Illitaunikuliriniq:
Teaching/learning/assessing readiness skills

Robert Harrison, IB Global Centre, The Hague
Head of MYP Development
Life beyond the classroom

CLIAG:
Career Learning, Information, Advice and Guidance

CCR:
College and Career Readiness
Metaphor

Finding our way through territory that is both new and familiar
Now the people will know we were here

https://www.historicacanada.ca/content/heritage-minutes/inukshuk
Where would your *inuksuk* direct others to follow? What would it say about the path you have taken?
Destinations

The goals of career-ready, competency-oriented, skills-based education
Building the right skills can help countries improve economic prosperity and social cohesion.

By contributing to social outcomes such as health, civil and social engagement.

By supporting improvement in productivity and growth.

By supporting high levels of employment in good quality jobs.
Strengthening skills systems

Developing relevant skills

Activating skills supply

Contributes to economic prosperity

Putting skills to effective use

Contributes to social cohesion
Employer needs (knowledge & applied skills)

Top 5 Needs of Employers

- Critical Thinking and Problem Solving
- Information Technology Application
- Teamwork/Collaboration
- Creativity/Innovation
- Diversity

Education Technology Expert Alan November has included **Empathy** as Number One In His Surveys

*Are They Really Ready To Work: (Employer’s Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce.)*

21st century edtech web site provides total ranking
### What employers want

**Figure 1: Employers rate the importance of candidate skills/qualities**

<table>
<thead>
<tr>
<th>Skill/Quality</th>
<th>Weighted average rating*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to work in a team structure</td>
<td>4.55</td>
</tr>
<tr>
<td>Ability to make decisions and solve problems</td>
<td>4.50</td>
</tr>
<tr>
<td>Ability to plan, organize, and prioritize work</td>
<td>4.48</td>
</tr>
<tr>
<td>Ability to verbally communicate with persons inside and outside the organization</td>
<td>4.48</td>
</tr>
<tr>
<td>Ability to obtain and process information</td>
<td>4.37</td>
</tr>
<tr>
<td>Ability to analyze quantitative data</td>
<td>4.25</td>
</tr>
<tr>
<td>Technical knowledge related to the job</td>
<td>4.01</td>
</tr>
<tr>
<td>Proficiency with computer software programs</td>
<td>3.94</td>
</tr>
<tr>
<td>Ability to create and/or edit written reports</td>
<td>3.62</td>
</tr>
<tr>
<td>Ability to sell or influence others</td>
<td>3.54</td>
</tr>
</tbody>
</table>

*5-point scale, where 1=Not at all important; 2=Not very important; 3=Somewhat important; 4=Very important; and 5=Extremely important

Source: Job Outlook 2014, National Association of Colleges and Employers
Competency is the capacity to generate appropriate performance: to marshal the resources (tools, knowledge, techniques) in a social context (which involves working with others, understanding expectations) to realize a goal that is appropriate to the context. (OECD, 2013)

- Application of knowledge and skills, not mastery of knowledge or technique

- Encompassing knowledge, skills, attitudes (beliefs, dispositions, values)

Having a skill, AND knowing how to use it wisely
KEY competencies

Pre-requisites for achieving desired outcome
• ‘successful life and well-functioning society’
• ‘preparation for (emerging) labour markets’
• ‘personal fulfilment, active citizenship, social cohesion, employability’

Relevant to all individuals

Can be learned

Are generic or highly transferable relevant to multiple social fields and work situations (*transversal*)

Enable people to deal with *complexity, uncertainty & insecurity* (Bourne and Neal, *The Global Engineer*)
DeSeCo Categories

- Use tools interactively
- Act autonomously
- Interact in heterogeneous groups
The 21st Century Workplace: Six Disruptive Forces and Ten Essential Skills

Drivers: disruptive shifts that will reshape the workforce landscape
Key skill needed in the Future workforce

Extreme Longevity
Increasing global lifespans change the nature of careers and learning

Rise of smart machines and systems
Workplace robotics nudge human workers out of rote repetitive tasks

Computational World
Massive increase in sensor and processing power makes the world a programmable system

Design Mindset

Cognitive Load Management

Virtual Collaboration

Globally connected world
Increased global connectivity puts diversity and adaptability at the center of organizational operations

Trans-disciplinarity

Computational Thinking

Sense-Making

Novel and Adaptive Thinking

Social Intelligence

New media ecology
New communication tools require new media literacies beyond text

New Media Literacy

Cross Cultural Competency

Superstructured organizations
Social technologies drive new forms of production and value creation

Source: Future Work Skills 2020, Institute for the Future
• An ability to communicate with people across a range of social and cultural backgrounds
• An ability to work within teams of people from a range of backgrounds and other countries
• Openness to a range of voices and perspectives from around the world
• Willingness to resolve problems and seek solutions
• Recognition and understanding of the importance of global forces on people’s lives
• Willingness to play an active role in society at local, national and international levels
## Groups and hierarchies

<table>
<thead>
<tr>
<th>Competency groups</th>
<th>Examples of specific competencies cited in frameworks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive competencies</strong></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Reading, writing, oral communication, proficiency in foreign languages.</td>
</tr>
<tr>
<td>Information processing</td>
<td>Thinking skills, managing information.</td>
</tr>
<tr>
<td>Problem solving</td>
<td>Recognising problems and devising and implementing a plan of action, discovering a rule or principle underlying the relationship between two or more objects and applying it when solving a problem.</td>
</tr>
<tr>
<td>Learning</td>
<td>Learning to learn, reflexivity, effective management of one’s own learning.</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Using numbers, reasoning mathematically, communicating in mathematical language.</td>
</tr>
<tr>
<td><strong>Interpersonal competencies</strong></td>
<td></td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Team work, cultural sensitivity, working with others, relating to customers, negotiating, participate in projects and tasks.</td>
</tr>
<tr>
<td><strong>Intrapersonal competencies</strong></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>Planning (self and others), organisation, responsibility.</td>
</tr>
<tr>
<td>Creativity/entrepreneurship</td>
<td>Initiative, creativity, ability to assess and take risks.</td>
</tr>
<tr>
<td><strong>Technological competencies</strong></td>
<td></td>
</tr>
<tr>
<td>ICT</td>
<td>Work with a variety of technologies, use IT to organise data.</td>
</tr>
</tbody>
</table>
5 ATL skills categories / 10 clusters (MYP)

- **Thinking Skills**
  - Critical Thinking
  - Creative Thinking
  - Transfer

- **Social Skills**
  - Collaboration

- **Communication Skills**
  - Communication

- **Self-management Skills**
  - Organization
  - Affective Skills
  - Reflection

- **Research Skills**
  - Information literacy
  - Media literacy
ATL skills: Self management - affective

| Perseverance | Demonstrate persistence and perseverance  
| | Practice delaying gratification  
| Resilience | Practice ‘bouncing back’ after adversity, mistakes and failures  
| | Practice ‘failing well’  
| | Practice dealing with disappointment and unmet expectations  
| | Practice dealing with change  

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

*IB learners strive to be:*
Check-points

The promise and peril of assessment
Unit 10 - Part 1

You are looking for a job and have located these five websites.

You want to use a site that does not require you to register or pay a fee.

Bookmark all the sites that meet your requirements.

Once you have bookmarked the sites, click Next to go on.

Find Your Job - JobSearch.com
The best job search site on the web. Check with us first!
www.jobsearch.com

Work Links
We connect you with the best jobs on the web.
www.worklinks.com

Looking for a job?
Start your job search here.
www.careerstarters.com

Connections.com
We provide access to the best jobs
www.connectiona.com

The best jobs online
If you are looking for the perfect job, start right here.
www.greatjobs.com
Tasks are the circumstances that trigger a person’s awareness and understanding of the problem and determine the actions needed to be taken in order to solve the problem. Ordinarily, a wide range of conditions can initiate problem solving. Tasks are defined in terms of intrinsic complexity and the explicitness of the problem statement. The intrinsic complexity of a problem is determined by:

- the minimum number of steps required to solve the problem;
- the number of options or alternatives at various stages in the solution path;
- the diversity of operators required to be used, and the complexity of computation/ transformation;
- the likelihood of impasses or unexpected outcomes;
- the number of requirements that have to be satisfied to arrive at a solution; and
- the amount of transformation required to communicate a solution.

The explicitness of the problem statement relates to the extent to which the problem is ill-defined (the task is implicit and its components are largely unspecified) or well-defined (the task is explicit and its components are described in detail).

http://skills.oecd.org/skillsoutlook.html
http://www.oecd.org/site/piacc
When in doubt, don’t!

Table 8.2
Coverage of the dimensions of human capital directly assessed in the Survey of Adult Skills (PIAAC)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Broadly transferable</th>
<th>Less transferable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Assessed to a limited extent (literacy and numeracy)</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Skills (cognitive)</td>
<td>Assessed (literacy, numeracy and problem solving)</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Skills (technical)</td>
<td>Assessed to a limited extent (computer use)</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Skills (inter and intra-personal)</td>
<td>Not assessed</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Competency/Application</td>
<td>Not assessed</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Personal attributes</td>
<td>Not assessed</td>
<td>Not assessed</td>
</tr>
</tbody>
</table>

Key competencies and skills covered (or not)

<table>
<thead>
<tr>
<th>Category</th>
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<td></td>
</tr>
<tr>
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<td>Self-regulation</td>
<td></td>
</tr>
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<td>Problem solving</td>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>Learning</td>
<td>Creativity/Entrepreneurship</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>ICT</td>
<td></td>
</tr>
</tbody>
</table>
OECD Collaborative problem solving 2015

**Student Background**
- **Prior Knowledge**
  - Math
  - Reading and writing
  - Science and environment
  - Everyday learning
- **Characteristics**
  - Dispositions and attitudes
  - Experience and knowledge
  - Motivation
  - Cognitive ability

**Core Skills**
- **Collaborative Skills**
  - Grounding
  - Explanation
  - Coordination
  - Filling roles
  - Perspective taking
  - Audience design
  - Argumentation
  - Mutual regulation
- **Problem Solving Skills**
  - Explore and understand
  - Represent and formulate
  - Plan and execute
  - Monitor and reflect

**Collaborative Problem Solving Competencies**
- Establishing and maintaining shared understanding
- Taking appropriate action to solve the problem
- Establishing and maintaining team organisation

**Task Characteristics**
- Openness
- Information availability
- Interdependancy
- Symmetry of goals

**Problem Scenario**
- Task Type
- Settings
- Domain content

**Medium**
- Semantic richness
- Referentiality
- Problem space

**Team Composition**
- Symmetry of roles
- Symmetry of status
- Size of group

**Context**
# OECD Collaborative Problem Solving 2015

<table>
<thead>
<tr>
<th>(1) Establishing and maintaining shared understanding</th>
<th>(2) Taking appropriate action to solve the problem</th>
<th>(3) Establishing and maintaining team organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(A) Exploring and Understanding</strong></td>
<td><strong>(A1) Discovering perspectives and abilities of team members</strong></td>
<td><strong>(A2) Discovering the type of collaborative interaction to solve the problem, along with goals</strong></td>
</tr>
<tr>
<td><strong>(B) Representing and Formulating</strong></td>
<td><strong>(B1) Building a shared representation and negotiating the meaning of the problem (common ground)</strong></td>
<td><strong>(B2) Identifying and describing tasks to be completed</strong></td>
</tr>
<tr>
<td><strong>(C) Planning and Executing</strong></td>
<td><strong>(C1) Communicating with team members about the actions to be/being performed</strong></td>
<td><strong>(C2) Enacting plans</strong></td>
</tr>
<tr>
<td><strong>(D) Monitoring and Reflecting</strong></td>
<td><strong>(D1) Monitoring and repairing the shared understanding</strong></td>
<td><strong>(D2) Monitoring results of actions and evaluating success in solving the problem</strong></td>
</tr>
</tbody>
</table>
Define, Access, Evaluate, Manage, Integrate, Create and Communicate

Developing, Foundational, Advanced
The company where you work has the following sign hanging on a door. Your supervisor asked you to retrieve supplies from this room. How should you handle this situation?

9 / 10

Best
- Inform your coworkers that you will enter the room.
- Ask a coworker to enter the room and get the supplies for you.
- Enter the room as quietly and secretly as possible.
- Return to your supervisor to find someone authorized to enter.
Others have passed this way

Comparing systems, models and pathways
The WRC is based on the national Equipped for the Future (EFF) applied learning standards and the U.S. Department of Labor’s work on SCANS and O*NET. Managers, workers, and supervisors from across industries chose the skills listed below from the EFF Standards as critical for entry-level workers to succeed in today’s workplace and global economy:

- Listen actively
- Read with understanding
- Use math to solve problems
- Solve problems and make decisions
- Cooperate with others
- Resolve conflict and negotiate
- Observe critically
- Take responsibility for learning
Australian national curriculum
Metastudy: shared 21st century skills

1. Thinking: analytical, critical, problem-solving, creativity
2. Information literacy: retrieval, analysis and presentation of information
3. Interpersonal: team work/collaboration
4. Citizenship: global awareness, environmental awareness, ethics
5. Career and life: self-motivation, self-presentation
8 essential skills (New Zealand)

1. Communication
2. Numeracy
3. Information
4. Problem-solving
5. Self-management and competitive
6. Social and cooperative
7. Work
8. Study
Level 2-3 European Qualification Framework

1. Cooperation
2. Problem solving
3. Creativity
4. Design
5. Health and safety
6. Systems thinking
7. Client awareness
8. Entrepreneurship
9. Added Value
10. Usefulness
7 domains of lifelong learning

1. Changing and learning (agency)
2. Critical curiosity (intrinsic desire to find out more)
3. Making meaning (connections and relationships)
4. Creativity (think ‘outside the box’)
5. Resilience (emotional response to difficulty)
6. Strategic awareness (reflective approaches to learning)
7. Learning relationships (in isolation, and in community)
6 personal learning and thinking skills (UK)

1. Team workers
2. Self-managers
3. Independent inquirers
4. Reflective learners
5. Creative thinkers
6. Effective participants

‘succesful learners, confident individuals, responsible citizens’
Career & technical education competencies

1. Act as a responsible citizen and contributing employee
2. Apply appropriate academic and technical skills
3. Attend to personal health and financial well-being
4. Communicate clearly and effectively with reason
5. Consider environmental, social and economic impact of decisions
6. Demonstrate creativity and innovation
7. Employ valid and reliable research strategies
8. Utilize critical thinking to make sense of problems and persevere in solving them
9. Model integrity, ethical leadership and effective management
10. Plan education and career paths aligned with personal goals
11. Use technology to enhance productivity
12. Work productively in teams while using intercultural competence
<table>
<thead>
<tr>
<th>Organization/Skill</th>
<th>Creativity</th>
<th>Problem Solving</th>
<th>Analyzing Information</th>
<th>Global Competence</th>
<th>Writing</th>
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<tbody>
<tr>
<td>Achieve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td>Assessment &amp; Teaching of 21st Century Skills (ACT21S)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>College Board</td>
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<td></td>
<td>✓</td>
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<tr>
<td>College Readiness Standards (ACT)</td>
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<td></td>
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<td></td>
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<td>Collegiate Learning Assessment</td>
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<td>Educational Testing Service (ETS)</td>
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<td>Hewlett Foundation Deeper Learning</td>
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<td>Metiri Group</td>
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<tr>
<td>Partnership for 21st Century Skills (P21)</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Tony Wagner’s The Global Achievement Gap</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Ways of thinking
- Creativity and innovation
- Critical thinking, problemsolving, decision-making
- Learning to learn, metacognition (knowledge about cognitive processes)

Ways of working
- Communication
- Collaboration (teamwork)

Tools for working
- Information literacy
- Information and Communication Technology (ICT) Literacy

Living in the world
- Citizenship - local & global
- Life and career
- Personal and social responsibility - including cultural awareness and competence
What is readiness?

ACT defines it as the acquisition of the knowledge and skills a student needs to enroll and succeed in credit-bearing first-year courses at a postsecondary institution (such as a 2- or 4-year college, trade school, or technical school) without the need for remediation.

How does ACT measure college readiness?

By measuring the empirical minimum scores needed on the ACT subject area tests to indicate:

- A 50% chance of obtaining a B or higher.
- Or about a 75% chance of obtaining a C or higher in corresponding credit-bearing first-year college courses.
21st century skill areas

Learning and Innovation Skills
  Creativity and Innovation
  Critical Thinking and Problem Solving
  Communication and Collaboration

Information, Media and Technology Skills
  Information Literacy
  Media Literacy
  ICT Literacy

Life and Career Skills
  Flexibility and adaptation
  Initiative and self-direction
  Social and cross-cultural skills
  Productivity and accountability
  Leadership and responsibility
1. Using tools interactively
   a) Use language, symbols and texts interactively
   b) Use knowledge and information interactively
   c) Use technology interactively

2. Interacting in heterogeneous groups
   a) Relate well to others
   b) Co-operate, work in teams
   c) Manage and resolve conflicts

3. Acting autonomously
   a) Act within the big picture
   b) Form and conduct life plans and personal projects
   c) Defend and assert rights, interests, limits and needs
CASEL essential skills

1. Know yourself and others
   • Identify feelings, understand obligations, recognize strengths

2. Make responsible decisions
   • manage emotions
   • understand situations, set goals, solve problems creatively

3. Care for others
   • Show empathy, respect others, appreciate diversity

4. Know how to act
   • communicate effectively
   • build relationships
   • negotiate fairly, refuse provocations
   • seek help
   • act ethically

21st century skills - ‘things like’: 

- Understanding global contexts and trends
- Creative and collaborative problem-solving
- Effective communication
- Negotiation and consensus building
- Strong entrepreneurship and leadership qualities
- Resilience and adaptability
- An innovative and critical mindset
- Cultural sensitivity
- Ethical decision-making
A short inquiry into skills models

FIRST, have a chat

a. How many are there?
b. Who put the list together → how does perspective and purpose shape what’s on the list?
c. What do they share with other lists with which you’re familiar?
d. What might they add to the conversation?

SECOND, take a hike

a. Share what you have, and what you think about it.
b. Compare with the other pair
c. (Exchange models if you each like the other’s more!)
d. Circle, star, annotate important points
e. Repeat
Learning is always a political act
Which direction should we take?

Plotting a course for ourselves (alone and together)
What are we still asking ourselves?

1. How can we overcome the technical and administrative limitation of group assessment?
2. How far can we go in evaluating competencies as a meaningful educational outcome?
3. What can we do to validate the development of non-cognitive skills?
4. Should we distinguish between college and career readiness?
5. Where is the proper balance of career / technical vs. ‘academic’ preparation?
6. What does effective career education look like for 11-16 year olds?
7. Are we teaching the right mathematics and literacy content?
8. Could it be that college and career readiness are already embedded in and assessed by the formal, informal and hidden curriculum with which students engage, and that outcomes/achievement already tell the tale?
9. Does focusing on career readiness unbalance the broader purpose of education (enlightenment, fulfilment, civilization, wisdom) for a technocratic, utilitarian vision?
10. Is this instrumentalist, colonial neo-liberal education at its worst?
11. Can education focused on the new economy serve all students?
Aware of/ guided by/ looking toward

Reaching out to

At its core

Grounded by
Mindset
How do you understand the world?

Relationships
For whom and to whom are you responsible?

Heart
What do you treasure?

Heritage
Where are your roots?
Radical or incremental innovation?

<table>
<thead>
<tr>
<th>Pedagogy</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenge-based learning</td>
<td>- Competency-based learning</td>
</tr>
<tr>
<td></td>
<td>- Schools of the future</td>
</tr>
</tbody>
</table>

(Ricardo Semler)
Masters and learners
Real-world projects
‘learn what you want’
A classroom makeover for digital knowmads

Wit
Curation
Teachability
Sales[man]ship
Using big data
Risk management
Imagination
Improvisation
Wisdom / Savvy
Uniqueness of vision