

# CONCURRENT ASSESSMENT OF FOUNDATIONAL SKILLS NEEDED FOR PARTICIPATION IN A KNOWLEDGE ECONOMY

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# AGENDA

- Research Background
- Research Goals
- GEFSA Components
- Student Comments
- Sample Results
- Future Work
- Conclusion

# RESEARCH BACKGROUND

- On-going transformation in higher education from a teaching- centric perspective to a student and learning-centric perspective, ensured that **student learning outcomes and their assessment have become the key vocabulary when discussing issues of pedagogy, accountability, and employability.**
- However, numerous reports point to a **notable misalignment** between the knowledge, skills, and attitudes demonstrated by **university graduates** and the competencies demanded by **employers**.
  - [UAE Skills Gap](#)
  - [Oman Unemployed](#)
- **This misalignment is what makes the assessment of foundation skills so relevant.**

# RESEARCH BACKGROUND

- **Proficiency in foundation skills**, ranging from the ability to engage in lifelong learning to functioning successfully on a multi-disciplinary team, is **critical for success in today's knowledge economy**
- In the 2021 vision the UAE has rightfully recognized that knowledge economies are at the center of the 21st century knowledge societies;
- Knowledge economies require graduates with strong foundational skills to become the knowledge workers driving these economies;
  - **Knowledge economies** are based on the intensive production, dissemination and use of knowledge.
  - **Knowledge workers** are those in sectors that require intensive knowledge and information analysis, such as engineers, doctors, scientists, university professors, lawyers, administrators, journalists and others

# RESEARCH BACKGROUND

- The foundational skills required of graduates by employers that will enable them to successfully embrace the opportunities offered by knowledge societies are:
  - life skills (communication skills, teamwork and leadership skills, language skills in reading and writing, information literacy),
  - transferable skills (such as problem-solving including critical thinking, creativity, quantitative reasoning), and
  - technology skills (search for knowledge and build upon it)

# RESEARCH BACKGROUND

- Foundation skills are notoriously **difficult to assess and measure**.
- Usually they **evaluate a skill indirectly** through focus groups, interviews or surveys eliciting student opinion
- To address this problem, we **adapted a direct method for assessing and measuring foundation skills** in an engineering setting (the Engineering Professional Skills Assessment – EPSA/CPSA) to the **ZU UC environment**
- This research aims to develop a **General Education Foundation Skills Assessment – GEFSA** for determination of student attainment

# RESEARCH BACKGROUND

- The GE program learning outcomes of ZU are well-aligned with the aforementioned foundational skills
- As such – we've developed **GEFSA** to reflect the general education program learning outcomes, i.e. the ZULO's.



# RESEARCH BACKGROUND

Zayed University Learning Outcome (ZULO)	Foundational Skill
Language	Ability to communicate effectively with a range of audiences.
Critical Thinking and Quantitative Reasoning	Ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
Information Literacy	Recognition of the need for and an ability to engage in continuing professional development.
Technological Literacy	Ability to use current techniques, skills, and tools necessary for computing practice.
Leadership	Ability to function effectively on team to accomplish a common goal.
Global Awareness	Ability to analyze the local and global impact of computing on individuals, organization and society.



# RESEARCH GOALS

1. To develop a concurrent assessment model (GEFSA) to measure student attainment of foundational skills;
2. to establish the basic reliability and validity of GEFSA and
3. to determine the perceived usefulness of the GEFSA to students, faculty and curricula design
4. To ensure that GEFSA aligns with CPSA for future institutional application

# GEFSA COMPONENTS

1. GEFSA student scenarios, the performance task
2. Student Posts - actual student performance
3. GEFSA rubric - measure student attainment of skills
4. Scenario Creation Guidelines to endure quality scenarios

# GEFSA COMPONENTS

- Feedback Components

1. **GEFSA student survey tool aligned to the rubric** to obtain meaningful feedback as to how students perceived the scenario improving their foundation skills
2. **GEFSA faculty survey tool** to obtain faculty feedback about they perceived the improvement of students foundation skills through participated in the GEFSA scenario activity

# STUDENT COMMENTS

(WHAT I LIKED ABOUT THIS ACTIVITY)

<p>I liked the topic because it is important that we know more it. I now have new ideas and knowledge after reading about this topic.</p>	<p>I like the strategy of group discussion with my colleagues and I really enjoyed doing it, because it related to my future major "environment and sustainability"</p>	<p>What I liked about the activity that it gave me the chance to read more about a topic that was not that familiar with</p>
<p>I liked this activity because it has improved my ability in writing and vocabulary</p>	<p>I think it help us in improving our writing and problem solving skills</p>	<p>Learning new information by searching and reading</p>

# SAMPLE RESULTS

- The attainment levels on our rubric are referred to as Missing (0), Emerging (1), Developing (2) and Practicing (3).
- We would expect students in by the end of their general education studies (3<sup>rd</sup> semester) to be in range of 2 to 3.
- Spring 2016 Pilot Results

Skill ZULO	A CTQR	B LS	C TL	D LANG	E GA	F IL
GEFSA Score	1.7	1.5	1.1	2.0	1.5	1.0

- Updated student prompts, updated rubric
- Fall 2016 Results

Skill ZULO	A CTQR	B LS	C TL	D LANG	E GA	F IL
GEFSA Score	2.22	2.17	2.00	2.44	1.56	1.94

# FUTURE RESEARCH

<b>GEFSA</b>	<b>0 - Missing</b>	<b>1 - Emerging</b>	<b>2 - Developing</b>	<b>3 - Practicing</b>	<b>n/a</b>	<b>n/a</b>
<b>CPSA</b>	0 - Missing	1 - Emerging	2 - Developing	3 - Practicing	4 - Maturing	5 - Mastering

<b>Measurement point in Baccalaureate</b>	<b>Skill Level Expectation</b>	<b>Comment</b>
<b>Year 1 beginning of GE (sem. 1)</b>	1.0+	Students mostly in the emerging band with some advanced students in the developing band
<b>Year 2 end of GE (sem. 3)</b>	2.0+	Students mostly in the developing band with some advanced students in the practicing band as they complete their GE requirements.
<b>Year 3 semester 2 = CIT 305 (sem. 6)</b>	3.5+	Students mostly in the practicing band with some advanced students in the maturing band as they complete their 3 <sup>rd</sup> semester in the major
<b>Year 4 semester 2 = internship (sem. 8)</b>	4.0+	Students mostly in the maturing band with some advanced students into the mastering band as they graduate from their major

# CONCLUSION

- Foundational skills (aka professional skills or employability skills) are critical for success in the 21st century knowledge economy – employers and governments expect them
- Academic programs strive to develop foundational skills in their students, **BUT** it is well-known that such skills are difficult to teach and assess.
- An additional challenge presented are accrediting bodies (local and international) requiring evidence of student attainment of foundation skills outcomes.