%	35,65%	8,70%	100,00%

Gender/ Satisfied with choice to study at UPAT	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	0,00%	10,20%	32,65%	34,70%	22,45%	100,00%
Male	4,76%	11,11%	20,63%	47,63%	15,87%	100,00%
Don't declare	0,00%	0,00%	33,33%	33,33%	33,34%	100,00%
Total	2,61%	10,43%	26,09%	41,74%	19,13%	100,00%

Table 21: Data Separation According to Age

Age / Satisfied with choice to study at UPAT	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	20,00%	20,00%	60,00%	100,00%
20-22	0,00%	7,02%	35,09%	40,35%	17,54%	100,00%
23-25	6,82%	18,18%	18,18%	43,18%	13,64%	100,00%
26 or more	0,00%	0,00%	11,11%	55,56%	33,33%	100,00%
Total	2,61%	10,43%	26,09%	41,74%	19,13%	100,00%

Age / Teaching stuff is empathic	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	20,00%	20,00%	40,00%	20,00%	100,00%
20-22	8,78%	17,54%	47,37%	21,05%	5,26%	100,00%
23-25	4,55%	13,64%	43,18%	31,82%	6,81%	100,00%
26 or more	0,00%	0,00%	11,11%	77,78%	11,11%	100,00%
Total	6,09%	14,78%	41,74%	29,57%	7,82%	100,00%

Age / Teaching materials aren't too difficult to understand	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	20,00%	40,00%	40,00%	100,00%
20-22	1,75%	28,07%	36,84%	28,08%	5,26%	100,00%
23-25	2,27%	13,64%	29,55%	45,45%	9,09%	100,00%
26 or more	0,00%	11,11%	44,44%	33,34%	11,11%	100,00%
Total	1,74%	20,00%	33,91%	35,65%	8,70%	100,00%

Table 22: Data Separation According to Age

Age /Use of learning portals	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	0,00%	80,00%	20,00%	100,00%
20-22	5,26%	33,33%	31,58%	26,32%	3,51%	100,00%
23-25	15,91%	13,64%	36,35%	29,55%	4,55%	100,00%
26 or more	11,11%	22,22%	11,11%	44,45%	11,11%	100,00%
Total	9,57%	23,48%	30,43%	31,30%	5,22%	100,00%

Age /Use of ICT tools	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	20,00%	40,00%	40,00%	**100,00%**
20-22	1,75%	26,32%	40,35%	31,58%	0,00%	**100,00%**
23-25	11,36%	13,64%	43,18%	29,55%	2,27%	**100,00%**
26 or more	0,00%	0,00%	44,44%	44,44%	11,12%	**100,00%**
Total	**5,22%**	**18,26%**	**40,87%**	**32,17%**	**3,48%**	**100,00%**

4.4 Students' Learning Outcome

To extract conclusions regarding Students' Learning Outcome the questionnaire include 9 questions. The results from each question are presented with the following codification:

I believe that studying at this University:

1. SLO_1 : Matches my learning expectations.
2. SLO_2 : Is really enjoyable.
3. SLO_3 : Is developing my soft-skills.
4. SLO_4 : Is giving me the opportunity to meet significant people for my life and my profession.
5. SLO_5 : Is giving me the opportunity to find a job.
6. SLO_6 : Will impact my good professional image/reputation.
7. SLO_7 : Will help me in acquiring a job or career-related knowledge and skills.
8. SLO_8 : Will help me develop my critical thinking.
9. SLO_9 : Will help me in team working.

The analysis and the extraction of results has held using the Minitab 17 software. Frequency distribution is presented in Table 23 while Histogram for each question is presented in Figures 17 through 18. Figure 19 depicts the box plots of the questions and Table 24 presents their descriptive statistics.

Concerning the students learning outcome we observe a positive stance for the 50% of the responders in all questions except SLO_2 and SLO_3 which ask if studying at this university is enjoyable and develops their soft skills. For the first part an explanation could be a misunderstanding of the question and a lot of students spontaneously answer negative as no one enjoys really to study for an exam. Most attention should be paid in SLO_3 which refers to the developing of their soft skills. Here we observe a percentage greater of 50% to be negative. The average stance of the students in all items is neutral to positive with the responses to cover all the possible choices. Looking at the histograms in figures 18 and 19 is clear that all the students believe that studying in UPAT will have a good impact about their image, will help them to find a job and will develop their critical thinking.

Summarize the thoughts of the students regarding their learning outcome are positive and attention should be paid in developing their soft skills and making studies a little more enjoyable for them perhaps changing the

methodology of teaching. If we combine the negative answers about the use of gamification methods with the negative stance of the enjoying to study maybe, we have the solution at least to one part of the problem.

Table 23: Frequency Distribution of Students' Learning Outcome Questions

	SLO_1		SLO_2		SLO_3		SLO_4		SLO_5	
Modality	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	5	4,35%	7	6,09%	9	7,83%	6	5,22%	6	5,22%
2	16	13,91%	27	23,48%	23	20,00%	16	13,91%	9	7,83%
3	35	30,43%	32	27,83%	30	26,09%	30	26,09%	29	25,22%
4	48	41,74%	39	33,91%	43	37,39%	46	40,00%	53	46,09%
5	11	9,57%	10	8,70%	10	8,70%	17	14,78%	18	15,65%
Total	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**

	SLO_6		SLO_7		SLO_8		SLO_9	
Modality	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	3	2,61%	2	1,74%	7	6,09%	7	6,09%
2	8	6,96%	8	6,96%	15	13,04%	17	14,78%
3	28	24,35%	30	26,09%	15	13,04%	30	26,09%
4	60	52,17%	62	53,91%	55	47,83%	52	45,22%
5	16	13,91%	13	11,30%	23	20,00%	9	7,83%
Total	**115**	**100%**	**115**	**100%**	**115**	**100%**	**115**	**100%**

Table 24: Descriptive Statistics of Students' Learning Outcome Items

	SLO_1	SLO_2	SLO_3	SLO_4	SLO_5	SLO_6	SLO_7	SLO_8	SLO_9
N	115	115	115	115	115	115	115	115	115
Missing	0	0	0	0	0	0	0	0	0
Ar. Mean	3,38	3,16	3,19	3,45	3,59	3,68	3,66	3,63	3,34
St. Dev.	0,99	1,07	1,10	1,07	1,02	0,89	0,84	1,13	1,03
Min	1	1	1	1	1	1	1	1	1
Q1	3	2	2	3	3	3	3	3	3
Median	4	3	3	4	4	4	4	4	4
Q3	4	4	4	4	4	4	4	4	4
Max	5	5	5	5	5	5	5	5	5

Figure 17: Bar Plot Students' Learning Outcome Questions 1 to 4

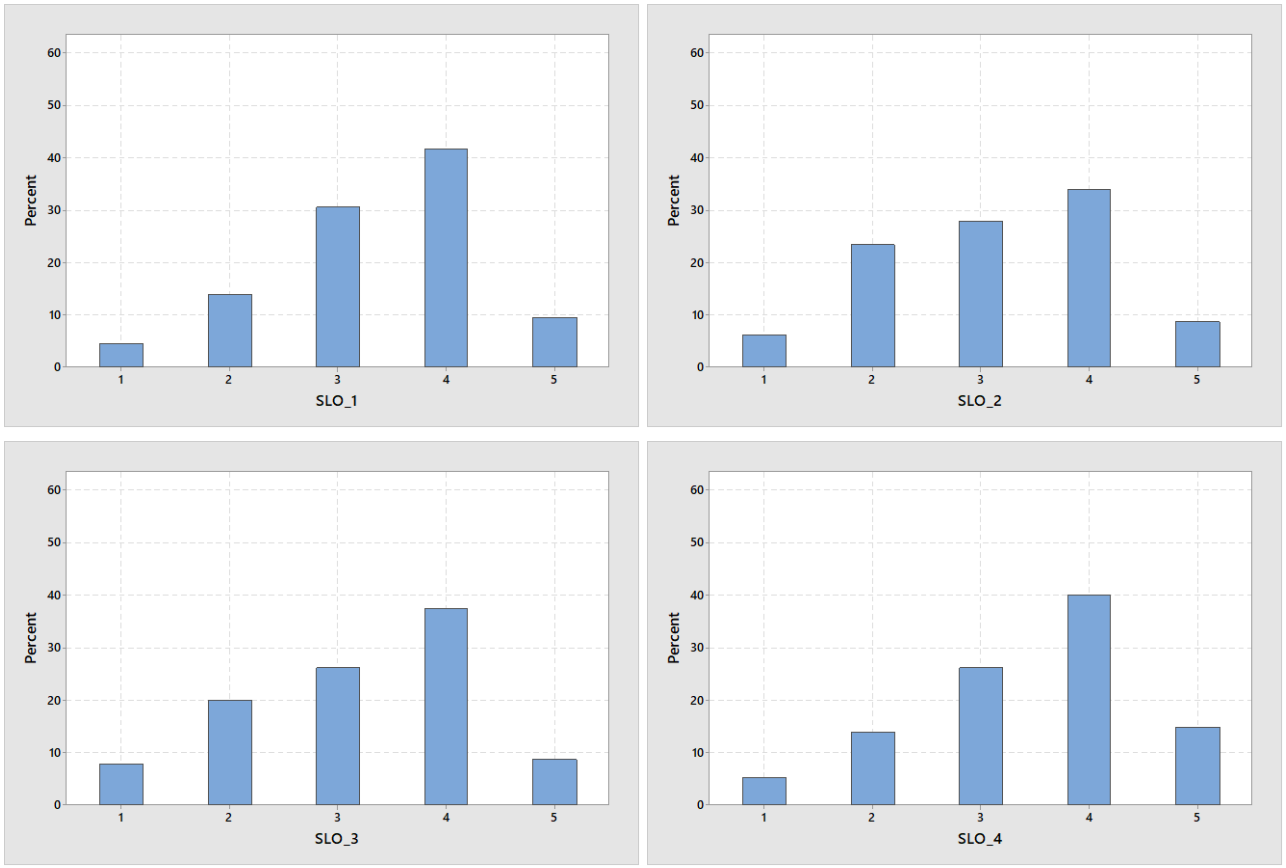


Figure 18: Bar Plot Students' Learning Outcome Questions 5 to 9

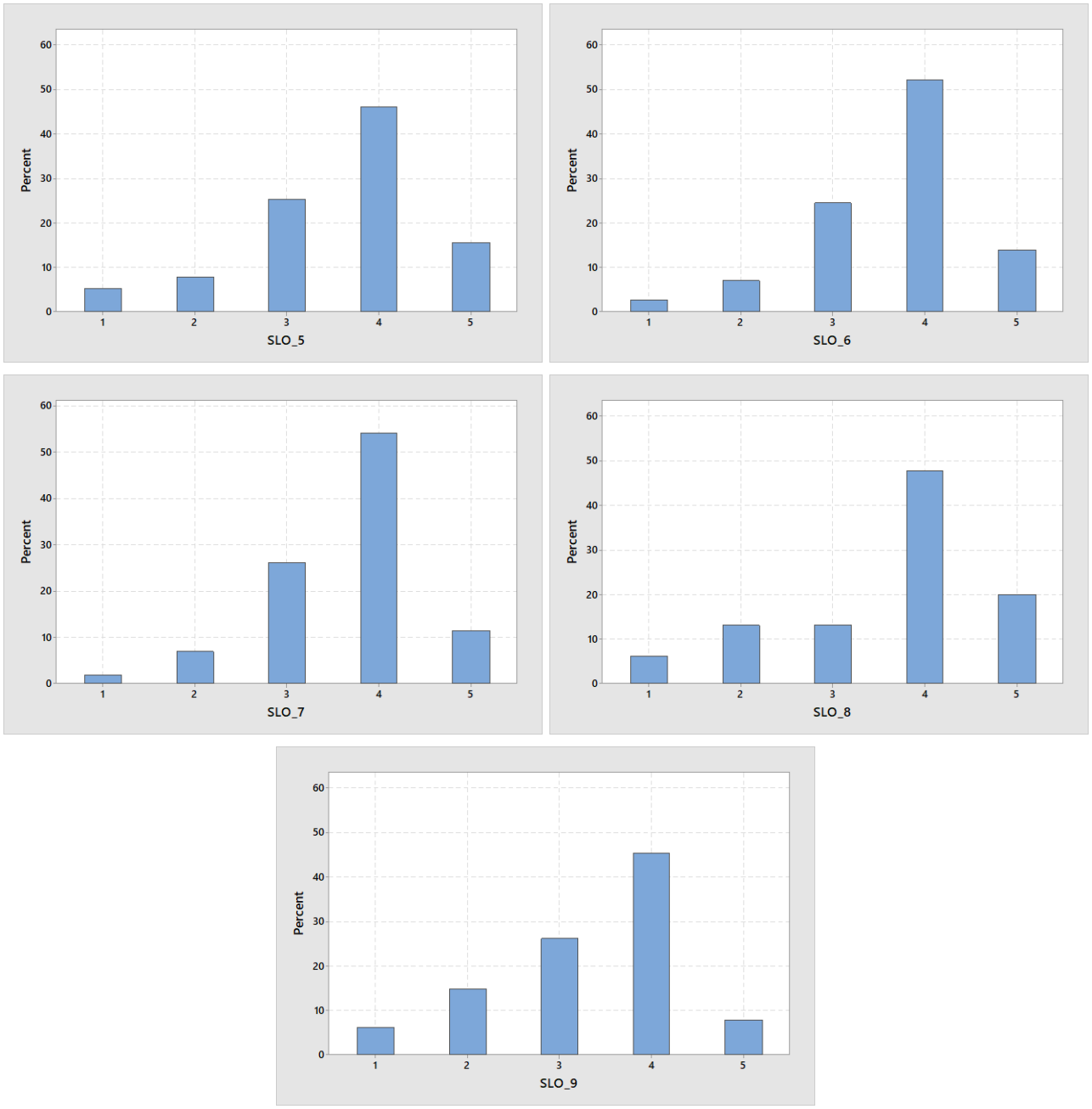
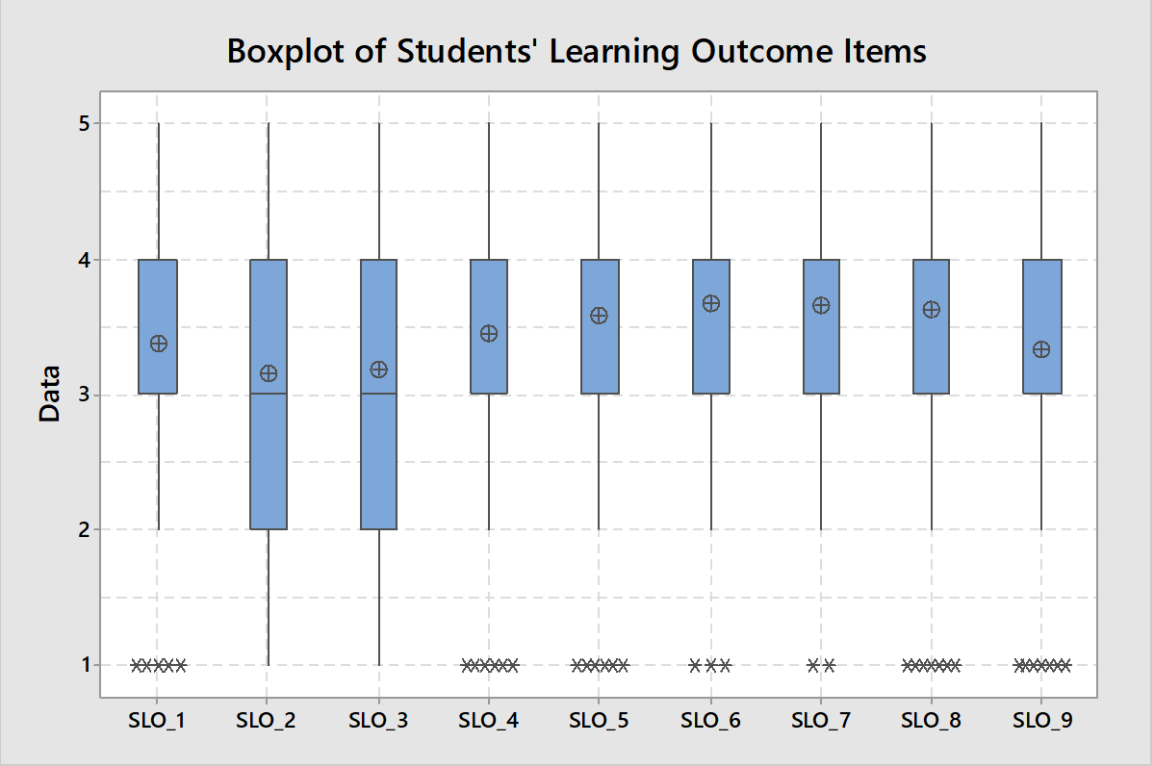


Figure 19: Boxplot of Students' Learning Outcome Items



In tables 25 through 29 data separation according to attending degree, gender and age are presented respectively. Looking closer to table 25 both master and bachelor students in their majority believe that studying at UPAT matches their learning expectations with some of the bachelor students to disagree with that statement and both categories to have a not negligible percentage in neutral response too. Separate data according to age the category of 20-22 seems to be more satisfied than 23-25 as they strongly agree with 10,53% while 23-25 seems to be more neutral or uncertain with 40,90%. in both categories exists a 15% approximately of students that disagree.

Master students seems to be less satisfied with their soft skill development than bachelor students. Nevertheless in both categories percentage of disagreement are not as small as it should be with bachelor students strongly disagree with 9,26% and disagree with 14,81% while master students percentages are 6,56% and 24,59% respectively.

The results are vise versa when they asked about the opportunity to find a job. In both categories percentage of agreement and strongly agreement is over 60% with master students to look more confident as they strongly agree with 19,67%. In both categories one to four students keeps a neutral or uncertain stance. Staying in the same subject over 60% of students in both categories believes that he will find a job related with their knowledge with master students to express a little uncertainty. In the same question females seem more confident than male. Again a 25% declares uncertain. In the other category the opinions are rather moderate. Separate the

same data according to age we conclude to the same results in both categories 20-22 and 23-25 which declare that agree and strongly agree with the opportunity to find a job related to their knowledge.

In the question about the development of critical thinking master students again seems more confident than bachelor students as they strongly agree with 21,31% over 18,52%. Both categories percentage of agreement and strong agreement are over 65% means that critical thinking development is an asset of UPAT. Data separation according to age reveals the same results, with 20-22 ages to strongly agree in a greater scale.

Females seems to enjoy their studies a little bit more than males with the second to be more strictly with their believes. The third category did not enjoy studying at UPAT with the number of responses to be small to extract a safe result.

Females are more confident that studying at UPAT will have a good impact in their professional image and reputation with males once again to be more strictly in their answers. In both categories the percentage of agreement and strongly agreement is over 60%.

Team working at UPAT seems to be a usual learning practice at UPAT as over 50% of the responders believe that studying at UPAT will help them in team working. Data separation according to age reveals that ages 23-25 are more uncertain than 20-22 with the last category to express a 21,05% of disagreement.

Table 25: Data Separation According to Attending Degree

Att. Deg. / Matches my learning expectations	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	3,70%	18,52%	27,78%	40,74%	9,26%	100,00%
Master	4,92%	9,84%	32,79%	42,61%	9,84%	100,00%
Total	4,35%	13,91%	30,43%	41,74%	9,57%	100,00%

Att. Deg. / Soft Skills Development	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	9,26%	14,81%	31,48%	37,04%	7,41%	100,00%
Master	6,56%	24,59%	21,31%	37,70%	9,84%	100,00%
Total	7,83%	20,00%	26,09%	37,38%	8,70%	100,00%

Att. Deg. / Opportunity to find a job	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	5,56%	7,41%	25,93%	50,00%	11,10%	100,00%
Master	4,92%	8,20%	24,59%	42,62%	19,67%	100,00%
Total	5,22%	7,82%	25,22%	45,09%	16,65%	100,00%

Att. Deg. / Job or career-related knowledge and skills	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	1,85%	7,41%	22,22%	57,41%	11,11%	100,00%
Master	1,64%	6,56%	29,51%	50,81%	11,48%	100,00%
Total	1,74%	6,96%	26,09%	53,91%	11,30%	100,00%

Table 26: Data Separation According to Attending Degree

Att. Deg. / Develop my critical thinking	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	3,70%	11,11%	16,67%	50,00%	18,52%	100,00%
Master	8,20%	14,75%	9,84%	45,90%	21,31%	100,00%
Total	6,09%	13,04%	13,04%	47,83%	20,00%	100,00%

Table 27: Data Separation According to Gender

Gender / Is really enjoyable	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	6,12%	24,49%	22,45%	44,90%	2,04%	100,00%
Male	4,76%	22,22%	33,33%	25,40%	14,29%	100,00%
Don't declare	33,34%	0,00%	33,33%	33,33%	0,00%	100,00%
Total	6,09%	23,47%	27,83%	33,91%	8,70%	100,00%

Gender /impact my good professional image/reputation	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	2,04%	8,16%	20,41%	57,14%	12,25%	100,00%
Male	1,59%	4,76%	28,57%	49,21%	15,87%	100,00%
Don't declare	33,33%	33,33%	0,00%	33,34%	0,00%	100,00%
Total	2,61%	6,96%	24,35%	52,17%	13,91%	100,00%

Gender /Job or career-related knowledge and skills	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total

Female	2,05%	4,08%	24,49%	59,18%	10,20%	**100,00%**
Male	1,59%	7,94%	26,98%	50,79%	12,70%	**100,00%**
Don't declare	0,00%	33,33%	33,34%	33,33%	0,00%	**100,00%**
Total	**1,74%**	**6,96%**	**26,09%**	**53,91%**	**11,30%**	**100,00%**

Table 28: Data Separation According to Age

Age / Matches my learning expectations	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	20,00%	40,00%	40,00%	**100,00%**
20-22	5,26%	14,04%	22,80%	47,37%	10,53%	**100,00%**
23-25	4,55%	15,91%	40,90%	34,09%	4,55%	**100,00%**
26 or more	0,00%	11,11%	33,34%	44,44%	11,11%	**100,00%**
Total	**4,35%**	**13,91%**	**30,43%**	**41,74%**	**9,57%**	**100,00%**

Age / Job or career-related knowledge and skills	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	0,00%	80,00%	20,00%	**100,00%**
20-22	3,51%	5,26%	28,07%	52,63%	10,53%	**100,00%**
23-25	2,27%	11,36%	20,45%	52,28%	13,64%	**100,00%**
26 or more	0,00%	0,00%	33,33%	33,34%	33,33%	**100,00%**
Total	**2,61%**	**6,96%**	**24,35%**	**52,17%**	**13,91%**	**100,00%**

Age / Develop my critical thinking	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	0,00%	60,00%	40,00%	**100,00%**
20-22	5,26%	19,30%	8,77%	45,62%	21,05%	**100,00%**
23-25	9,09%	9,09%	18,18%	47,73%	15,91%	**100,00%**
26 or more	0,00%	0,00%	22,22%	55,56%	22,22%	**100,00%**
Total	**6,09%**	**13,04%**	**13,04%**	**47,83%**	**20,00%**	**100,00%**

Table 29: Data Separation According to Age

Age / Help me in team working	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	0,00%	20,00%	60,00%	20,00%	**100,00%**
20-22	5,26%	21,05%	21,05%	43,87%	8,77%	**100,00%**
23-25	9,09%	11,36%	31,82%	43,18%	4,55%	**100,00%**
26 or more	0,00%	0,00%	33,33%	55,56%	11,11%	**100,00%**
Total	**6,09%**	**14,78%**	**26,08%**	**45,22%**	**7,83%**	**100,00%**

4.5 Customize Section

In that section each partner was able to set three questions to the students regarding the topic which was interested to investigate. Patras University choose to investigate the experience of the students in distance learning process which was taking place during the COVID-19 lockdown. Students called to answer the following questions:

1. CS_1 : I consider distance learning process better than teaching in situ.
2. CS_2 : Examinations are much easier when they are held from distance.
3. CS_3 : My performance was better in distance learning process than in situ process.

The analysis and the extraction of results has held using the Minitab 17 software. Frequency distribution is presented in Table 30 while Histogram for each question is presented in Figure 20. The same Figure depicts also the box plots of the questions and Table 31 presents their descriptive statistics.

About their distance learning experience, the examination procedure, and their performance students of UPAT were rather negative. More specific a 50% of the responders finds distance learning negative or strongly negative and a 50% keeps a neutral to negative stance about examination procedure and their performance. The overall average in three items is below three so the majority of students don't find distance learning appealing. Even in the question about their examination performance which one should expect that distance examination would be easier than in situ (because students have plenty of ways to cheat) the results were not the expected one. Only a 40% agrees from which only a 6% strongly agrees with that.

In conclusion the customize section of the survey reveals that attention should be given in the area of distance learning and evaluation making them more appealing to the students. The future of modern education will surely include a distance learning sector and rules and guidelines should be created about that purpose. ECOLHE project targets to close the gap between learning in situ and distance learning, developing tools, learning procedures and setting the guidelines for a better learning and distance learning environment.

In the tables 32,33 and 34 data are separated according to attending year, gender and age respectively. In the first question which ask if distance learning is better than in situ, both the majority of bachelor and master students disagree and strongly disagree with approximately a 31% of bachelor and 20% of master students to agree or strongly agree. Responding to the same question male student prefer distance learning with 26,98% and 3,17 of agreement and strongly agreement while female students strongly disagree and disagree with

34,69% and 26,53%. It seems that male liked the procedure much more than female students. Students that don't declare sex also like distance learning. Bigger ages seems to be more in fond with distance learning as they agree in very high percentages while 20-22 disagreement is declared. One possible reason for that is that younger people expect from their studies not only a learning outcome but a social as well.

The difficulty of the exams investigates the next question and both master and bachelor students express an uncertain to disagreement. Only one over four students find distance examination easier. Females seems to find easier that way of examination with male students to keep a rather uncertain stance. Both percentage of disagreement and strongly disagreement is very high though. Ages over 26 seems to prefer examination from distance and ages 17-19 to disagree or strongly disagree. Ages 20-22 and 23-25 behavior is similar with high percentage of disagreement.

In the final question about student's performance with distance learning process, master students seems to have better results than bachelor as the agree with a 41%. Female and students who don't declare a sex performance was better from distance than male with female percentage of agreement 43%. Better performance had also and the ages 20-22 giving a clue that they are more familiar with distance learning procedures. Ages 23-25 also doing well but they express a little more uncertainty. Ages 17-20 and over 26 sample is too small to extract safe conclusions.

Table 30: Frequency Distribution of Students' Distance Learning Experience Questions

	CS_1		CS_2		CS_3	
Modality	n	%	n	%	n	%
1	28	24,35%	19	16,52%	14	12,17%
2	34	29,57%	23	20,00%	19	16,52%
3	24	20,87%	41	35,65%	35	30,43%
4	26	22,61%	26	22,61%	40	34,78%
5	3	2,61%	6	5,22%	7	6,09%
Total	115	100%	115	100%	115	100%

Table 31: Descriptive Statistics of Students' Distance Learning Experience Items

	CS_1	CS_2	CS_3
N	115	115	115
Missing	0	0	0
Ar. Mean	2,50	2,80	3,06
St. Dev.	1,17	1,13	1,12
Min	1	1	1
Q1	2	2	2
Median	2	3	3
Q3	4	4	4
Max	5	5	5

Figure 20: Bar and Box Plot of Students' Distance Learning Experience Questions

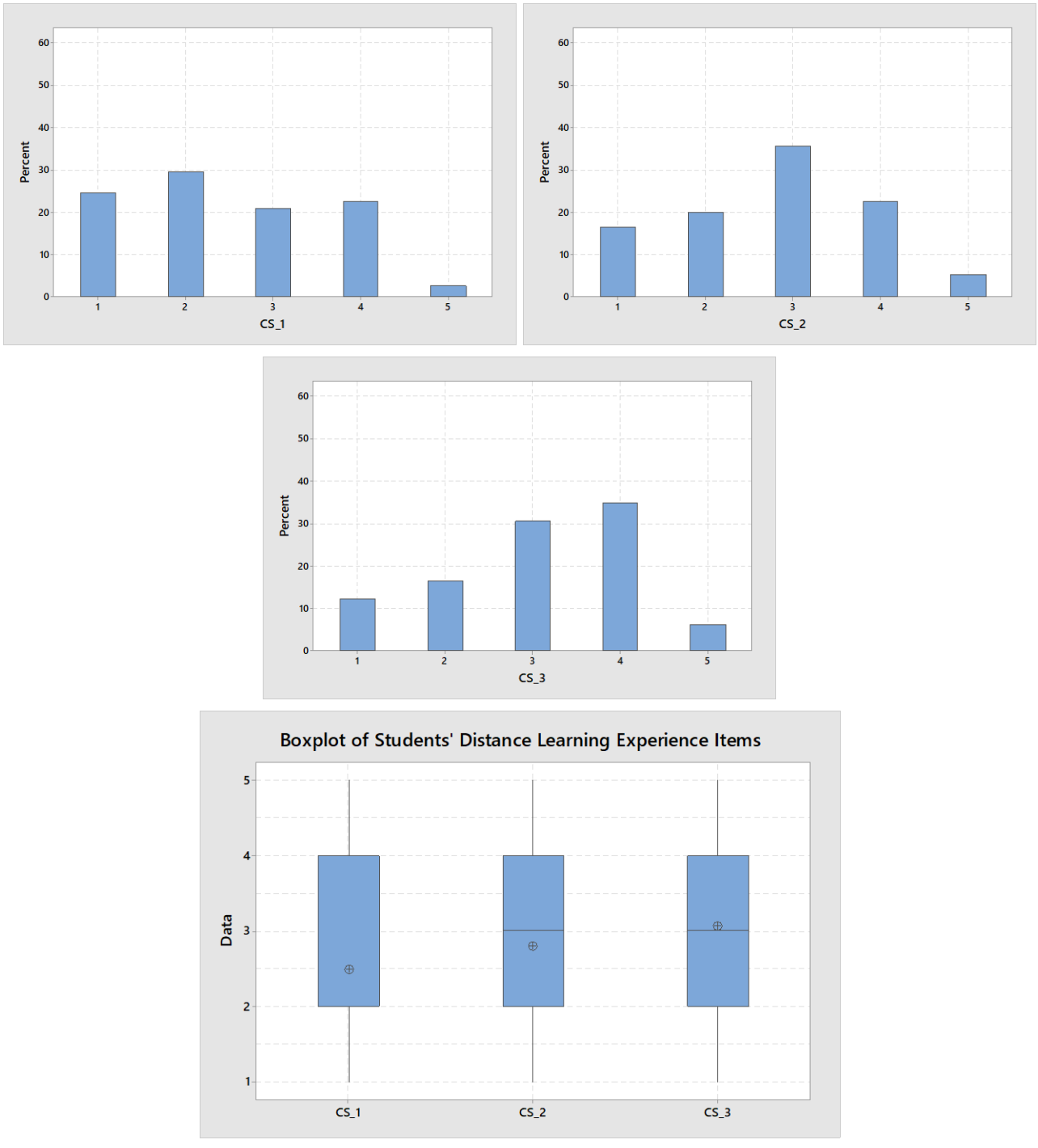


Table 32: Data Separation According to Attending Degree

Att. Deg. / Distance learning better than teaching in situ	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	25,93%	29,63%	12,96%	25,93%	5,55%	100,00%
Master	22,95%	29,51%	27,87%	19,67%	0,00%	100,00%
Total	24,35%	29,57%	20,87%	22,60%	2,61%	100,00%

Att. Deg. / Examinations much easier from distance	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	12,96%	29,63%	29,63%	20,37%	7,41%	100,00%
Master	19,67%	11,48%	40,98%	24,59%	3,28%	100,00%
Total	16,52%	20,00%	35,65%	22,61%	5,22%	100,00%

Att. Deg. / Performance better in distance learning process	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Bachelor	11,11%	22,22%	31,48%	27,78%	7,41%	100,00%
Master	13,11%	11,48%	29,51%	40,98%	4,92%	100,00%
Total	12,17%	16,52%	30,43%	34,78%	6,10%	100,00%

Table 33: Data Separation According to Gender

Gender / Distance learning better than teaching in situ	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	34,69%	26,53%	22,45%	14,29%	2,04%	100,00%
Male	17,46%	33,34%	19,05%	26,98%	3,17%	100,00%
Don't declare	0,00%	0,00%	33,33%	66,67%	0,00%	100,00%
Total	24,35%	29,57%	20,87%	22,61%	2,60%	100,00%

Gender / Examinations much easier from distance	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	18,37%	22,45%	28,57%	24,49%	6,12%	100,00%
Male	14,29%	19,05%	42,86%	19,05%	4,76%	100,01%
Don't declare	33,33%	0,00%	0,00%	66,67%	0,00%	100,00%
Total	14,29%	19,05%	42,86%	19,05%	4,75%	100,00%

Gender / Performance better in distance learning process	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
Female	12,24%	18,37%	22,45%	42,86%	4,08%	100,00%
Male	12,70%	15,87%	38,10%	26,98%	6,35%	100,00%
Don't declare	0,00%	0,00%	0,00%	66,67%	33,33%	100,00%
Total	12,17%	16,52%	30,43%	34,78%	6,10%	100,00%

Table 34: Data Separation According to Age

Age / Distance learning better than teaching in situ	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	40,00%	20,00%	20,00%	20,00%	0,00%	100,00%
20-22	26,32%	40,35%	21,05%	12,28%	0,00%	100,00%
23-25	22,72%	18,18%	22,73%	31,82%	4,55%	100,00%
26 or more	11,11%	22,22%	11,11%	44,45%	11,11%	100,00%
Total	24,35%	29,57%	20,87%	22,61%	2,60%	100,00%

Age / Examinations much easier from distance	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	20,00%	40,00%	40,00%	0,00%	0,00%	100,00%
20-22	17,54%	21,05%	36,84%	21,05%	3,52%	100,00%
23-25	15,91%	15,91%	36,36%	22,73%	9,09%	100,00%
26 or more	11,11%	22,22%	22,22%	44,45%	0,00%	100,00%
Total	16,52%	20,00%	35,65%	22,61%	5,22%	100,00%

Age / Performance better in distance learning process	Strongly Disagree	Disagree	Neutral or uncertain	Agree	Strongly Agree	Total
17-19	0,00%	20,00%	40,00%	40,00%	0,00%	**100,00%**
20-22	14,04%	22,81%	21,05%	38,60%	3,50%	**100,00%**
23-25	11,36%	9,09%	40,91%	31,82%	6,82%	**100,00%**
26 or more	11,11%	11,11%	33,34%	22,22%	22,22%	**100,00%**
Total	**12,17%**	**16,52%**	**30,43%**	**34,78%**	**6,10%**	**100,00%**

4.6 SWOT Analysis

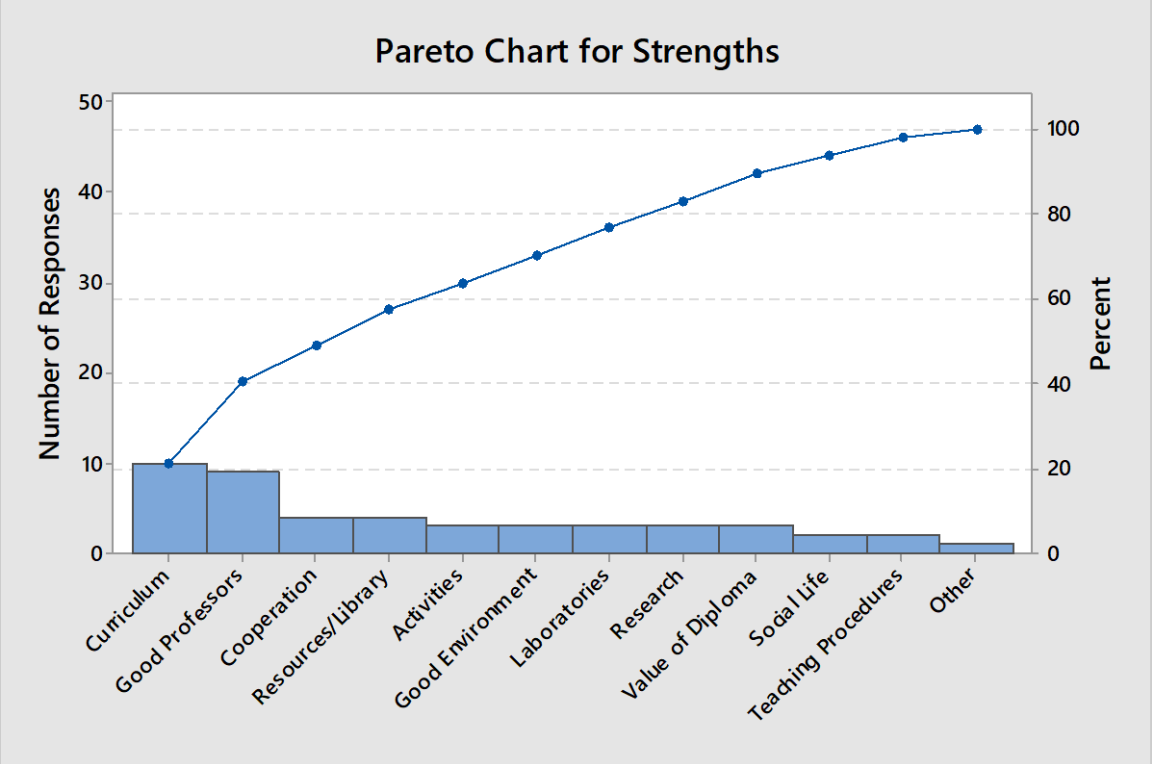
4.6.1 Strengths Analysis

The responses which received regarding the main strengths of UPAT were measured and categorized according to the Table 35. For the extraction of Pareto chart (Figure 21) Minitab 17 was used. The answers show that the main strengths of UPAT according to its' students is the curriculums that students can follow, the quality of the professors, the cooperation between students among themselves and between teaching stuff, the quality of laboratories and the access to the resources. Noted that the number of students which respond to SWOT questions is smaller than the overall answers to the multiple choice questions but even that we can make some useful conclusions.

Table 35: Strengths Observed

Strengths	n	%
Good Professors	9	19,15%
Social Life	2	4,26%
Curriculum	10	21,28%
Laboratories	3	6,38%
Public Education	1	2,13%
Teaching Procedures	2	4,26%
Research	3	6,38%
Value of Diploma	3	6,38%
Good Environment	3	6,38%
Resources/Library	4	8,51%
Activities	3	6,38%
Cooperation	4	8,51%
Total	**47**	**100,00%**

Figure 21: Pareto Chart for Strengths Observed



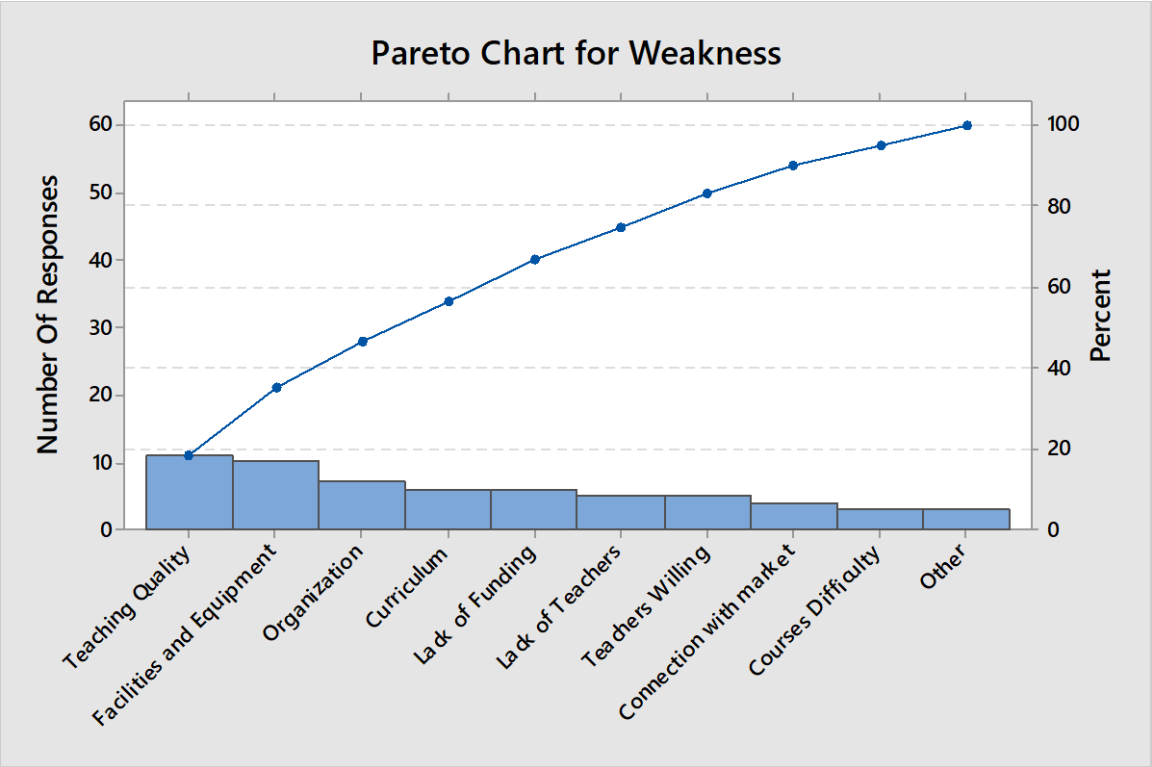
4.6.2 Weakness Analysis

The responses which received regarding the main weaknesses were measured and categorized according to the Table 36. For the extraction of Pareto chart (Figure 22) Minitab 17 was used. The answers show that the main weaknesses of Patras University according to its' students is the teaching quality and the lack of sufficient facilities and equipment, teachers and funding also the organization of the curriculum and operation of the institution should be reorganized. Noted that the number of students which respond to SWOT questions is smaller than the overall answers to the multiple choice questions.

Table 36: Weakness Observed

Weakness	n	%
Teaching Quality	11	18,33%
Teachers Willing	5	8,33%
Lack of Teachers	5	8,33%
Organization	7	11,67%
Facilities and Equipment	10	16,67%
Lack of Funding	6	10,00%
Curriculum	6	10,00%
Amount of work	2	3,33%
Courses Difficulty	3	5,00%
Connection with market	4	6,67%
Administrative	1	1,67%
Total	**60**	**100,00%**

Figure 22: Pareto Chart for Weakness Observed



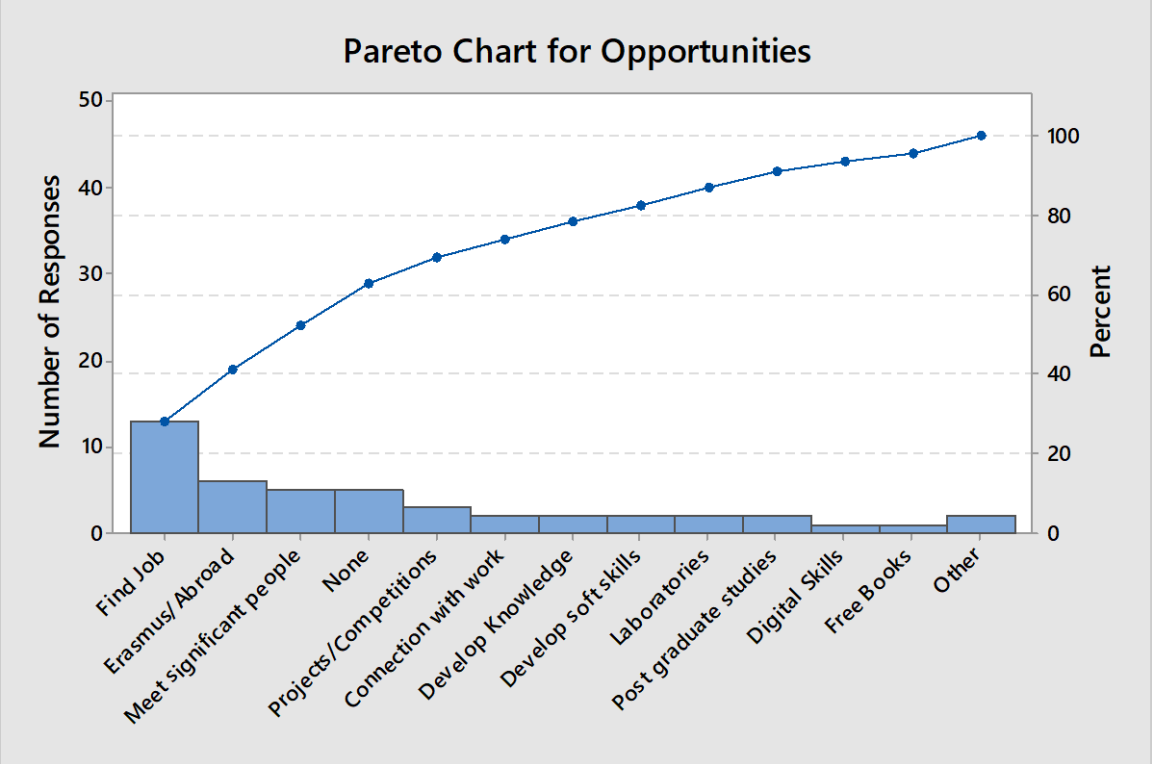
4.6.3 Opportunities Analysis

The responses which received regarding the main opportunities were measured and categorized according to the Table 37. For the extraction of Pareto chart (Figure 23) Minitab 17 was used. The answers show that the main opportunities of UPAT according to its' students that studying in UPAT will lead them to find a job more easily the Erasmus programs and the opportunity to work abroad and that they will make connections with the market and meet significant people. Noted, that the number of students which respond to opportunities questions is 46 so the conclusions are not as reliable as it should be.

Table 37: Opportunities Observed

Opportunities	n	%
Workshops	1	2,17%
Erasmus/Abroad	6	13,04%
Laboratories	2	4,35%
Post graduate studies	2	4,35%
Find Job	13	28,26%
Free Books	1	2,17%
Research	1	2,17%
None	5	10,87%
Digital Skills	1	2,17%
Meet significant people	5	10,87%
Projects/Competitions	3	6,52%
Connection with work	2	4,35%
Develop soft skills	2	4,35%
Develop Knowledge	2	4,35%
Total	**46**	**100,00%**

Figure 23: Pareto Chart for Opportunities Observed



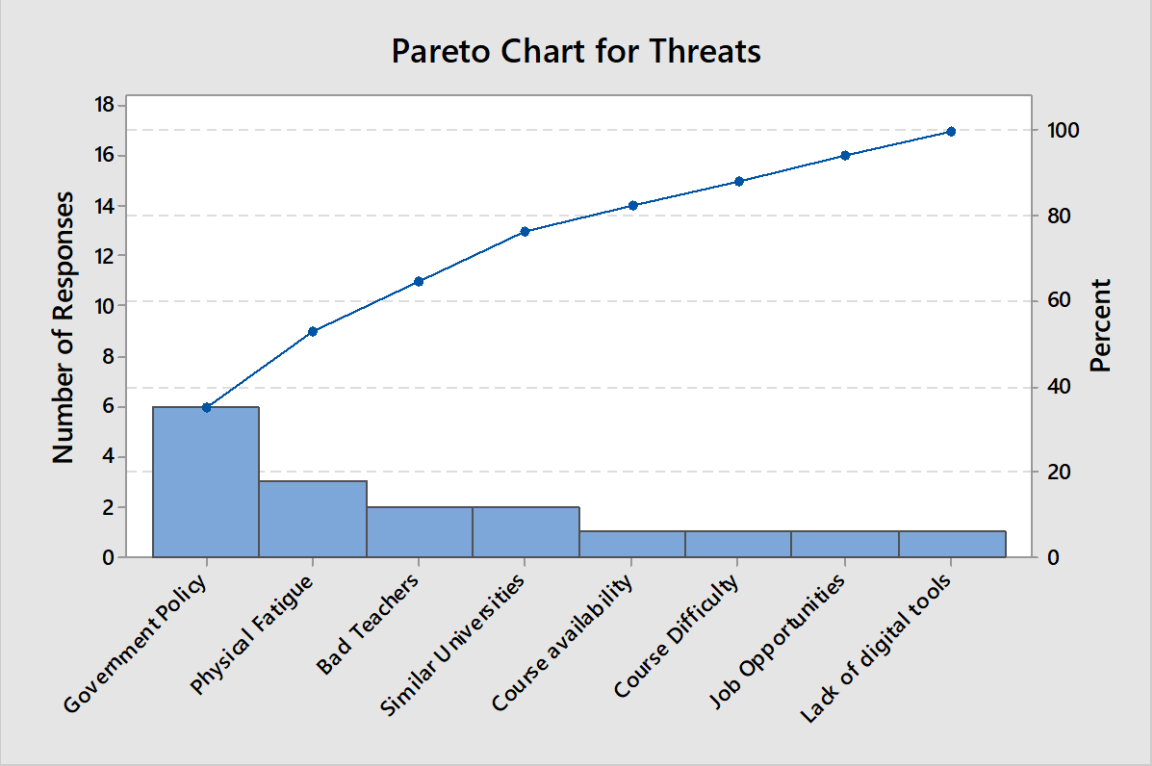
4.6.4 Threats Analysis

The responses which received regarding the main threats of studying in UPAT were measured and categorized according to the Table 38. For the extraction of Pareto chart (Figure 24) Minitab 17 was used. The answers show that the main threats are, according to its' students, the amount of work that they called to carry during semesters which leads them to health strain problems and fatigue. Another threat is the difficulty of courses a threat which is connected with the previous one. A very interesting answer is that some students believe that the existence of universities with similar fields of education are a threat for UPAT. The explanation for this maybe the fear of the competitive environment when they are going to look for a job. Furthermore, the majority of responders finds no threats. Noted, once again, that the number of students which respond to SWOT questions is smaller than the overall answers to the multiple choice questions, especially for the threats analysis the total number of answers was only 26 and that together with the percentage of none threat makes the threat analysis less reliable than the others.

Table 38: Threats Observed

Threats	n	%
None	5	19,23%
University police	2	7,69%
Students' health strain/fatigue	4	15,38%
Paused courses	1	3,85%
Studies limit	1	3,85%
Political parties	1	3,85%
Teacher behavior/willing	2	7,69%
Digital learning environment	1	3,85%
Turn into private education	1	3,85%
Difficult courses	3	11,54%
Administrative staff	1	3,85%
Similar universities	2	7,69%
Low finance	1	3,85%
Job opportunities	1	3,85%
Total	**26**	**100,00%**

Figure 24: Pareto Chart for Threats Observed



CONCLUSIONS / RESULTS

Greece case study report tries to capture the current situation of digital integration in HE in both teaching and administrative dimension. National guidelines and legislation follow the E.U. directives and guidelines but there is a lot of work that should be done for the transition to a mixed or fully digital environment in H.E. The specific work examines the current National Legislation for H.E. and the way that digital technologies are implemented and applied at Patras University (UP).

For that purpose, in depth interviews with policy makers and Academic Bodies were held. Also three focus group interviews were taken from professors, researchers and administrative staff in order to capture all the perspectives of the same picture from the working personnel of UP. The main body of each university is its' students which are somehow the users of university basic scope which is to provide scientists to the Greek society. So, the opinion of them surely has a value and for that a survey was held in order to capture their perspective too.

Looking at the national legislation, there are acts that encourage digital transformation in HE, but there are not specific guidelines and a consist framework that HE should follow. That occurs in a great manner from the fact that Greek HE Institutions are self governed so they are able to follow their own path toward digital transformation at all levels (organizational, educational etc.). A solid framework and guidelines should be formed and both should be harmonized with E.U. general guidelines in order to have a smooth cooperation with other institutions not only in national but an international level, especially with HEI in the E.U.

The vision of digital transformation in policy makers perspective follows the E.U. guidelines and national legislation. In Academic Bodies perspective the vision for establishing ICT culture is to make the best out every available legal technology in both teaching and administrative levels. The same opinion expressed from researchers and administrative staff. All the responders agree that there is not a major change in organizational level, but they believe that in the future will be for sure.

The report presents their opinion for teaching process which have change during the pandemic years to fully online, they mark current tools such as eclass, progress, meeting platforms and all agree that the pandemic was an opportunity for digital transformation of teaching. Drawbacks of course exist and they are many, but as the technology and the new way of teaching become familiar, a lot of them are overcome. All notice the need for fast internet services, the need for extra funding and equipment (these two are connected) from the state and the need for hiring more personnel for teaching and tutoring. Another notice is that professional development to a lot of teaching and administrative staff does not come from self training rather than seminars.

Students on the other hand find distance learning not such attractive as lessons in class. The majority of them prefer lessons in class and wants new teaching methods which use digital tools (for example gamification in teaching) and that is the major weakness of UP as a lot of students is not happy from teaching quality. On the other hand, curriculum and professors are the main strengths of UP according to its students. Their experience of UP is positive and they believe that UP provides them all the necessary knowledge to find a job or continue their studies with Erasmus. Major threat at their opinion is fatigue during the semester.

In conclusion, technological tools are very helpful in both teaching and administrational procedures but can only play a complementary role in teaching activities. They should not replace human interaction which is the base of any educational system. Students should come into direct contact with their tutors and with one another. Socialization of students is as important as the accumulation of knowledge.

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ANNEX

In Depth Interviews with Policy Makers

- V.D. Heading position in National Telecommunications Committee
- K.S. Scientific Counsellor at IEP (Institute of Educational Policy)
- M.L. Responsible contact person of Erasmus Plus projects of ECE department

In Depth Interviews with Academic Bodies

- N.A. Dean of Polytechnic Scholl of Patras University.
- S.K. Director of ICT sector (ECE department)
- O.K. President of ECE Department, former Dean of Polytechnic Scholl of Patras University.

Focus Group: Professors

Researchers: Stylianakis Vasilios / Perivolaris Panagiotis

Data collected : 14/9/2021

H: 18:00/20:00

- M.L. Professor, ECE department.
- P.E. Professor, ECE department.
- K.G. Associate Professor, ECE department.
- V.S. Associate Professor, ECE department.
- L.D. Professor, ECE department.
- P.E. Professor, ECE department.
- T.I. Professor, ECE department.
- M.I. Professor, ECE department.

Focus Group: Researchers

Researchers: Stylianakis Vasilios / Perivolaris Panagiotis

Data collected : 12/7/2021

H: 20:00/21:30

- G.P. Researcher.

- C.P. Tutor/Researcher
- M.G. Tutor/Researcher
- K.E. Tutor/Researcher
- P.P. Researcher, PhD student
- A.A. Researcher, PhD student
- R.K. Researcher, PhD student
- T.D. Tutor/Researcher.

Focus Group: Administrative Staff

Researchers: Stylianakis Vasilios / Perivolaris Panagiotis

Data collected : 14/7/2021

H: 20:00/21:30

- R.D. Secretary, ECE department.
- S.D. Director of Electronic Networks
- K.E. Secretary, ECE department.
- T.M Tutor / Researcher / Administrative staff
- T.G. Director of Health and Safety at Labour of UP
- D.C. Technical Staff.
- S.C. Technical Staff.
- N.Z. Secretary, ECE department.