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D3.2 REPORT ON EXISTING ELEARNING METHODOLOGIES AND TECHNOLOGIES

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Chapter 1

Introduction

Teaching methodologies are important part of curriculum design. For successful course delivery it is necessary to achieve cohesion between teaching activities, teaching methods, learning outcomes and course content. Traditionally teaching excellence standards focus on teacher expertise in the field. Teacher pedagogical skills are less examined. With the advances in elearning technologies, teaching methodologies gain more and more attention. Nowadays, the use ICT technology in teaching has introduced opportunities for enhancing learning experience. Elearning overcomes learning barriers in terms of place, pace and time of study. It has a potential to increase variety of learning resources, improve diversity of learning materials, facilitate adoption of learner centered approach and individualized learning. Main motives for introducing e-learning are pedagogical motives, increased flexibility of learning, better use of recourses and facilitating lifelong learning.

Teaching methodologies and technologies used for e-learning environments are perceived as important aspects of teaching in higher education in Europe in a number of expert group reports. In the report by the Higher Level Group on the Modernization of Higher Education to the European Commission [European Commission, 2013] significant emphasis is put on improving teacher pedagogical training as one of the measures for improving quality of teaching in higher education institutions (HEIs). In this report several recommendations refer to teaching methodologies and technologies. Recommendation number 4 suggests that “continuous professional education as teachers should become a requirement for teachers in the higher education sector”. Recommendation number 13 calls for “promoting innovative teaching and learning methodologies and pedagogical approaches” and recommendation number 11 suggests that “higher education institutions should support their teachers so they develop the skills for online and other forms of teaching opened by the digital era”.

On the other hand, there is also a need for diversifying study modes as pointed in the Agenda for the modernization of Europe’s higher education systems [European Union 2011]. It is stated that the key policy issues of European Union (EU) member states and higher education institutions should encourage greater diversity of study modes such as part-time, distance and modular learning and continuing education. This will increase flexibility of learning pathways and curriculum delivery methods and increase participation rates in tertiary education. Short cycle studies and part time studies contribute to fulfilling these goals as well as to achieving lifelong learning strategy goals in several ways. Short cycle studies (SCHE) increase and enrich educational offer at higher education level and offer opportunities for tightening relationship

between industry and education. These programmes usually have strong labor market orientation and largely involve employers in the curriculum design process and implementation. Short cycles allow for faster adaptation to industry needs and changes in the labor market trends as they provide programmes of narrower scope, focused on the particular field of study. Part time studies (PT) allow study with work. In this mode of study, the student workload per year is usually reduced in comparison to full time studies, which reflects on the reduced number of ECTS per year. Part-time studies are envisaged for employed students or for students that some other reasons need or prefer more flexible modes of education. Taking into account characteristics of PT and SCHE it can be concluded that flexible learning approaches and delivery methods are necessary to be considered for these forms of study. E-learning technologies and methodologies are therefore ideally suited for these studies.

Serbian strategy for education development 2020 envisages introduction of short cycle studies as means for increasing flexibility of the higher education system. It is foreseen that short cycle programmes will provide "narrower and functionally-associated knowledge with 30 – 120 ECTS". The Action plan for implementation of the strategy for development of education in the Republic of Serbia by the year 2020 envisages introduction of studies with work ("part time" studies)

Purpose of this report is to present literature survey and analysis of suitable existing e-learning methodologies and technologies for part-time and short cycle studies as well as to address organizational and policy aspects of implementation of these studies. This report is part of the project "Introduction of part-time and short cycle studies in Serbia" that has as an aim to contribute to accomplishment of Serbian Strategy's goals, such as widening access to HE education, and making HE more relevant and adaptable to the labor market.

The report is organized in three sections. The first section presents detailed study of e-learning methodologies in general and in the context of part-time and short-cycle studies. The second section investigates ICT technologies used in e-learning environment and again the aim is to look at these issues from the PT and SCHE perspective. The third section addresses issues such as policy documents used for accreditation and quality assurance of e-learning, PT and SCHE studies. Each section addresses each topic in two ways. First, the topic is studied based on the literature survey. This study is then followed by the investigation based on the questionnaire. For the purpose of this report two questionnaires have been created. The first one is intended for the staff of the EU partner HEI that is part of the project. The goal of this questionnaire is to collect the newest information on the EU partner experiences and standards or benchmarks for the teaching methodologies, technologies and policy aspects of e-earning, PT and SCHE. The second questionnaire is intended for students and staff in Serbian HEIs. This questionnaire addresses issues regarding introduction of PT and SCHE as well as questions regarding teaching methodologies and ICT technologies used for e-learning. The goal of this questionary is to collect relevant information on the present state of methodologies and technologies for e-learning in Serbia.

A brief description of each section goals is as follows.

First section contains literature review of broad scope of issues regarding e-learning, part-time and short-cycle studies. The issues that are covered include reasons for using e-learning, benefits of e-learning, and opportunities that e-learning environment offers as well as summary of elearning experiences in EU. This section also includes detailed study of the needs and reasons for introducing and conducting part-time and short time studies and some examples of EU experiences and best practices taken form literature. The specific questions addressed both by literature review and by means of questionnaires are: what are the criteria for selecting appropriate methodology, how e-learning environment influences the selection of the teaching methodology, what are the specifics of the short cycle and part-time studies and how this reflects on the teaching methodology, how does e-learning facilitate learning in short-cycle and part-time studies, how does level study influences teaching methodology, what are the most common teaching methods used at present, what models for instructional design are used for e-learning and what are the future trends in the implementation of teaching methodologies.

Second section presents literature review results on the technologies used for e-learning. General overview of the usage of ICT technologies in education is given. The factors that influence selection of the technologies are considered. These incorporate both realistic practical consideration such as potentials of the institution and staff for implementing e-learning technologies as well as considerations that are dictated by the latest trends and developments in e-learning technologies. Special attention has been given to communication technologies that allow creation of collaborative work environments. The specific issues that are covered based on literature survey and questionnaire are: overview of learning management systems used at present in EU HEIs, policies on institutional technical support for e-learning, overview of common formats and standards used for content presentation and software tools that are used for creating content as well as analysis of communication tools.

Third section focuses on the standards and benchmarks that exist in EU and HEIs regarding elearning, PT and SCHE. These standards can be in the following form: national and institutional and EU strategic documents, documents such as standards, guidelines, recommendations used in HEI for accreditation process, documents such as manuals, guidelines and standards used for quality assurance in HEIs or at the European level. The goal is to investigate and compare approved and adopted documents as well as documents that can be used as reference point for finding answers to the following questions: how is the adoption and development of e-learning ensured and fostered, what are the guidelines and recommendations regarding teaching approaches, methodologies and technologies for e-learning in general and in the context of PT and SCHE, how accreditation criteria and quality assurance takes into account learning methodologies and technologies and what are the specifics of these standards for e-learning, PT and SCHE. The review of these and other aspects such as organizational aspects is presented based on the literature

review. The questionnaire targets the following issues: institutional/national policy documents where details about short cycle studies and part time studies are regulated, recommendations for the teaching approach that is most suitable for short cycle studies, part time studies, and e-learning, accreditation criteria for the part time studies, short cycle studies and eLearning programs/courses, policies on the eLearning methodologies and technologies, guidelines for creating of the eLearning courses, quality assurance of the short cycle and part time studies.

Terminology

E-learning

The term e-learning in this report encompasses all learning and teaching with the aid of information and communication technologies irrespective of the degree of usage of ICT.

The courses can be designed with varying degrees of usage of ICT. In this report we distinguished between the following e-learning courses [OLC 2016]:

- Traditional Classroom Course – course activity is organized around scheduled class meetings. Syllabus and grades may be posted online.
- Web-Enhanced Course – web based materials and activities complement class sessions without reducing the number of required face-to-face classes.
- Blended Course – online activity is mixed with classroom meetings, replacing some, but not all required face-to-face classes.
- Online Course – all course activity is done online; there are no required face-to-face classes and no requirements for on-campus activity.

Flexibility

Provision of study where some or all aspects of learning flexibility such as flexibility related to content, entry requirements, instructional approach and resources, and delivery methods and logistics is provided [Eurydice, 2014] . It often relates to provision of study such that students have greater number of choices when it comes to time, pace and place of learning [EADTU 2016].

Flipped learning

In flipped learning, students acquire most of their content knowledge by independent online study rather than in face-to-face lectures. Teacher-student contact time is instead used for discussion and problem-solving [EADTU 2016].

Short cycle studies

Programmes of narrower scope (30-120 ECTS), focused on the particular field of study, that usually have strong labor market orientation and greater involvement of employers in the curriculum design process and implementation. In Europe, this is generally two-year associate degree types of studies in higher education situated at level 5 of the EQF. The main objective of level 5 SCHE studies is professional specialization focusing on employment. SCHE can be considered to be the missing link between secondary and higher education.

Part-time studies

The study where student workload per year is usually reduced in comparison to full time studies, which reflects on the reduced number of ECTS per year. It can also include various aspects of flexibility as well as more learner centered teaching approach. Part-time studies are envisaged for employed students or for students that some other reasons need or prefer more flexible modes of education.

Chapter 2

E-learning methodologies

2.1. Introduction

Students in part-time (PT) and short cycle higher education programs (SCHE) can be divided into two major groups. The first group comprises students, who have no previous experience in higher education and, who are about to take the first step toward getting a higher certificate. These students have to be specifically helped with personal and online consultations, remedial classes, advisory services etc. Their progress has to be closely and individually monitored. In the second group there are students, who are already degree holders and who already work for their second or third qualification and who are in search for better employability, higher social status and/or higher income. In the development and running of programs for these PT and SCHE students, the state-of-the-art teaching methods and materials, as well as the highest possibility quality of teaching, the best possible practical placement and internationalization play the most significant role. (Pollard, 2012)

Part-time and short cycle studies, are primarily learner-centred. Part-time studies are planned for employed students or for students not living in towns with HE programs, or for students that prefer more flexible modes of education using e-learning methodologies and technologies. The Bologna-driven short cycle programs fulfill the dual role: of preparing graduates for employment, while simultaneously equipping them with the skills and the opportunity to continue their studies toward a bachelor's degree. These innovative programs have the potential to serve as a bridge between the traditionally separated vocational and academic sectors and to create more flexible learning pathways into and within higher education. Short cycle programms allow students to get necessary knowledge and skills for a particular job in shortest time (3 to 18 months). Many lecturers in SCHE also have strong links with industry as the majority of institutions have representatives of industry teaching at their institution. Many of the SC students are non-traditional and mature students who combine work with education and training.

Face-to-face (F2F) learning in many cases is not feasible, and PT studies may provide only limited F2F course hours. On the other hand, F2F hours for SCHE students are suitable for particular courses with physical skils and close colaboration. Full online coursis (without F2F course hours), is the only option for students living far from HE institution and is suitable for reading of learning materials and some forms of assessments. In most cases, blended learning is the most suitable for

PT and SCHE student, because student can use online lerning mode (elearning), and does his tutorials using F2F learning, in form of workshops, which can be organized during the weekends or as evening classes during work days.

2.2. Part Time Education

A part-time course may be delivered alongside full-time provision, provided separately or as a mixture of the two. It may be delivered in partnership with another institution, often a further education (FE) college, at an employer's premises, or via distance learning. At present, demand for undergraduate PT study appears to be limited to particularly working adults who primarily want to improve their employment and career prospects through studying at higher levels. These individuals are either unable to give up their job to study full-time or choose to study part-time since it offers greater flexibility, allowing them to fit study around existing commitments. These individuals, who are balancing work, life and study commitments, tend to have a preference for vocational courses delivered in the evenings and at weekends, and provided locally (Pollard, 2008). Flexibility could also mean flexible length of study – the time taken to complete. This type of flexibility allows individuals to study at their own speed and intensity, and possibly interrupt their studies – although perhaps within some boundaries.

PT students have different support needs compared with full-time students. They need:

- flexible learning delivery and also flexible assessment
- online support
- consistency and clear communication
- educational guidance to build their study programmes
- peer support – a group of individuals to share their experiences with.

Students and potential students interested in studying HE part-time can be segmented into four groups in relation to why they want to study and the relationship between study and their career:

- career enhancers, who are the largest group;
- career changers;
- non-career learners and career entrants.

Different groups require different approaches to increase their demand for part-time HE. There are a number of ways in which part-time provision can be organised, structured and delivered. propose a typology of delivery models, which includes (Callender, 2012):

- provision that is fully integrated with full-time provision
- mixed provision where some part-time provision is integrated, but other courses are provided separately
- separate part-time provision which is the responsibility of a school/university department
- programmes that have an equivalent full-time course and others that do not (free-standing part-time provision).

It is rare for any of these models to exist in isolation. While one particular model may dominate part-time delivery in an institution, particularly undergraduate studies, within some departments and for some types of provision, other delivery models exist. The most common delivery mode across all non-specialised part-time is the integrated model whereby part-time students are taught in the same classes as full-time students.

Part-time provision can also be developed and delivered independent of full-time courses, as a free-standing model. For example, part-time students are registered within a dedicated department, which has its own building and facilities, students do not share the same ICT systems as full-time students and are not registered on the institution's database systems for fulltime students.

Since part-time students tend to be older, have work and life experience, the pedagogy can draw on their experiences to enrich the curriculum. Specialist part-time providers are able to elaborate and expand on the differences of managing part-time student groups. Generally part-time pedagogy can take an applied approach relating theory to practice.

Institutions covering a large and/or rural geographic area may make more use of distance or blended learning. Across the range of subjects and courses, blending online learning with some face-to-face delivery was emphasised. More frequently, the institutions had introduced managed and virtual learning environments (M/VLEs), which were used as a repository for course resources (lecture notes and handouts), and a coordinating access point for central services and facilities such as an online library, IT services or learner support services.

Part-time students have different support needs compared with full-time students. They need:

- flexible learning delivery and so also flexible assessment
- online support as they are less likely to be on campus
- consistency and clear communication in order to fit study around their other commitments
- educational guidance to build their study programmes
- peer support – a group of individuals to share their experiences with.

Students and potential students interested in studying HE part-time can be segmented into four groups in relation to why they want to study and the relationship between study and their career:
 career enhancers, who are the largest group;
- career changers;
- non-career learners and career entrants.

Different groups require different approaches to increase their demand for part-time HE.

A part-time course may be delivered alongside full-time provision, provided separately or as a mixture of the two (European Commission, 2013). It may be delivered in partnership with another institution, often a further education (FE) college, at an employer’s premises, or via distance learning. It may be delivered:

- during normal university working hours,
- on weekday evenings or at weekends, or

- in small blocks of intense study

At present, demand for undergraduate part-time study appears to be limited (in the main) to older individuals, particularly working adults who primarily want to improve their employment and career prospects through studying at higher levels. These individuals are either unable to give up their job to study full-time or choose to study part-time since it offers greater flexibility, allowing them to fit study around existing commitments. These individuals, who are balancing work, life and study commitments, tend to have a preference for vocational courses delivered in the evenings and at weekends, and provided locally. Flexibility could also mean flexible length of study – the time taken to complete. This type of flexibility allows individuals to study at their own speed and intensity, and possibly interrupt their studies – although perhaps within some boundaries.

There are a number of ways in which part-time provision can be organised, structured and delivered (Callender, 2012) propose a typology of delivery models, which includes:

- provision that is fully integrated with full-time provision or infilled to full-time courses
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It is rare for any of these models to exist in isolation. While one particular model may dominate part-time delivery in an institution, particularly undergraduate studies, within some departments and for some types of provision, other delivery models exist. The most common delivery mode across all non-specialised part-time is the integrated model whereby part-time students are taught in the same classes as full-time students.

Part-time provision can also be developed and delivered independent of full-time courses, as a free-standing model. Here courses may be bespoke rather than developed or repackaged from an existing full-time course. For example, part-time students are registered within a dedicated department, which has its own building and facilities, students do not share the same ICT systems as full-time students and are not registered on the institution's database systems for fulltime students.

Since part-time students tend to be older, have work and life experience, the pedagogy can draw on their experiences to enrich the curriculum. Specialist part-time providers are able to elaborate and expand on the differences of managing part-time student groups. Generally part-time pedagogy can take an applied approach relating theory to practice.

Delivery model implemented by institutions may be an artefact of the accessibility of an institution and/or its rurality. Institutions covering a large and/or rural geographic area may make more use of distance or blended learning. Across the range of subjects and courses, blending online learning with some face-to-face delivery was emphasised. More frequently, the institutions had introduced managed and virtual learning environments (M/VLEs), which were used as a repository for course

resources (lecture notes and handouts), and a coordinating access point for central services and facilities such as an online library, IT services or learner support services.

2.2.1. Part-time Methodology Specifications

The institutional strategic plan should identify the roles that e-learning will play in the overall development of the institution and set the context for production of the plans of academic departments, administrative and operational divisions. Faculty and departmental plans should aim to best match the student requirements of their particular market sector (national/international focus) in presenting e-learning/blended learning options. Implementation of e-learning may require an institution to review and revise its policies on the deployment of resources to ensure that it has in place an adequate managerial, technical and physical infrastructure. The institution should provide students with clear advice and guidance on course choice prior to registration, taking into account their personal characteristics and time available for study. Students should be provided with clear and up-to-date information, including a full description of the study programme, the variety of learning methods used, and information on how they will be assessed. Establishing an appropriate educational approach is a key stage in course design (Gaebel 2012). Those undertaking this task should address how the e-learning methodologies available to them can best be used to assemble a learning model appropriate to the level and subject domain of the course. Three broad educational approaches make differing demands on the capabilities of e-learning systems:

- Didactic learning: efficient delivery of structured teaching materials, embedded testing and automated feedback can be achieved online, allowing for flexible pace of study by independent learners working to self-determined schedules.
- Resource based learning: online learning can provide access to information resources that are on a par with campus based access.
- Collaborative learning: various online social media tools can be used for online collaborative learning. Their use may, however, place constraints on flexibility of study and will require appropriate academic oversight.

The majority of courses will utilise several educational approaches to secure their learning outcomes. The use of different types of e-learning and levels of support needs to be fit for purpose.

Curriculum design should address the needs of the target audience for e-learning programmes that, in the context of growing emphasis on lifelong learning, may differ significantly in prior experience, interest and motivation from the traditional young adult entrant to conventional universities (Williams, 2012) Key challenges and opportunities include: programme modularity, online assessment methods, building online academic communities, integration of knowledge and skills development, and offering personalised learning to meet different learning needs and aspirations. A major issue for curriculum designers is how to schedule activities that are restricted in place. Designers may choose to aggregate face-to-face activities in a small number of modules

within a programme with the result that these modules require similar levels of attendance to conventional provision. Alternatively, curriculum designers may distribute the activities so that the majority of modules have a limited requirement for attendance. If possible, alternative dates should be provided.

The design and architecture of the institution's technical infrastructure is a key factor in successful delivery of e-learning programmes. This may demand significantly greater capacity and capability than is required to support campus based students or research programmes. The core of the Virtual Learning Environment (VLE) is the system for delivery of e-learning materials to students. This component of a VLE may also be known as a learning platform. Its facilities influence the nature of teaching and student interactions that can be offered and affect the work of course designers and students.

Student support services are an essential component of e-learning provision. Institutions should develop policies and strategies for the design and provision of student support services. Although the delivery of student support services may vary between institutions, some aspects of student support should be taken into account in all e-learning programmes. Summarizing, support services for e-learning students should be designed to cover the pedagogic, technical and administrative aspects that affect the online learner:

- Clear and up-to-date information and advice about courses should be provided to enable students to make informed choices.
- Information and advice about technical and administrative matters should be easily accessible.
- Staffed helpdesk and advisory services should be provided at times appropriate to students' needs.
- Online library services should be provided to e-learning students. Students should be supported through online communities.

Special attention should be paid to offering adequate support to lifelong learners, as many higher education e-learning students are adults with professional and personal responsibilities, who are studying part-time and working to flexible schedules.

E-learning offers the opportunity to provide flexibility in the time, place and pace of learning. The presentation of content can be more flexible and the didactic approach more open. Institutions need to have clear policies and practices for scheduling programmes and courses. These policies should take due account of student requirements for flexibility in time and place of study. E-learning programmes should offer learners considerable flexibility in the place of study, with the optimum being the full provision of learning facilities via any internet access point including the use of mobile devices.

While conventional annual or semester-based cycles of course provision may not be appropriate for students on e-learning programmes, the scheduling of courses with no fixed start or finish times is not necessarily educationally effective or desirable. Fixed start and finish dates for modules

constrain student flexibility but facilitate the management of student cohorts and allow for participation in group activity. Fixed times for submission of assignments provide target dates for task completion which help to maintain pacing and engagement. Similarly, synchronous online events can provide a structure analogous to the lecture or seminar schedule of a face-toface programme. However, strict scheduling may place significant restrictions on the flexibility required by students facing pressures from family or employment obligations. It may be beneficial to offer alternative schedules, and even alternative exam dates.

Provision of aspects of the curriculum that require access to specialist facilities such as laboratories and direct face-to-face contact may prevent institutions offering programmes fully online. In these circumstances blended provision is the only practicable mechanism. Whether face-to-face contact is provided directly or delivered through synchronous technologies such as online conferencing or video conferencing may be dependent on student distribution and prevailing technology infrastructure. Where blended learning is employed, the curriculum provides an appropriate mixture of online and face-to-face approaches to learning, including assessment.

The flipped approach is a natural fit with blended learning, where the independent study can be online using the VLE or the internet (including OER and MOOCs) and the teacher-led sessions can be face to face.

Appropriately designed and implemented modular programmes enable institutions to offer their students a broad curriculum and optimise utilisation of resources. Offering short and flexible elements or courses allows students to build a programme to meet their needs.

E-learning offers modern ways of building communities and supporting communication between teachers and students, and between students and their peers. Interactions between student and teacher and among students are key components of e-learning in a higher education context. Since content can now be delivered direct to the student rather than via the teacher, it should be a principle of curriculum design to embed prompts that encourage online contact between the participants in the teaching-learning process. Either teachers or experienced students may be allocated the role of moderating student discussion areas. Electronic forums for interchange of experience amongst teaching staff provide important mechanisms for staff development through exchange of good practice, sharing of teaching resources, and general peer support.

Online assessment is an important function of a VLE, and may be formative or summative. Online systems are capable of delivering assessments in a range of styles. It should be the goal of all institutions engaged in e-learning to develop and implement assessment systems that are recognized as at least being equivalent to those used in conventional systems regarding their effectiveness and integrity. Assessment should include both formative and summative elements. Formative assessment provides feedback to students; summative assessment contributes to their course result. Individual items of assessment may fulfil either or both functions. Self-assessment and reflection can be valuable in helping students to improve their own work and develop as selfregulated learners. VLE incorporates quiz engines for automatic marking of an increasingly

sophisticated range of question types. Provision of instant feedback according to student response can offer an effective mechanism for integrating formative assessment.

Each course should include a clear statement of the learning outcomes to be achieved on successful completion. These outcomes will be specified in terms of knowledge, skills, vocational/professional competencies and personal development The development of each course should include a clearly documented course specification which sets out the relationship between learning goals/outcomes, teaching and learning activities and assessment methods. A course may include a blend of e-learning and face-to-face elements; attention should be paid to the appropriateness of assessment methods, the levels of interactivity and the provision of adequate feedback.

Academic staff need particular support to make the transition from traditional face-to-face teaching to effective teaching using an online environment; this support should encompass both educational and technical aspects without demanding that academics become ICT or media specialists in their own right. Academic, administrative and support staff should have access to appropriate training. Staff need to be supported in the development of the teaching skills and methods that are necessary for e-learning. Effective administrative support should be provided to all staff involved in the development and delivery of e-learning courses and programmes. Staff motivation is important to the effective development of e-learning programmes.

2.2.2. Part time experiance in EU

Despite the fact that there is a common understanding of the notion of flexible learning, it is widely acknowledged that the concept is difficult to define. When approaching this theme, definitions commonly refer to a higher degree of individualization compared to traditional studies and a wider range of options from which to choose with respect to different aspects of the learning experience (European Commission/EACEA/Eurydice, 2014). Flexible learning is also referred to as learner-centered rather than teacher-centered learning, or as learning that enhances the independence of the learner and changes the role of the teacher to one of facilitator and mentor

One of the most common approaches for adapting higher education to the needs of those who cannot follow traditional 'full-time' studies is to offer a possibility for students to register with an alternative student status, which offers more flexibility compared to full-time study mode. The concept of part-time studies varies greatly across Europe. In several countries, part-time study is defined in relation to the workload of full-time studies, where being a part-timer means a less intensive workload. Students' workload can be expressed in ECTS credits (e.g. Lithuania and Ireland), study hours/weeks (e.g. the United Kingdom – England, Wales and Northern Ireland) or the combination or both (e.g. Latvia, Sweden and the United Kingdom –Scotland).

In Latvia, full-time studies correspond to 40 LV credits (60 ECTS) per academic year and no less than 40 study hours per week.

Part-time studies correspond to less than 40 LV credits (60 ECTS) per academic year and fewer than 40 study hours per week.

Lithuania offers two forms of study: 'continual form' (i.e. full-time form) and 'extended form' (i.e. part-time form). In the first case, student shall achieve 60 credits per academic year and should not achieve less than 45 credits. In the second one, a student is not expected to achieve more than 45 credits per year.

In Sweden, the Higher Education Ordinance states that full-time studies take 40 weeks per academic year and correspond to 60 ECTS. A part-time student studies at less than full-time intensity.

In the United Kingdom (England, Wales and Northern Ireland), students are deemed full-time if they are studying a course for which each year of study requires attendance for at least 24 weeks out of the year. Part-time students are any students who are studying at less than full-time intensity. They may be studying full-time on courses with less than 24 weeks of study in the year, on block release, or during the evenings.

Estonia and Portugal use a similar approach, but they define the difference between full-time and parttime students in terms of the percentage of workload of full-timers. Both countries require full-time students to complete at least 75 % of their planned yearly workload and, consequently, part-time students are defined as those who complete less than 75 %.

All the above approaches are combined in steering documents in the United Kingdom (Scotland), where full-time students are required to attend an institution for periods amounting to at least 24 weeks within the year and dedicate at least 21 hours per week to their studies. Part-time students are those whose course is equivalent to 50 % of a full-time course. It is the college, university or distance-learning provider that decides whether they are working towards at least 50 % of a fulltime equivalent higher education course.

In Bulgaria, Croatia, Hungary, Poland and Romania, part-time students do not have a reduced workload in terms of study hours or credits, but their direct participation in study sessions is limited (i.e. limited contact hours).

In Hungary, for instance, part-time students are defined as those who follow a programme which includes at least 30 % and at most 50 % of contact hours of a full-time programme.

In Bulgaria, Croatia and Romania, part-time students are expected to accomplish the same volume of study in terms of credits, but they are not obliged to attend all lectures.

In Poland, lectures for part-timers generally take place from Friday to Sunday.

In some countries (e.g. Spain, Italy and Slovenia), steering documents refer to part-time studies, but they do not provide their exact definition. This means that higher education institutions can autonomously define in their regulations what the part-time study mode will involve. A similar situation can be observed in Norway, where students may register on a part-time or full-time basis, but the workload related to each student status is defined individually and stipulated in an individual education plan. The establishment of the plan is obligatory for all programmes financed by the Ministry of Education and Research.

In Greece, for instance, the legal framework that is currently phasing in foresees a possibility to study part-time only for students who can justify that they work at least 20 hours a week.

Finally, if a country does not offer a possibility for students to formally register as part-timers, it does not necessarily mean that students cannot study in a flexible way. For example, in Austria, there is no official part-time student status, but students do not have to study according to the time limit given in the curriculum. A similar situation can be observed in France, where higher education institutions may provide students with an opportunity to adapt their study rhythm to their needs. This is commonly offered to high-level sportsmen/women, working students, students involved in various higher education associations and/or bodies, and those following in parallel more than one higher education programme. In Germany, flexibility is offered through dual programmes, combining work experience and higher education studies, as well as individualised programmes that are designed to enable people to better combine studies with family duties, such as care for children or elderly people.

The analysis indicates that most European countries offer a possibility for students to formally organise their studies in a more flexible way compared to traditional full-time arrangements. However, the understanding of the concept of part-time studies varies greatly across Europe, and so does the terminology employed when describing 'part-time' study modes. Moreover, if a country does not offer a formal part-time student status or part-time programmes, it does not necessarily mean that students have no possibility to study in a flexible way. Indeed, in several countries with no formal offer of part-time studies, students can organise their programme in a flexible way and follow de facto part-time studies.

In almost all countries, higher education institutions can autonomously decide whether they will offer such a possibility. However, despite institutional autonomy in the field, most countries are claiming that the majority of higher education institutions offer part-time studies. Yet, this must be interpreted with caution as, the experience from the site visits shows that the degree of activity can vary from one faculty and/or department to another, some providing students with a substantial provision of part-time studies, whereas others limiting their activity in this field. When examining distance learning, it appears that institutions focusing on the provision of this study approach exist only in some European countries. However, among countries with no higher education institution of this type, some have put in place systematic support for students who study at a distance learning institution located in another country. The analysis also shows that distance learning and e-learning are already quite spread across traditional higher education institutions. It is still more common for higher education institutions to integrate these approaches into traditional programmes (i.e. blended learning) than to provide programmes that are fully delivered through distance learning and e-learning. It is interesting to note that central authorities in several countries have provided a support for the development of distance learning, e-learning and blended learning either through policy statements or concrete projects aiming to enhance these modes of study.

2.3. Short Cycle

Short-cycle" higher education (SCHE) is not new. Already in the 1970s it was discussed as a way to diversify higher education systems in the face of booming participation. In 1973, the Organisation for Economic Cooperation and Development (OECD) report "Short-Cycle Higher Education. Today, the issue is still at the forefront of policy debates in many countries, not last because of the more international uniformity resulting from the Bologna agreements. The old OECD definition above raises two points of interest:

- SCHE is non-university education
- SCHE has inherently a strong vocational element

While most SCHE graduates prefer to join the labour market, an increasing number of them decide to use their SCHE title to continue their studies at a full degree level. In an international comparative perspective, Very often the main and sometimes the only aim of SCHE is, to give students a short professional training not linked to previous studies. In countries that have either very strong links with degree programmes or are embedded in a structure of degree studies one of the objectives is virtually always the preparation for degree studies (Kirsch, 2011). This is the case in Bulgaria, Cyprus, Czech Republic, Latvia, Lithuania, Luxembourg, Spain, Switzerland and Turkey.

In countries where SCHE has strong links with degree programmes or are embedded in a structure of degree studies, one of the objectives is the preparation for degree studies. In the latter case, "the transition is just a further step on the ladder of learning". In most countries the transition is governed by legislation (Austria, Bulgaria, Croatia, Cyprus, Denmark, France, Hungary, Iceland, Ireland, Italy, Latvia, Norway, Slovenia, Spain, Switzerland, and Turkey, by agreed principles (United Kingdom), or there is an integrated higher education system (Sweden).

Sometimes the credits earned in SCHE can be taken into account entirely when proceeding to degree studies but in other cases they will just grant access to university or degree studies. In most countries SCHE is delivered at universities and/or at other Higher Education Institution. This means that in these countries SCHE is at least more likely to be successful in supporting student transfer to full degree programmes because it is part of higher education. In Austria, Bulgaria, Croatia, France, Iceland, Ireland, Italy, Latvia, Malta, the Netherlands, Norway, Romania, Sweden, the Swiss confederation, Turkey and the UK SCHE is delivered at universities and/or at other Higher Education Institutions. In the Czech Republic, Hungary, Luxemburg and Spain SCHE education is only delivered within the college sector or in schools.
Who organises SCHE? In most countries state and private. Denmark, Italy, Luxemburg, Malta, and Northern Ireland only know state education. The Czech Republic and Spain are the only two countries where private education is provided but not recognised by the authorities. Curriculum in SCHE In most countries it is either a combination of theory and practice or a combination of theory, practice and work placement. There is always a professional or vocational element involved. Most SHE programmes take two years, some of them one or three (exceptionally more

than three). The title Diploma is very often used for a two-year programme, a certificate might be given after one, two or three years. Qualification of teachers is mixture of Bachelor's and Master's degrees.(majority Masters). In Austria, Norway, Sweden and France there are an important number of teachers holding PhD.

Practice-oriented and experienced-based learning methodologies are very actively used. Virtually all SCHE integrates up to a certain extent placements in industry into the curriculum or has people from industry teaching within this type of education. There is clear interaction between theory and practice.

2.3.1. Short-cycle methodology specifications

In most cases SCHE level 5 is organised by the State and provided by various public education providers but in some cases it is organised by private providers. In both cases it may sometimes be organized in companies, with trade unions etc. SCHE level 5 is provided by various public education providers such as universities, university colleges, universities of applied sciences, regional technical institutes, further education or adult education organizations or even upper secondary schools. In all countries surveyed SCHE is subsidized by the State or other authorities. In some cases there may be some (indirect) funding by companies. The fact that SCHE is provided in such a wide variety of settings enhances the opportunities of non-traditional learners to participate in higher education. However, it is also to be noted that although SCHE is offered in a wide variety of settings (Kirsch, 2009).

The main objective of level 5 SCHE studies is professional specialization focusing on employment. Every student who has SCHE level 5 certificate or diploma has a qualification that enables him or her to apply for a job at that level on labor market. The bulk of study progammes offered in SCHE are in the aria of business studies, administration, building, catering and hospitality, engineering and mechanics. New programmes are being developed in areas such as logistics, ecology, security, entrepreneurship, driving instructor, aircraft mechanics etc.

As SCHE studies try to respond swiftly to demands of industry and as SCHE studies are employment-oriented it is obvious that collaboration with industry and business in designing the programmes and curricula and in defining the learning outcomes is very strongly targeted. Many of the students in SCHE are non-traditional and mature students who return to education at a later stage in life. An important number of these mature students combine work with education and training.

Provision of SCHE is also quite flexible through part-time learning, dual learning and blended learning systems including ODL, time-tables meeting the needs of the learners etc. This proves that most countries see SCHE- level 5 in a lifelong learning perspective focusing on flexible access and flexible learning pathways. Notwithstanding the fact that many countries offer flexible learning pathways the majority of the students are still full-time students. However in a few countries the majority or a considerable percentage of students are part-time students. Those who study part-time are in most cases adult or mature students who may already be working. In those

cases they combine work and learning. SCHE-institutions are open to new technologies and innovation. As shown in the list of recently introduced programmes it is clear many programmes are state-of the art and responding to new trends (e.g. green jobs) and new technologies. Moreover several institutions provide programmes that enhance entrepreneurship and many of them teach entrepreneurship as a subject. Without any doubt, the fact that many lecturers are entrepreneurs themselves and that creative pedagogical methods are used (e.g. projects in companies) enhances creativity, innovation and entrepreneurship among the students.

Legislation in most countries allows for flexible provision of courses in SCHE. In sixteen countries SCHE courses are taught both on a full and part-time basis. In Denmark, Iceland, Malta and Turkey the ministry only mentions full-time provision. When taking into consideration the way in which institutions providing SCHE are flexible to meet the needs of the learners it is obvious that the institutions show great flexibility. The Fig 1 give an indication of flexibility of institutions organizing SCHE in order to meet the needs of their learners. In three quarters of the respondent institutions, courses are time-tabled to meet the needs of the learners. Seven out of ten institutions offer courses both on a full- and part-time basis. Courses are also offered through blended learning and through open and distance learning (around 40%). Only one quarter of institutions are not flexible in their mode of provision and only offer courses on a full-time basis and 5% only on a part-time basis. In one out of eight institutions courses are also offered offcampus at places of work, and in some institutions a combination of all of the above is offered. Some institutions also mention modular courses. In the Netherlands and the UK the possibility exists of dual education (mix of work and study, both relevant for the learning outcomes). In the UK this is referred to as work-based learning. In the Netherlands it is more comparable to Cooperative Education (European Commission, 2010).

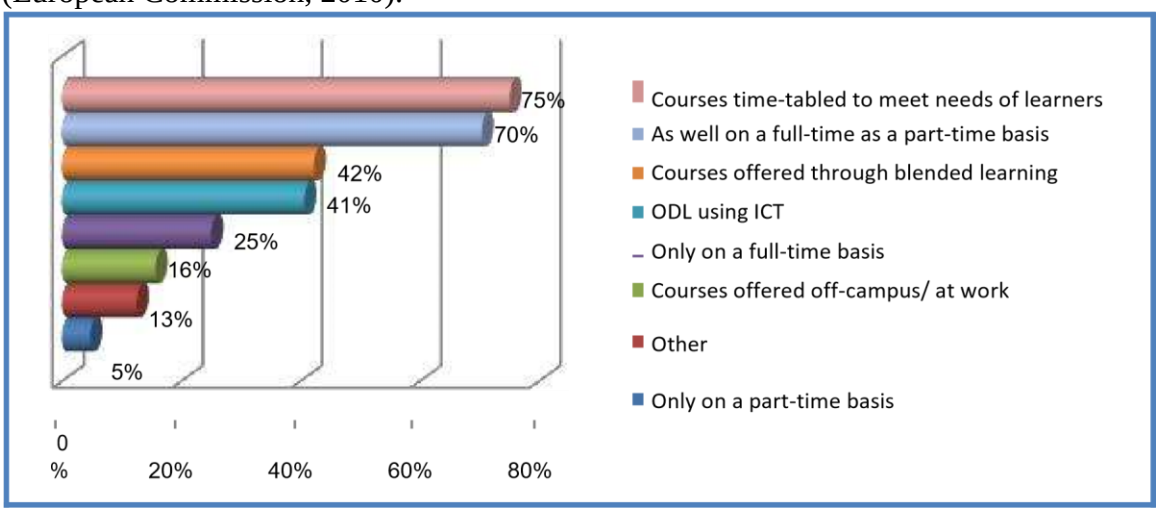

Figure 1: Flexibility

2.3.2. Short-cycle in Europe

According to survey (Kirsh, 2011) more than half of countries surveyed have not introduced their NQF yet and are still wondering at what level to position SCHE studies (Fig. 2). An attempt was therefore made to list for all the countries surveyed whether the NQF had been introduced and how many levels were implemented. Only 20 countries or regions (Belgium (NL), Belgium (FR), Cyprus, Czech Republic, Denmark, Spain, France, Hungary, Ireland, Iceland, Latvia, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovenia, Turkey, United Kingdom EWNI (England, Wales and Northern Ireland), UKSC (UK supreme court) were taken into consideration for the rest of the study. The most important question was to know whether a short cycle was provided within the higher education structure of the country or whether the country intended to introduce SCHE.

Three countries have indicated that they intend to or might introduce SCHE in the future (Belgium (de), Estonia, Italy). This means that the majority of countries surveyed now have SCHE or are intending to introduce it. In most countries SCHE is organised nationally. However, in Belgium, Spain and the UK education is either organised by the communities (Belgium), the regions (Spain) or the different countries within the United Kingdom. In Spain legislation is the same for the whole country but provision might differ according to the region. In order to enhance the readability of the report the term countries will be used even when referring to different entities (communities or regions) within the above mentioned countries. It is clear from the table above that several countries do not see SCHE as an element of lifelong learning and do not associate lifelong learning with higher education as they indicate that they have post-secondary having no formal links with higher education (Austria, Germany, Estonia, Finland, Greece, Romania).

Country	NQF	Introduce	under level	SHE at level	EHEA/SCHE	when	PS links	PS no links	Intention
AT			8		no SCHE			(5?)	no
BEDE			8	(5?)	no SCHE yet		(5)		yes
BEFR			8	(5)	SCHE	2009			yes
BENL	8	2009			SCHE	2009			yes
BG			8	(5?)	no SCHE?	1999			unclear
CH					no SCHE		(5?)		unclear
CY			8	(5)	SCHE	1970's			yes
CZ			8	(5,6?)	no SCHE	1995			unclear
DE			8		no SCHE			(5?)	no
DK	8	2003		5	SCHE	1997			yes
EE	8	2008			no SCHE yet			(5?)	yes

ES			8	(5)	SCHE				yes
FI					no SCHE			(5?)	no
FR	5			3	SCHE	1966			yes
GR			8		no SCHE			?	no
HU			8	(5)	SCHE	1998			yes
IE	10	2003		6	SCHE	1970's			yes
IS			(7)	(4)	SCHE	1990			yes
IT			?		no SCHE yet		(4/5?		probably
							EQF)		
LI			?		no SCHE		(5)		unclear
LT			8		no SCHE			5	no
LV			8	(5)	SCHE	2001			yes
LU			8	(5)	SCHE	?			yes
MT	8	2007		5	SCHE	2005/2006			yes
NL	8	2010		5	SCHE	2006			yes
NO			?	?	SCHE	1970's			yes
PL			?		no SCHE			?	no
PT	8	2010		5	SCHE	?			yes
RO			8		no SCHE			(5)	no
SE			?	?	no SCHE		(5)		no
SI			8	(6,1)	SCHE	1996			yes
SK			8		no SCHE			?	no
TR			8	(5)	SCHE	?			yes
UKEW	8	2001		HND+F DL5	SCHE	70's FD 2002			yes
UKSC	12	2001		8	SCHE	70's			yes

Figure 2: Presence of NQF, SCHE, level 5 EQF: ()=planned, ?=unclear

2.4. Educational methodologies for short cycle and part time studies - Reports PT&SCHE

HE institutions in PT&SCHE Erasmus Programme are using variety of methodologies in its part time and short cycle educational programs. This section contains an overview of the educational methods for PT and SCHE studies based on the reports received from the EU project partners (Reports 3.2-3.3, 2016).

Most appropriate teaching methodology is defined by the teacher, or is determined by each person developing their own course or as a part of course team with the overview of the programme director. There is not one good teaching method, it is about the right mix and balance between different methods. There are three different types of learning activities, which should be in balance:

- individual reading, familiarizing with both theoretical foundations/vocabulary and reallife context related to the domain under study, participating and note-taking in lectures
- personal knowledge construction, applying the new knowledge in problem-solving, interpreting, writings
- collaboration and teamwork for social negotiation of meaning, learning from each other and together

The number one criteria for selection most appropriate teaching methodology include the needs of a particular group of students. Factors that play a role when selecting the most appropriate methodology are infrastructural – e.g. the availability of technical devices in the classroom. Even in the case when traditional lecture courses are organized, teachers tend to use the internet, ppt-s, videos, and/or some digitalized teaching materials. Also used methods are student presentations, discussions, simulation and role play. In the area of sciences project-based learning is used, a type of student-centered pedagogy, in which students learn in teams by doing certain tasks. [University of Szeged report]. Some online courses can have live virtual classroom sessions and some tutors will use discussion board, blog post or peer feedback function for example [Aberdeen report].

The teachers' preference and preparedness also play a role. University of Szeged has regular occasions when new methodologies are introduced to the interested teaching staff. In some HE institutions in Estonia academic staff is offered free training on pedagogy and educational technology, support and consultancy from the e-learning centre. University of Aberdeen has elearning team, who provide training for stuff and assistance. All staff are encouraged to develop their teaching skills and to obtain a postgraduate certificate in teaching in higher education, as well as to become fellows of the Higher Education Academy.

It is important to design learning activities on the basis of real-life problems that are relevant for learners. There are not as such most appropriate teaching methodologies for an e-learning environment, but the appropriate methodology depends on the learning goals, the learner and the learning context. In that sense, any methodology that makes use of the networked and flexible character of online learning is better than reproduction of methodologies from a pure offlinecontext.

Most students who participate in short-cycle and part time studies are more mature and more experienced than regular students. For various job-related and family reasons they were/are not able to attend classes on a regular /daily basis. They need individualized learning possibilities, they need individual learning pace and learning time. But, due to differences in their backgrounds, they need individualized help, too, which can be given to them by the teacher. The teacher is not the only source of knowledge, but the teacher functions as a facilitator of learning.

Short-cycle and part time students also need occasions for real-life professional communication, occasions for sharing problems, ideas and professional success. Being part of a real learning community is also an important factor. This is why blended learning, which integrates the advantages of online education with the benefits of in-classroom work seems to be the most appropriate for short-cycle and part time learners.

The e-learning enables the student to do the work to suit their personal circumstances. This means they can modify the timings of what they need to do to suit them, and not need to follow a set time for a class, unless it's for an online chat or discussion session. E-learning is suitable for individualized learning. Students can do the tasks whenever they have the time to learn, they can proceed at individualized space, they can spend as much time on the tasks as they need to. In addition, they can keep in touch with their teacher or group mates online, too. Also, nowadays, online tasks are very attractive and motivating for learners.

Approach to on-line education emphasizes interaction among students and between students and the instructor. The on-line environment usually includes a student services area and areas for each course. All students have access to the student services, but only students registered for a class can access the course area. The on-line class is organized into activity windows. Within each activity window students are expected to complete or participate in certain course activities. The course is asynchronous in that students control when they perform their work within each activity window. In flexible course, none of the activities require that the students participate at any fixed time. The usual course activities are reading (e-lecture notes, textbooks,...), discussion, assignments (homeworks) and tests. Discussion within an activity period typically centers on one or several discussion topics that the instructor provides for an activity window. However, students can also post discussion issues. On-line assignments can be submitted to the instructor only, or submitted so that they are accessible to everyone in the class. The test can be on-line (series of short essay questions) or in the style of traditional course. Learners in short-cycle and part time education are even more diverse considering their backgrounds, than in regular educational programs. This is why initial, in-course and end-ofthe-course assessments are of crucial importance. Students have to be familiarized with selfassessment materials and techniques, too. Regular group consultations are also helpful, but occasions are also needed for individual consultations.

In the Netherlands, there are several implementations of short-cycle and part-time studies. Shortcycle programs in the form of associate degrees are implemented via the Universities of Applied Sciences (Dale, 2010), while other forms of part-time education are available at Universities of Applied Science and Universities. Short-cycle studies at OUNL are most of the time in the form of continuous professional programs (CPP). These courses are not falling under the statefinanced activities but are commercial courses. Most of the time, these courses are very much related to requirements of the labour market and fulfil a specific need.

The teaching methods should be considered in short cycle and part time studies are listed in Table 1 and Table 2. They are rated on the scale from 1 to 5 (where 1 means absence and 5 means strong presence). Table 1 contains the rates related to short cycle Bachelor and Master studies, and Table 2 contains the rates related to bachelor, master and doctoral part time studies. The presented rates

are given as the mean value of the rates from individual tables of EU PT&SCHE partners reports (Reports 3.2-3.3, 2016).

Acording to rates in Table 1, teaching methods in short cycle studies witch have greatest importance (4/5) is integrated learning for bachelor and master studies, and field visits for master studies. Next high rates (3.67/5) have lectures/presentations and exercises/problems for bachelor studies, and only for master studies, case study analysis and practical work. The lowest importance for bachelor studies (1.67/5) have mediated self/instruction, and for master studies the lowest rate (1.33/5) have role play/simulation and games. Table 1 Rate of teaching methods in short cycle studies

Teaching method	Level of presence Bachelor studies	Level of presence - Master studies
lectures/presentations	3.67	3.67
group discussions/group work	3	3.33
brainstorming	2.33	2.33
demonstration	2.67	2
directed study of texts	2.67	3.33
mediated selfinstruction	1.67	3
seminars	3	3.33
exercises/problems	3.33	3
case study analysis	3	3.67
role play/simulations	2	1.33
games	2	1.33
practical work	3.33	3.67
project work/research	3.33	2.8
field visits	3.33	4
integrated learning	4	4

Acording to rates in Table 2, teaching methods in part time studies witch have greatest importance (5/5) are directed study of texts and project work/research for PhD studies. Rate (4/5) is for practical work, project work/research and integrated learning for master studies and demonstration for PhD studies. Highest rates for Bachelor studies (3.67/5) have lectures/presentations and exercises/problems. The lowest rate for Bachelor and master studies have games (1.67/5) and (2/5). For PhD studies the lowest rate (1/5) have case study analysis and play/simulation.

Table 2 Rate of teaching methods in part time studies

Teaching method	Level of presence Bachelor studies	Level of presence Master studies	Level of presence PhD studies
lectures/presentations	3.67	3.67	2.5
group discussions/group work	3	3.33	3.5
brainstorming	2.33	2.67	3.5
demonstration	2.33	3	4
directed study of texts	3.33	3.67	5
mediated selfinstruction	3.33	3.33	3.5
seminars	2.33	2.33	2.5
exercises/problems	3.67	3	1.5
case study analysis	2.67	3	1
role play/simulations	2	2.67	1
games	1.67	2	2
practical work	2.67	4	3
project work/research	3.33	4	5
field visits	2.67	3.33	3
integrated learning	3	4	

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Chapter 3

E-learning technologies

3.1. Introduction

Education is one of the fastest-growing economic and social sectors in the world, and the use of new technologies is an integral and driving component of that growth [Anderson 2004]. It is clearly known that in case of technology development and use that we have nowadays, modern classroom is changed in many ways, comparing the classroom from e-learning development beginning.

The internet users have the opportunity to be involved in editing web content (web 2.0 concepts) and there is growing field of semantic, intelligent web (web 3.0 concepts). The internet connection which is used is fast, wideband and supports exchanging voice, text, illustrations, audio and video recordings. There are variety devices that can be used to connect to the internet. Many systems and tools are developed for managing learning process (LMS). Some of those systems are commercial and there are some free, open-source platforms (Moodle).

Computer devices are used in each phase of developing e-learning courses, starting with preparation, following with realization and evaluation of e-learning program.

Fast technology changes set new e-learning trends. Teachers and students use faster internet connections, mobile devices and different program tools. Communication and collaboration over internet become very accessible at all learning levels. There is a common case to use LMS in teaching and learning process.

After defining outcomes, at the beginning of e-learning program developing, there is a need to make a choice of media. Analysis of main characteristics and constraints of existing media and technologies and right selection are very important for making every e-learning program [Siemens 2002].

3.2. Multimedia on the Internet

- Text – in speaking, auditory, printed and digital form. Text in programs for e-learning has the aim to encourage students to understand learning materials, as well as for discussions between teachers and students. Tools for synchronous communication enable instant messaging [Siemens 2002].
- Digital illustrations – classical and infographics.
- Digital audio – many tools are developed for recording and editing audio for the defined program request. Podcast tools are commons used in e-learning courses. They offer easy view, editing and listening.
- Digital video – in order to make distance learning more similar to traditional way of learning with teacher who presents materials, there are many tools for on-line realization of classes, by recording, editing and distributing digital video to end users. Video materials can be offered also as screencast recordings of activities on the computer screen. There is a possibility to use video materials with creative commons licence of free use.
- Multimedia – combination of two or more different media can be useful but only if it is planned carefully in order not to cause an opposite effect on learners [McGreal 2004].

3.3. E-learning technologies

E-learning is a process of education by using ICT (Information and Communication technology) in order to improve: learning quality, learning outcomes, learning conditions and to make learning acceptable to modern generation students. E-learning includes different aspects of using ICT. Overview of basic technologies considering the level of ICT application is given in Table 1.

Particular levels of e-learning, supported by using LMS are given in Table 2.

Table 1. Basic forms of e-learning considering the level of ICT application

Forms of learning	Description	Technology

ICT supported teaching	Technology is used separately for preparing teaching and separately for learning	PowerPoint presentations Multimedia books Software tools Online text E-mail
Blended	Combination of classical	LMS systems to manage learning, e-mail,
teaching	education and teaching over the Internet	forums
Online teaching	Teaching entirely over Internet, there is no teaching in classroom	LMS, web based training, Virtual classroom and laboratories, PLE (Personal Learning Environments), e-mail, chat, forums, video conferencing

Table 2. Levels of e-learning supported by using LMS

E-learning level	Learning objective	Conditions
Level 1.	Provide students good awareness of the course, make communication with teachers easier	Course information Curriculum List of literature General discussion forums
Level 2.	Give students better choice of teaching materials and make learning easier	Activity calendar Teaching materials Forums Assignments and tests

Level 3.	Provide students with flexible learning conditions	All teaching materials Lessons and exercises Pre examination activities Regular assessment tests

3.4. E-learning tools

There are many dynamic web pages and applications on the internet where users can create and exchange multimedia data. It refers to groups of web 2.0 tools, that allow communication and collaboration over internet. Following groups of web 2.0 tools are the most common in elearning:

- multimedia tools,
- tools for communication, collaboration and video conferencing,
- LMS tools,
- Wiki tools,
- blogs and microblogs tools, ● podcast and screencast tools,
- social networks tools.

3.5. Multimedia tools

Multimedia tools include plenty of tools, that can be used for developing different formats of digital materials, that are useful in process of learning such as: texts, illustrations, animations, simulations, digitalized audio and video content. Multimedia materials allow learning about events in real world that are too slow or to fast, dangerous or abstract. Multimedia tools make learning process more interesting and efficient.

Recommended software multimedia tools:

- Adobe Creative Cloud,

- Adobe Document Cloud,
- Adobe Presenter 9,
- Adobe Animate,
- Unity 3D, ● GIMP.

Adobe Creative Cloud is a membership that gives access to all of photography, design, video, and web applications on users desktop and mobile devices [Adobe 2016].

Adobe Document Cloud includes Acrobat DC, Adobe Sign, and mobile applications [Adobe 2016].

Adobe Presenter 9 is tool for making interactive multimedia video presentation. It is used for videos, product demos, distance learning, customer support, as marketing collateral or social media content [Adobe 2016].

Adobe Animate is used for designing interactive animations with cutting-edge drawing tools and publish them to multiple platforms. It is used for making 2D interactive animations [Adobe 2016].

Unity 3D is a multiplatform tool for creating 2D and 3D animations and simulations, as well as interactive video games. It has free version for personal use [Unity 2016].

GIMP is free software for image editing available for more operating systems, including Linux, Windows and OS X operating systems [GIMP 2016].

Learning Objects

- eXe [eXe 2016]
- Merlot [Merlot 2016].

3.6. Tools for communication, collaboration and video conferencing

In every learning process communication between participants is very important. Communication tools for different forms of asynchronous (postponed) and synchronous (temporary) communication have been developed and are in use:

- e-mail exchange,
- online exchange of short messages,
- online exchange of messages on forum,
- video conferencing with exchange messages, audio and video.

Specific kind of synchronous communication over internet is video conference, which is used for lectures and meetings, inside the same institution, as well as for more than one. At all locations

for video conferencing the appropriate hardware and software are necessary. For large number of users and for high quality of video and audio, licenced software is prefered.

Recommended software tools for communication and video conferencing:

- Adobe Connect Learning [Adobe 2016],
- Cisco Webex [Webex 2016],
- Google+ Hangouts [Google Hangouts 2016], ● Skype [Skype 2016],
- Viber [Viber 2016],
- VSee [VSee 2016] ,
- Slack [Slack 2016],
- DropBox [Dropbox 2016],
- Google Drive [GoogleDrive 2016], ● ConceptBoard [ConceptBoard 2016].

3.7. LMS tools

LMS system for learning management is software where are integrated tools for making and publishing materials on the internet, also where are included tools for communication, collaborative work, administration and evaluation. One of the most used and accepted LMS systems is Moodle platform. The benefits of using Moodle platform are: open-source code of the platform, free for using and easy to deal with accessible tools [Moodle 2016].

Recommended LMS tools:

- Moodle LMS [Moodle 2016],
- JoomlaLMS [Joomla 2016],
- LAMS [LAMS 2016],
- Blackboard [Blackboard 2016],
- Absorb LMS [Absorb 2016],
- Grovo LMS [Grovo 2016], ● Schoology LMS [Schoology 2016], ● Edmodo LMS [Edmodo 2016].

Cloud LMS

- iSpring Learn [iSpring 2016],
- Study Cloud [StudyCloud 2016].

3.8. Wiki tools

Wiki tools are very useful because of allowing efficient collaborative web pages editing. Wiki tools offer simple syntax and options for content changing, setting up links to other contents and saving contents. Previously, these tools were made for open editing. One of main wiki tools characteristics is that more persons can create and edit content.

Recommended wiki tools:

- Wiki Moodle module [Wiki Moodle, 2016],
- XWiki [XWiki 2016],
- TWiki [MediaWiki 2016], ● Foswiki [Foswiki 2016].

3.9. Blogs and microblogs tools

Weblog tools enable author or a group of authors to create series of posts on one website. Posts are usually chronologically organized. Blog tools support multimedia files and links to other blogs and articles, and enables readers to write their comments. Weblogs are more and more involved in programs for e-learning.

Microblogging tools

Microblogging services (such as Twitter) allow people to broadcast short messages, so-called microposts, in continuous streams. The posts usually consist of a text message enriched with contextual metadata, such as the author, date and time, and sometimes also the location of origin. While an individual post is small in size and of limited information value, aggregated posts of multiple users provide a rich source of time-critical information that can point to events and trends needing attention [LOHMANN 2012]. Microblogging is a combination of traditional blogging and social network services.

Recommended blogs and microblogs tools:

- Wordpress [Wordpress 2016],
- Mahara [Mahara 2016], ● Twitter [Twitter 2016].

3.10. Podcast/Screencast tools

Podcast tools enable work with podcast files (audio files in digital format, which can be downloaded from Internet and played on local computer). This tools allow simple editing and recording of soundtrack: including different audio effects, recording noise, it allows different formats (avi, mp3,…), change of formats, incorporation in screencast files, LMS and other resources. Podcast tools can be very useful in learning in cases where re listening and rehearsing communication and contents is needed.

Screencast tools enable recording all activities on the computer screen, and audio narration that describes recorded activities. Of course it is necessary to have appropriate equipment connected to the computer: microphone and headphone. These tools allow processing of audio and video records, and their storage in different formats (wmv, mp4...). Screencast tools are very useful in preparation of learning materials because they enable visualization of topics which are very difficult to explain textually and material prepared using this tool are accessible to everyone [Anderson 2004]. Recommended podcast and screencast tools:

- Adobe Captivate [Adobe 2016],
- Camtasia [Camtasia 2016],
- Audacity [Audacity 2016],
- Sound Forge [SoundForge 2016].

Streaming Video

- YouNow [YouNow 2016], ● UStream [UStream 2016],
- LiveStream [LiveStream 2016], ● Youtube [Youtube 2016].

Social network tools

Social network tools are all tools incorporated into social network applications. These tools allow communication, collaborative work, multimedia materials exchange and other different services that are common for social network applications. These tools can be applied in all areas of learning.

Recommended social network tools:

- Google+ tools [Google+ 2016],
- Facebook Developers [Facebook Developers],
- AgoraPulse [AgoraPulse 2016]

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Chapter 4

PT&SCHE policy documents

There is a great diversity of approaches to implementing short-cycle and part-time studies across Europe. The literature review revealed that the main reasons for establishing short-cycle studies are to diversify and increase educational offer at the level of higher education and to increase participation at the level of tertiary education, to provide skills demanded by the labor market, to facilitate lifelong learning and to decrease dropout rates. It is also pointed out that short-cycle studies may offer opportunity to greater innovation that "traditional" universities are reluctant to implement. This diversity of objectives reflects on the profile of SCHE qualifications and policy issues. One aspect of this is the degree of integration of SCHE with the higher education system. For example, the SCHE qualifications may primarily aim to provide and intermediate step to full bachelor degree, they can be an independent qualifications with labor market orientation or they can serve both of these purposes. There is also a great variety of awards for SCHE studies, as well as diversity of institutions conducting these studies in EU countries. A good survey on European practices in the SCHE studies can be found in the report from 2011, reference [Kirsch 2011]. National legislations in EU countries regulate the following aspects of SCHE: accreditation, entry requirements organization of the course, quality assurance and transition to degree studies. In Table 1 we have extracted information on these issues from reference [Kirsch 2011] for three countries partners in the project that implement SCHE: Netherlands, Hungary, and Slovenia. We have also included information, from reference [Kirsch 2011], on curriculum, teaching approaches and cooperation with industry. It can be seen from Table 1 that legislation in all three counties envisages accreditation and quality assurance mechanisms for SCHE as compulsory. As far as teaching approaches are concerned, institutions in these countries include flexible study modes, full time or part-time, and incorporate e-learning and blended learning methods. The cooperation with industry is emphasized and present in number of SCHE aspects, such as in the form of employer participation in the curriculum design, student placements with industry, as well as participation in strategic management, quality assurance procedures and involvement in the teaching process.

Table 1 Comparison of SCHE organizational and policy aspects in Netherlands, Slovenia and Hungary (taken from [Kirsch 2011])

	Netherlands	Hungary	Slovenia
Entry requirements	-certificate of general secondary education -certificate of technical or	-certificate of general secondary education -certificate of technical	-certificate of general secondary education

	vocational education - formal qualifications are not necessarily required Entry on the basis of recognition of Prior Learning is also possible.	or vocational education	-certificate of technical or vocational education -Master craftsman /Foreman/Shop manager exam.
Duration	120 ECTS credits	SCHE lasts two years and focuses on employment but is also a preparation for further degree studies.	two years 120 ECTS credits
Flexibility	- the courses are timetabled to meet the needs of learners -SCHE is organized on a full-time, part-time or dual ('work-based learning') basis. -blended learning	-the courses are timetabled to meet the needs of learners -Open and Distance Learning programmes are offered using information and communication technology - blended learning	-time-table organization, open and distance learning -blended learning using information and communication technology. - full and part-time study modes. - Occasionally courses are also offered off-campus in the work place.
Curriculum design	-employers are involved in the planning, designing and restructuring of curricula	-employers are closely involved in the planning, designing and restructuring of curricula	-professional organizations (trade unions, chambers of commerce, employment agencies) and/or employers are closely involved in the design and restructuring of curricula for SCHE.

Employers support	-representatives of (local) industry sit on the board of the institutions. They help to draft programmes/ curricula or they teach at the HBO institutions. They help to define the professional competences. They are involved in internal QA and sit on external QA panels. Local industry also offers placements for students.	-both institutions and industry consider cooperation to be important and beneficial. SCHE institutions cooperate with industry as representatives of (local) industry sit on the board of the institutions or are helping to draft programmes/ curricula. They also sit on examination boards, check the quality of teaching materials or teach at the SCHE institutions. Representatives of (local) industry help define the professional competences, participate in external QA panels and offer placements for students.	-SCHE institutions cooperate with industry in various ways: representatives of local industry sit on the board of the institutions and help to draft programmes and curricula. They also teach at the SCHE institutions, they help define professional competences and offer placements to SCHE students

Legislative framework	SCHE is a formal degree (Associate degree) within the professional Bachelor degree, that it has at least 120 ECTS Higher Education and Research Act states that Associate degree programmes are integrated in professionally orientated bachelor degree programmes and that Addegree holders are automatically entitled to complete their bachelor degree with the remaining 120 ECTS, directly or at a later moment	The most important legislation act of the minister of education on the national qualification register covers all issues related to SCHE: organization, entry, fields of study, QA and accreditation, transition from SCHE to further degree studies and tuition fees.	the law of SCHE, focuses on all major aspects of SCHE such as the organization of SCHE, entrance requirements for SCHE, fields of study in SCHE, quality assurance and accreditation of SCHE, the transition from SCHE studies to degree studies, the institutions where SCHE is organized and the minimum number of students per institution.
Transition to degree studies	Higher Education and Research Act states that Associate degree programmes are integrated in professionally orientated bachelor degree programmes and that Addegree holders are automatically entitled to complete their bachelor degree with the remaining 120 ECTS, directly or at a later moment	Approximately one third of the knowledge (30 to 60 credit points) acquired during the courses of higher vocational education or SCHE may be converted into credits at the bachelor level of tertiary studies.	Students can normally use part of their credits (normally 60) when continuing to higher education courses. The HE institutions set the conditions for the transition from SCHE to HE individually according to their autonomous academic evaluation.

Curriculum	The curriculum consists of a combination of theory, practice and work placement.	The curriculum consists of a combination of theory, practice and work placement.	SCHE is also organized in the framework of adult education. The main objective is further professional specialization focusing on employment. The curriculum consists of a combination of theory, practice and work placements.
Quality assurance and accreditation	quality assurance is compulsory The accreditation is granted by the NVAO (Nederlands,VlaamseAccreditatieorganisatie) the international accreditation organization for the Netherlands and Flanders.	Internal quality assurance/self-evaluation is applied by all institutions offering SCHE as it is compulsory in Hungary. An external mechanism for monitoring quality assurance in SCHE exists and is applied by the national quality assurance agency, sometimes assisted by foreign experts. Accreditation is awarded by the national accreditation agency. In the HEIs the accreditation is in the hand of National Higher	Internal quality assurance/selfevaluation is applied by all institutions offering SCHE and there is external quality assurance system in place. The external quality assurance body (since 2010 it is the Slovenian Quality Assurance Agency and before it was the Council for Higher Education) evaluates and accredits Higher Education Institutions whilst it only evaluates

		Education Accreditation Body.	Higher Vocational Colleges. Accreditation of these institutions and of their study programmes is different to those of Higher Education Institutions as accreditation is granted by the Ministry of Education.

As short cycle studies are seen as ideally suited for achieving lifelong learning strategy goals, flexible learning and teaching methods are particularly important. Nowadays, this flexible learning and teaching methods cannot be imagined without the aid of ICT. E-learning methodologies are therefore of great importance. A good survey on e-learning in European higher education institutions is presented in [Gaebel 2014]. The results of this survey show that all institutions that participated in this survey use some kind of e-learning, mostly in the form of combination with a traditional learning methods, such as in blended learning, however significant number of institutions also offers on-line learning courses as well. Main motives for introducing e-learning are pedagogical motives, increased flexibility of learning, better use of recourses and facilitating lifelong learning.

There is no comprehensive comparison of policy documents, plans and guidelines regarding elearning courses accreditation criteria, teaching methodologies and quality assurance in EU higher education institutions. However, an excellent and extensive guide on methodology and supporting resources for the quality assurance of e-learning in higher education is given in the newest e-excellence manual Quality Assessment for E-learning: a Benchmarking Approach] [EADTU 2016] form 2016. This survey is a result of a series of EU funded projects involving a great number of well known EU HEIs. It incorporates experience of HEI institutions as well as quality assurance agencies and includes recent developments in e-learning practice. As it is pointed out in 6, there are well established rules and systems for accreditation and quality assurance of HEIs and study programmes in EU, however, they do not always address the specifics of e-learning. On the other hand, the guidelines in 6 focus on the parameters of quality assurance relevant to e-learning. The manual in] [EADTU 2016] is intended to serve as supplementary tool which may be used with quality assurance processes so that e-learning developments are considered as a specific feature. Its purpose is to be reference for the assessment or review of e-learning programmes and to serve as manual to staff in institutions concerned with the design, development, teaching, assessment and support of e-learning programmes. It includes the

following aspects of e-learning: strategic management, curriculum design, course design, course delivery, staff support and student support. For each of these aspects, detailed indicators, and guidance notes are given. In the context of standards and benchmarks for teaching methodologies the attention should be given to the following important aspects of teaching approaches:

- Programme modularity. This will enable student to tailor the programs to their needs.
- Learning flexibility in respect to place, pace and time.
- Creation of the collaborative work environment. Student-student communication is recommended to be incorporated in the curriculum planning and the criteria for assessment of collaborative activities to be defined.
- Student contacts with professionals in the field. Curriculum should be designed in such a way that it provides these opportunities for students.
- Developing research skills and generic skills. Apart from addressing the specific knowledge and skills required by the field of study, curriculum should also provide opportunities for developing research skills and generic skills.
- Appropriate assessment strategies. The assessment should be effective and ensure integrity as in traditional programmes. An appropriate balance between formative and summative assessment should be achieved. Innovative assessment methods such as collaborative work assessment should be considered.
- Cohesion between teaching activities, teaching methods, learning outcomes and course content. Teaching activities and methods should be in line with learning outcomes and content.
- Learning materials. The learning materials should include interactive content, self assessment activities, self-paced materials as well as collaborative work activities.
- Diversity of learning recourses. Making use of the richness of the learning resources that is offered by the e-learning environment is recommended and the use of independent learning materials such as moocs should be considered.
- Course design, implementation and evaluation. This should be performed by team of experts comprising of experts in the field of study as well as experts on methodologies and elearning technologies.

The recommendations that cover technology aspects of ensuring the quality of e-learning courses refer to providing all necessary technical infrastructures for the courses.

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Survey of eLearning methodologies and technologies in Republic of Serbia

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Chapter 1

Survey of eLearning in Republic of Serbia

1.1 Introduction

As a part of the activities in Working Packages 3 and 4 in the ERASMUS+ project PT & SCHE, the survey about Part-Time (PT), Short Cycle (SC) studies and eLearning in higher education in Serbia was conducted. The electronic survey was created using Google Forms, and the link was distributed. The survey was available to the teachers for one month, from September 19th until October 18th and received 533 filled responses. The survey was anonymous.

The questions in the survey for the part of eLearning methodologies and technologies was created by the VISER (School of Electrical and Computer Engineering of Applied Studies) and OUNL (Open University of the Netherlands) partners of the project, with help from other partners, especially team leader for the Working Package 3 University of Kragujevac. Regarding the eLearning methodologies and technologies there were 8 questions, and these question will be discussed in the next section of the report, while in this section the introductory questions and their responses will be presented.

Graph presented in Figure 1.1 as well as Table 1.1 show the responses for the first question **"What is your University/School affiliation?"**. This question had small number of replies (less than half), probably due to the formating of the questions. Nevertheless, the responses show that there was the high distribution among the higher education institution in Serbia that included the institutions from Subotica, Zrenjanin, Novi Sad, Beograd, Kragujevac, Kraljevo, Cacak and Uzice.

Given the different needs, technologies and methodologies used in different scientific fields, second question **"What is your scientific field?"** collected the data about the fields and these results are presented in Table 1.2 and Figure 1.2. The results show that the highest numbers of the response on the survey was received from the teachers in the fields Social Science and Humanities and Technology and Engineering Sciences, followed by Science and Mathematics while slightly lower number of the responses was received from teachers in the next fields: Arts, Medical Sciences and Interdisciplinary studies.

On the third question, data about the **position at the institution** were collected. The

Table 1.1: University/School affiliations.

University/School	Broj
No answer	283
Academy of Arts, Novi Sad	7
Faculty of Architecture, Belgrade	3
Faculty of Economics, Belgrade	11
Faculty of Economics, Subotica	7
School of Electrical Engineering, Belgrade	8
Faculty of Engineering, Kragujevac	2
Faculty of Medical Sciences, Kragujevac	1
Faculty of Pedagogical Sciences, Kragujevac	6
Faculty of Sport and Physical Education, Belgrade	6
Faculty of Technical Sciences in Čačak	11
Faculty of Technical Sciences, Novi Sad	14
Faculty of Hotel Management and Tourism, Kragujevac	3
Faculty of mechanical and civil engineering, Kraljevo	5
Faculty of Special Education and Rehabilitation, Belgrade	8
Faculty of Philology and Arts, Kragujevac	18
Faculty of Philosophy, Belgrade	1
Faculty of Philosophy, Novi Sad	3
Faculty of Physics, Belgrade	2
Faculty of Geography, Belgrade	1
Faculty of Chemistry, Belgrade	2
School of Medicine, Belgrade	1
Faculty of Medicine, Novi Sad	1
Metropolitan University, Belgrade	6
Faculty of Agriculture, Belgrade	1
Faculty of Agriculture, Novi Sad	3
Faculty of Law, Belgrade	3
Faculty of Ortodox Theology, Belgrade	1
Faculty of Science, Kragujevac	4
Faculty of Sciences, Novi Sad	10
Technical Faculty in Bor	10
Technical faculty "Mihajlo Pupin", Zrenjanin	2
Hungarian language teacher training faculty, Subotica	3
Teacher Education Faculty, Užice	5
University of Belgrade	17
University of Kragujevac	21
University of Novi Sad	34
School of Electrical Engineering and Computer Science of app. stud, VISER, Belgrade	9

Table 1.2: Scientific fields.

Fields of Science	Number	%
No answer	7	1.31
Social Science and Humanities	174	32.65
Interdisciplinary studies	3	0.56
Medical Science	30	5.63
Sciences and Mathematics	100	18.76
Technology and Engineering Sciences	173	32.46
Arts	46	8.63

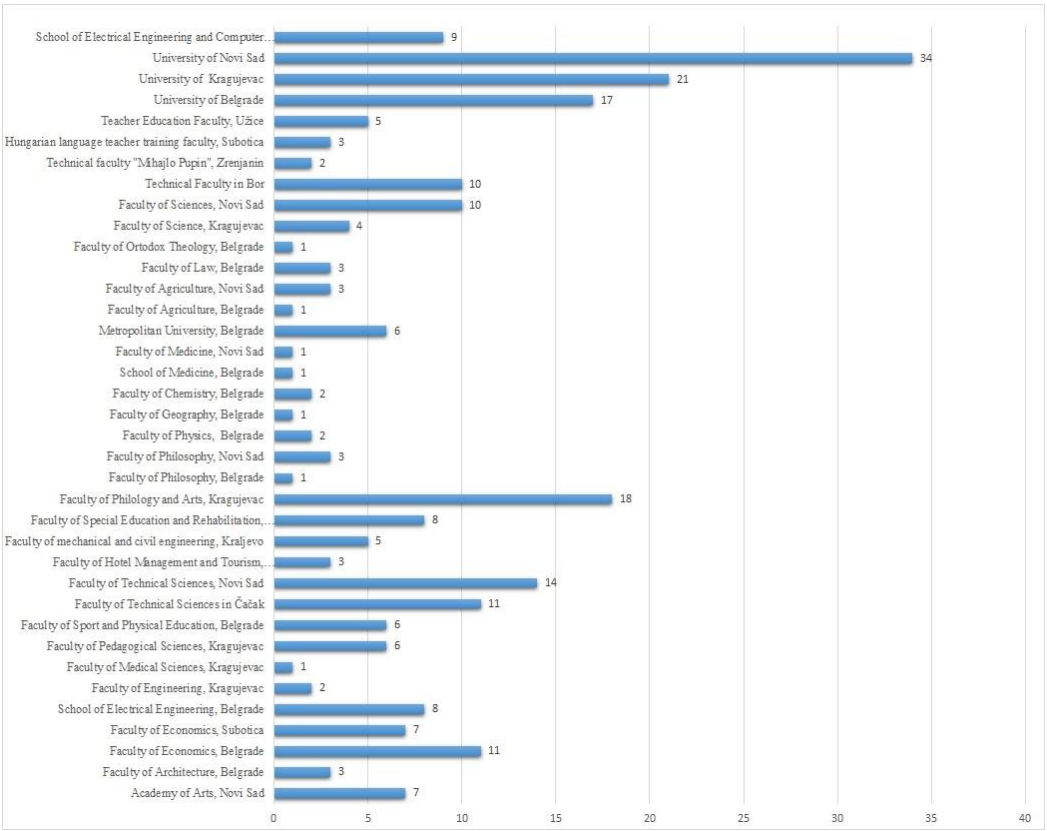

Figure 1.1: University/School affiliations.

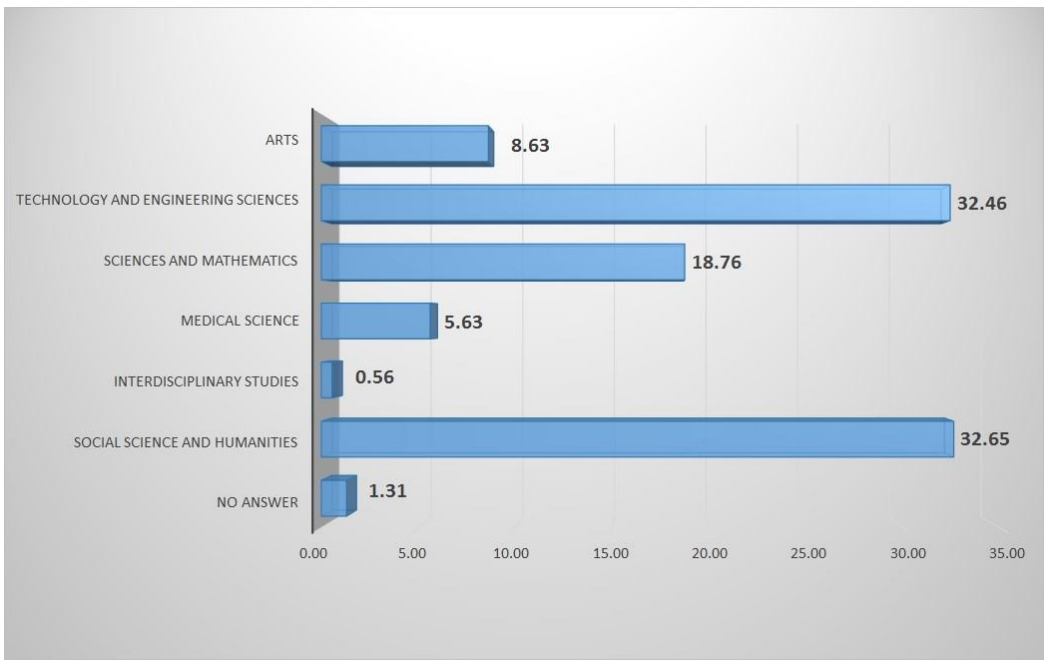

Figure 1.2: Scientific fields.

detailed results are presented in Table 1.3 and Figure 1.3, where the positions were grouped as follows: two large groups Teachers (more than a half) and Teaching Assistants (around

one third), and two small groups Research Associate and Lector that together have less than 2 %.

The answers on the second and third questions where later used for the in depth analysis of the responses for the questions regarding the eLearning methodologies and technologies.

As an introductory question for the eLearning methodologies and technologies we have included in this analysis question **"Does your Institution has a policy document that governs the rules of eLearning used in your Institution?"**, given its significance. Large percentage of the responses were that they dont know is there a such a policy document (60%), while around third of the participants stated that there is know such a document, while only around 4% said that there is a policy document regarding eLearning in their institution. Results are shown in Table 1.4 and 1.4.

Table 1.3: Positions at the University/School.

Position (position in the institution)	Number	%
No answer	10	1.88
Teacher	345	64.73
Teaching Assistant	170	31.89
Research Associate	2	0.38
Lector	6	1.13

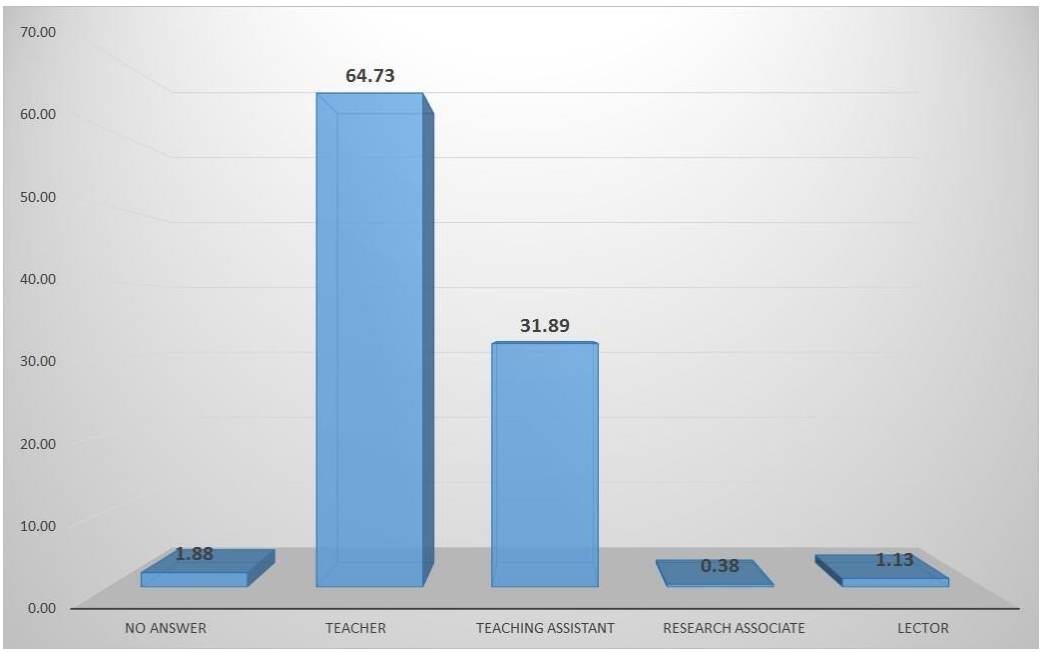

Figure 1.3: Positions at the University/School.

Table 1.4: Presence of policy documents regarding eLearning.

Answer	Number	%
No answer.	17	3.19
Yes, our institution has a policy document that governs the rules of eLearning used in our institution.	23	4.32
I do not know whether our institution has such a policy document.	321	60.23
No, we don't have such a policy document.	172	32.27

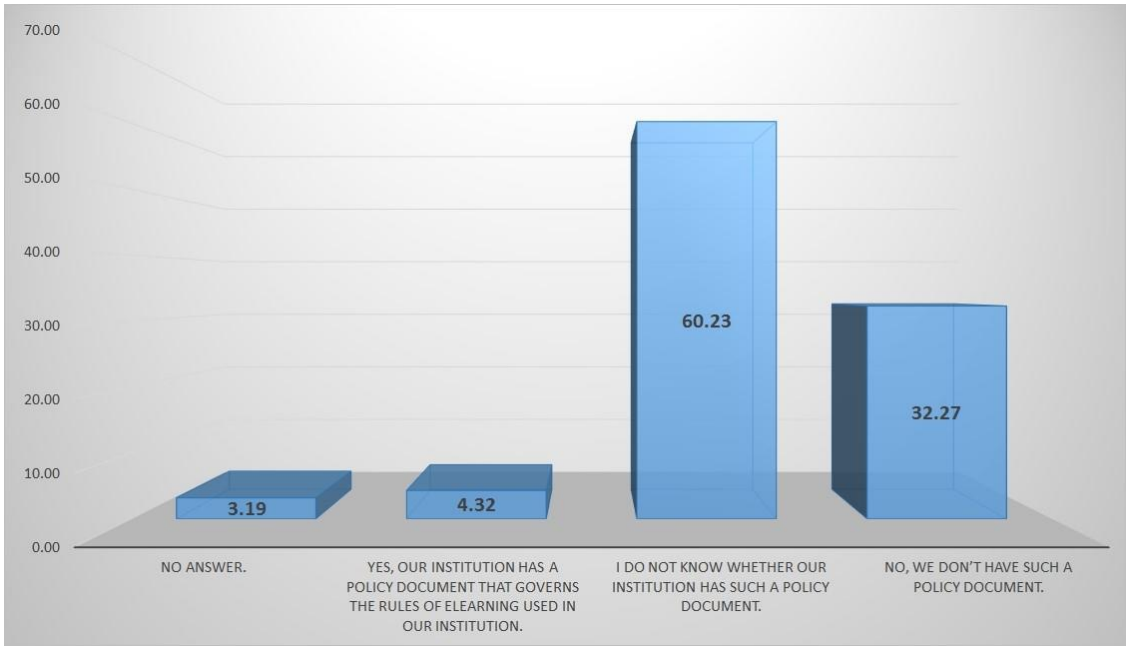

Figure 1.4: Presence of policy documents regarding eLearning.

1.2 Statements about eLearning

Grades given to statement eLearning is useful as addition to the F2F classes are presented in Tables 1.5 and 1.6. Total average grade is 4.25. In Table 1.5 and Figures 1.5 and 1.6 responses are grouped by the field of science of the interviewed teacher, and in the Table 1.6, Figure 1.7 and Figure 1.8 by the position in institution of the responder. It is interesting that teachers off Social Science and Humanities, Medical science and Science and Mathematics grade usefulness of e-learning with higher grades than interviewed teachers employed in Technology and Engineering Science. As for the distribution by position, teaching assistants find eLearning more useful than teachers.

Table 1.5: Grades for the statement "eLearning is useful as addition to the F2F classes" for each field of science.

Grade	1	2	3	4	5	No answer	Average grade
Social Science and Humanities	4	3	16	51	92	8	4.35
Interdisciplinary studies	0	0	0	0	3	0	5.00
Medical Science	0	2	3	4	17	4	4.38
Sciences and Mathematics	4	2	14	19	55	6	4.27
Technology and Engineering Sciences	4	5	31	44	81	8	4.17
Arts	1	3	8	10	19	5	4.05
TOTAL:	13	15	72	128	267	31	4.25

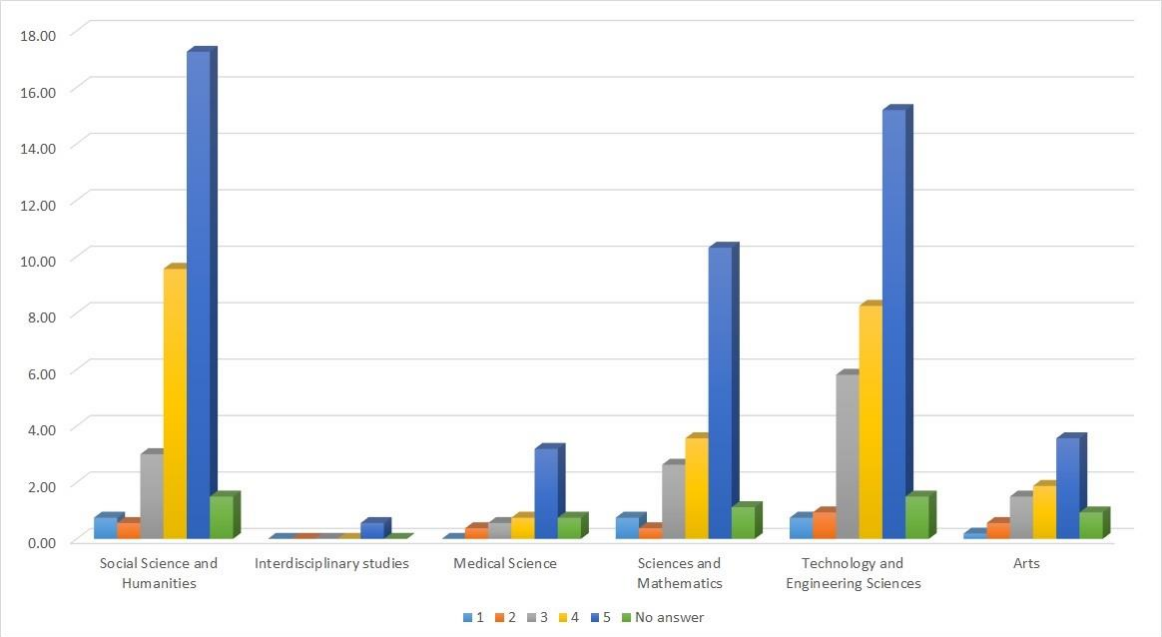

Figure 1.5: Grades for the statement ”eLearning is useful as addition to the F2F classes” - for each field of science.

Grades for statement ”eLearning is useful for students that are working or for students that are unable to go to classes” are given in Table 1.9 grouped by the scientific field. Average

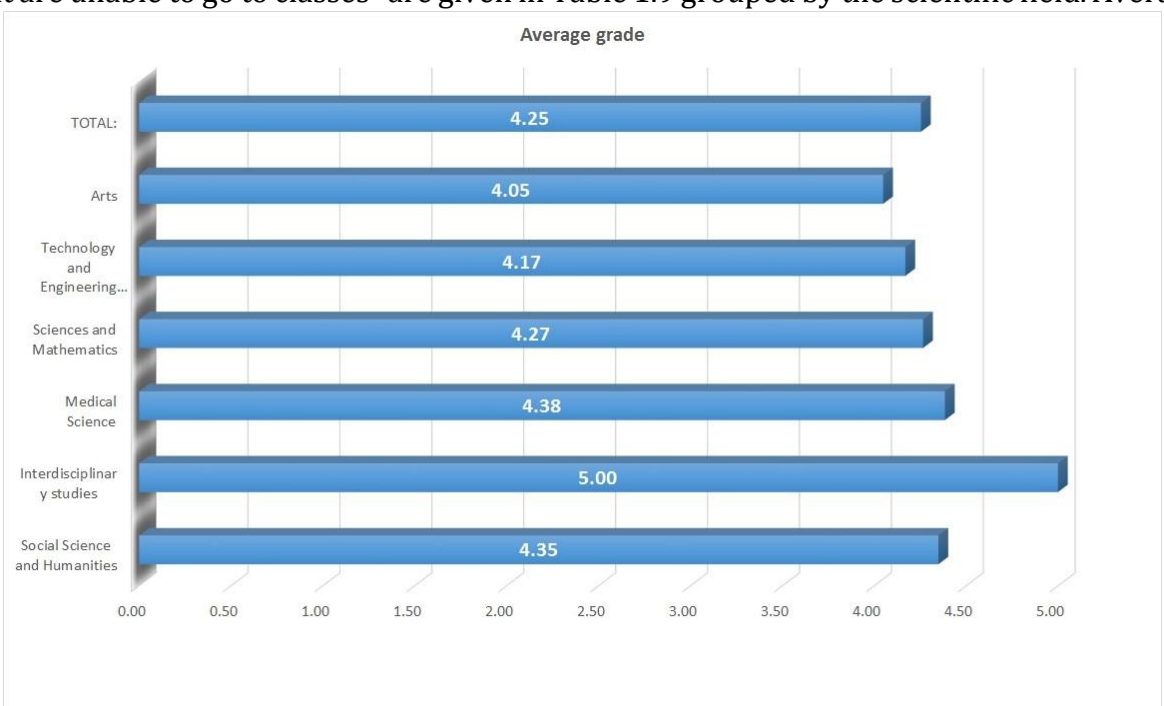

Figure 1.6: Average grades for the statement ”eLearning is useful as addition to the F2F classes” - for each field of science.

Table 1.6: Grades for the statement ”eLearning is useful as addition to the F2F classes” for each position in institutions.

Grade	1	2	3	4	5	No answer	Average grade
Teacher	9	9	45	92	169	21	4.24
Teaching Assistant	4	4	26	35	94	7	4.29
Research Associate	0	0	0	0	1	1	5.00
Lector	0	1	0	1	3	1	4.20
TOTAL:	13	14	71	128	267	30	4.26

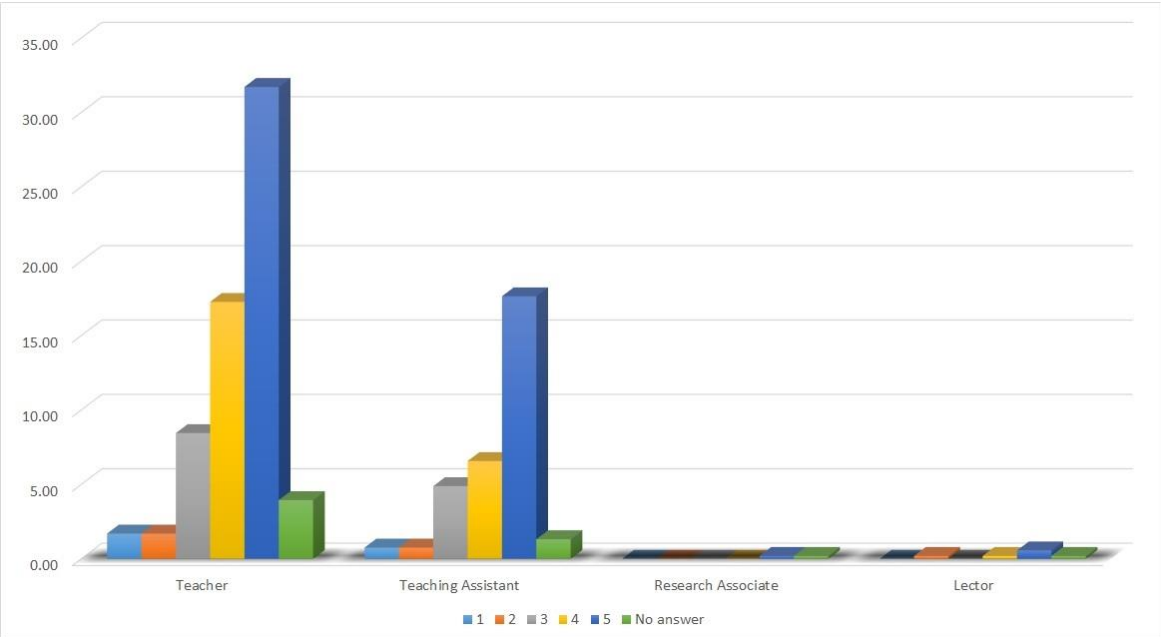

Figure 1.7: Grades for the statement ”eLearning is useful as addition to the F2F classes” - for each position in institutions.

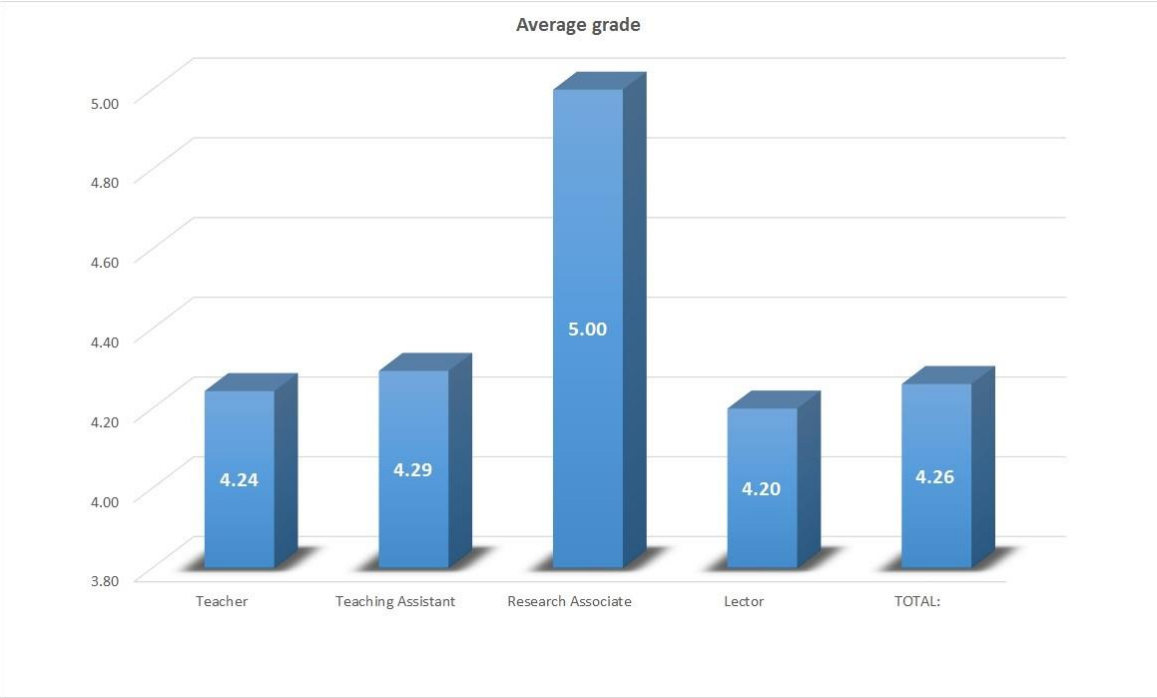

Figure 1.8: Average grades for the statement ”eLearning is useful as addition to the F2F classes” - for each position in institutions.
grades for each scientific field are grouped around the average only the group Science and Mathematics deviates more, but not significant from the average grade 4.24 (Figure 1.14). Figure 1.13 shows number of each grade for each scientific field. Table 1.10 and Figures 1.15 and 1.16 present results of rating the same statement as 1.9, difference is that answers are grouped by position in institution. For this statement results were similar for all groups.

Table 1.7: Grades for the statement ”eLearning does not have the same value as F2F teaching methods” - for each field of science.

Grade	1	2	3	4	5	No answer	Average grade
Social Science and Humanities	26	20	42	40	37	9	3.25
Interdisciplinary studies	0	0	0	2	1	0	4.33
Medical Science	2	4	5	7	8	4	3.58
Sciences and Mathematics	9	17	21	16	32	5	3.47
Technology and Engineering Sciences	20	19	44	38	42	10	3.39
Arts	9	2	16	6	7	6	3.00
TOTAL:	66	62	128	109	127	34	3.34

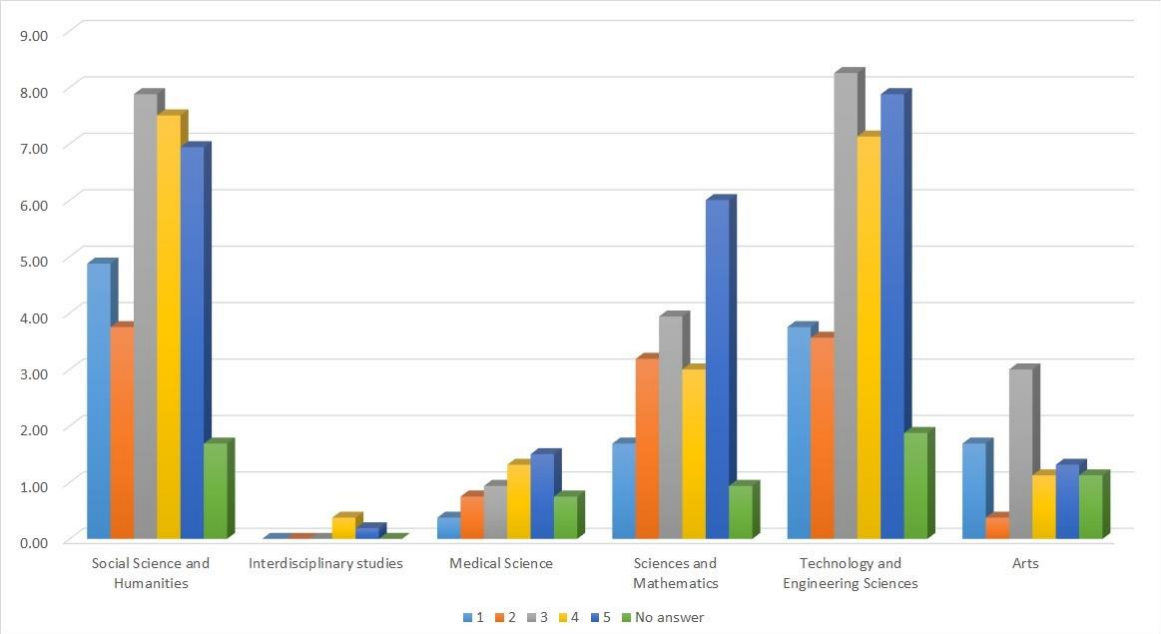

Figure 1.9: Grades for the statement ”eLearning does not have the same value as F2F teaching methods” - for each field of science.

Average grade for statement ”eLearning would be suitable for students of short cycle studies” is 3.85. In Table 1.11 the results for this statement are given grouped by the scientific field. Figure 1.17 presents the results for every scientific field in particular, and Figure 1.18 shows average grades for each group. The second grouping, as for tree previous statements is by position, and Table 1.12 and Figures 1.19 and Figure 1.20 show he results by this criteria.

Statement ”eLearning is useful for the easier adaptation to the individuality of students”. Is graded with average grade 3.29. Interviewed teacher from all fields of science gave similar

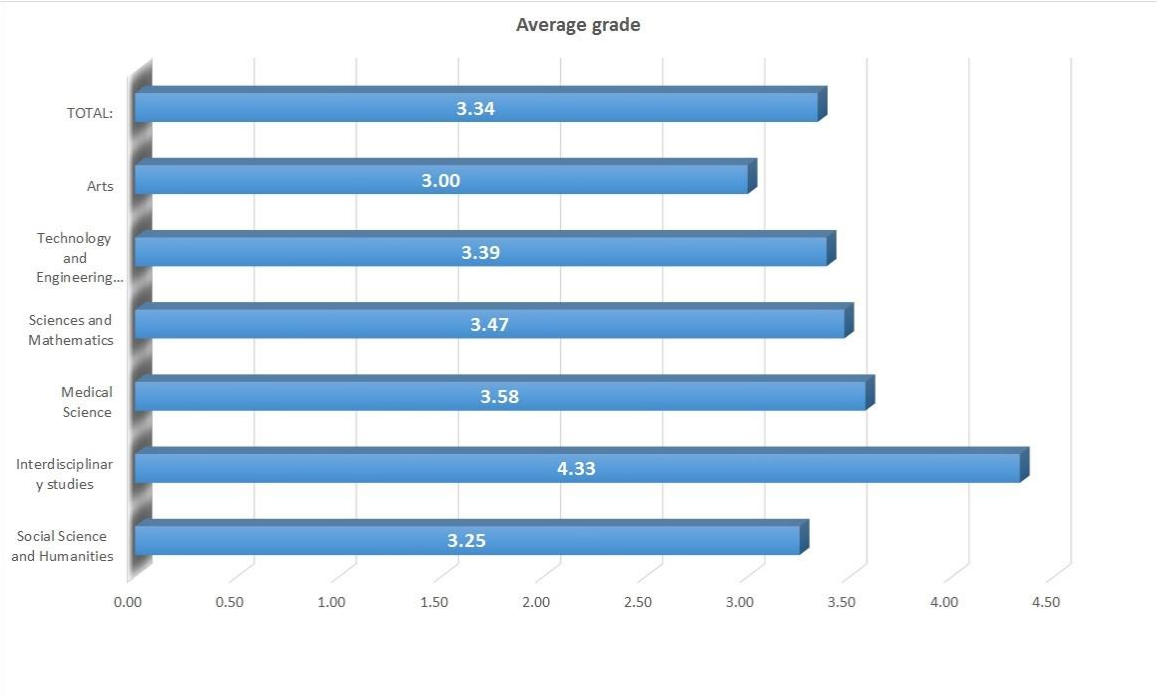

Figure 1.10: Average grades for the statement ”eLearning does not have the same value as F2F teaching methods” - for each field of science.

Table 1.8: Grades for the statement ”eLearning does not have the same value as F2F teaching methods” - for each position in institutions.

Grade	1	2	3	4	5	No answer	Average grade
Teacher	39	41	86	76	78	25	3.35
Teaching Assistant	25	20	40	31	48	6	3.35
Research Associate	0	0	1	0	0	1	3.00
Lector	1	1	1	1	1	1	3.00
TOTAL:	65	62	128	108	127	33	3.35

Table 1.9: Grades for the statement ”eLearning is useful for students that are working or for students that are unable to go to classes” - for each field of science.

Grade	1	2	3	4	5	No answer	Average grade
Social Science and Humanities	4	6	9	54	95	6	4.37
Interdisciplinary studies	0	0	1	0	2	0	4.33
Medical Science	1	0	0	11	13	5	4.40
Sciences and Mathematics	6	8	15	21	45	5	3.96
Technology and Engineering Sciences	7	6	13	55	83	9	4.23
Arts	0	3	4	9	24	6	4.35
TOTAL:	18	23	42	150	262	31	4.24

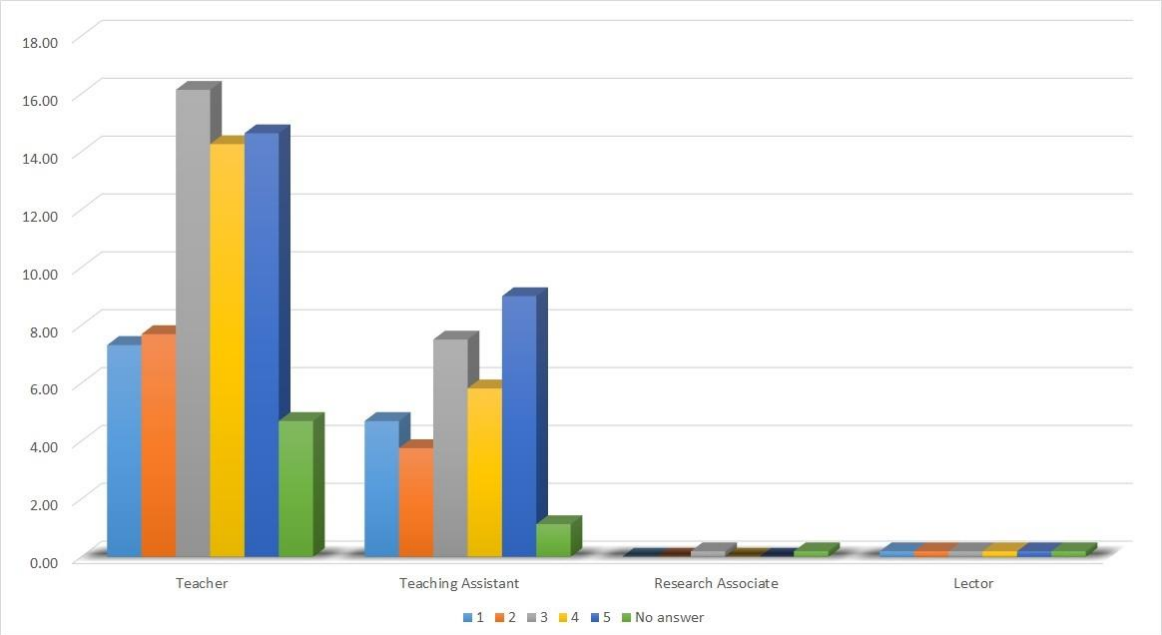

Figure 1.11: Grades for the statement ”eLearning does not have the same value as F2F teaching methods” - for each position in institutions.

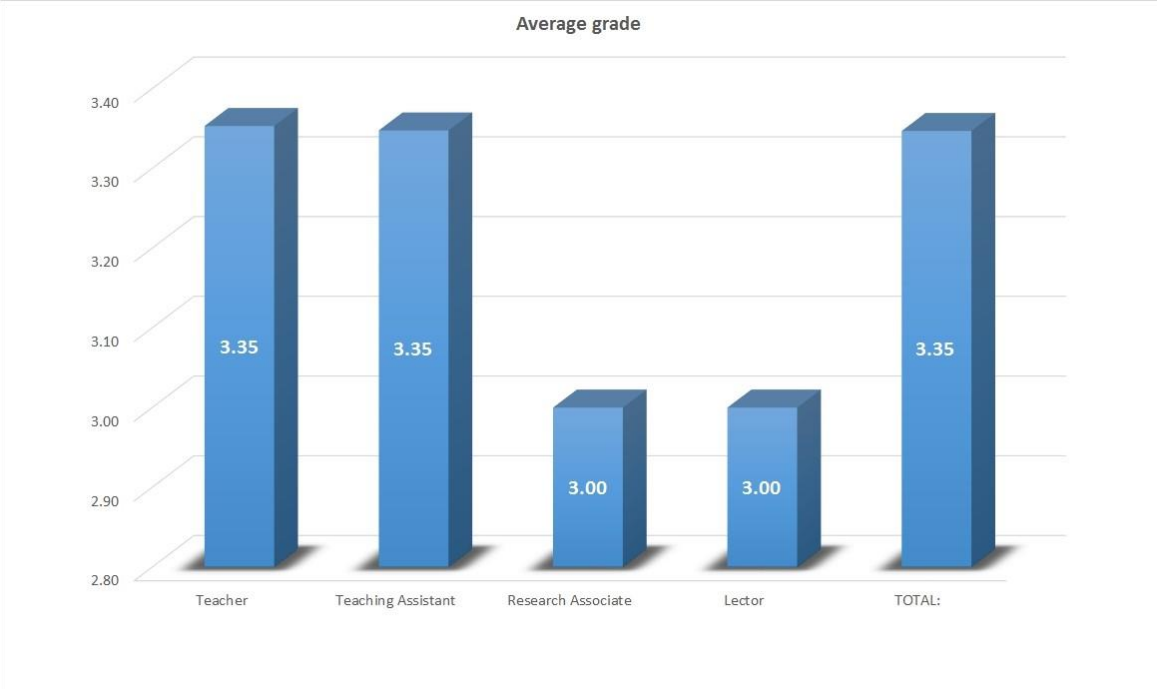

Figure 1.12: Average grades for the statement ”eLearning does not have the same value as F2F teaching methods” - for each position in institutions.

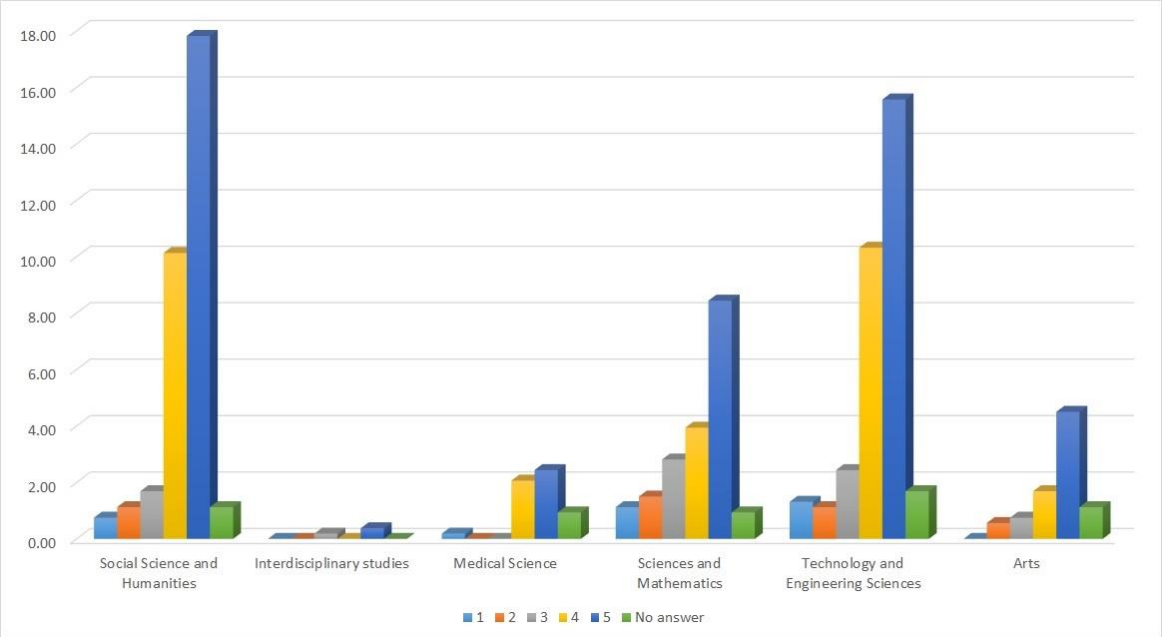

Figure 1.13: Grades for the statement ”eLearning is useful for students that are working or for students that are unable to go to classes” - for each field of science.

Table 1.10: Grades for the statement ”eLearning is useful for students that are working or for students that are unable to go to classes” - for each position in institutions.

Grade	1	2	3	4	5	No answer	Average grade
Teacher	14	14	25	94	177	21	4.25
Teaching Assistant	4	7	17	54	81	7	4.23
Research Associate	0	0	0	1	0	1	4.00
Lector	0	1	0	1	3	1	4.20
TOTAL:	18	22	42	150	261	30	4.25

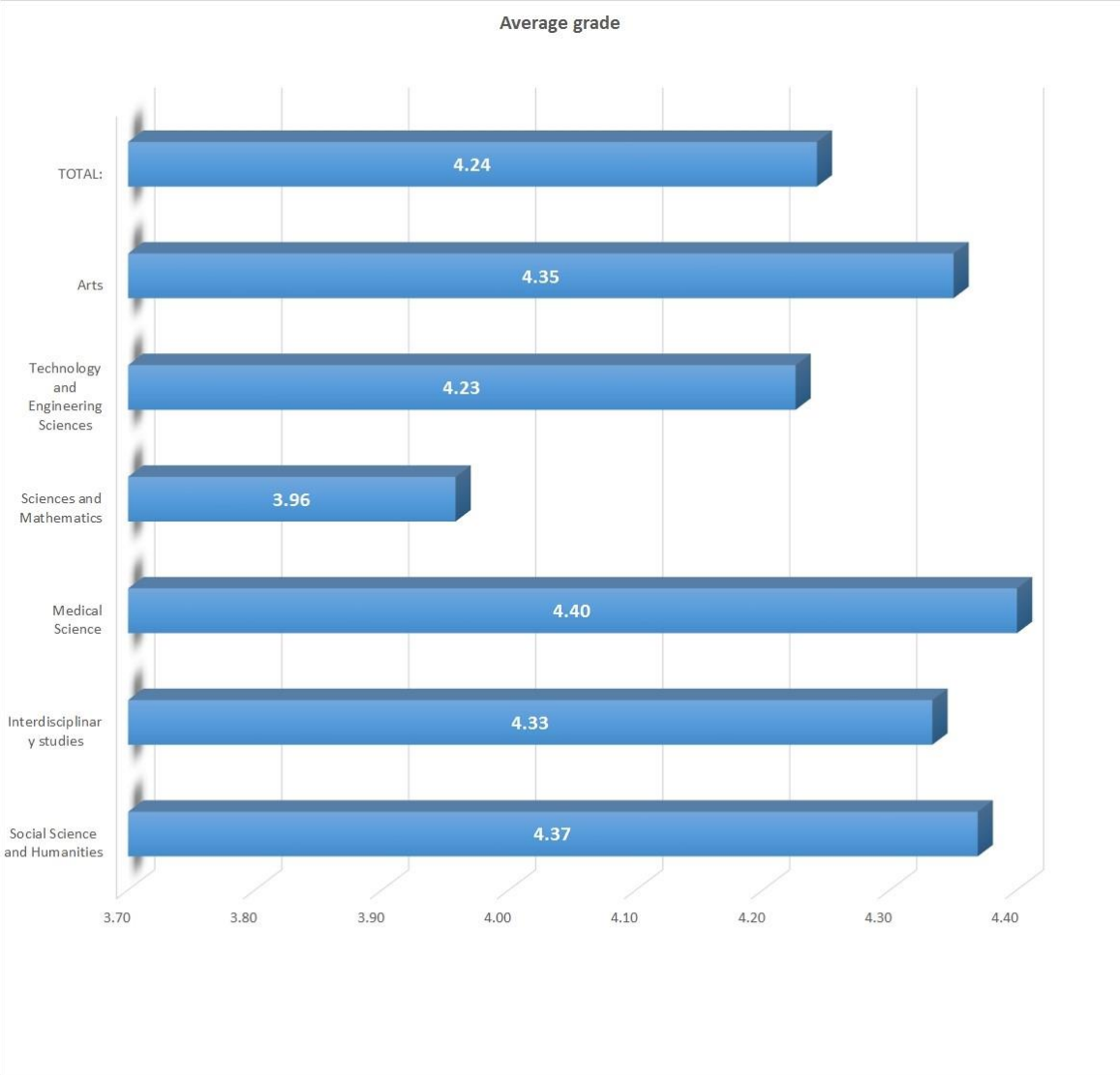

Figure 1.14: Average grades for the statement ”eLearning is useful for students that are working or for students that are unable to go to classes” - for each field of science.

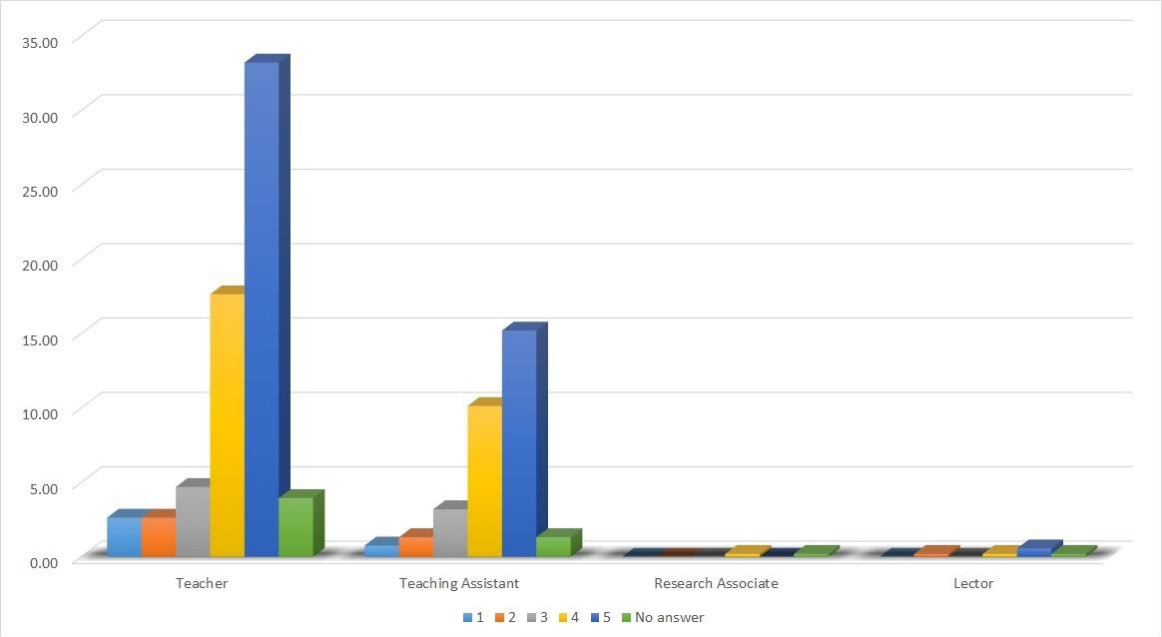

Figure 1.15: Grades for the statement ”eLearning is useful for students that are working or for students that are unable to go to classes” - for each position in institutions.

average grades as it is presented in Table 1.13 and Figures 1.21 and 1.22. Table 1.14, Figure 1.22 and 1.23 present the results for the same statement grouped by position in institution.

Table 1.11: Grades for the statement ”eLearning would be suitable for students of short cycle studies” - for each field of science.

Grade	1	2	3	4	5	No answer	Average grade
Social Science and Humanities	9	9	40	48	60	8	3.85
Interdisciplinary studies	0	0	1	0	2	0	4.33
Medical Science	1	1	6	8	10	4	3.96
Sciences and Mathematics	9	6	22	24	33	6	3.70
Technology and Engineering Sciences	8	9	39	48	58	11	3.86
Arts	2	3	7	7	21	6	4.05
TOTAL:	29	28	115	135	184	35	3.85

In Table 1.15 grades for the statement ”eLearning provides valid way to test the students knowledge” for each field of science is presented. Average grade for this statement is 2.70. Teachers from field of science Sciences and mathematics gave lowest grades comparing to the teachers from other fields of science. And in general, this statement has the worst average grade compering to the previous five statements. Figure 1.24 and Figure 1.25 show the results for same statement grouped by the same criteria.

Grades for statement ”eLearning provides valid way to test the students knowledge” grouped by position in institution are given in Table 1.16, Figure 1.26 and figure 1.27.

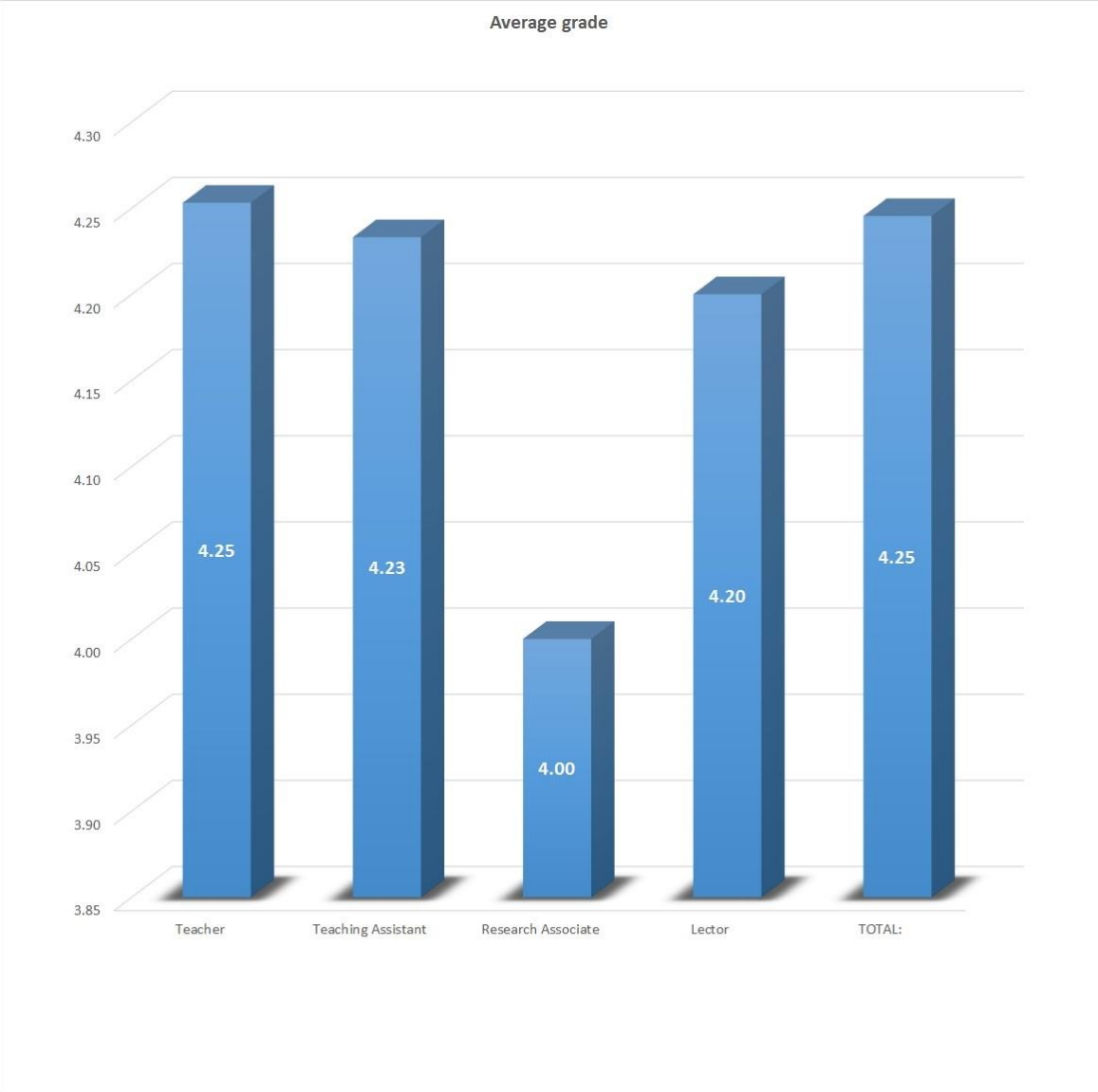

Figure 1.16: Average grades for the statement "eLearning is useful for students that are working or for students that are unable to go to classes" - for each position in institutions.

Table 1.12: Grades for the statement "eLearning would be suitable for students of short cycle studies" - for each position in institutions.

Grade	1	2	3	4	5	No answer	Average grade
Teacher	21	18	68	94	120	24	3.85
Teaching Assistant	8	9	46	39	60	8	3.83
Research Associate	0	0	0	1	0	1	4.00
Lector	0	0	1	1	3	1	4.40
TOTAL:	29	27	115	135	183	34	3.85

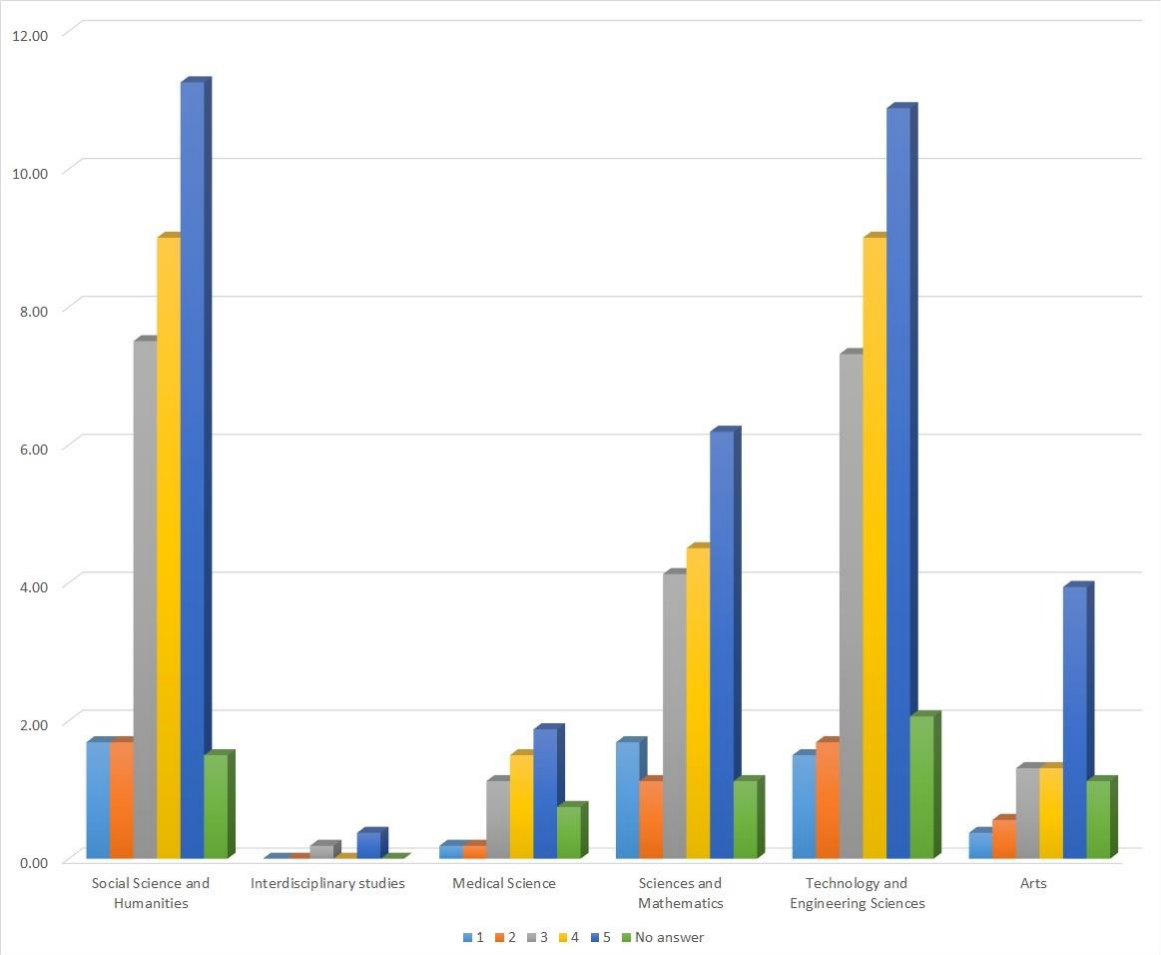

Figure 1.17: Grades for the statement "eLearning would be suitable for students of short cycle studies" - for each field of science.

Table 1.13: Grades for the statement "eLearning is useful for the easier adaptation to the individuality of students" - for each field of science.

Grade	1	2	3	4	5	No answer	Average grade
Social Science and Humanities	13	14	62	35	41	9	3.47
Interdisciplinary studies	0	1	0	1	1	0	3.67
Medical Science	4	4	6	6	5	5	3.16
Sciences and Mathematics	18	9	27	19	21	6	3.17
Technology and Engineering Sciences	21	19	58	34	29	12	3.19
Arts	5	5	12	8	9	7	3.28
TOTAL:	61	52	165	103	106	39	3.29

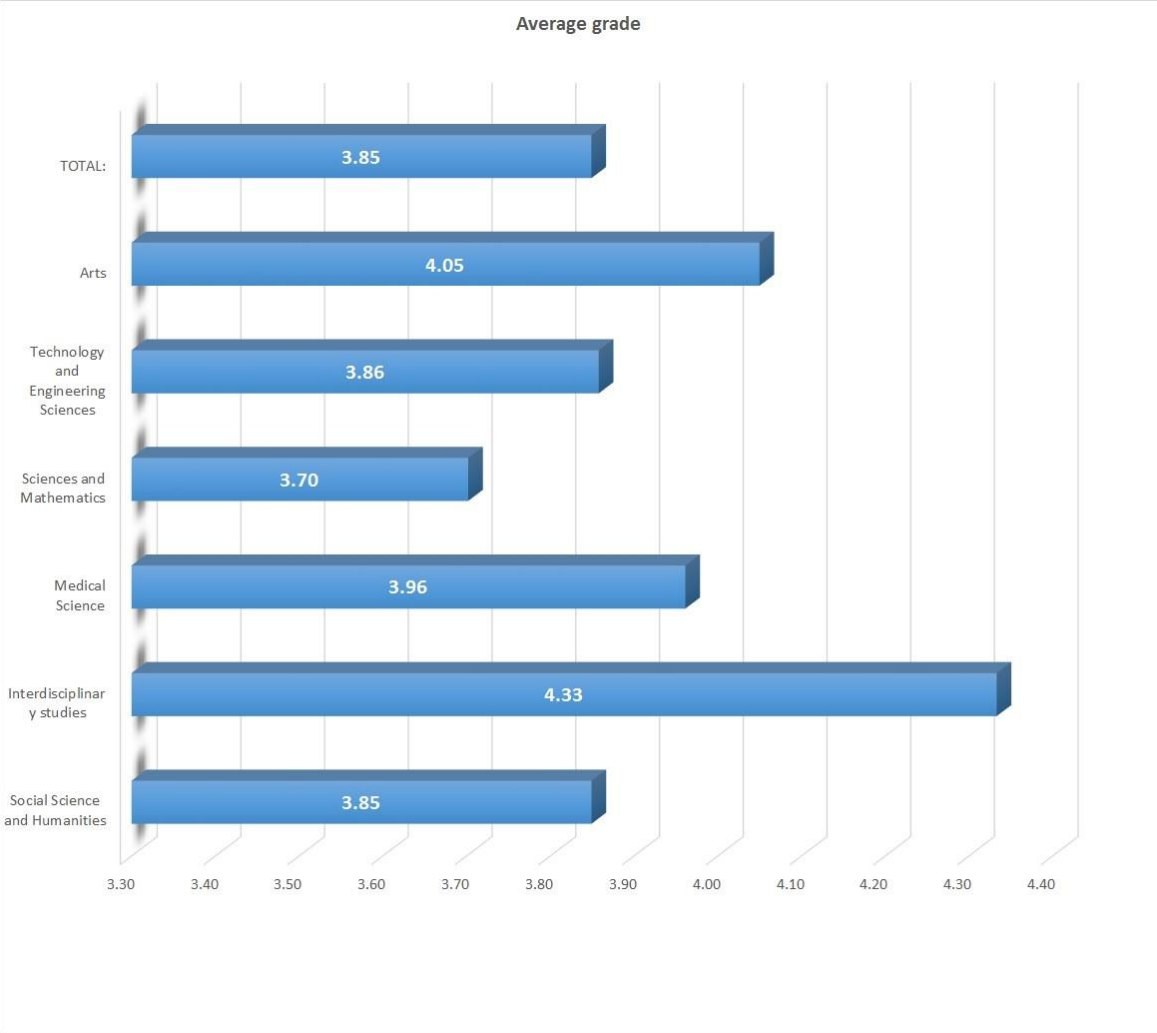

Figure 1.18: Average grades for the statement ”eLearning would be suitable for students of short cycle studies” - for each field of science.

Table 1.14: Grades for the statement ”eLearning is useful for the easier adaptation to the individuality of students” - for each position in institutions.

Grade	1	2	3	4	5	No answer	Average grade
Teacher	44	28	109	73	64	27	3.27
Teaching Assistant	17	21	54	28	41	9	3.34
Research Associate	0	0	0	1	0	1	4.00
Lector	0	1	2	1	1	1	3.40
TOTAL:	61	50	165	103	106	38	3.29

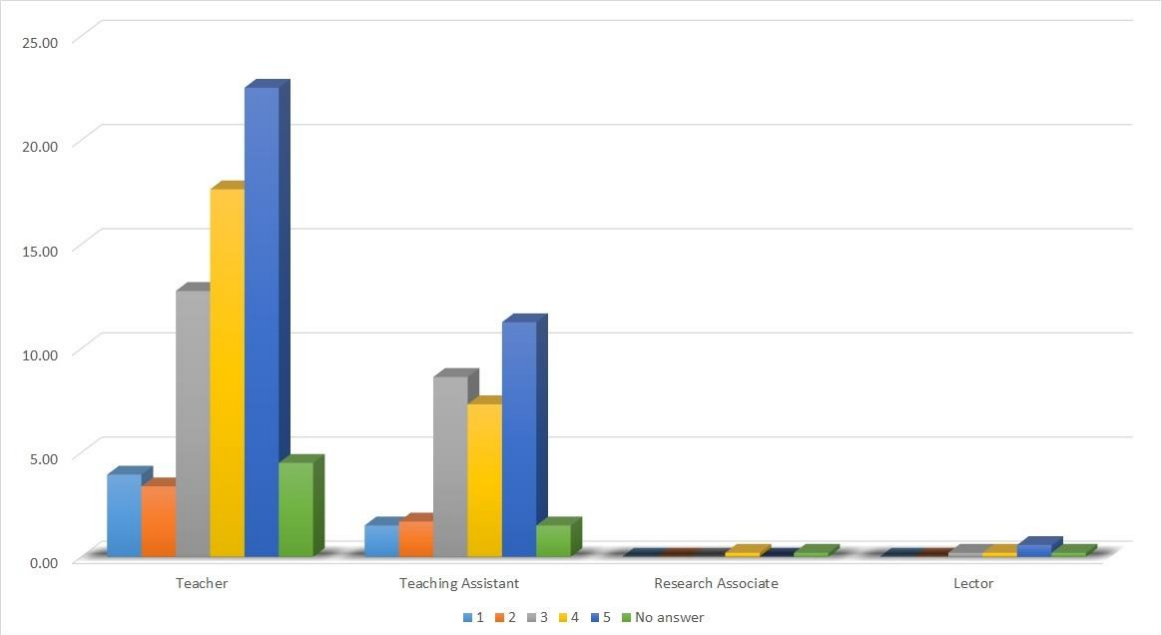

Figure 1.19: Grades for the statement ”eLearning would be suitable for students of short cycle studies” - for each position in institutions.

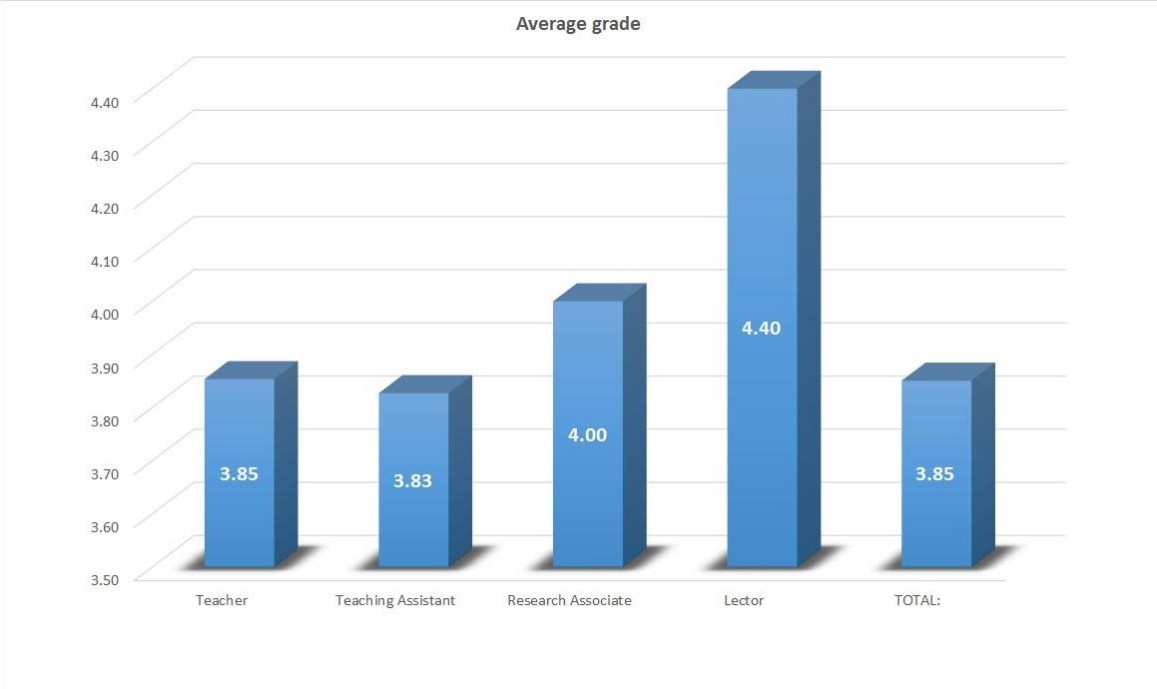

Figure 1.20: Average grades for the statement ”eLearning would be suitable for students of short cycle studies” - for each position in institutions.

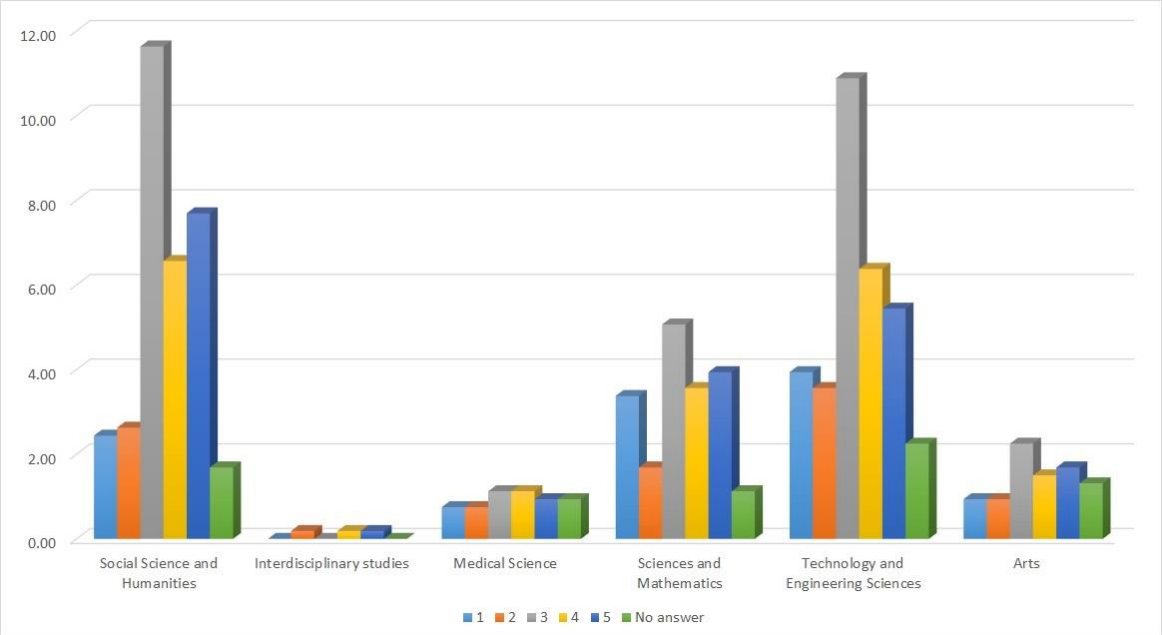

Figure 1.21: Grades for the statement ”eLearning is useful for the easier adaptation to the individuality of students” - for each field of science.

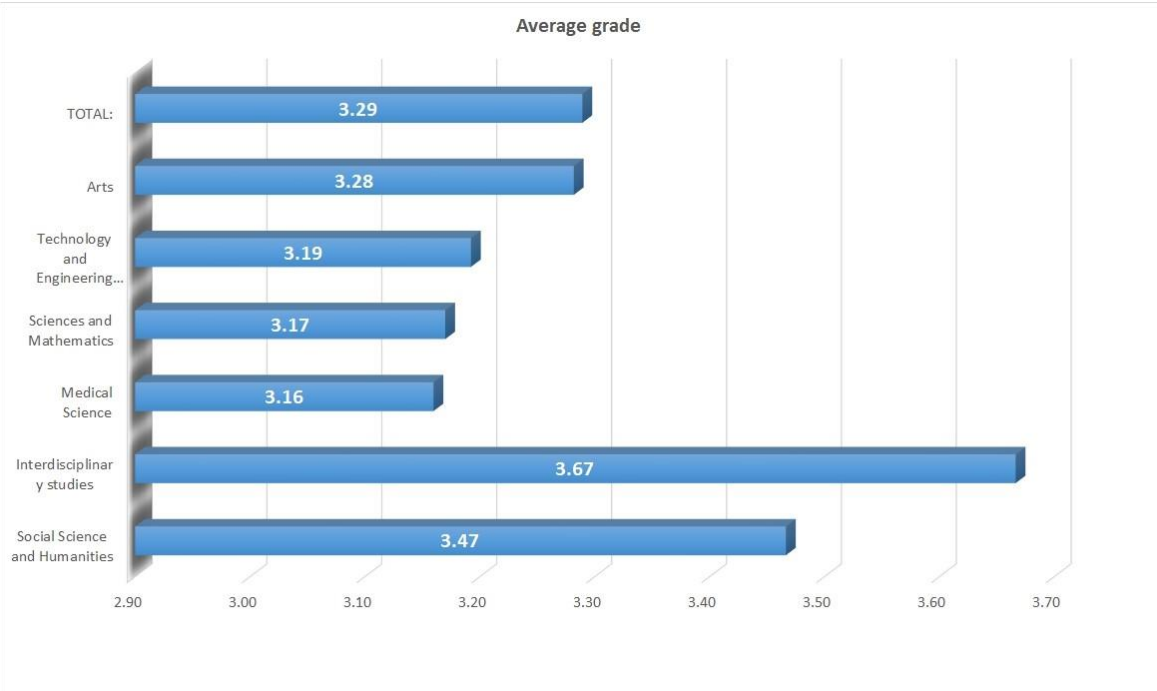

Figure 1.22: Average grades for the statement ”eLearning is useful for the easier adaptation to the individuality of students” - for each field of science.

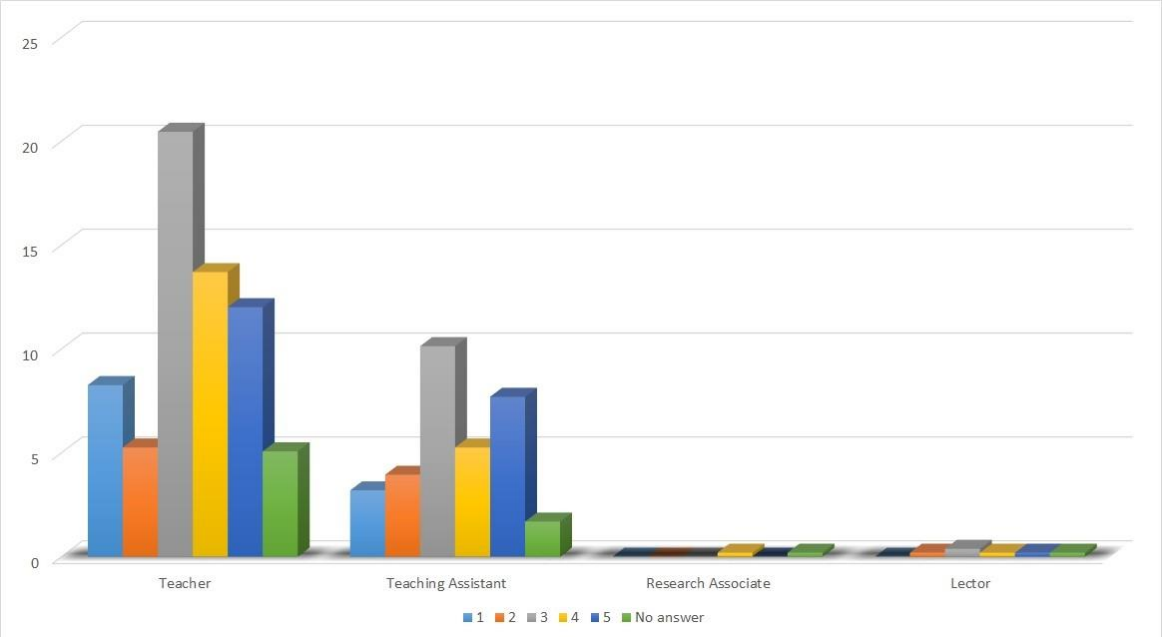

Figure 1.23: Grades for the statement ”eLearning is useful for the easier adaptation to the individuality of students” - for each position in institutions.

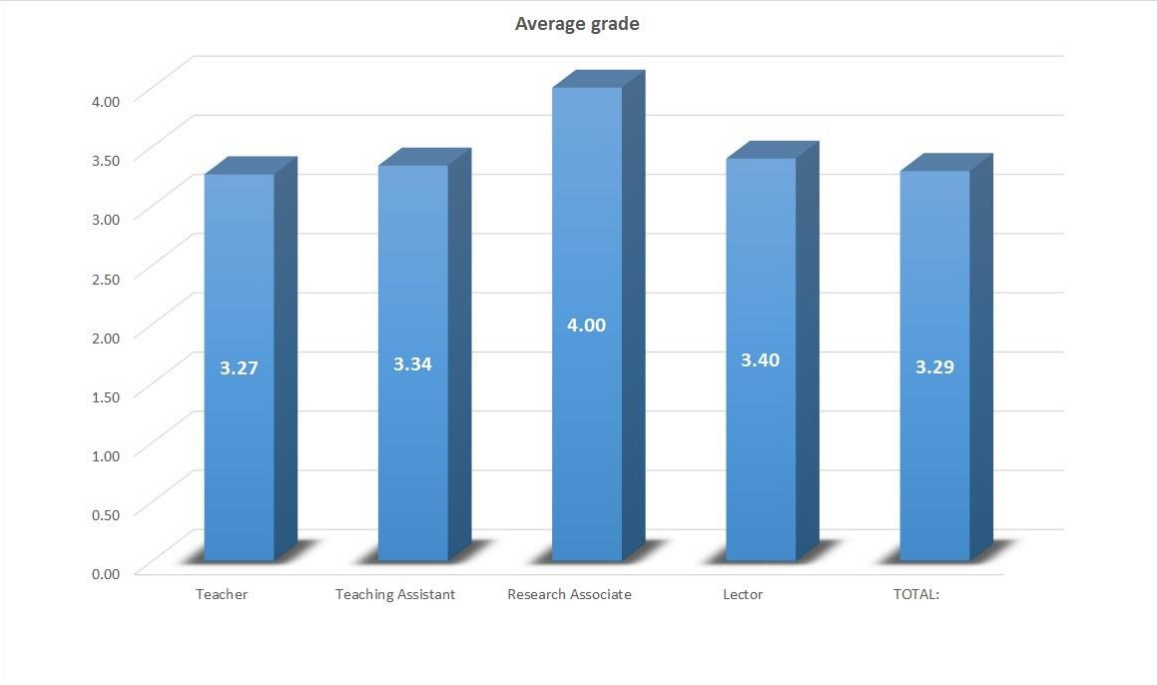

Figure 1.24: Average grades for the statement ”eLearning is useful for the easier adaptation to the individuality of students” - for each position in institutions.

Table 1.15: Grades for the statement ”eLearning provides valid ways to test the students knowledge” - for each field of science.

Grade	1	2	3	4	5	No answer	Average grade
Social Science and Humanities	25	41	58	29	12	9	2.77
Interdisciplinary studies	0	2	0	1	0	0	2.67
Medical Science	3	5	10	5	2	5	2.92
Sciences and Mathematics	26	19	31	13	5	6	2.49
Technology and Engineering Sciences	31	37	55	27	13	10	2.72
Arts	11	6	11	2	7	9	2.68
TOTAL:	96	110	165	77	39	39	2.70

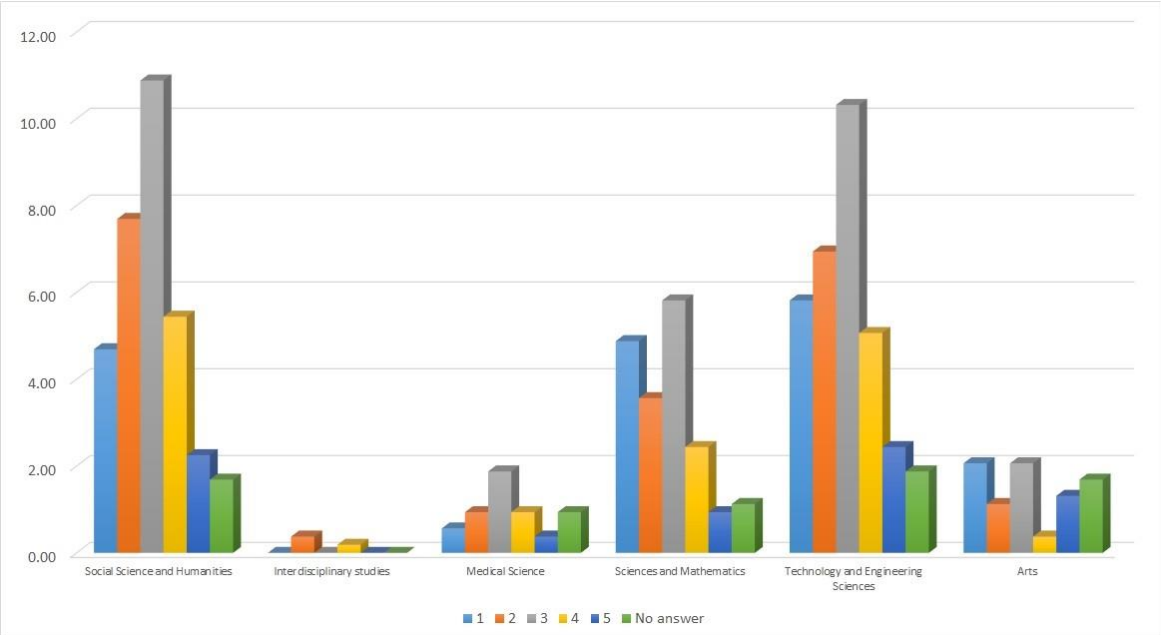

Figure 1.25: Grades for the statement ”eLearning provides valid ways to test the students knowledge” - for each field of science.

Table 1.16: Grades for the statement ”eLearning provides valid ways to test the students knowledge” - for each position in institutions.

Grade	1	2	3	4	5	No answer	Average grade
Teacher	63	64	115	47	27	29	2.72
Teaching Assistant	32	42	48	29	12	7	2.67
Research Associate	0	1	0	0	0	1	2.00
Lector	1	1	2	1	0	1	2.60
TOTAL:	96	108	165	77	39	38	2.70

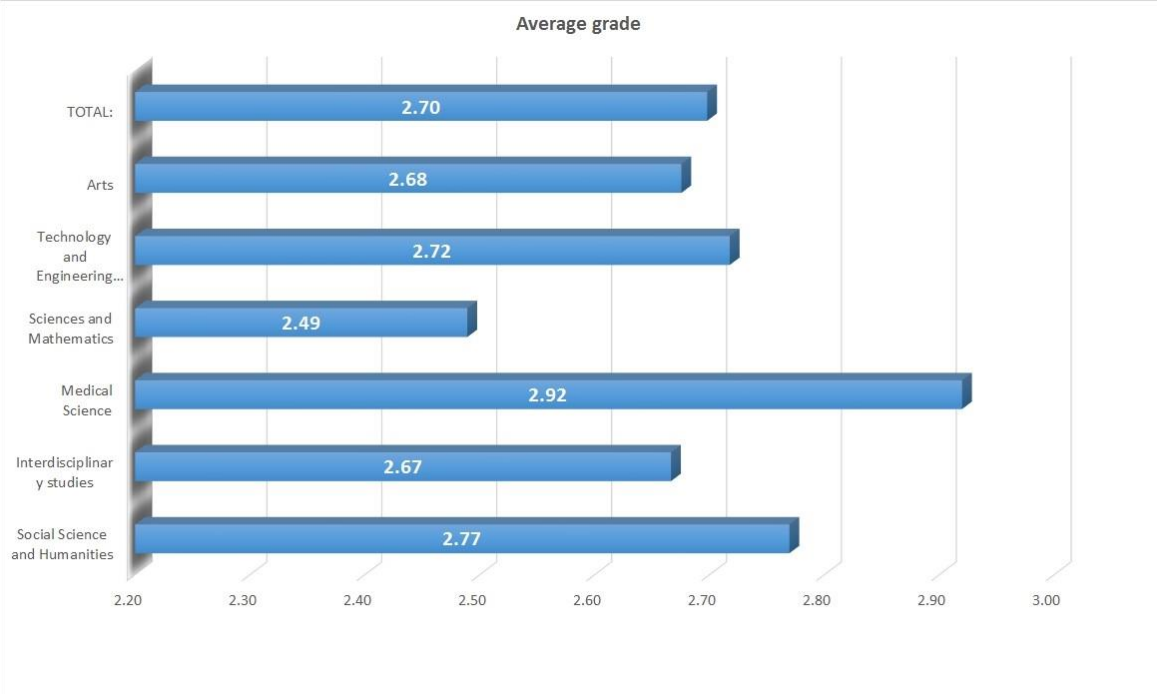

Figure 1.26: Average grades for the statement ”eLearning provides valid ways to test the students knowledge” - for each field of science.

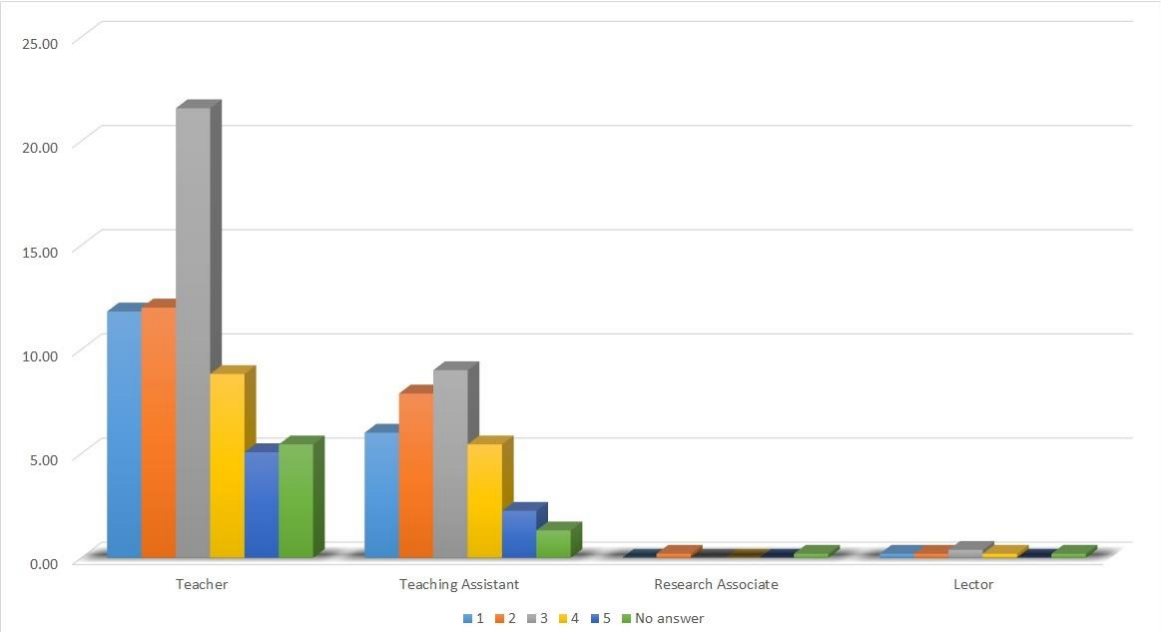

Figure 1.27: Grades for the statement ”eLearning provides valid ways to test the students knowledge” - for each position in institutions.

Figure 1.28: Average grades for the statement ”eLearning provides valid ways to test the students knowledge” - for each position in institutions.

Chapter 2

Survey of eLearning methodologies and technologies in Republic of Serbia

2.1 Introduction

As a part of the activities in Working Packages 3 and 4 in the ERASMUS+ project PT & SCHE, the survey about Part-Time (PT), Short Cycle (SC) studies and eLearning in higher education in Serbia was conducted. The electronic survey was created using Google Forms, and the link was distributed. The survey was available to the teachers for one month, from September 19th until October 18th and received 533 filled responses. The survey was anonymous.

The questions in the survey for the part of eLearning methodologies and technologies was created by the VISER (School of Electrical and Computer Engineering of Applied Studies) and OUNL (Open University of the Netherlands) partners of the project, with help from other partners, especially team leader for the Working Package 3 University of Kragujevac. Regarding the eLearning methodologies and technologies there were 8 questions, and these question will be discussed in the next section of the report, while in this section the introductory questions and their responses will be presented.

2.2 E-learning technologies and methodologies

On the question **"What do you think are the biggest challenges and risks for the introduction of eLearning in Schools and Faculties, and what are the biggest advantages?"** around 180 responses were received. Some of these responses are very similar to one another. We have created the comprehensive table that contains the answers, mainly the ones that are repeated with same or different wording among the answers (Table 5.2.x). For the challenges and risks, the answer cover several topics, such as technology aspects, methodology aspects, as well as more general topics such as exams and diplomas. Regarding the technologies the main concerns are familiarity of teacher to the technologies, willingness to learn and adopt to them, hardware and software support to these technologies, adaptation of the materials to the new technologies, and high work-load for the teachers during the preparation of these materials. Listed technology challenges also included the remainder that **Table 2.1:** Modalities offered to students by the institution in different fields of science.

Answer	Social Science and Humanities	Interdisciplinary studies	Medical Science	Sciences and Mathematics	Technology and Engineering Sciences	Arts	TOTAL
No answer	8	0	7	3	13	11	42
Access to computer classrooms	145	3	18	93	148	28	435
Wi-Fi	131	3	19	74	142	27	396
E-mail accounts within the institutional network	81	2	11	72	105	15	286
Online course catalog	97	3	8	71	123	21	323
Online access to library	83	2	8	37	49	19	198
Online testing	29	1	1	11	48	6	96
Student portal for learning and communication	45	2	2	37	72	5	163
ePortfolio	13	1	1	12	21	6	54

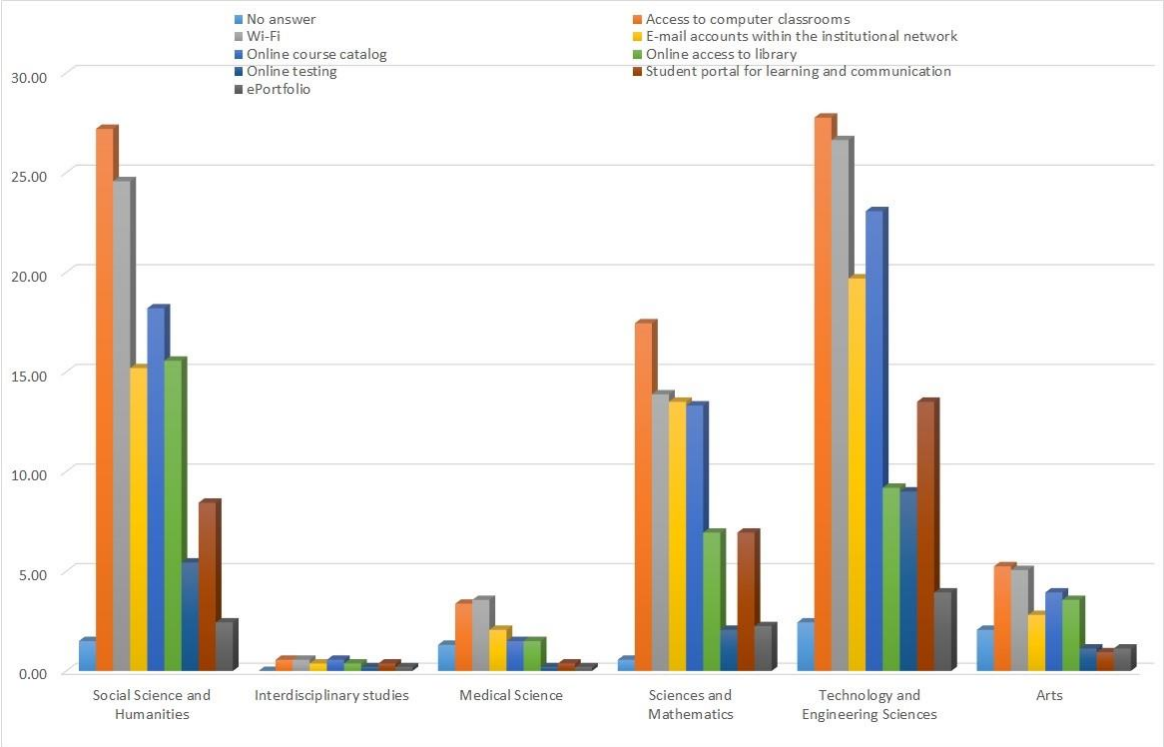

Figure 2.1: Modalities offered to students by the institution in different fields of science.

Table 2.2: Hardware, as a support to eLearning, that students use during lessons.

Answer	Number	%
No answer	113	21.20
Their mobile devices (eg. phones, tablets)	200	37.52
Their laptops and desktops	278	52.16
Mobile institution devices (eg. phones, tablets)	39	7.32
Laptops and desktop institution computers	326	61.16

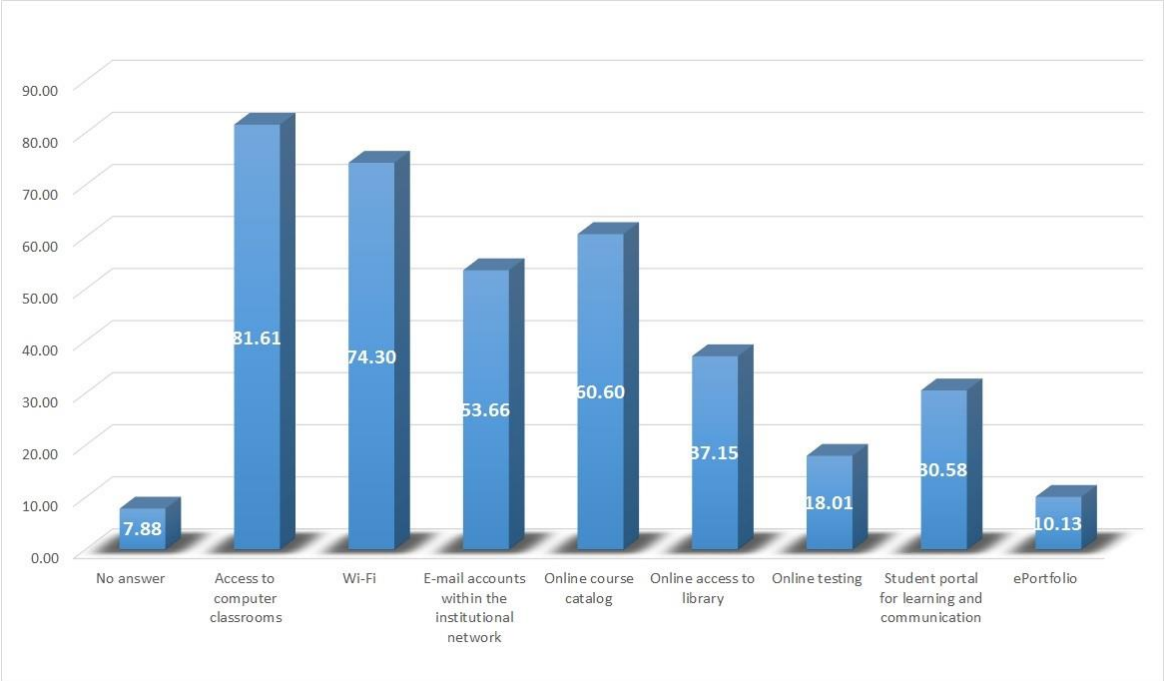

Figure 2.2: Modalities offered to students by institutions.

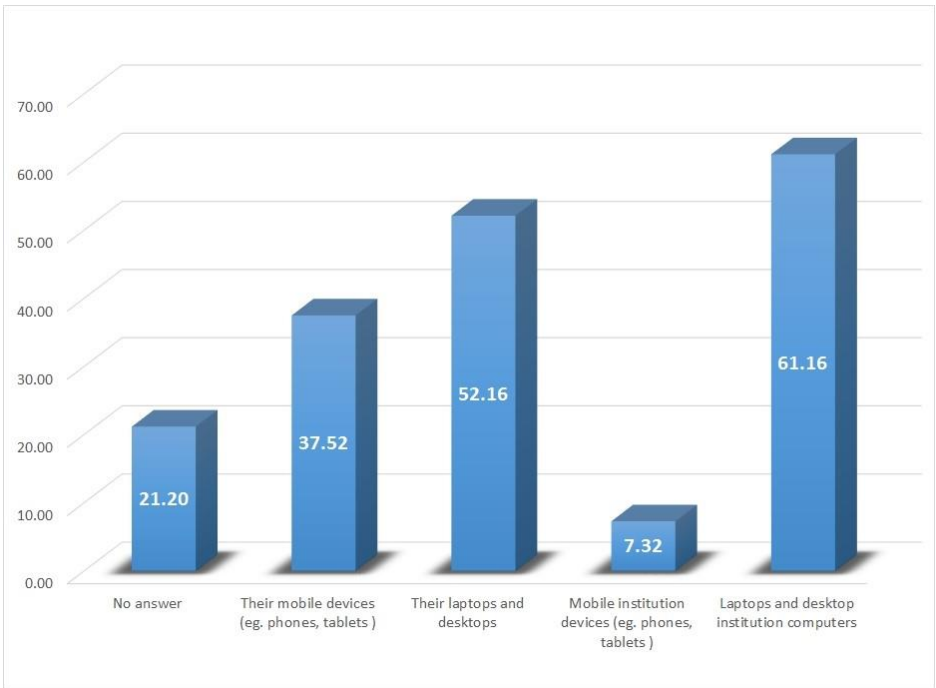

Figure 2.3: Hardware, as a support to eLearning, that students use during lessons.
Table 2.3: Authoring tools that are used by institutions in different fields of science.

Answer	Social Science and Humanities	Interdisciplinary studies	Medical Science	Sciences and Mathematics	Technology and Engineering Sciences	Arts	TOTAL
No answer	31	0	8	14	19	20	92
Software for presentations (eg. Keynote, PowerPoint)	131	1	18	72	134	14	370
HTML editors	16	1	2	15	36	1	71
Text editors (eg. MS Word, Pages, Open Office, LaTeX)	103	1	13	42	119	10	288
Audio / Video editors (eg. Adobe Captivate, iMovie, Camtasia, Audacity)	29	1	5	14	38	13	100
Editors within distance learning systems	11	1	0	8	32	2	54

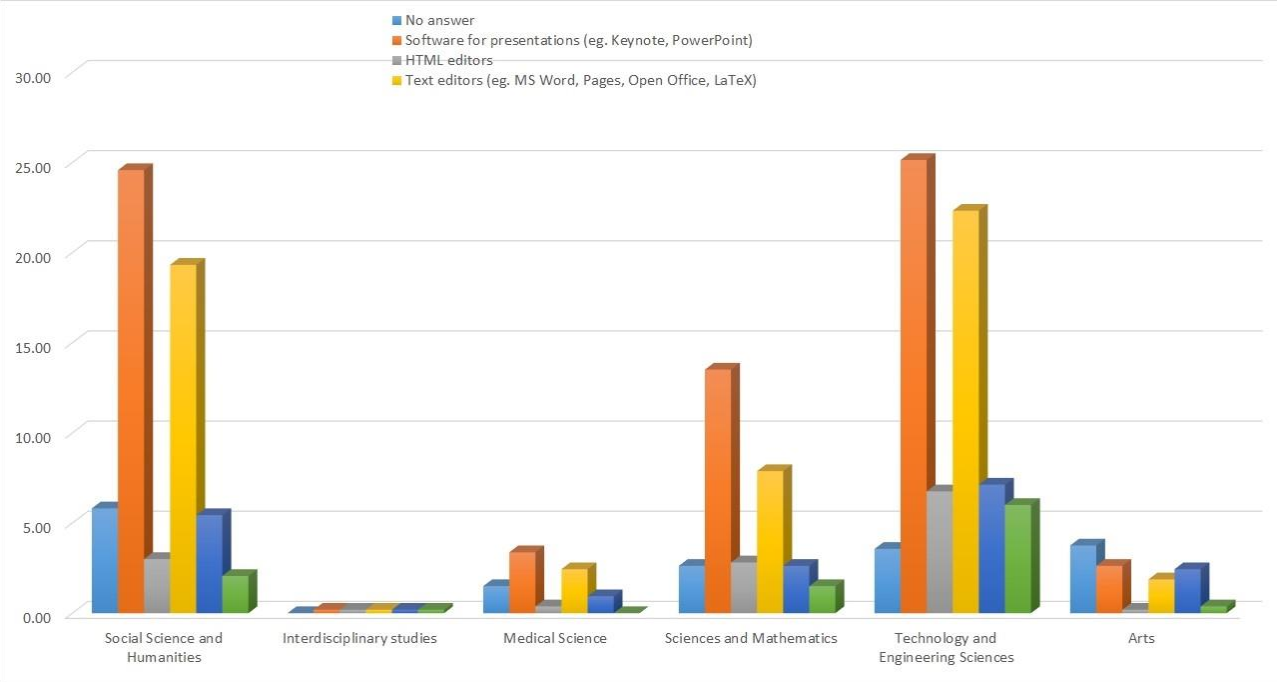

Figure 2.4: Authoring tools that are used by institutions in different fields of science.

Table 2.4: Authoring tools that are used by people with different positions in the institutions.

Answer	Teacher	Teaching Assistant	Research Associate	Lector
No answer	67	138	1	2
Software for presentations (eg. Keynote, PowerPoint)	237	127	1	4
HTML editors	45	25	0	0
Text editors (eg. MS Word, Pages, Open Office, LaTeX)	206	130	1	4
Audio / Video editors (eg. Adobe Captivate, iMovie, Camtasia, Audacity)	62	36	0	1
Editors within distance learning systems	36	26	0	1

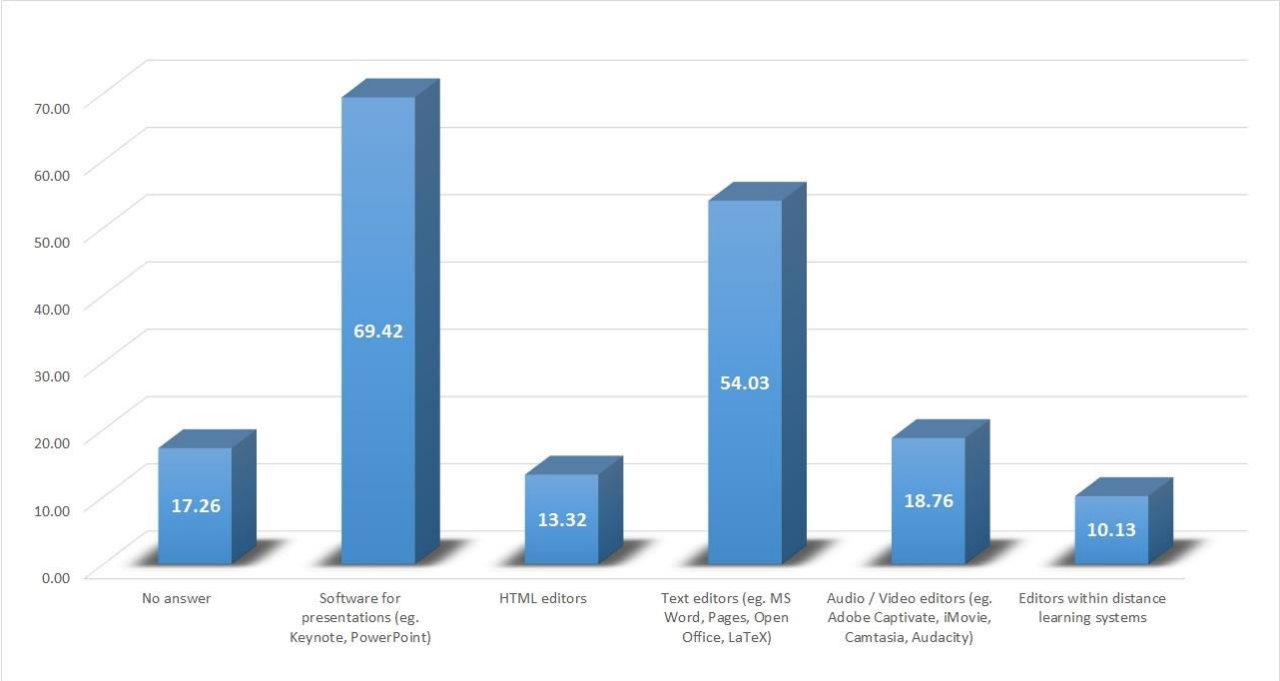

Figure 2.5: Authoring tools that are used by institutions.

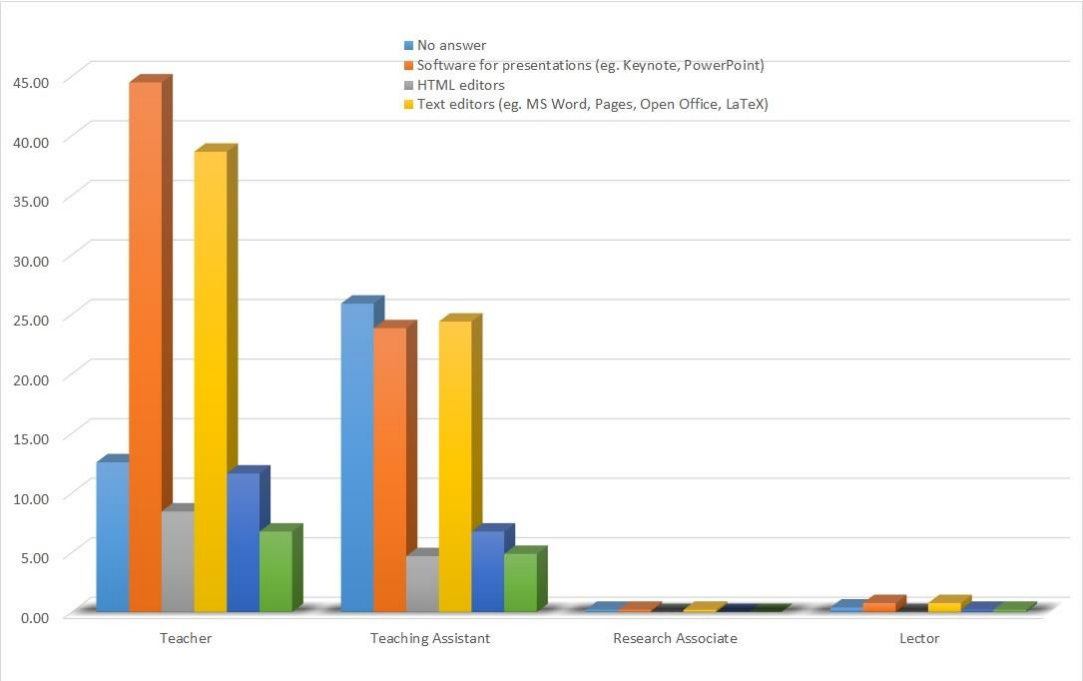

Figure 2.6: Authoring tools that are used by people with different positions in the institutions.

Table 2.5: Technology enhanced methods that are used in eLearning in institutions.

Answer	I use now and I will use in 5 years.	I use now, but I don't plan to use it in 5 years.	I do not use now, but I will use in 5 years.	I do not use now and don't plan to use it in 5 years.	No answer
Ebooks, text lessons in electronic form, presentations lesson	367	10	74	18	64
Simulations	183	13	155	71	111
Social networks	129	14	124	168	98
Blogs and wiki pages	99	20	109	178	127
Online courses, eLearning platforms	112	24	190	89	118
MOOC courses	26	8	125	187	187
Podcasts (including audio or video recordings of lessons)	61	15	176	129	152
Interactive resources (including eg. serious games applications for augmented reality, virtual reality applications)	44	22	174	146	147
Interactive ebooks	83	23	211	80	136
Software for collaboration (eg. Google docs, Skype)	173	21	135	76	128
Virtual classroom and / or resources for video conferencing (eg. Skype, hangout, collaborate)	75	22	184	116	136
Resources for learning on a mobile phone	42	23	166	169	133

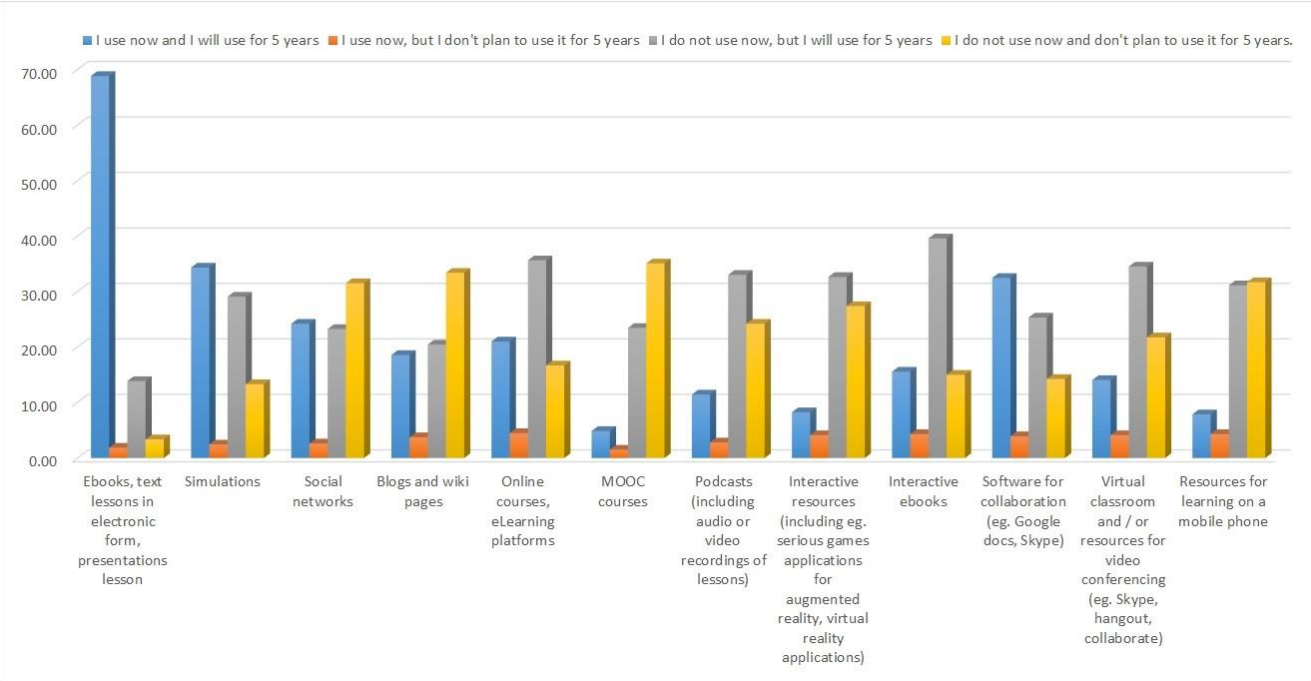

Figure 2.7: Technology enhanced methods that are used in eLearning in institutions.

Table 2.6: Grades for familiarity with eLearning platforms.

Grade	1	2	3	4	5	No answer	Average grade
Moodle (LMS)	193	54	59	65	103	59	2.64
Blackboard (LMS)	340	49	41	14	12	77	1.48
Wordpress (CMS)	268	57	63	32	39	74	1.95
LAMS	357	37	29	14	18	78	1.46
Joomla	290	63	54	22	26	78	1.75
TOTAL:	1448	260	246	147	198	366	1.86

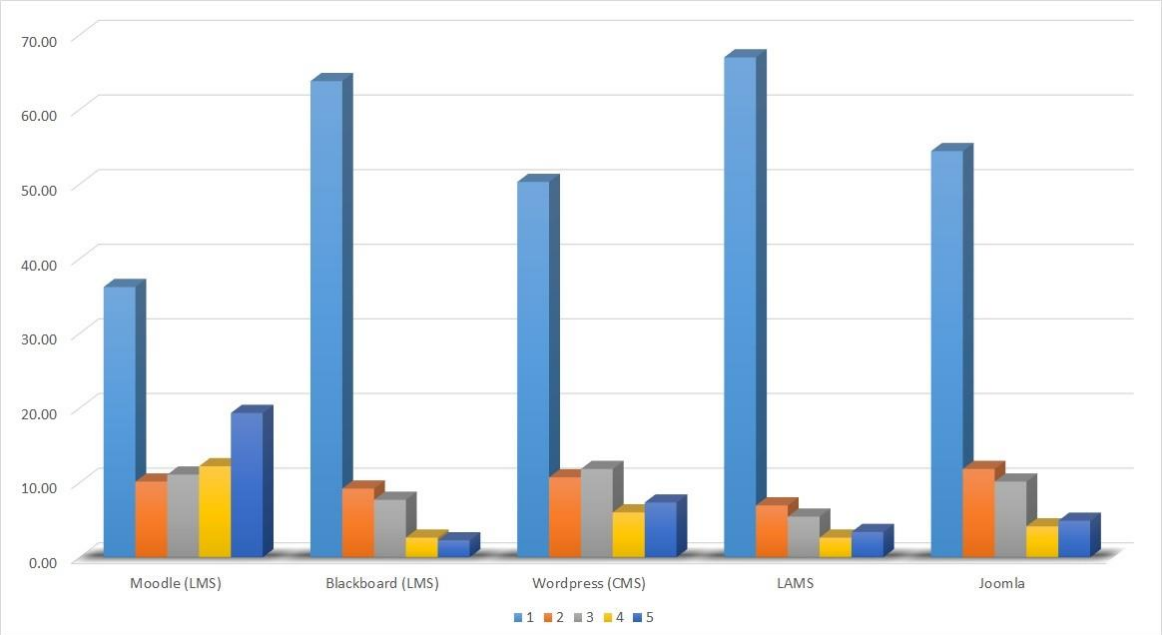

Figure 2.8: Grades for familiarity with eLearning platforms.

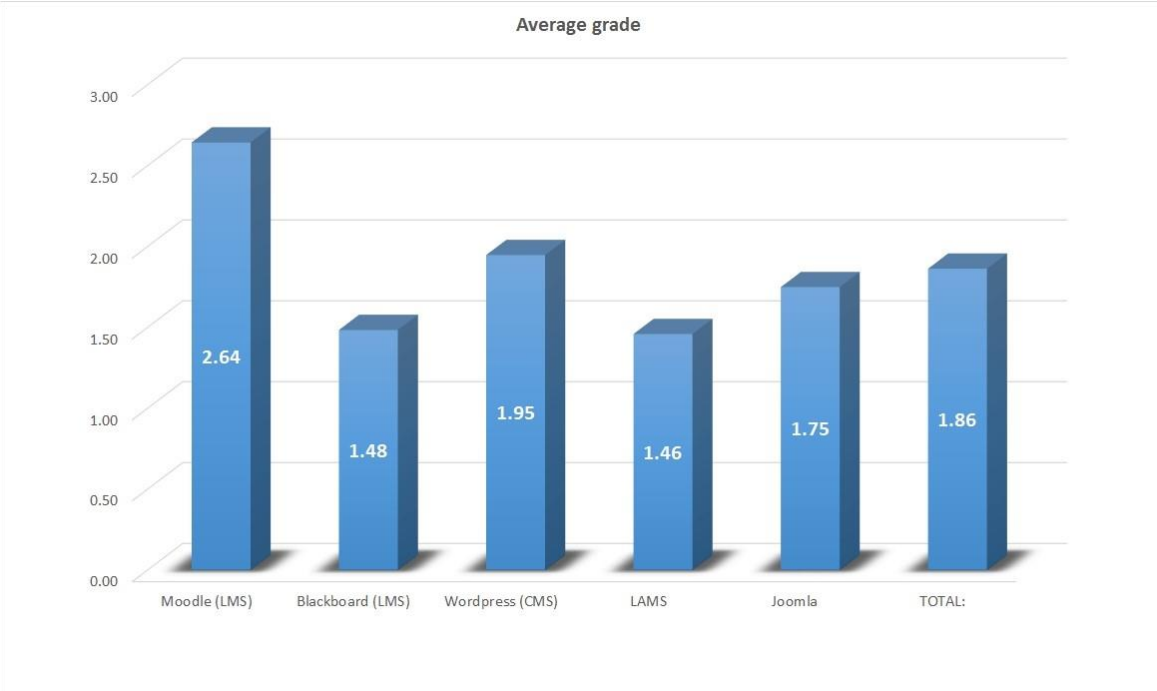

Figure 2.9: Average grades for familiarity with eLearning platforms.

Table 2.7: The most frequently used instructional design by institutions in different fields of science.

Answer	Social Science and Humanities	Interdisciplinary studies	Medical Science	Sciences and Mathematics	Technology and Engineering Sciences	Arts	TOTAL
No answer	17	0	3	11	21	6	58
I am not informed about these models	102	2	18	43	72	28	265
Learning model based on problem solving	31	1	5	27	50	7	121
Learning model based on asking questions	19	0	2	14	18	1	54
Layered model	4	0	2	5	10	4	25
4C/ID model	1	0	0	0	1	0	2
ASSURE model	0	0	0	0	1	0	1

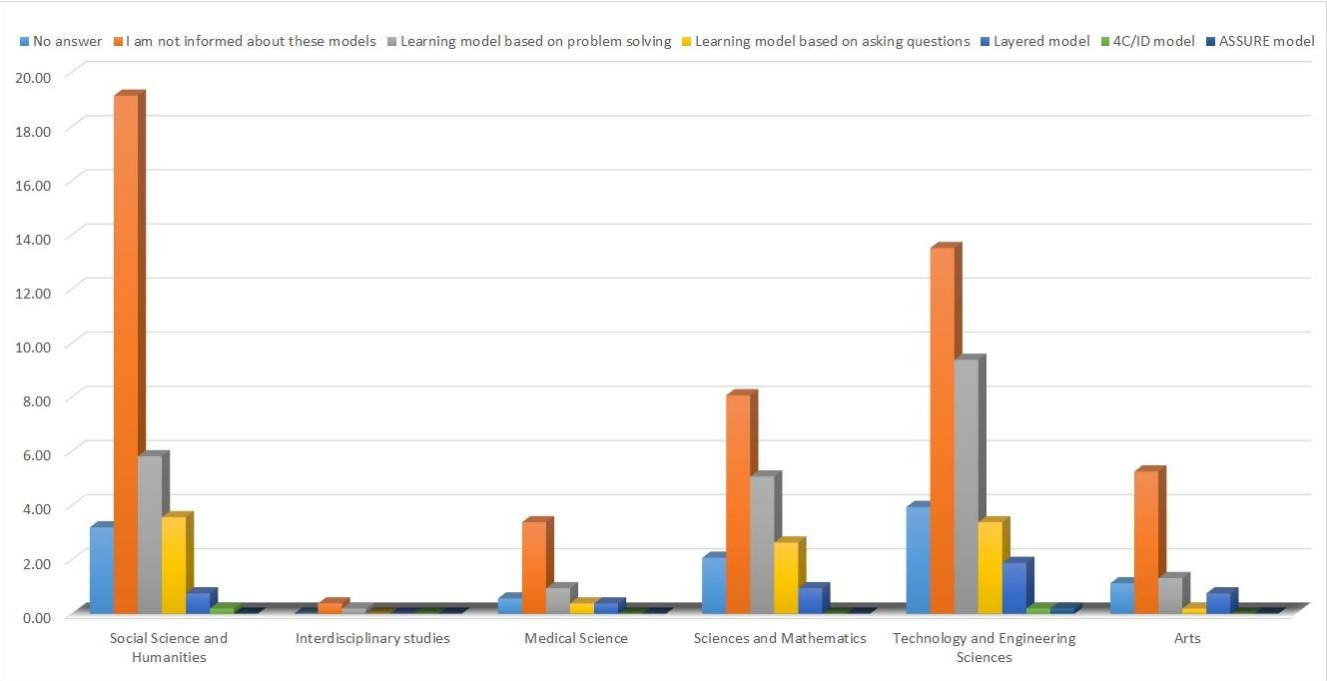

Figure 2.10: The most frequently used instructional design by institutions in different fields of science.

Table 2.8: Challenges, risks, and advantages of introduction of eLearning in Schools/Universities.

Challenges	Risks	Advantages
Teacher training in the field of	Some of the teachers do not accept new	Different possibilities to present a
Adjustment of the existing courses to eLearning	Authorization of content	Easer adaptation of materials
Misuse of on-line system	Quality of exams	Easier access to course materials
Grading	Lowering quality	High efficiency of knowledge acceptance
Changing the long established practice and getting used to the change	Some courses can't be translated in eLearning material	Faster communication with students
New regulative and standardization necessary	Corruption	Automation of grading
Limitations of hardware and software support, infrastructure and support needed	Misuse and fraud during testing	Interactive learning
Constant changes in the technologies	Identity of students	Access to relevant information
Updating the material more often	Lower quality of lectures, knowledge and diplomas	Time and space savings
Lost of the objectivity	Trading of education	Higher competitiveness of
No vision from management of the Institution	Lowering creativity in work	Transparency
Teaching in English	Misuse and sellout of diplomas	Availability
Combining the F2F with eLearning	To many informations	Impartial grading
Distrust	Departure from the topic of the course	Flexibility
Alienation of students,no social component for student, dehumanization, no interactions in the classroom, not enough dialogs and debates	Inability to follow students' progress	It is helpful for students that work or for other reasons are unable to attend the F2F classes
No understanding of the core of the	Internet access	Individual work
No practical work	Hacking	Larger groups of students
Low level of understanding the	Lowering the position of the education in	International compatibility
Digitalization of materials takes time	Lowering the ability of students to solve	Higher efficiency
	Domination of the form over contents	Application of computer technologies and development of digital competences
	Spending the money on something that is not needed	Activities for students
	Exams become question of the number of tries	Life-long learning
	Large work load for teachers for a small gain in students knowledge	Connections between different institutions
	Lowering competences of graduates	Following the new and modern ways of education
	To much of the segmentations and visualization of a course content	Cheaper studies
	Acceptance of these diplomas and certificates from employers	Crowd-sourcing
	Lower involvement of students leads to longer duration of studies	Distance laboratories
	Time for the introduction of new methods	New way of financing for Schools and Universities
		Electronic literacy
		Good as an addition to the traditional education
		Possibility of larger number of students for Institution

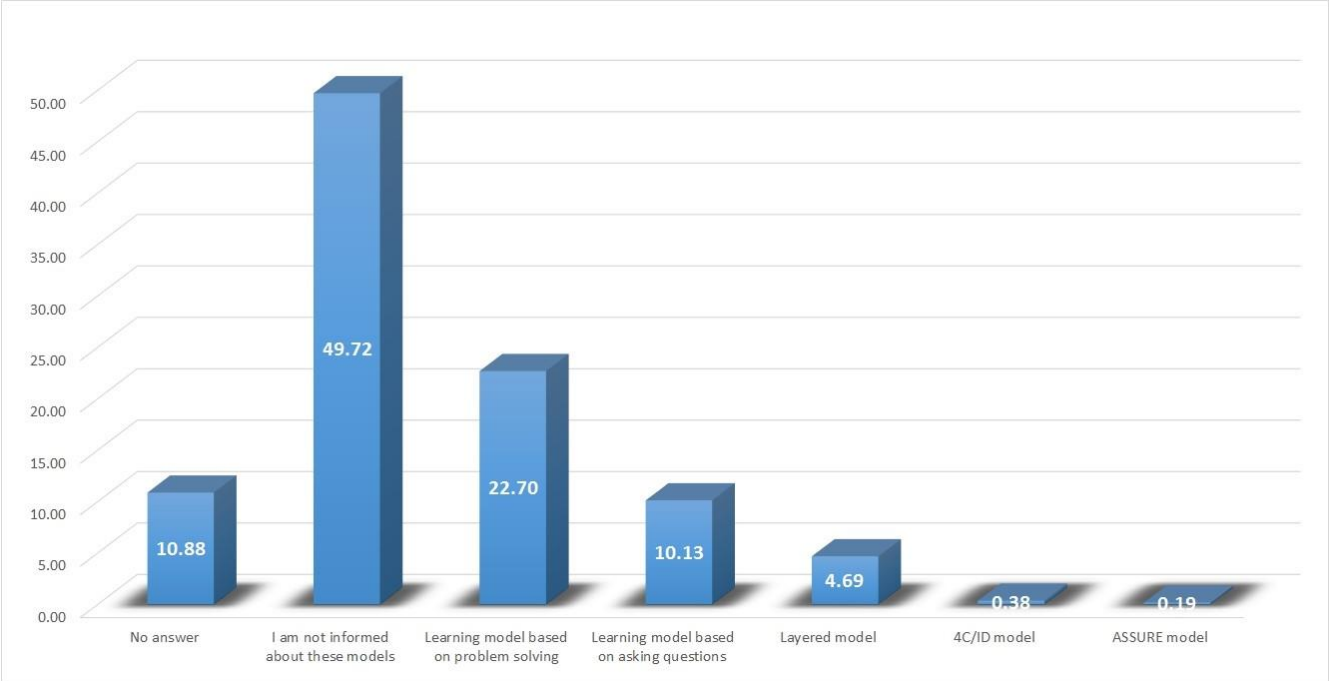

Figure 2.11: The most frequently used instructional design by institutions

not every topic can be converted in the on-line material, such as practical work. Also, some more general challenges and risks regarding the technologies were raised, such as alienation of students, dehumanization, no dialogs in real life, that is especially important for the fields where work inclines constant work with people, no debates that would lead to improvement of communication skills. Regarding the methodologies the main concerns were adaptation of course contents to the on-line material and its presentation, without losing the quality. Also, some stated that for the on-line material there would be to much segmentations and visualization, that is sometimes good, but not always. The main concern were connected to the communications with students. Some listed dehumanization and alienation of students, not enough dialogs and debates. Among the methodologies some participant of the survey noted concerns that the level of understanding the materials would be low, while the exams would become the question of the number of tries. Among the general topics, the question of the authorization of the material is raised, as well as concerns about the quality of this kind of programmes, knowledge acquired in this way and diplomas that are reached while studying on-line. The main parts in the list of the advantages of eLearning for students are:

- higher transparency, flexibility, efficiency, and availability,
- the electronic literacy,
- an easier access to materials,
- individuality of students taken into an account,

easier studying while working or in the other cases when the student is not able to attend classes. For the institution, the advantages of eLearning are possibility of higher number of students and larger groups of students, easer cooperation with the other institutions and modernization.