



4th International Academic Conference on **Teaching, Learning and Education**

The Human Skills Matrix as a Tool for Teacher Self-Reflection: A Case Study

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Abstract

University instructors are often tasked with annual self-reflections to improve their teaching and courses. The Human Skills Matrix (HSM), developed by the Massachusetts Institute of Technology (MIT), consists of 24 soft skills needed for success in the 21st century work environment and can serve as an alternative reflective tool for educators. This study focuses on the author's development of a Likert scale of 55 questions for the matrix which was then used to assess a first-year university Academic English course. This reflective practice revealed that the course addressed only 16 out of the 24 soft skills of the matrix itself. With minor changes to the course, this number could be raised to 21 out of 24 skills. This would allow for 88% of total matrix coverage. Skills that needed further addressing in the course related to the concepts of creativity, entrepreneurship, ethics, empathy, self-awareness, strategic vision, project management, and performance management. Recommendations to improve the course include the addition of an IMRD project or paper, a problem-solution assignment, a student self-reflection, clear links to the university's strategic vision in lessons and assignments, and student self-assessment of individual or group work.

Keywords: self-reflection, course assessment, soft skills

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1. Background

The reason for this study emerged from the comments on my annual performance review from the department chair in which deeper reflections on my courses and teaching were suggested. To assist in this endeavour, I decided to examine alternate ways of reflection beyond the usual reflective practice. Van Manen's (1977) three levels of reflection – technical, practical, and critical – come into play here as I was searching for ways to *critically* assess a course and not just look at the technical and practical side of my teaching once again. Since reflection is meant to serve as a tool for greater understanding and informed decision making (Robins et al., 2003), a framework to guide my reflection was needed (Sellars, 2017). Whilst supporting Na'amal, an organization that helps refugees train for and find remote work, I was introduced to MIT's Human Skills Matrix. This matrix immediately attracted my attention as a possible alternative course reflection tool with the following question arising: How does the course I just taught align with the critical soft skills in this matrix? In other words, does what I do in class build on the skills my students need upon graduation? If not, how can I improve the course to ensure skill coverage takes place? And so, this study was born.

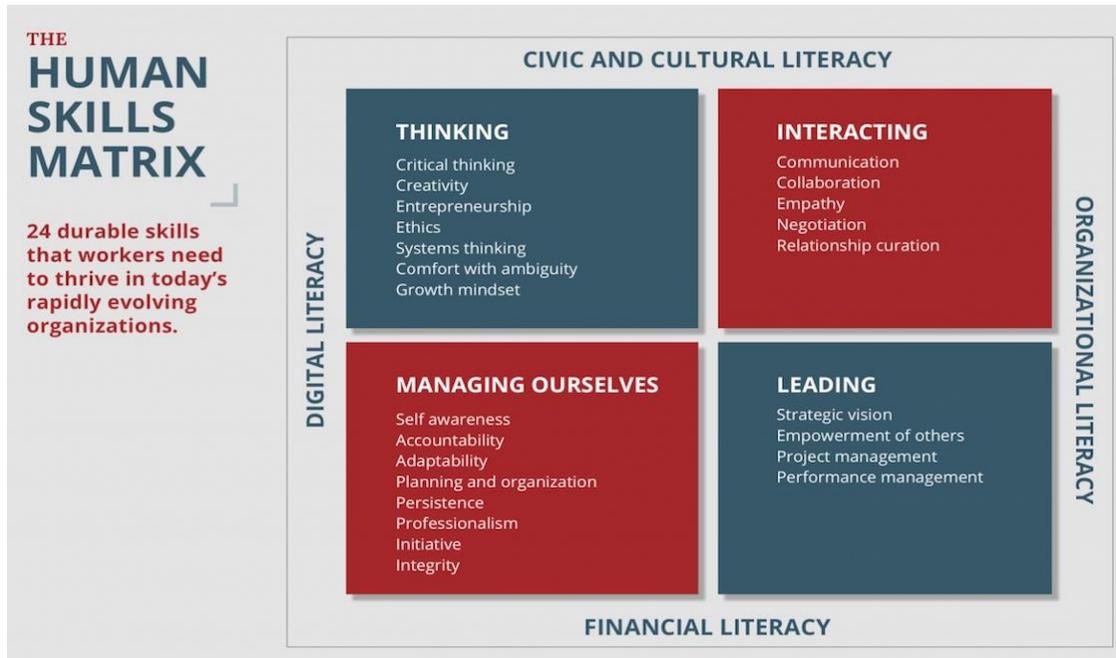
2. Introduction to the Human Skills Matrix

The Human Skills Matrix (HSX) – see Figure 1 – is a framework that highlights the essential non-technical human skills needed in today's digital working world. These skills can also be referred to as soft skills or power skills. The HSX itself was developed by the Abdul Latif Jameel World Education Lab at MIT (MIT, 2017) with an aim to help educators, employees, employers, and policy makers understand, assess, and/or build the many non-technical skills needed for successful work in the 21st century.

Figure 1: The Human Skills Matrix



4th International Academic Conference on Teaching, Learning and Education



Source: <https://jwel.mit.edu/human-skills-matrix>

To fully understand the matrix, a closer look at each quadrant is needed. For a quick overview, however, the top row is all about *applied skills* while the bottom row is all about *skills that are mastered and managed*. Moreover, the left column focuses on *intrapersonal* skills whereas the right column is more about *interpersonal* skills (Stump et al., 2022).

2.1 Quadrant 1: Thinking

2.1.1 Critical thinking

Critical thinking tops the list in this quadrant. The need for critical thinking in both education and at work has long been lauded as important. But what exactly is this skill? In truth, it is a number of skills all in one. It is the ability to analyze a situation or problem, collect data, synthesize information, infer meaning, organize ideas, and draw conclusions in order to come up with a successful solution. Luckily, critical thinking can be learned and developed throughout one's life. To assess one's level of critical thought, the following scale can be used (Figure 2):

Figure 2: Critical Thinking Self-Assessment Scale



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I can explore.
I can use evidence to make simple judgements.
I can ask questions and consider options. I can use my observations, experience, and imagination to draw conclusions and make judgements.
I can gather and combine new evidence to develop interpretations; identify alternatives, perspectives, and implications; and make judgements. I can examine and adjust my thinking.
I can examine evidence from various perspectives to analyze and make well-supported judgements and interpretations about complex issues.

Source: Core Competency Self-Assessment: Critical Thinking, <https://www.surveymonkey.com/r/X8DJWP>

2.1.2 Creativity

Being creative is also a very important soft skill to have and hone. A traditional definition of creativity is often the making of something new, unique, and useful (Plucker et al., 2004). In the sense of this quadrant and matrix, however, it refers to the thought processes involved in the creation of something new and novel. To be creative, then, means to use one's imagination and cognitive abilities to come up with an original idea.

2.1.3 Entrepreneurship

To be entrepreneurial means to be able to see opportunities and take risks in terms of building a business or making money. Thinking like an entrepreneur means looking for ways to improve things, being curious, channeling your energy towards one thing, and thinking strategically.

2.1.4 Ethics

Thinking ethically means allowing your thought processes to be influenced by your values. This means never losing sight of who you are and what you believe in. One way of thinking ethically is determining if the consequences of an action would be right or wrong in your view. Thinking ethically means applying moral principles to your actions and decisions.

2.1.5 Systems thinking

This type of thinking relates to viewing yourself, others, and things as part of a system. This means that the actions of one person, group, or system can easily affect the greater system of which they are a part. Systems thinking is understanding how different components work and how they influence one another, even over time. Part of systems thinking is also being able to see the bigger picture.

2.1.6 Comfort with ambiguity

Ambiguity can be defined as something that can be interpreted in more than one way. Being comfortable with that kind of thinking is an important 21st century skill. To analyze and evaluate

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a situation or a problem from different perspectives is a natural part of critical thinking. Understanding that others might have a different perspective on an issue or problem is a key 21st century skill.

2.1.7 Growth mindset

Having a growth mindset relates to the belief that one can always learn more and improve on one's skills. Although talent is part of the equation, hard work and effort are equally so.

2.2 Quadrant 2: Interacting

2.2.1 Communication

This refers to one's ability to share information either through verbal or non-verbal communication (gestures, facial expressions). Good oral communication skills not only call for active listening but also for clear and concise expression.

2.2.2 Collaboration

To collaborate means to work well with others in order to reach a common goal. Another word for collaboration is teamwork. For teamwork to be effective, it requires positive and respectful interactions from all on the team.

2.2.3 Empathy

When you have empathy for someone, it means that you understand their point of view and share an emotional bond with them. You care about them and you care for them. When there is empathy in your interactions with others, your communication is bound to be genuine.

2.2.4 Negotiation

Interactions often call for the need to negotiate. Negotiation is the skill of giving and taking in a discussion in order to come to a mutual agreement on something. The ability to persuade, adapt, and listen are all part of a negotiation.

2.2.5 Relationship Curation

This refers to the ability to establish and maintain relationships with other people. The ability to build rapport with others is an important part of this. To do this, you will need to find common ground between you and others all the while remaining friendly and kind in your interactions.

2.3 Quadrant 3: Managing Ourselves



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2.3.1 Self-awareness

Being self-aware means knowing and understanding yourself fully – your feelings, your character, your thoughts, and your actions. According to Morin (2011), self-awareness can be defined as “the capacity of becoming the object of one’s own attention... (where) one actively identifies, processes, and stores information about the self” (p. 807). Becoming self-aware requires a person to be self-reflective.

2.3.2 Accountability

Accountability is when a person takes responsibility for their actions. They own their mistakes and accept the consequences. There is a willingness to do better and an acknowledgement of one’s own responsibility in a situation rather than placing the blame on others. Being accountable also implies being proactive in matters and looking for solutions to problems.

2.3.2 Adaptability

Being flexible and easily adaptable to changing circumstances is also an important 21st century skill. To be willing to make mistakes and to learn from them as well as others falls into this category as well. Accepting failure and looking for the silver lining is all part of being flexible. In essence, this soft skill is all about being able to embrace change.

2.3.3 Planning and organizing

The ability to plan and organize requires you to set future goals, develop steps to reach those goals, and make a timeline of completion for each step. For this, you need to be able to prioritize tasks in terms of importance and time needed to complete a task. Time management features dominantly here.

2.3.4 Persistence

Persistence refers to the continuation of one’s efforts despite all the setbacks one has experienced. It is continuing in the face of great opposition and not giving up on a project or idea regardless of how difficult.

2.3.5 Professionalism

This refers to the respect you show your colleagues/classmates, supervisor/professor, and place of work or study in terms of behaviour, dress, and communication. It is all about how you represent yourself in a formal environment.

2.3.6 Initiative

To take the initiative means to act before others without being asked to do so – usually to solve a problem. It means thinking and acting independently of others to resolve a situation.

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2.3.7 Integrity

Integrity means being honest and reliable in your dealings and communications. It means steadfastly adhering to one's code of ethics or values and being fair to others at all times.

2.4 Quadrant 4: Leadership

2.4.1 Strategic vision

A strategic vision can be defined as a shared vision of the future. It guides the actions and goals of a company or community of people. A strategic vision tends to be motivational, memorable, and manageable.

2.4.2 Empowerment of others

An empowered person is one who has self-confidence and high levels of autonomy. To empower others means to give them the ability to take charge of their own futures and to take actions and responsibility accordingly. Part of empowering others is helping them set and reach reasonable and measurable goals.

2.4.3 Project management

Managing a project refers to the management of a team in pursuit of a common goal. This also includes the management of non-human resources such as funding and technology in relation to the project. It requires skills such as planning, organization, time-management, and execution.

2.4.4 Performance management

This usually refers to the ability to manage the performance of an organization, team, or individual. It relates to meeting goals in a capable and efficient way. It is all about creating an atmosphere where everyone performs at their best.

3. Methods

The definitions of the quadrants and the subsections of the Human Skills Matrix outlined in section 2 were used to create 55 Likert-scale questions. These questions were developed to determine if an instructor's course aligned with the building of the essential soft skills needed to be successful in the 21st century work environment. A five-point Likert scale was used so that there was room for the instructor to choose a neutral stance when uncertain (strongly agree to strongly disagree). The author of this paper used this questionnaire to self-reflect and assess an Academic English course she taught at a university in the United Arab Emirates. The course was a 3-credit hour course that ran for 17 weeks in the fall semester of 2021. The course began



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with 102 registered students and then dropped down to 89 students after the midterm. The following questionnaire was developed and used for this purpose:

Self-Reflection Questionnaire

QUADRANT 1: THINKING

Critical Thinking

- Q1. I encouraged my students to ask questions.
- Q2. I encouraged my students to explore evidence.
- Q3. I encouraged my students to consider different options.
- Q4. I encouraged my students to draw conclusions.
- Q5. I encouraged my students to gather and combine new evidence.
- Q6. I encouraged my students to adjust their thinking according to new findings.
- Q7. I encouraged my students to view things from many different perspectives.
- Q8. I encouraged my students to make well-supported judgements.

Creativity

- Q9. I gave my students opportunities to use their imagination in class.
- Q10. I gave my students opportunities to come up with new ideas in class.

Entrepreneurship

- Q11. I gave my students opportunities to be curious in class.
- Q12. I allowed my students to think strategically in class.
- Q13. I allowed my students to find new ways to improve something.

Ethics

- Q14. I gave my students opportunities to explore their own moral principles in class.
- Q15. I gave my students opportunities to apply their moral principles in class.

Systems Thinking

- Q16. I encouraged my students to view themselves as part of a greater whole.
- Q17. I encouraged my students to view their actions or requests as having an effect on others.
- Q18. I encouraged my students to see the bigger picture of a situation

Comfort with Ambiguity

- Q19. I encouraged my students to analyze and evaluate a situation from many different perspectives.
- Q20. I encouraged my students to be comfortable with not knowing the answer to something.

Growth Mindset

- Q21. I encourage my students to try harder, learn more, and improve on their skills.



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Q22. I instill the need for hard work and effort into my classes.

QUADRANT 2: INTERACTING

Communication

Q23. I gave my students opportunities to share information and opinions both verbally and non-verbally in my class.

Q24. I encouraged my students to communicate in a clear and concise manner.

Q25. I encouraged my students to actively listen.

Collaboration

Q26. I gave my students opportunities to work together in class.

Q27. I encouraged my students to interact with each other in positive and respectful ways.

Empathy

Q28. I encouraged my students to try to understand the viewpoint of others in class.

Q29. I encouraged my students to show care for one another.

Negotiation

Q30. I gave my students opportunities to negotiate with one another in class.

Relationship Curation

Q31. I encouraged my students to build and maintain relationships with one another.

Q32. I encouraged my students to be kind and friendly in their interactions with one another.

QUADRANT 3: MANAGING OURSELVES

Self-Awareness

Q33. I gave my students opportunities to self-reflect on their actions.

Accountability

Q34. I gave my students opportunities to reflect on the consequences of their actions.

Q35. I encouraged my students to take responsibility for and ownership of their actions.

Q36. I encouraged my students to do better and be proactive in the future.

Adaptability

Q37. I encouraged my students to accept failure and learn from their mistakes.

Q38. I encouraged my students to be flexible in class and adapt to changes.

Planning and Organizing

Q39. I encouraged my students to plan ahead for their assignments.

Q40. I encouraged my students to prioritize activities/class work.

Q41. I gave my students opportunities to manage their in-class time and activities.



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Persistence

Q42. I encouraged my students to continue trying even after poor grades or setbacks.

Professionalism

Q43. I taught my students to show their professors and others respectful behaviour and communications.

Initiative

Q44. I gave my students opportunities to take the initiative in class.

Integrity

Q45. I encouraged my students to be honest in their dealings with me and one another.

Q46. I encouraged my students to be reliable.

QUADRANT 4: LEADERSHIP

Strategic Vision

Q47. I encouraged my students to understand the university's strategic vision.

Empowerment of Others

Q48. I helped my students build their own learner autonomy.

Q49. I helped my students set reasonable goals.

Q50. I set reasonable goals/deadlines for class work and projects.

Q51. I made my students take responsibility for their actions and work.

Project Management

Q52. I gave my students opportunities to lead teams in class work.

Q53. I gave my students opportunities to manage non-human resources.

Performance Management

Q54. I gave my students opportunities to encourage each other to work efficiently in groups.

Q55. I gave my students opportunities to evaluate their own individual/group performance.

After the questionnaire was completed, averages were made for each quadrant and any soft skills marked at 3 (uncertain) or under were highlighted as weak in their representation. This then led to further reflection on how to incorporate those skills, if possible, into future classes.

4. Results

The completion of the questionnaire by the instructor yielded the following results:

Table 1: Questionnaire results

Question Number	Value	Question Number	Value
Critical Thinking Q1	5	Self-Awareness Q33	1



4th International Academic Conference on Teaching, Learning and Education

Critical Thinking Q2	5	Accountability Q34	5
Critical Thinking Q3	4	Accountability Q35	5
Critical Thinking Q4	4	Accountability Q36	4
Critical Thinking Q5	4	Adaptability Q37	5
Critical Thinking Q6	4	Adaptability Q38	4
Critical Thinking Q7	4	Planning Q39	5
Critical Thinking Q8	5	Planning Q40	5
Creativity Q9	1	Planning Q41	5
Creativity Q10	3	Persistence Q42	4
Entrepreneurship Q11	4	Professionalism Q43	4
Entrepreneurship Q12	4	Initiative Q44	4
Entrepreneurship Q13	1	Integrity Q45	5
Ethics Q14	1	Integrity Q46	4
Ethics Q15	1	Strategic Vision Q47	1
Systems Thinking Q16	4	Empowerment of Others Q48	4
Systems Thinking Q17	4	Empowerment of Others Q49	1
Systems Thinking Q18	4	Empowerment of Others Q50	4
Comfort with Ambiguity Q19	4	Empowerment of Others Q51	5
Comfort with Ambiguity Q20	3	Project Management Q52	4
Growth Mindset Q21	5	Project Management Q53	1
Growth Mindset Q22	5	Performance Management Q54	3
Communication Q23	5	Performance Management Q55	1
Communication Q24	5		
Communication Q25	5		
Collaboration Q26	5		
Collaboration Q27	4		
Empathy Q28	3		
Empathy Q29	3		
Negotiation Q30	4		
Relationship Curation Q31	4		
Relationship Curation Q32	4		

The averages for each quadrant and subskills were as follows:

Table 2: Averages of results

Quadrant	Skill	Average							



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1	CT4.3	CR2.0	EN3.0	ET1.0	SY4.0	CO3.5	GR5.0	-	3.3
2	CM5.0	CL4.5	EM3.0	NE4.0	RC4.0	-	-	-	4.4
3	SA1.0	AC4.7	AD4.5	PO5.0	PE5.0	PR4.0	IN4.0	IG4.5	4.1
4	SV1.0	EO3.5	PM2.5	PF2.0	-	-	-	-	2.2

Results indicate that a total of 8 skills were assessed at level 3 or under. This translates into 16 out of 24 soft skills of the Human Skills Matrix practised in the course – equating to a 67% coverage of skills.

4. Discussion

The results of Quadrant 1 indicate a weakness in skills related to creativity, entrepreneurship and ethics. Quadrant 2 shows a weakness in the skill of empathy and Quadrant 3 that of self-awareness. Quadrant 4 has weaknesses in almost all of its subskills: strategic vision, project management, and performance management. In order to better understand these weaknesses and the reasons for them, it is important to refer back to the course's prescribed learning outcomes in this discussion (see Table 1).

Table 3: Course learning outcomes

Learning Outcome	Description
1	Present ideas and arguments in written contexts following academic conventions of planning and organization by developing clear, concise, and coherent writing
2	Use writing and reading for inquiry, learning, concise, and coherent writing
3	Demonstrate understanding of a written assignment as a series of tasks, including finding, evaluating, analyzing, summarizing, and synthesizing from appropriate primary and secondary sources.

Source: University Course Syllabus 2021

5.1 Creativity

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Question 9: *I gave my students opportunities to use their imagination in class* received a strongly disagree rating. In an academic writing course there is very little room for one's imagination. Logic, reason, evidence, and data need to be applied instead. Therefore, this rating is reasonable in outcome. Question 10: *I gave my students opportunities to come up with new ideas in class* received an uncertain rating. Again, the nature of the course does not allow for the generation of novel ideas since no student research is conducted in the course. In order to add this to the course and thereby strengthen the skill of creativity, the learning outcomes would need to be revised to include an IMRD project/paper. In fact, other universities in which the author has worked include such a project on the syllabus.

5.2 Entrepreneurship

Question 13: *I allowed my students to find new ways to improve something* received a strongly disagree rating as well. Again, this skill is beyond the remit of the course. Given the nature of the course, the entrepreneurial skill of innovation would be difficult to include unless a problem-solution type of assignment where students come up with a solution to an existing local, regional, or global problem were introduced. Again, such a project/assignment has been given by the author at other universities where she taught a similar course.

5.3 Ethics

Question 14: *I gave my students opportunities to explore their moral principles in class* and Question 15: *I gave my students opportunities to apply their own moral principles in class* received strongly disagree ratings. The ethics of academic writing were taught in this course. There was no room for students to explore or apply their own principles here. Rather, they were expected to adhere to the ones prescribed in the course to meet international standards.

5.4 Empathy

Question 28: *I encouraged my students to try to understand the viewpoint of others in class* and Question 29: *I encouraged my students to show care for one another* were both assessed as uncertain. The reason for this rating is that the author of this paper was teaching online which resulted in very few students expressing their viewpoints. In order to observe interactions, the author needed to visit the breakout rooms during activities. Although this was done, it was sporadic and left very little chance for proper assessment of this skill – although the author would always encourage students to respect other viewpoints and show care for each other.

5.5 Self-Awareness

Question 33: *I gave my students opportunities to self-reflect on their actions* received a strongly disagree rating. Although students were *made aware of* how their actions resulted in lower grades or even assessments of zero, the course itself did not have a reflective assignment. This could easily be added to the end of the course to get students to reflect on their learning experience. This was often part of similar courses taught by the author at other institutions.

5.6 Strategic Vision

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Question 47: *I encouraged my students to understand the university's strategic vision* received a strongly disagree rating. The reason for this is that the author, who was adjunct only, had not viewed the strategic vision herself. The course outline did not include the university's strategic vision either, so it never occurred to the author to introduce it in class. However, upon reflection it would have been a useful exercise to do. In the future, the vision could easily be introduced at the beginning of the course and added to the course outline. Throughout the course, the instructor could highlight the different skills that support this vision in class. For example, in this Academic English course, students practised their analytical, communicative, and critical thinking skills in a collaborative and nurturing environment. With 67% of the Human Skills Matrix covered in this course, it is sure to help students succeed in their future professional lives as well.

5.7 Project management

Question 53: *I gave my students opportunities to manage non-human resources* also received a strongly disagree rating. In this course, students did not get the opportunity to manage resources such as technology or funding for a project. Due to the nature of the course and its learning outcomes, this addition is not suitable.

5.8 Performance management

Question 54: *I gave my students opportunities to encourage each other to work efficiently in groups* received a rating of uncertain and Question 55: *I gave my students opportunities to evaluate their own individual/group performance* received a strongly disagree rating. Whereas the instructor always encouraged students to work efficiently and often showed students how to do this, it was unclear whether students had the opportunity themselves to suggest this. This would have required closer observation in the breakout sessions of the course by the instructor. In terms of evaluation of students' own performance, this course did not allow for this type of assessment. Perhaps in the future, the course could have a group project where members of the group assess their own and others' contributions.

5. Conclusion

The use of the Human Skills Matrix as a self-reflective teaching tool has proven to be useful to the instructor in/author of this study. The self-reflection highlighted a number of weaknesses in the course in terms of preparing students for their future professional work environments. The author recommends the addition of the following to further strengthen the course:

- Include and IMRD project or paper
- Include a problem-solution assignment
- Include a self-reflection assignment
- Include clear connections to university's strategic vision in lessons

4th International Academic Conference on Teaching, Learning and Education

- Include a group project where students self-assess and assess other members

With the above additions, there would be increases in the ratings of creativity, entrepreneurship, self-awareness, strategic vision, and performance management, resulting in satisfactory course representation. This would reduce the number of unaddressed soft skills in the Human Skills Matrix to only 3, bringing the percentage of addressed skills to 21 out of 24 or 88%. Further ways to strengthen the skills would be to add a professional email writing assignment to the course and to have students examine and discuss their ethics on plagiarism based on their past experience and cultural learning environments. Another possible addition would be to help students working in groups set reasonable project goals.

Limitations to this study include the subjectivity of this study in terms of only one investigator developing and applying the questions to one course. Including more academic voices in the development of the questionnaire would make the tool more robust. Having other instructors from all kinds of faculties from different universities around the world apply the tool to the assessment of their courses would yield further results and greater discussion as well.

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