

Collaboration and teamwork

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- Marilyn Binkley, Ola Erstad, Joan Herman, Senta Raizen, Martin Ripley, May Miller-Ricci, and Mike Rumble, „**Defining Twenty-First Century Skills**“, In Assessment and Teaching of 21st Century Skills, Eds. Patrick Griffin, Barry McGaw, Esther Care, pp.17-66, ISBN: 978-94-007-2323-8 (Print) 978-94-007-2324-5 (Online), 2012.
(http://link.springer.com/chapter/10.1007%2F978-94-007-2324-5_2)
- ITL Research, Microsoft Partners in Learning, SRI International, „**21CLD Learning Activity Rubrics**“, 2012
(<http://fcl.eun.org/documents/10180/14691/5.3x+-+21cld+learning+activity+rubrics+2012.pdf/e240da11-07c2-4633-a86e-06c12f00d8ad?version=1.0>)

Defining Twenty-First Century Skills

Table 2.6 Ways of working – collaboration, teamwork

Knowledge	Skills	Attitudes/values/ethics
<p><i>Interact effectively with others</i></p> <ul style="list-style-type: none"> • Know when it is appropriate to listen and when to speak 	<p><i>Interact effectively with others</i></p> <ul style="list-style-type: none"> • Speak with clarity and awareness of audience and purpose. Listen with care, patience, and honesty • Conduct themselves in a respectable, professional manner 	<p><i>Interact effectively with others</i></p> <ul style="list-style-type: none"> • Know when it is appropriate to listen and when to speak • Conduct themselves in a respectable, professional manner
<p><i>Work effectively in diverse teams</i></p> <ul style="list-style-type: none"> • Know and recognize the individual roles of a successful team and know own strengths and weaknesses, and recognizing and accepting them in others 	<p><i>Work effectively in diverse teams</i></p> <ul style="list-style-type: none"> • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work 	<p><i>Work effectively in diverse teams</i></p> <ul style="list-style-type: none"> • Show respect for cultural differences and be prepared to work effectively with people from a range of social and cultural backgrounds • Respond open-mindedly to different ideas and values
<p><i>Manage projects</i></p> <ul style="list-style-type: none"> • Know how to plan, set, and meet goals and to monitor and re-plan in the light of unforeseen developments 	<p><i>Manage projects</i></p> <ul style="list-style-type: none"> • Prioritize, plan, and manage work to achieve the intended group result 	<p><i>Manage projects</i></p> <ul style="list-style-type: none"> • Persevere to achieve goals, even in the face of obstacles and competing pressures
	<p><i>Guide and lead others</i></p> <ul style="list-style-type: none"> • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power 	<p><i>Be responsible to others</i></p> <ul style="list-style-type: none"> • Act responsibly with the interests of the larger community in mind

21CLD Learning Activity Rubrics

- Collaboration means:
 - 1) working together
 - 2) sharing responsibility
 - 3) making substantive decisions together
 - 4) working interdependently

21CLD Learning Activity Rubrics

- Students **work together** (collaborate) when the activity requires them to work in pairs or groups to:
 - discuss an issue
 - solve a problem
 - create a product

21CLD Learning Activity Rubrics

IS THIS WORKING TOGETHER?	
YES:	NO:
Pairs of students give each other feedback.	Students do their work alone.
A small group discusses an issue together.	A whole class discusses an issue.
A student uses Microsoft Lync or Skype to interview a student in another town via the Internet.	
Students use OneNote to share their story drafts and give each other feedback.	Each student creates his/her own story and sends it to the educator for feedback.

21CLD Learning Activity Rubrics

- Students have **shared responsibility** when they work in pairs or groups to develop a common product, design, or response.
- Students must collectively own the work and be mutually responsible for its outcome.

21CLD Learning Activity Rubrics

IS THIS SHARED RESPONSIBILITY?	
YES:	NO:
Students conduct a lab experiment together. Students have joint responsibility for carrying out the lab experiment.	Students give each other feedback. This activity structure implies that one student "owns" the work, and the other is only helping.
A student works with a peer in another country to develop a joint website using Microsoft Office 365. The students share responsibility for the development of the website.	A student interviews a peer in another country about the local weather. This is a task that students conduct together, but they do not have mutual responsibility for its outcome.

21CLD Learning Activity Rubrics

- Students make substantive decisions together when they must resolve important issues that will guide their work together:
 - Content: use knowledge of an issue to make a decision that affects the content of their work together
 - Process: what to do, when to do it, what tools to use, the roles and responsibilities of people on the team
 - Product: make fundamental design decisions that affect the nature and usability of the product

21CLD Learning Activity Rubrics

IS THIS A SUBSTANTIVE DECISION?	
YES:	NO:
<p>Students in teams are preparing for a debate and must decide what side of the issue they will argue for. This is a content decision that will shape their work together, and students must negotiate their ideas.</p>	<p>Students work together to identify capital cities of particular countries in Europe. This decision does not affect the rest of their work.</p>
<p>Pairs of students are developing a presentation about climate change and must decide what causes to write about. Students must decide together what the most important causes are; this decision will shape their presentation.</p>	<p>Pairs of students choose which animal they will study. Students will probably make this decision based only on personal preference, not on their knowledge of the subject.</p>
<p>Student teams are conducting a research project and must decide on their own workplan and roles on the team. Students must plan the process of their work.</p>	<p>Student teams assign roles to team members based on the list of roles the educator has defined. The educator has planned the process of their work, not the students.</p>
<p>Pairs of students decide how to shape their presentation to a particular audience. This is a fundamental design decision that will affect the nature of their overall product.</p>	<p>Pairs of students select a colour scheme for their presentation. Decisions about surface features are not considered substantive decisions that fundamentally affect product design.</p>

21CLD Learning Activity Rubrics

- Students' work is **interdependent** when all students must participate in order for the team to succeed.
- A group of students may share responsibility for an outcome, but one or two students may do all the work for the team.
 - Individual accountability: each individual on the team is responsible for a task that he or she must complete in order for the group to do its work.
 - Group accountability: all must work together to produce the final product or outcome, must negotiate and agree on the process, design, and conclusions of their work.

IS STUDENTS' WORK INTERDEPENDENT?

YES:	NO:
<p>Group members each research a different internal system (e.g. circulation, digestion, etc.) of frogs. Students then work together to dissect a frog and write a lab report about the dissection, identifying frog parts and the systems to which they belong. Students rely on each other's work in order to successfully identify what they see during the dissection.</p>	<p>Group members work together to research frogs, but each student conducts their own dissection and writes their own lab report. Students work together on the research component, but the products do not require input or participation from others.</p>
<p>Students each use their own networked device to contribute coordinate points that must collectively create the shape of a star. Each student's contribution is necessary so the group can create the completed shape.</p>	<p>One student uses a device to plot coordinate points and create a star shape, with input from group members. Only one student is plotting coordinates; the others may contribute, but they could also disengage without preventing the group from completing the product.</p>
<p>Students create a tourist website presenting the history, culture, attractions, and accommodations of their local area. Each individual might create a different piece of the overall website, but students need to work together to determine how to organize the information to create the best possible website.</p>	<p>Students each create a webpage about the history, culture, attractions, or accommodations of their local area that will be linked to the class homepage. Students do not have to strategize together in any particular way.</p>
<p>Students use Mouse Mischief to create a diagram showing the food chain in a vernal pond ecosystem. Each student controls a particular species and students must work together to place each species in its appropriate niche in the food chain. Students must work with each other to complete a comprehensive and accurate representation of the food chain.</p>	<p>Students use Mouse Mischief to identify which species in the vernal pond ecosystem are carnivores, herbivores, or omnivores, by placing each species in the appropriate list. Any student can use their mouse to move any species to any list; students do not need to work together in any specific way.</p>

21CLD Learning Activity Rubrics

Collaboration in the context of programming

- Examples

- Program design decisions made together

- Each team member does a part of a program – all phases

- OR Each team member performs a specific function (testing, documenting, refactoring)

- OR Mixed approach

- Code inspection of other member's work (issues)

- Pair programming (agile software development technique)

Collaboration in the context of programming

- Teamwork support tools (free)
 - Subversion
 - Git
 - Mercurial
- Teamwork support hosting (free/commercial)
 - Subversion
 - GitHub (repos, organizations, issues)
 - BitBucket