

The Integration of Soft Skills at Tertiary Level in Morocco: Engineering Undergraduate Students' Perspectives

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ABSTRACT

The current study aimed at investigating the state of the art related to the integration of soft skills at tertiary level by trying to find out the reasons for which soft skills should be integrated at this instructional level, the top five soft skills undergraduate engineering students consider important for employability, and some of the challenges instructors might face in their endeavour to incorporate soft skills into their courses. A structured questionnaire that includes four parts was randomly administered to 40 engineering graduate students enrolling at the Faculty of Sciences and Techniques of Errachidia, University of Moulay Ismail in Meknes. The findings revealed that almost all the participants think that soft skills are important because they are critical for career advancement, they are important for getting a better job, and they are highly sought by employers. As for their views about soft skills, most of them claimed that effective communication, creative problem-solving, time and stress management, team/work spirit, and analytical and critical thinking are the top five skills they consider important for employability. As far as some of the challenges instructors might face while trying to incorporate soft skills into their courses, they contended that limited time to cover the syllabus, students' attitude in the classroom, and large number of students in the classroom are the major ones.

Key words: soft skills, tertiary level, undergraduate engineering students, employability

INTRODUCTION

Nalini (2018) claims that the advent of digitalisation in the field of education has brought a paradigm shift in the way education is perceived. The crucial skills of the most effective and efficient graduates of today are totally different from those years ago. This entails that academic expertise, knowledge and mastery of a given subject matter is not enough to guarantee a job. Rather, today's graduates must possess the appropriate soft skills to meet the new requirements of the job market. Therefore, it is mandatory for modern engineers to reinvent themselves to meet the challenges confronting them in the 21st century. This requires from them to be willing to learn, unlearn and then relearn in order to be abreast of the latest developments in this ever-changing society. The present study aims at shedding some light on this topic by addressing three main questions. The first is related to undergraduate engineering students' views about the reasons for which soft skills should be integrated at tertiary level. The second is concerned with the top five soft skills students consider important for employability. The last pertains to some of the challenges instructors might face in their endeavour to incorporate soft skills into their courses.

Theoretical framework

Defining soft skills

A plethora of definitions have been suggested to soft skills in the literature. According to Robles (2012: 5457), soft skills are "character traits, attitudes and behaviour-rather than technical aptitude or knowledge. They are the intangible, nontechnical, personality-specific skills that determine one's strengths as a leader, facilitator, mediator, and negotiator". For Pachauri and Yadav (2014), soft skills are "personality traits, social gracefulness, fluency in language, personal habits, friendliness and optimism to variable degree". One further

definition suggested by Voogt and Roblin (2010, 2012) argues that the 21st century skills or competencies can be defined as “an overarching concept for the knowledge, skills and dispositions that citizens need to be able to contribute to the knowledge society” in (Joynes et als., 2019: 8).

The three afore-mentioned definitions agree that soft skills include personality traits, attitudes, values and competences that help a person solve problems creatively, communicate with others effectively, think critically and analytically, and contribute to the dissemination of knowledge.

The importance of soft skills

Tulgan (2015: 3) states that “the incidence and insistence of managers complaining about the soft skills of their new young workers has risen steadily year after year since we began tracking it in the mid-1990s” cited in (Boverhof, 2018: 5-6). Gillard (2009) argues that “soft skills are important for information technology graduates as they are, most of the time, given the task of project management due to their expertise in the development and installation of information system” cited in (Idrus and Abdullah, 2009: 69). Overall, soft skills shape human beings' personality in addition to being an indicator of job performance.

In a study conducted by Majid et als., (2012), the findings indicated that most of the respondents believe that soft skills are important for the following three reasons. First, they are critical for career advancement. Second, they are highly sought by employers. Finally, they are important for getting a better job.

From what has been said, one could deduce the idea that the mastery of soft skills combined with an ability to innovate will also add sufficient value to engineering graduates. Such continuing skill development through lifelong learning that prevents technical obsolescence and burn out are critical in this era marked by the excessive and widespread use of various technological applications in all domains of life (Shuman, 2005) cited in (Idrus and Abdullah, 2009).

Soft skills for higher education and employment

Succe (2015: 252-254) developed the following taxonomy of soft skills for higher education and employment. It includes three main types of skills university students are supposed to possess to get a job.

Personal skills	Social skills	Content reliant/methodological skills
- learning skills	- communication	- creativity/innovation
- commitment	- customer orientation	- decision-making
- professional ethics	- team work	- management skills
- tolerance to stress	- leadership	- adaptability to change
- self-awareness	- negotiation	- continuous improvement
- life balance	- conflict management	- research and information
-cultural adaptability	- contact network	management skills

In (Nalini, 2018: 1964)

The taxonomy provided by Succe (2015) is divided into three major categories. Personal soft skills are “the abilities that relate to the individual alone (commitment and tolerance to stress as examples).” Social soft skills are “the abilities required to relate to another person (teamwork, leadership and negotiation as a case in point)”. Methodological soft skills are “the techniques or procedures used to solve a problem, answer a question or respond to a given situation such as creativity and decision-making to mention only a few”.

Models for implementing soft skills in higher education

Pachauri and Yadav (2014) suggested a holistic approach that could be adopted for implementing soft skills among students at tertiary levels. It is based on the combination of a set of programs activities: formal teaching and learning activities that include curricular and co-curricular elements, and support programs which can be either academic or non-academic. This may involve using two models.

Stand-alone subject model

As its name suggests, this model requires the explicit teaching of the soft skills by training students and allowing them ample opportunities to develop them through specific courses that are carefully planned for this particular purpose. Such subjects can be offered as university courses (English language, entrepreneurship, etc) and elective courses (public speaking and critical thinking, etc).

Embedded model

This model involves the implicit teaching of soft skills by embedding them in the teaching and learning activities across the curriculum. This process does not require from students to take special courses as the case with the stand-alone subject. Rather, students are trained to master the soft skills through formal teaching and learning activities planned and carried out using specific strategies and methods. Activities which could be used in this model are questioning, class discussions, brain storming, teamwork, presentations, role plays and simulations, field work and site visits.

Combination of stand-alone subject model and embedded model

Both models have weaknesses and strengths. For this reason, it is better to combine them from the framework of planning, implementation and assessment. This brings some sort of variety into the classroom and helps instructors cater for students' different needs as well as learning styles.

Methods of introducing soft skills in the ELT context

Various methods to introduce soft skills into higher education have been suggested. Tevdovska (2015) lists the possible ways of embedding soft skills in the classroom.

Task-based and problem-solving activities

These activities require from students to solve a task/problem using the available resources. As for the task-based activities, they are more engaging and interesting for students. They involve meaningful and real-life situations, creative and critical thinking which results in team building. Concerning problem-solving, they involve ethical issues and dilemmas. This allows students to discuss issues related to ethics and morals.

Group work

This method makes use of discussions and debates to embed communication skills as well as interpersonal skills. Students discuss issues pertaining to professional life, especially specific situations that might crop up in the workplace (for example conflicts, pressure on one or more employees, differences and similarities among the employees, accepting or rejecting authority). These activities are used to push students to use their problem-solving and critical thinking abilities to resolve problems.

Oral and poster presentations

The rationale for having recourse to such activities is to improve students' speaking skills and to develop their effective communication abilities (verbal and non-verbal). Students are assigned to prepare and deliver PowerPoint or poster presentations on given topics related to their professional orientation and to evaluate the presentations.

Role plays and dialogues

These methods include simulations of meetings, interviews and workplace discussions. They might also include working on workplace situations which require ethical issues and dilemmas as well as providing feedback to colleagues, subordinates and supervisors. This requires the use of interpersonal and critical thinking skills.

Writing

Writing is one of the best methods that could be used to incorporate soft skills into the courses. Examples of the writing tasks instructors might consider are writing an appropriate curriculum vitae, cover letter, email, official request, report and complaint. Those tasks involve considering all the aspects of academic writing in terms of form and content. Such aspects include grammar, vocabulary, mechanics, style, level of formality, format, etc. This motivates students to make use of not only their writing skills, but also their communication, problem solving and critical thinking skills. Above all, those tasks are directly related to students' academic as well as professional careers.

Assessing Soft skills

Assessment is an important dimension that instructors have to handle in their endeavour to promote students' soft skills. Through assessment, instructors could get clear insights into students' performance as well as their soft skills development. In this concern, peer assessment is a method that provides students with ample learning opportunities as it allows them to develop the ability to reflect on the performance of others and their own.

In the same vein, Fry (1990: 81) argued that peer assessment has five advantages. First, students are encouraged to tackle problems outside the tutorial session. Second, they appreciate and reinforce the correct solutions when they are grading others' work. Third, they become aware of the grading scheme and appreciate the reasoning behind points awarded or deducted. Fourth, they realise the importance of clearly presenting the solution when grading others' work. Finally, the instructor could act as a facilitator rather than an assessor (Abbas and Hum, 2013: 370).

From the advantages mentioned above, one might claim that peer assessment is more likely to contribute to the development of students' soft skills. They, for instance, can improve their communication skills, develop their critical thinking and problem-solving abilities, and enhance team spirit by engaging in collaborative tasks.

The study

The major scope of the present study is to explore the integration of soft skills at tertiary level. This will be done from the perspective of undergraduate engineering students enrolling at the Faculty of Sciences and Techniques of Errachidia, University of Moulay Ismail, Meknes.

Research questions

The study seeks to answer the following three research questions:

What are the reasons for which soft skills should be integrated at tertiary level?

Which top five soft skills do undergraduate engineering students consider important for employability?

What are some of the challenges instructors might face while attempting to incorporate soft skills into their courses?

METHODOLOGY

Given the exploratory nature of the study, an Ex Post Facto research design was adopted. This research design was chosen because the study's major aim is to find "what is going on rather than what causes this" according to Hatch and Lazaraton (1991, p. 101). The data was collected making use of a structured questionnaire that comprises four parts. It was randomly administered to 40 Moroccan engineering students (Genie Informatique) enrolling at the Faculty of Sciences and Techniques of Errachidia-University of Moulay Ismail, Meknes-Morocco. The data got from the participants was analysed using frequency distribution and percentages. Below are some pieces of information about the participants.

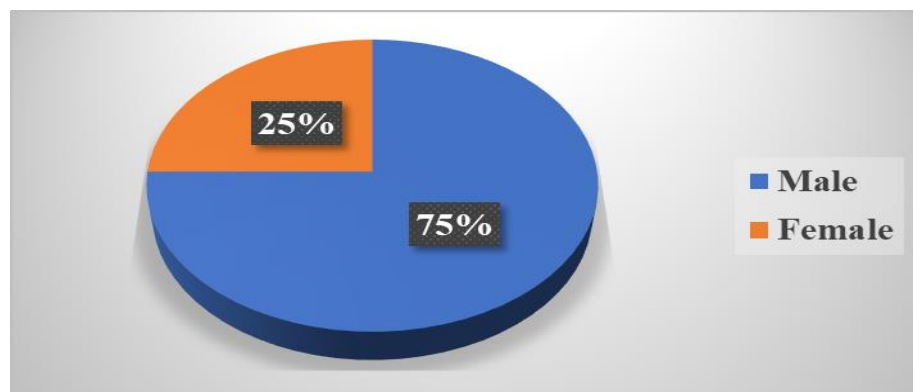


Figure 1: The distribution of the participants according to gender

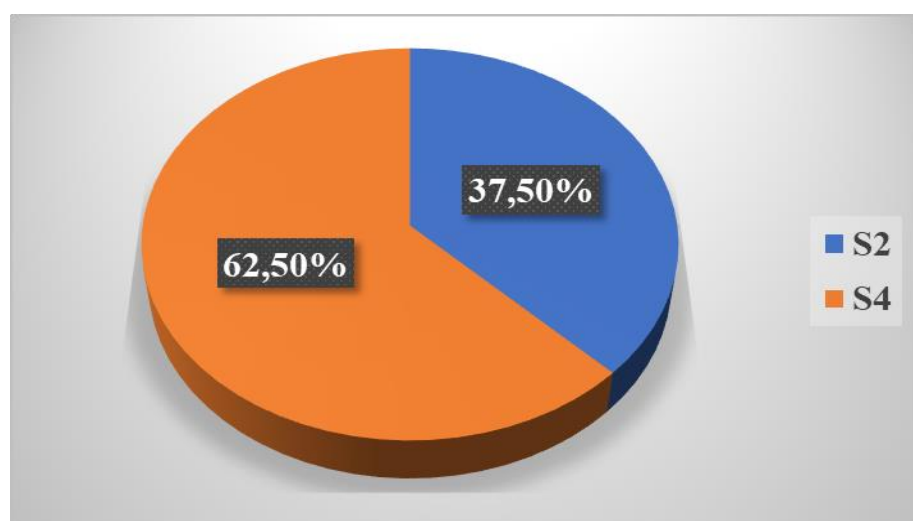


Figure 2: The distribution of the participants according to level

As displayed in figures 1 and 2, 75% of the participants are males, while 25% of them are females. Concerning their level, 62.5% of them are in semester 4, whereas 37.5% of them are in semester 2.

Findings of the study

In this section, the findings of the study will be presented. Special emphasis will be put on these elements. First, the reasons for which soft skills should be integrated at tertiary level. Second, the top five soft skills the participants consider important for employability. Finally, some of the challenges that teachers might face in their endeavour to incorporate soft skills into their courses.

The reasons for which soft skills should be integrated at tertiary level

This part includes items related to engineering students' perceptions about the reasons for which soft skills should be integrated at tertiary level.

Table 1: The reasons for which soft skills should integrated at tertiary level

Reasons	Agree		Uncertain		Disagree		Total	
	N	%	N	%	N	%	N	%
1. Soft skills are critical for career advancement.	36	90	03	07.5	01	02.5	40	100
2. Soft skills are highly sought by employers.	30	75	09	22.5	01	02.5	40	100
3. Soft skills are important for getting a better job.	34	85	05	12.5	01	02.5	40	100
4. Soft skills are important for self-growth.	10	25	13	32.5	17	42.5	40	100
5. Soft skills are crucial for self-improvement.	08	20	11	27.5	29	72.5	40	100

The result displayed in table 1 demonstrate that most of the participants believe that the top three reasons for which soft skills should be integrated at tertiary level are:

Soft skills are critical for career advancement (90%),

soft skills are important for getting a better job (85%), and

soft skills are highly sought by employers (75%).

The top five soft skills students consider important for employability

This part consists of items which pertain the top five soft skills the participants consider important for employability.

Table 2: The top five soft skills the participants consider important for employability

Soft skills	N	%
1. Effective communication skills	36	90
2. Creative problem-solving skills	35	87.5
3. Time and stress management skills	31	77.5
4. Team work/spirit skills	29	72.5
5. Analytical and critical thinking skills.	25	62.5

The results in table 2 reveal that the big majority of the participants strongly believe that the top five soft skills which are important for employability are the following:

Effective communication skills (90%),

creative problem-solving skills (87.5%),

time and stress management skills (77.5%),

team work/spirit skills (72.5%), and

analytical and critical thinking skills (62.5%).

The challenges the participants think instructors might face while attempting to incorporate soft skills into their courses

Items in the last part of the questionnaire were geared towards eliciting information that pertains to the participants' views about some of the challenges instructors might face in their attempt to incorporate soft skills into their courses.

Table 3: The challenges teachers might face while attempting to incorporate soft skills into their courses

Challenges	Agree		Uncertain		Disagree		Total	
	N	%	N	%	N	%	N	%
1. Students' attitude in the classroom.	18	45	10	25	12	30	40	100
2. Limited time to cover the syllabus.	23	57.5	11	27.5	06	15	40	100
3. Large number of students in the classroom.	17	42.5	11	27.5	12	30	40	100
4. Lack of training for Teachers.	10	25	09	22.5	31	77.5	40	100
5. Teachers' perceptions about the teachability of soft skills.	08	20	13	32.5	19	47.5	40	100

As shown in table 3, most students claim that the major challenges teachers might face in their attempt to incorporate soft skills into their courses are as follows:

Limited time to cover the syllabus (57.5%),

students' attitude in the classroom (45%), and

large number of students in the classroom (42.5%).

DISCUSSION

The findings of the study revealed that the majority of the participants are aware of the importance of soft skills in their professional lives. They claimed that soft skills' integration at tertiary level is crucial for three major reasons. First, they are critical for career advancement. Second, they are important for getting a better job. Finally, they are highly sought by employers. This result corroborates with the one of Majid et al., (2012). Some participants went even further to contend that soft skills help graduates adapt to work environment easily, facilitate collaboration and contribute to positive work environment, allow graduates enough opportunities to make use of their technical and hard skills properly, and boost productivity.

As for the top five soft skills that are important for employability, the findings indicated that most of the participants agree that effective communication, creative problem-solving, time and stress management, team work/spirit, and analytical and critical thinking are more likely to help graduates find a job, and to perform well. In this regard, Gewertz (2007) admitted that "in this increasingly global, technical economy, it is no longer enough for engineering graduates to be academically strong. They must also be able to work comfortably with people, solve problems creatively, write and speak well, think in a multidisciplinary way and evaluate information critically" cited in (Idrus and Abdullah, 2009: 71).

Concerning some of the challenges the participants think instructors might face while attempting to incorporate soft skills into their courses, the findings demonstrated that limited time to cover the syllabus, students' attitude in the classroom, and large number of students in the classroom are the major ones. These results are in line with those found by Idrus and Abdullah (2009). In their study, they found that the instructors' failure to integrate soft skills in teaching technical courses could be attributed to three factors. The first is students' attitude arguing that most of their students are not aware of the importance of soft skills. This reveals students' unwillingness to embrace the relevance of soft skills in their academic as well as professional achievements as future engineers who would contribute in one way or another to the progress of their country in all sectors. The second is limited time to cover the syllabus believing that time is the real obstacle that prevents them from incorporating soft skills into their courses. Most teachers are exam-oriented for the simple reason that they are much more concerned with preparing their students for exams. This in turn explains their reluctance to incorporate soft skills into their classroom practices as an integral part of the curriculum. The last is the large number of students in the classroom. Such a problem prevents teachers' designing activities that are geared towards helping students acquire and improve a number of fundamental soft skills. The three challenges make it hard for instructors to migrate from a teacher-centered methodology to a student-centered one. This is due to the fact that most teachers still adhere to the traditional orthodoxy which is based on lecturing.

LIMITATIONS

The study has got two limitations. The first one pertains to the sample size. 40 undergraduate engineering students in one institution makes it harder to generalize the study findings. A larger sample would provide true insights about the integration of soft skills at tertiary levels in Morocco. The second is related to the validity and reliability of the findings. One data collection instrument could not yield valid and reliable results. It could have been better to adopt a mixed-methods approach that involves the use of both qualitative and quantitative research methods. This could have been achieved by means of using more than one data collection tool.

RECOMMENDATIONS

The 21st century educational systems are facing the dual challenge of equipping students with the new knowledge, skills and values needed to be competitive in the global market. They are, at the same time, required to produce graduates who can benefit both their own countries and the whole world. Thus, globalisation challenges us to rethink not only how much education is needed but also its ultimate goals as well.

To bridge the gap between university and the job market, universities and other higher institutions are recommended to ensure a well-designed and planned education system which is the key to developing human capital. Therefore, the incorporation of soft skills into the system at all levels is more likely to produce human capital that is knowledgeable and skilful. This should be done to meet the new demands, expectations and requirements of the job market. Students should also be made aware of the importance of soft skills in their academic and professional lives. Above all, instructors are strongly advised to get out of their comfort zone by embracing the new dimensions that pertain to higher education which stresses the centrality of the student in the teaching/learning process of any subject matter. This means that the lecturing orthodoxy is no longer effective and efficient in the AI era.

CONCLUSION

In a nutshell, the current study has been an attempt to delve into the integration of soft skills at tertiary level from the perspectives of undergraduate engineering students enrolling at the Faculty of Sciences and Techniques of Errachidia, University of Moulay Ismail-Morocco. The results revealed that there are three major reasons for which soft skills should be included in higher education. First, they are critical for career advancement. Second, they are important for getting a better job. Finally, they are highly sought by employers. Concerning the participants' views about soft skills, the majority believed that effective communication, creative problem-solving, time and stress management, team work/spirit, and analytical and critical thinking

are the top five soft skills which are critical and decisive for employability. As for the possible challenges instructors might face while striving to incorporate soft skills into their courses, most of the participants argued that limited time to cover the syllabus, students' attitude in the classroom, and large number of students in the classroom are the major ones.

Overall, the study reconfirms the importance of including soft skills in higher education in Morocco. For this reason, it is high time to think seriously about revisiting the pedagogical architecture at tertiary levels to make it suit the new requirements of and adapt to the changing labour market. This will undoubtedly harness the employability of future university graduates.

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