Foundational Skills for Jobs and Productivity

4th November 9.15-10.30 AM

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World Bank

Jobs, Labor & Migration Course
Outline

1. Why Foundational skills?
   – What are foundational skills?
   – Why are they increasingly important?

2. Why are Foundational skills increasingly important?
   – Changes in the demand for skills
   – The payoffs to foundational skills

3. How to develop foundational skills among youth and adults?
   – The Science of adult learning and behavioral change
   – Examples and evaluation results from some successful/ promising youth training and adult literacy interventions
WHAT ARE FOUNDATIONAL COGNITIVE AND SOCIO-EMOTIONAL SKILLS?

(Socio-emotional also called non-cognitive, life or soft skills, character skills, 21st century skills..)
Workers have more education, but inadequate skills

Where is the disconnect?

General skills?

Specific skills?

Mismatch of skills?

Other factors ...

Not enough jobs?

... nature of jobs’ skills requirements is changing
What does it take to be a “well-educated” person in the 21st Century?

<table>
<thead>
<tr>
<th>Basic Cognitive Skills</th>
<th>Socio-Emotional Skills</th>
<th>Technical (job-task specific)</th>
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<tbody>
<tr>
<td>Involving the use of logical, intuitive and creative thinking</td>
<td>Beliefs, personality traits, Behavioral skills</td>
<td>Involving manual dexterity and use of methods, materials, tools &amp; instruments</td>
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<tr>
<td>Raw problem solving ability vs. knowledge to solve problems</td>
<td>Openness to experience, conscientiousness, extraversion, agreeableness, emotional stability</td>
<td>Developed through VET/university/training or acquired on the job</td>
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<tr>
<td>Verbal ability, numeracy, problem solving, memory (working and long-term) and mental speed</td>
<td>Self-regulation, Grit/perseverance, decision making, self &amp; interpersonal skills</td>
<td>Related to specific occupations/trades (e.g. engineer, economist, IT specialist, plumber)</td>
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Defining socio-emotional skills (Psychology)

“...relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances” (Roberts, 2009)

**Personal characteristics**

- **Beliefs, attitudes motivation**
  - Self-theories (Growth vs. fixed mindsets)

- **Personality Traits**
  - **BIG 5**: Openness to experience, Conscientiousness, Extraversion, Agreeableness, Emotional Stability
  - Other (e.g., honesty)

- **Personality facets (~ Socio-emotional skills)**
  - Curiosity, Originality, Self-regulation, Self-efficacy, Grit, Resilience, Empathy, Cooperation, Self-esteem, Internal/External locus of control, many others.

**Observed Behaviors**

- Self-disciplined, organized, on time, reliable, patient, perseverant/gritty
- Shows initiative; Thinks outside the box; Problem solver
- Willing and quick to learn, from mistakes
- Handles well stress and frustration; Bounces from setbacks
- Works well with others, Good with clients
- Guides, supervises others effectively

At school, in the workplace
WHY ARE FOUNDATIONAL SKILLS INCREASINGLY IMPORTANT?
Changing jobs from requiring non-routine cognitive/technical and socio-emotional skills

KEY: Change in share of jobs, 1980 to 2012
- Fell
- About the same
- Grew

Work in the developing world is also becoming more intensive in non-routine skills

Change in Employment Composition by type of occupation (2000-2012)

Annual average change in employment share (percentage points)

- High-skilled occupations (intensive in non-routine cognitive and interpersonal skills)
- Middle-skilled occupations (intensive in routine cognitive and manual skills)
- Low-skilled occupations (intensive in non-routine manual skills)

Digital technologies are expected to take on or transform many jobs

50%: Probability that a child in the developing world will find a job in an occupation as they exist today

Cognitive skills of adults lag behind in developing countries, especially among women

### Reading Proficiency Scores*
**Adults in urban areas, 25-64 years**

- Ukraine: Men - 263, Women - 269
- Armenia: Men - 254, Women - 254
- Georgia: Men - 237, Women - 244
- Vietnam: Men - 236, Women - 228
- Colombia: Men - 232, Women - 223
- Bolivia: Men - 191, Women - 173
- Kenya: Men - 182, Women - 158
- Ghana: Men - 107, Women - 160

* Reading proficiency scale 0 to 500


**Average Literacy skills scores for OECD countries on PIAAC is about 272, with no significant gender differences.**
Foundational literacy skills pay off, especially in less developed economies

Earnings premium to Reading Literacy
Workers 25-64 years old in urban areas

*** statistically significant at 1%; change in earnings from a 1 stdev change
Foundational Socio-emotional skills also carry an earnings premium

**Earnings premium to Openness to Experience**
Workers 25-64 years old in urban areas

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent Increase in Earnings</th>
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<tbody>
<tr>
<td>Colombia</td>
<td>-2%</td>
</tr>
<tr>
<td>Armenia</td>
<td>0%</td>
</tr>
<tr>
<td>Bolivia</td>
<td>2%</td>
</tr>
<tr>
<td>Georgia</td>
<td>9%</td>
</tr>
<tr>
<td>Ghana</td>
<td>4%</td>
</tr>
<tr>
<td>Ukraine</td>
<td>9%</td>
</tr>
<tr>
<td>Kenya</td>
<td>17%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>17%</td>
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</tbody>
</table>

** ** stat sigif at 5%; *** stat sigif at 1%; change in earnings from a 1 stdev change
In Peru, Cognitive Skills And Grit Are as Important in Predicting Earnings, and More Important For College Access Than Financial Constraints

Note: Simulations from regressions that control for individual and family factors such as gender, ethnic group, parental/family background. Monetary resources proxy by self-reported family SES during secondary schooling. Skills measured through batteries of tests.

Change in the probability of tertiary education enrollment


* Attend university rather than technical institute
PRIORITIZING FOUNDATIONAL SKILLS
Investing in Skills over the life-cycle: When, for Whom

Source: Based on Valerio, Venegas, and Arias (2016).
Skills policy priorities in a fast-changing world

1. Policy makers need to reckon with policy trade-offs in investing in the skills needs of today and tomorrow’s - The Skills Balancing Act:

   • Skills to cater to most prevalent employment today and potential leading sectors in the future
   • Skills of new cohorts and skills of the current stock of workers
   • Specific technical skills to ease the school-to-work transition and foundational skills to help workers adapt to change

2. Prioritize achieving universal foundational skills

   • Equality of opportunities and school readiness, including through investments in maternal health, child nutrition/ECD, education quality for learning, adult literacy
   • Learning should focus on cognitive and socio-emotional skills that lay a basis for metacognitive skills like “thinking about thinking”, “learning to learn” rather than rote learning
   • Avoid tracking too early to narrow vocational basic education

3. Education and training systems and programs need to be more responsive and adaptive
HOW TO DEVELOP FOUNDATIONAL SKILLS AMONG YOUTH AND ADULTS?

Adult Literacy
The aging brain poses some challenges to adult learners

Changes in Brain Plasticity over life course

Data from Huttenlocher & Dabholkar (1997)
But the aging brain can compensate – adult learners can actually harness some strengths

Better-performing older participants compensated for age-related memory decline by reorganizing the episodic retrieval network

- Learning involves interaction of many brain areas in a hierarchy of systems, most remain plastic for the kinds of learning relevant to adult learners
- Adults have some strengths: several skills are optimal by age 20-30 and don’t decline until 60 onwards (Executive function (attention, working memory), explicit memory, Meta-cognition (learning to learn, thinking to think), oral language)
- Adults learn best by building on prior experience/knowledge and require more practice

Source: Daselaar and Cabeza (2004)
Science of Adult Literacy: Key Principles

• Learning to read as an adult is hard:
  – Takes a great deal of mental effort over an extended period of time (same for children);
  – Adult literacy programs should be sufficiently long and provide adequate intensity of instruction

• Literacy is acquired along a continuum, with three very broad stages: starting from Emerging, to Improving, to Fluent literacy
The building blocks of literacy

- Alphabetic principle
- Phoneme-grapheme correspondences
- Metalinguistic awareness
- Functional literacy
- Developing decoding and encoding
- Large sight vocabulary
- Rapid retrieval of word meaning
- Rapid decoding of new words
- Literacy for comprehension
- Improving rate and comprehension
- Effortless

The continuum of literacy development, moving from Emerging, through Improving to Fluent literacy.

Source: Thomas, et al., forthcoming.
Science of Adult Literacy: Implications for program design
Science of Adult Literacy: In a nutshell

Three key principles for effective ALP:

• **Sequencing** along the building blocks of literacy;

• **Suitability**: programs are designed to suit the brain and life of the adult learner;

• **Quality of instruction**: just as in any level of education, it is a key ingredient of learning.

More successful programs follow some or all principles
Programs that targeted emerging literacy skills had positive significant impact

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<tr>
<th>Program Objective</th>
<th>Baseline Ability of Participants</th>
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<tr>
<td></td>
<td>Illiterate</td>
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</table>
| Emerging Literacy skills | - Project ABC  
- CELL-ED  
- Call Me Educated |                  | - Theory-based CAI  
- ML-CHAMP |                  |
| Literacy skills | - NEUROALFA  
- Misión Robinson |
|                  | - Phonological-Awareness and Rapid-Reading Training  
- TA+  
- GAIN  
- Incentives to Improve Attendance | - READY  
- Text Comprehension Strategies  
- Structured Decoding  
- Instructional Approaches on Reading Outcomes  
- Sam and Pat  
- Learning Strategies  
- CAI in Prison | - Two methods of Reading  
- Autoskill |

- The relatively high success rate of programs targeting emerging literacy skills may, in part, stem from the fact that those programs target the baseline ability of their participants;

- The majority of programs aiming beyond emerging literacy don’t account for learners’ baseline abilities and/or don’t build the necessary foundations (e.g., materials/approach for the wrong skill level is part of this)
Adult literacy with monitoring program boosts literacy and numeracy among adults in Niger

- 160 villages were randomized into three groups: (i) those receiving adult education; (i) getting adult education + monitoring cell phone calls; and (iii) control getting nothing. Five days a week, three hours per day, over four months. Low-cost to replicate.

- Monitoring calls each week during the last two months of the literacy course to: the teacher, the village chief, two randomly selected (female and male) students.

- Impact seems to occur through increased teacher and student effort and motivation due to increased attention.

Source: Aker and Ksoll 2015
In India, an adult literacy program paired with parenting training improved mothers’ literacy and numeracy

- Households from 480 villages in the states of Bihar and Rajasthan were assigned to receive either: (i) adult literacy (language and math) classes for non-literate mothers; (ii) training for mothers on how to enhance their children’s learning at home; (iii) a combination of the latter two; and (iv) control getting nothing. Five days a week, three hours per day, over four months. Low-cost to replicate.

- Mother Literacy classes were delivered two hours a day, six days a week by trained volunteers. Parenting classes delivered by a paid staff member of the implementing NGO (Pratham) who visited each mother once a week for about 15-20 minutes.

- Results: Mothers’ literacy and numeracy rose significantly in all three groups, despite a low take-up rate of the literacy classes, especially among mothers who attended more frequently. And treated mothers are more involved in children’s learning.

- The scaling from NGO to government implementation has proved tricky.
HOW TO DEVELOP FOUNDATIONAL SKILLS AMONG YOUTH AND ADULTS?

SOCIO-EMOTIONAL
Success factors of Socio-emotional Skills Interventions (I)

They need to be “SAFE”:

• **Sequential**: ¿Does the intervention comprise activities to develop SE skills in a sequential fashion, step by step?

• **Active**: ¿Does the intervention utilize active Learning strategies such as role playing, situational simulations, with feedback loops?

• **Focused**: Does the program devote “sufficient” time exclusively to developing social and emotional skills?

• **Explicit**: Does the program target specific social and emotional skills?
Success factors of Socio-emotional Skills Interventions (II)

✓ Curriculum and activities based on robust psychological models and evidence-based (i.e., promising or tested even if at small scale)

✓ Activities that are age-appropriate (engaging)

✓ Ignite incentives for action and behavioral change (e.g., connect wishes with goals, ideally at an emotional level)

✓ Use mentors and peers to motivate, model behaviors and develop them into habits

✓ Create real-life opportunities to experience practicing with the skills
Youth Skills Training in Dominican Republic boosted earnings and formal employment over long term

1. Disadvantaged youth out of work, age 16-29, incomplete high school

2. Classroom-based training (225 hours)
   A. Vocational training (150 hours) tied to needs of local employers
   B. Socio-emotional skills training (75 hours): Self-esteem, communication, conflict resolution, goal-setting, time management, team work, decision making

3. Apprenticeships in private companies (240 hours):
   On the Job Learning: 6 hours per day during 8 weeks
   - Counseling with the training provider: 4 hours per week (8 weeks)

4. RCT evaluation: A+B; B; control group

Earlier evaluations indicate positive impacts on earnings and formal employment, arising largely from SE skills


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<th>Increased Formal Employment</th>
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<td>All</td>
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<th>Higher Earnings</th>
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<td>SD women 25-31%</td>
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Teaching goal-setting and self-regulation strategies to adults

- Designing interventions to teach goals-directed behavior among adults (youth and adults), to influence their beliefs about own agency and teach strategies for goal-setting, staying-on task, persisting
Lessons, Known Unknowns

• Foundational cognitive and socio-emotional skills are increasingly key to employability, carrying positive labor market returns

• Some promising interventions suggest these can be taught cost-effectively among youth, and also can be developed among adults though we lack data on costs-benefits

• Many unknowns: designing with aging brains in mind, use of behavioral nudges, right dose (intensity vs fatigue), single vs. multi-facet, long-term impacts; can incentives or wraparound services increase take-up and reduce dropout?

• Overcoming hurdles to scale up interventions and sustain impacts
  • Planning for low technology environments, training of instructors, etc
  • Sustaining impacts over time
THANK YOU!