Modernization and Internationalisation of Iranian HEIs via collaborative TEL-based curriculum development in engineering and STEM

University of Isfahan

Chapter 1. Institution Information

- *Name of the partner:* ***The university of Isfahan***
- *Names of respondents, positions, departments*
- ***Vice-chancellor for teaching, Director of the International Office***
- *Provide a short introduction describing the methodology you used and the number and types of sources*
- *Please keep your answer short, maximum 1 page*

Located in the City of Isfahan, in the center of Iran, the University of Isfahan is a comprehensive public university comprising all fields of research and inquiry, including science, engineering, social sciences, and humanities. It is nationally recognized for exceptional programs that prepare its diverse student body for academic and professional success. The university has more than 15.000 students (5% international students)

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enrolled and about 650 full-time (50 % full professor and associate professor), and about 1000 part-time faculty members.

The University of Isfahan is one of the top ten universities in Iran, with a good position in both national and international university rankings. It also has a high international profile and is committed to academic and research excellence with a general reputation for high-quality research and education and the development of academic disciplines.
The seven faculties of the University of Isfahan, with its 55 specialized departments, cover most of the international and modern university disciplines at Bachelor, Master, and Ph.D. levels. There is also an increasing number of multi-disciplinary research centers, projects, and units. The university has a strong link with the industry and society.

The University of Isfahan also accepts international students from different countries. The International Center of Teaching Persian to Speakers of Other Languages at the University of Isfahan accepts Persian learners worldwide.

The University of Isfahan is constantly interfacing with the international environment to expand its borders and explore the world. It has a policy of internationalization and is heavily involved in international cooperation in research and education. The university has signed many bilateral agreements with universities, research institutions, and academic centers of excellence from all parts of the world. The cooperation with the global partners has been in different areas of common interest, including joint research and educational programs, exchange and mobility of faculty members and students, Erasmus projects, joint supervision of postgraduate thesis and dissertations, and co-tutelle and dual degree programs.

Chapter 2. Existing practices for curriculum planning

- *Name of the partner:* **University of Isfahan**
- *Names of respondents, positions, departments*
- ***Vice-chancellor for Education, Vice-chancellor for Research, Director of the international office***
- *Provide a short introduction describing the methodology you used and the number and types of sources:* **Interview and document analysis**
- *Please keep your answer short, maximum 1-1 ½ page per question*

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2.1. Policies and guidelines in use for curriculum planning

- *How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.)*
- **The reason for introducing a new course is the university policies and society's needs and demands. To introduce a new course, there are standard procedures, and it should start from a department committee. The department committee places a request to introduce a new course with their clear reasons, goals, and relations with university policies and society demands. Then the request is reviewed by the Faculty committee, the university committee, and if it is accepted, it will be sent to the Ministry of Science, Research and Technology (MSRT). The MSRT is the official body to authorize establishing the new course.**
- *What kind of goals are set in the organizational strategy and other governing documents for overall curriculum planning and development?*
- ***Micro strategies such as moving toward the third and fourth generation universities***
- ***Responding the society's demands***
- ***Moving toward internationalization***
- *Are the needs of working life and the industry somehow described in the governing documents? If they are, please describe, how?*
- ***Yes, these are considered in the curriculum planning, in employability of the students, students' entrepreneurship, focusing on the students' wellbeing***
- *Is TEL/online learning part of the overall strategy for your institution's development and how*
- ***Yes, the University of Isfahan has been using Learning Management System for over a decade, and its application is widened during the pandemic.***
- ***The university has been keen in investment on the LMS annually.***
- *Do you foresee laboratory activities within curriculum planning?*
- ***Yes, the University of Isfahan is a comprehensive university and all science- related faculties are equipped with the relevant laboratory. The university has also a central laboratory.***
- *Which kind of laboratory activities do you use? (e.g. in presence, virtual, remote labs etc.).*
- ***The main laboratory activities are in presence. The university has the infrastructure for virtual labs, however, the real activities are less than 5 per cent. The university of Isfahan does not have remote lab.***
- *In case you use virtual/remote labs can you please describe them in terms of technological infrastructure and pedagogical model applied?*
- ***As it mentioned above, the application of virtual and remote lab is close to none.***
- *Has the COV-19 pandemic affected your curriculum planning practices? In which way? (please describe any changes that occurred after covid pandemic broke out).*

> ● *The COVID-19 lead to widely usage of the existed LMS. We have been using Bigblubutton for over a decade, however, it was employed only for a limited number of online courses. After the COVID-19, the whole university's courses quickly mover to LMS and 100 % courses were conducted online. Each week over 4000 classes are conducted in the LMS. The laboratory classes were conducted in-presence under the strict health protocols. Curriculum planning has not been changed, but the online classes takes 60 minutes in contrast to the 90 minutes in-presence classes.*

2.2. Curriculum planning in practice

> ● *How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.)*
> ● *Please see above.*
> ● *How are different stakeholders (e.g. teachers, students, businesses and other actors in society) and their needs taken into account in the curriculum development?*
> ● *Yes, the university of Isfahan has a strong link with the industries and the society through the its Office of Industry relations. In the curriculum development the university invites people from relative businesses to consider their needs. The students' needs are monitored through their practicums. Therefore, the curriculum is developed based on the professors', the stakeholders' ideas and the students' needs.*
> ● *How is the content of the course designed?*
> ● *Professors who are in charge of curriculum development, review similar courses around the world and in the world top universities, and also as mentioned before, consider the ideas of stakeholders. Sometime the university invites professors from other universities to participate in designing the course content.*
> ● *The MSRT also has a committee including expert from some university in different fields and the course contents are reviewed and updated every 4 years in that committee.*
> ● *In faculty level, does the curricula design reflect any specific pedagogical practices and innovation?*
> ● *Yes, the course contents often are designed based on this.*
> ● *In faculty level, what way is working-life relevance discussed in the curricula?*
> ● *It is recommended that each subject is taught with examples from the real life or with assignment that should be done in the society. For example, in the financial economy course the students should be familiar with the real structure of the stock market, or in the family counseling course, the student should practice some hours of family counseling under supervision.*
> ● *What is the teaching staff-student ratio?*

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Chapter 3. Designing and implementing and a TEL (Technological Enhanced Learning) course

- *Name of the partner: **University of Isfahan***
- *Names of respondents, positions, departments*
- ***Vice-chancellor for Education, Vice-chancellor for Research, Director of the international office, Head of the valuation and Monitoring Office***
- *Provide a short introduction describing the methodology you used and the number and types of sources*
- ***Interview, document analysis***
- *Please keep your answer short, maximum 1-1 ½ page per question*

3.1. TEL as a practice in your institution

- *Is TEL or online courses a usual practice in your university, or do you organize teaching like this only due to pandemic?*
- ***As mentioned before, the University of Isfahan has been using LMS for its online courses over a decade, however, the application is widespread after the pandemic.***
- *How many, in what level? (e.g. graduate/postgraduate).*
- ***There are currently over 4000 classes each week in all levels.***
- *Is TEL part of the overall strategy for your institution's development and how?*
- ***Yes, the University invests in equipment and training annually.***
- *Is there a strategy in your institution for digital innovation, TEL being a part of it? Is this strategy known within the institution at all levels?*
- ***Yes, this is one of the main strategies that all faculties must observe since five year ago. All faculties have at least one personnel (IT engineer) who helps staff in this regards.***

3.2. Technology in use

- *What kind of technology are you using (e.g. platforms, videoconferencing etc.)*
- ***The University of Isfahan use Bigbluebutton and skyroom for the classes and conferences.***

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> - *Other platforms are employed if these two platforms are down or in international meetings.*

3.3. Course development process

> - *How do you plan the initiation of a course (e.g. needs analysis for demand and constraint identification etc.) in TEL/online courses compared to face-to-face courses?*
> - ***There is no differences in online or face-to-face curriculum, however, the professors are trained to use the equipment and software,***

3.4. Stakeholders involved and their roles and tasks

> - *Do you involve students in TEL/online course design?* **No**
> - *How is the content of the course designed?* ***Please see above.***
> - *Is there any technical support for teachers in course design? Is support given at university, faculty or department level?*
> - ***The University of Isfahan has established the Teaching Development Centre (TDC), since 5 year ago. The center is actively support the staff in all areas related to teaching.***
> - ***Also, as mentioned before, in all faculties there is at least one IT technician ever day to support the staff.***
> - *Are there any facilitators that support the learners? If there are, please elaborate: describe their role, tasks and the cooperation with the lecturer.*
> - ***In some faculties, there are Paid-Tutors that assist the professors in some subjects. TA are often PhD students, however, they can also be some experts from outside the university.***
> - ***All departments also have an educational student officer, who is helping students in selecting their subjects.***

3.5. Protocol of course assessment

> - *How do you evaluate the course: Is there a systematic institutional process / protocol? Are students involved at this stage?*
> - *How is evaluation performed after the course is taught/delivered?*

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- *How is data collected?*
- *Do students give feedback on teaching? If, please describe how.*
- *Who is informed about the evaluation?*
- *What measures can be taken for improvement?*

- ***Professors are free to select their evaluation methods, and the students can indirectly influence the evaluation methods. For example, some professors may ask the students about their ideas at the start of the course and then implement the ideas that could be integrated with their selected methods.***

- ***Although the professors are free to select their evaluation methods, the time of the final exams is announced by the University Education Office when the students choose their subjects. Professors often use different evaluation methods during the course, and the grades are a combination of marks they received during the semester and in the final exam. Being present in the final exam is mandatory.***

- ***The students also evaluate the professors before the final exams.***

3.6. Identification of TEL /online quality practices or patterns of quality

- *Is your Institution using Quality standards/frameworks for TEL/online?*
- *If no, what are the reasons?*
- *Are you planning to use one in the future?*
- *If yes, which are they?*
- *What quality areas do they cover? How long have you been using them?*
- *Does your Institution collect data in order to evaluate TEL/online programs?*

- *Is there a strategy on the use and purpose of learning analytics within the institution?*

- *Does your institution consider ethical norms and government policy with respect to data protection and the privacy of students?*

- ***As mentioned above, the professors' evaluation is one of the regular practices in the university and has been done before the final exam. Students must answer a questionnaire that covers different areas of teaching and code of practice. After the pandemic and moving to 100 percent online teaching, another questionnaire for evaluating online learning is developed. The questionnaires cover areas such as: informing the students about the curriculum and evaluation methods at the start of the semester, ability to transfer the knowledge, quality of teacher-student interaction, encouragement of students to be critical and knowledge seeking, constant assessment, availability to answer the questions.***

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- *In the questionnaire about online learning, there are questions about the quality of technology and the online system, covering the curriculum in the designated time, quality of online interaction, quality of the contents and slides, photos, voices, etc., quality of online teaching.*
- *There is also a questionnaire that the department head should complete evaluating the quality of teaching. This questionnaire will be signed by the vice-chancellor for education and the dean of the Faculty.*
- *Two more questionnaires are also used in the University of Isfahan: The evaluation form for supervisors and the top 20 percent of students. The first form will be completed after graduation and is a convenient means to evaluate the thesis/dissertation supervision level. The logic behind the latter form is that the top students might evaluate professors without bias.*
- *The results of all questionnaires will be combined and reported to each professor in each semester. If the result shows low quality, the professors will be referred to a teaching counselor to discuss and work on his/her deficits and to strengthen his/her teaching and evaluation method.*
- *The results of the annual evaluation are critical for the professors' annual promotion. The annual promotion depends on the quality of research and teaching, and if the professors do not meet the threshold, their yearly promotion could be in danger.*
- *The information of the students is strictly confidential during this process.*

3.7. Process of continuous improving of educational provision

- *Are TEL/online programs reviewed, updated, and improved and how?*

- *Yes, updating and improving the online programs are among the most important policies and is regularly practiced. Based on the review and feedback, there were several workshops about online learning and evaluation for the professors.*

- *The curriculum is reviewed every 5 years and if a course does not review and updated after 5 years, the course will be suspended until it will be updated.*

- *Are there any Institutional policies, structures, processes, and resources in place to guarantee the successful teaching and learning process of students with special educational needs?*

- *The University of Isfahan has recently established the first center for students with special needs and had hold two workshops for the professors about the students with special needs. The center is working closely with the students and the university to meet the students' needs. Several obstacles in academic achievement of the students have been found and the center is working to facilitate overcoming*

> *these issues.*
>
> - *Is there an institutional policy and code of practice to ensure academic integrity and freedom and ethical behavior?*
>
> - *Are there any electronic security measures set by your institution's policy/code of practice?*

3.8. Professional development of teachers and instructional designers

> - *In faculty level, do people involved in designing/ developing/ evaluating TEL/online programs have specific expertise in academic and technical aspects and which?*
>
> - ***Yes, only experts in academic and technical aspects are involved in this process.***
>
> - ***In Faculty level, the professors are involved in two programs: Internal evaluation and the 5-year plan. The Internal evaluation shows the strength and limitations of each department and based on this evaluation a 5-year plan is suggested by the departments. After 5 year the plan will be reviewed and another 5-year plan will be organized.***
>
> - *Is the teaching staff involved in designing/ developing/ evaluating educational programs familiar with the advantages/disadvantages of using TEL/online in particular course contexts?*
>
> - ***Yes, they are familiar with the advantages/disadvantages of using TEL/online, and give feedback to the university. In case they are not familiar, there are several workshops.***
>
> - *Is the teaching staff trained and proficient in the use of learning technologies and (e-) assessment methods?*
>
> - *Are there any particular training activities for new staff?*
>
> - *Has the institution developed procedures to identify the support requirements of the teaching staff?*
>
> - ***As mentioned before, the University of Isfahan has a center called Teaching Development Center (TDC). The main aim of TDC is to empower the quality of teaching. The center is serving the needs of the University of Isfahan, the other universities in the province, any other universities that request a workshop and the Department of Education (Elementary and secondary school teachers).***
>
> - ***The center has access to the evaluation forms of professors with less than 2 year experiences and monitor their status and if there was any problems will give them counseling to empower them.***

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- *What workshops are available for your teachers to attend? (for example: professional development, enhancement of faculty competence in skills, enhancement of faculty competence in pedagogy and enhancement of faculty competence in TEL)*

- ***The center routinely hold a 3 tired teaching method course that is mandatory for all professors. In the second tire online learning methods, and technology applications and methods are discussed. After the pandemic there is also a separate course about Technical and pedagogical requirements of online learning. The course was very popular and there are some requests to repeat it.***

- ***TDC regularly research the requirements of the universities and the country to develop new courses for teaching development***

Chapter 4. Industry relevance

- *Name of the partner: **University of Isfahan***
- *Names of respondents, positions, departments:*
- ***Vice-chancellor for Education, Vice-chancellor for Research, Director of the international office, Head of the valuation and Monitoring Office***
- *Provide a short introduction describing the methodology you used and the number and types of sources*
- ***Interview and document analysis***
- *Please keep your answer short, maximum 1-1 ½ page per question*

4.1. Policy and action plan for industry-relevance

- *Are industry needs considered when developing the learning model and the curricula design?*

- *How is industry and other stakeholders involved in the process? Are there specific needs considered for STEM education in your institution when transferring courses to technology enhanced learning or online learning? If so, please explain how.*

- ***The stakeholders are invited when the university is introducing or reviewing and updating a course. The university facilitates the process of inviting experts from outside the university as teachers or supervisors. They can assist the main lecturer in teaching, or in practicum and projects. For example, there are some sport coaches that are not employed in the university but are invited to teach some courses.***

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> - *There is also an office belong to the Iran Technical & Vocational Training Organization. The organization holds workshops bot in the university or in their designated places in the city and gives certificate.*
>
> - *The office of Career Development Center is also working in improving the students' employability through summer schools for employability, and helping students to choose their major based on their interest before entering the university.*

4.2. Infrastructure

> - *Is the technical infrastructure aligned with the teaching methodology, learning activities, and e-assessment methods? If so, please explain how.*
>
> - *Does the mentioned infrastructure and used online tools support student active learning and collaboration?*
>
> - ***Yes, the university LMS is a good place to conduct all classroom activities. Due to constant monitoring and evaluation, its deficits have been recognized and the IT team is working to improve the system. The system does not work well for practical and laboratory classes though.***

4.3. Assessment of learning

> - *Are (e-) assessment methods fit for purpose, allowing students to demonstrate the extent to which the intended learning outcomes have been achieved?*
> - *How are they designed?*
>
> - ***Due to the pandemic the university was forced to quickly move to online learning and assessment. Accordingly, several workshops were organized about e-assessment programs, designing and implementing e-assessment as well as continuous assessment.***

4.4. Functionalities of the technical infrastructure

> - *Does the virtual learning environment, VLE (if any) support specific pedagogical methods and tools?*
>
> - *Is the VLE based on non-proprietary web standards and is it updated to reflect technological changes? How often?*
>
> - *Does the technical infrastructure ensure the accessibility of the TEL/online programme by students with special educational needs and how?*

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> - *The main VLE in the university is the Learning Management System (LMS), the has been used for over a decade. The system is regularly monitored and during the semester there are some staff available to support the staff of they encountered any issues.*
>
> - *The system is easily accessible for students with physical disability and visual impairment, however the online classes is not easily accessible for students with hearing impairment. They rely on the course materials that will be uploaded during the semester.*

4.5. Use of virtual and remote laboratories

> - *Does the institution provide students with an e-library?* **Yes**
>
> - *Does the institution have virtual labs?* **Yes, but it is not widely used and is not adequate.**
>
> - *Does the institution have remote labs?* **No**

Chapter 5. TEL quality practices and support

> - *Name of the partner:* **University of Isfahan**
> - *Names of respondents, positions, departments*
> - ***Vice-chancellor for Education, Vice-chancellor for Research, Director of the international office, Head of TDC***
> - *Provide a short introduction describing the methodology you used and the number and types of sources*
> - *Please keep your answer short, maximum 1-1 ½ page per question*

5.1. Staff professionalization

> - *Has your institution procedures for recruiting and hiring teaching staff?*
>
> - *Do you offer pedagogical training for teaching staff? Do you have courses specific for technology-enhanced learning? How is it organized?*
>
> - *How is the teaching staff coordinated during course delivery?*
>
> - *Do you have support materials available on the intranet for online learning and teaching?*
>
> - *Is pedagogical training mandatory for teaching staff?*

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> • *As mentioned above, the TDC is the main body to provide pedagogical and technical training to the staff. The center is available for any supports that the professors need.*
>
> • *The recruitment and hiring of the staff start from the departments' request. The request will be send to the relative committee and if accepted, there will be a call for vacancies in the MSRT websites. The candidates send their documents and after initial selection, the suitable candidates are invited to job interview. Several committees interview the candidates and the TDC is one of them. The TDC suggested that the candidates have a micro-teaching as part of their assessment, however, this process has not been implemented yet. For new staff, there is teaching counselor and also workshops. The pedagogical and technical wrokshops are mandatory for all professors.*

Chapter 6. Opportunities and challenges for adoption of TEL practices

> • *Name of the partner:* **University o Isfahan**
> • *Names of respondents, positions, departments*
> • *Provide a short introduction describing the methodology you used and the number and types of sources*
> • *Please keep your answer short, maximum 1-1 ½ page per question*

> • *After describing the current state of art in previous chapters, identify opportunities and barriers for transformation of education. Put them in order:* **the most important first.**

6.1. Opportunities

● *1. The University has the necessary infrastructure for online learning and has been keen in investment in the future.*

● *2. The university has focused on facilitating the process of provision and use of online learning software, and routinely train the professors.*

● *3. The university regularly reviews and updates the curriculum, and focuses on the industry and the society needs and demands. Different centers in the university are involved in this process including the Teaching Development Centre (CDC), Career Development Center (CDC), Management Development and Counseling Center (MDCC) and Students with Special Needs Center (SSC).*

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6.2. Barriers

- *1. Practical and laboratory subjects were challenging to teach online and the university forced to make in-presence classes with strict health-protocols. The university's infrastructure for the virtual labs needs improvements and there is not a remote lab in the university. Therefore, the main challenge of the university is to keep the quality of the laboratory and practical courses.*

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