Skill Activation Rubric – Reap Benefit

Introduction

In 2012, Reap Benefit began its journey with the mission to solve local civic and environmental issues with young people. Over the last 5 years, Reap Benefit has touched over 17500 school students through our program. We aim to create responsible future citizens by activating 21st century skills amongst students who undertake this program. We have created a skill rubric based on the latest literature which we use to evaluate skills activation among these students.

The reasons for creating this skill rubric are:
- To measure skill activation amongst our students based on actions taken
- To help students develop these skills further and how they could incorporate it in their lives

This document will serve as an introduction and guide to the skill rubric and contains the definitions that were used in its development.

Model
The World Economic Forum [1] has taken on a multi-year initiative, New Vision for Education, to examine the pressing issue of skills gaps and explore ways to address these gaps through technology. They believe that to thrive in a rapidly evolving, technology-mediated world, students must not only possess strong skills in areas such as language arts, mathematics and science, but they must also be adept at skills such as critical thinking, problem-solving, persistence, collaboration and curiosity. All too often, however, students in many countries do not attain these skills.

They have divided these skills into 3 broad categories:
- **Foundational Literacies** - representing how students use core skills to everyday tasks
- **Competencies** - representing how students would approach challenges and problems that they face
- **Character Qualities** - representing how students approach their changing environment

This classification was very useful to us and we have classified our skills using the same rubric below:

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21st Century Skills

- How students apply core skills to everyday tasks
- How students approach complex problems
- How students approach changing environments

Foundational Literacies
- Data orientation
- Hands on skills
- Citizenship

Competencies
- Problem Solving
- Communication skills
- Critical thinking

Character Qualities
- Community Collaboration
- Grit
- Applied Empathy
- Entrepreneurial skills

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The WEF observes that there are many difficulties to measuring these skills, even in more developed OECD countries. Some of these issues are due to differing cultural connotations for these skills, lack of data in these skills, lack of these skills being tracked and so on. They believe that with clearer definitions of these skills, we would be able to develop parameters to track progress on these skills.

Based on this, we defined skills more robustly to allow us to track students’ actions and thereby measure skill activation. The definitions are below:

**Foundational Literacies**

**Data orientation**

Universities UK, a consortium of leading universities in the UK, has reported [2] that the collection and analysis of quantitative data is becoming increasingly important across a range of sectors. As business and research interest in data expands, so too does the demand for workers able to analyze and interpret datasets. They also report that there is a shortage of these data skills today.

They have recommended the following changes in schools and colleges:

(a) Stronger teaching of mathematics and statistics
(b) More and better information about analytical career prospects and role models
(c) Embedding of data analysis in more subjects
(d) Support for development of data related extra-curricular activities
(e) Boosting business and soft skills of graduates from data analysis courses

Our curriculum supports a data-related development in this direction by ensuring that students are taught the importance of data collection and analysis in the problem-solving process. Activation of data skills is then evaluated on the following parameters:

- Student is able to use a data collection tool to collect data
- Student can analyze collected data using a tool
- Student can create a report based on the data collected
- Student can develop a data collection tool like a questionnaire
- Student is able to do advanced analysis (mapping / statistical techniques) using a tool and create a report / dashboard

**Hands on skills**

Engineering students who took hands on courses were more likely to succeed in their courses in a study done in Canada by Knight et. Al. [3]. The explanations for these
successes were the impact of active hands-on pedagogy, creation of student learning communities, an early experience of the human side of engineering, self-directed acquisition of knowledge by students, instructor mentoring, and the success orientation of the course.

We are building on these results by ensuring that our students also develop significant hands on skills. We have measured them from planning to installation and also have included a rubric to measure the student on complexity of the solutions

The parameters for skill activation are given below:
- Student is able to prototype a new solution for the problem
- Is the solution prototyped completely new or was an existing solution used?
- Student installs a solution to solve the problem
- Is the solution completely new or was an existing solution used?

Citizenship Skills

P21, the Partnership for 21st Century learning, is a major advocate of learning 21st Century skills in school and college. Their position is that future citizens will be involved in an expanded civic life by being active in physical communities, online and through social media and getting involved in local politics as well as global initiatives. [4]

We would be activating these skills in students and promoting them to take these skills to their communities. In accordance with this thought, the below parameters have been created to measure activation of citizenship skills.
- Student participates in campaign activities at school / community
- Student starts a campaign at school / community
- Shares existing or new solution/s with authority figures

Competencies:

Problem Solving:
“Problem solving is cognitive processing directed at achieving a goal when no solution method is obvious to the problem solver.” [5]

There are researchers who provide evidence that some problem-solving skills do transfer between disciplines. Our objective therefore is to enable youth to solve local civic and environmental problems – this will help them activate skills that will help them to develop an attitude of being able to solve problems.

Some metaskills involved in the problem-solving process are discussed below [6]:
- Planning what – Question formation
- Planning how – Way to get answer

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• Planning big picture – Visualizes the problem
• Connects steps and pieced
• Monitors own progress
• Knowledge of own strengths and weaknesses
• Creativity
• Judgement of reasonable issues
• Personal experience

In order to maintain independence of skill groups – our problem-solving skills refers to the ability of the student to plan out her solutions to the problem identified from initial solution identification to final implementation.

• Student searches for and identifies existing solutions to the problem
• Student details out the steps for installing the solution (creates preparatory checklist)
• Student searches for and identifies existing information to prototype a new solution
• Student monitors the solution (campaign) design process through a checklist

Communication skills

Communicative competence, as defined by McCroskey and McCroskey is “the adequate ability to pass along or give information; the ability to make known by talking or writing” [7].

We are able to observe actions related to idea explanation, message delivery and listening ability

In our rubric we focus on explanation and message delivery. We assume that the student would build on her ability from delivering a generic description, with some explanations through any medium to a position wherein she can develop a fact or data-based explanation for problems and having the ability to choose the best possible medium for communicating to stakeholders

• Student informs stakeholders about problems faced in the school / home
• Student shares supporting data about a problem in an understandable manner
• Student shares one or more solutions to the issues faced to relevant stakeholders
• Student will build a case for her solution to the problem using precise definitions and collected data
• Student shares content to a relevant authority within the community

Critical thinking

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Critical thinking means making reasoned judgments that are logical and well-thought out. It is a way of thinking in which you don't simply accept all arguments and conclusions you are exposed to but rather have an attitude involving questioning such arguments and conclusions. It requires wanting to see what evidence is involved to support a particular argument or conclusion. People who use critical thinking are the ones who say things such as, 'How do you know that? Is this conclusion based on evidence or gut feelings?' and 'Are there alternative possibilities when given new pieces of information?' [8]

We have defined critical thinking starting at gathering information to trying to understand the information to ultimately being able to utilize information in problem solving.

Our rubric measures critical thinking on the following themes:
- Student is able to identify a civic / environmental issue
- Student expresses the overall outcome of the problem
- Student breaks up the problem into smaller parts
- Student expresses why a given issue needs a solution
- Student is able to express key areas for problem resolution

Character skills

Community Collaboration

As per the NewTechNetwork’s Rubric for collaboration, the student is able to Contribute to productive conversations by clearly expressing well-developed ideas that are relevant and supported with evidence or sound reasoning and monitoring solutions to closure [9]

In keeping with this sentiment, the Reap Benefit Skill rubric on Community collaboration focuses on the following parameters:
- Student is able to engage with community stakeholders to arrive at solutions
- Student is able to coordinate with community stakeholders to start off or create a multi-member solution / campaign
- Student is able to plan and execute and take the group solution to logical closure in the community

Grit

Grit is the tendency to sustain interest in and effort toward very long-term goals (Duckworth et al., 2007). [10]
Grit is about having what some researchers call an ‘ultimate concern’—a goal you care about so much that it organizes and gives meaning to almost everything you do. It is a combination of passion and perseverance.

Our rubric measures students’ activation of grit on the following parameters:
- Student makes multiple follow-ups to relevant stakeholders to solve the problem
- Student finds multiple channels to get in touch with stakeholders and solves the problem by engaging with stakeholders through these multiple channels

**Applied Empathy**

According to the Ashoka changemaker program, “Empathy is the ability to understand the feelings of another by reflecting on the impact of one’s actions on another.” [11]

They have divided empathy into the following subskills [12]:
- Articulating and managing emotions
- Active Listening

The Reap Benefit rubric, similarly recognizes when the student is able to put herself in the shoes of another, and is able to communicate and ensure that all members of the community have their needs met.

The evaluation parameters are as follows:
- Student is polite and ensures that her conduct does not demean or degrade any member of her team
- Student ensures that multiple members of the team have a voice in the final solution being decided upon and rejection of ideas do not lead to conflicts
- Student is cognizant of all stakeholders’ needs and tries to ensure that the solution does not exclude any stakeholder

**Entrepreneurial Skills:**

According to the Key Competence Framework, the entrepreneurship key competence refers to an individual’s ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. [13]

We recognize that entrepreneurial skills are an amalgamation of multiple skills already measured by us. However, to maintain independence of skill measurement we measure entrepreneurial skills as a mixture of leadership and agency.

Agency is the belief in our own ability to affect change in our lives. Agency provides us with the platform to rally our other skills in order to guide and direct our lives. [14]

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We measure skills activation in entrepreneurial skills thorough
Agency:
  • Researching the causes and consequences of the problem
  • Helping other problem solvers and stakeholders with multiple solutions
  • Verifying and reporting issues
Leadership:
  • Starting campaigns at home / community
  • Creating products
  • Mentoring fellow problem solvers
References
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11. Ashoka - Teacher Guide-EmpathyMetrics-Grade11-12
12. Ashoka_Comprehensive_Report_V4.0