

Formative Assessment Tools & Strategies for 21st Learning
Before, During, and After the Learning Experience

<p align="center">Activity</p>	<p align="center">Tools <i>Link or Application</i></p> <p><i>Listed tools are examples and do not represent a complete list. Tools may be used in multiple areas.</i></p>	<p align="center">Strategy</p> <p><i>Strategies below are examples and not a complete list.</i></p> <p><i>Suggested strategies should include student self-reflection using any of the tools.</i></p> <p><i>Suggested strategies can be used in multiple areas</i></p>
<p><i>Surveys</i></p> <p><i>Warm-Up, Cool-Down</i></p> <p><i>Responses to Open-ended questions</i></p> <p><i>Exit Tickets</i></p>	<p>Online</p> <p>GoogleDocs Google Forms, Zoomerang, Survey Monkey, Wallwisher, TappedIn</p> <p>*Applets <i>Math</i> http://mathforum.org/mathtools/</p> <p>http://www.learnalberta.ca/content/mjhm/index.html?l=0</p> <p>http://seeingmath.concord.org/sms_interactives.html</p> <p><i>Science</i> http://itsi.portal.concord.org/preview/</p> <p>Gliffy, Webspiration, or, Software Application such as: <i>Inspiration</i>, <i>Kidspiration</i></p>	<ul style="list-style-type: none"> ❖ Surveys <ul style="list-style-type: none"> ○ Forms, surveys can be designed to gain understanding of students' prior knowledge <ul style="list-style-type: none"> ▪ <i>Include opportunities for responses to open-ended and higher order thinking questions.</i> ○ Use/modify above to gain information about what students learned. <ul style="list-style-type: none"> ▪ <i>Include opportunities for responses to open-ended and higher order thinking</i> ❖ Applets <ul style="list-style-type: none"> ○ Warm Up <ul style="list-style-type: none"> ▪ Use Math, Science applets prior to teaching concept. Small group or individuals work on concept, reflect on steps in attempt to learn, solve. Think alouds could be used to respond. Teacher assists with clarifying thinking and then provides deeper opportunities for understanding. ○ Cool Down <ul style="list-style-type: none"> ▪ Same or different applet could be used to shore up thinking, extend, deepen learning ❖ Open-ended <ul style="list-style-type: none"> ○ <i>Inspiration</i> software (or online mapping software) can be used to generate concept maps, outlines, Venn Diagrams, K, W, L or T-Charts ○ Learning Check <ul style="list-style-type: none"> ▪ After teaching a concept, stop class, ask students to reflect on what was learned, students use <i>RapidFire (Inspiration, Webspiration)</i> to respond to prompt. Teacher reviews responses, adjusts instruction. ▪ Students use on-going to

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		<p>adjust concept map as a self-reflection, connection of learning to concepts</p> <ul style="list-style-type: none"> ○ Think-Pair-Share <ul style="list-style-type: none"> ▪ Students discuss goals, strategies for improvement. Use tools/word processing to capture responses from discussions ○ Learning Logs <ul style="list-style-type: none"> ▪ 3 column table, students listen to concept presentation, type in concepts, next unclear about/questions, students ask questions about concept, search for clarification, final column input reflections/solutions to misunderstandings ○ Virtual Classroom <ul style="list-style-type: none"> ▪ Set up a classroom within TappedIn (text only). Provide prompt. Use Studios (breakout rooms) to divide students into small groups. Students discuss. Return to classroom for check for understanding. ○ Exit Ticket <ul style="list-style-type: none"> ▪ Use concept mapping or online response via Walkwisher. Set up prompt. Students type responses.
Polling	<p>Clickers <i>einstruction</i> <i>Mobi,</i> <i>Active Slate</i></p> <p>Online MyStudiyo, ThatQuiz (math only), Scientific Notation, Polleverywhere (cell phone or computer input) Textmarks (cell phone)</p>	<p><i>Should include questions requiring higher order thinking</i></p> <ul style="list-style-type: none"> ❖ Warm up, cool down activities ❖ Daily Maintenance of previously taught skills ❖ Checks for Understanding ❖ Practice, Review ❖ Student-created items
Rubrics	<p>Online Rubistar, Rubrics for Teachers, Edorigami</p>	<p><i>Rubrics can be used in any subject area as an on-going check. Student-centered assessment includes creating rubrics with teachers.</i></p> <p>Go to Edorigami to download Andrew Churches’* document, <i>Bloom’s Digital Taxonomy</i>, for Rubrics, examples, and exemplars—from <i>Bookmarking</i> and</p>

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		<i>Social Bookmarking (Remember) to Digital Publishing (Create)</i>
Portfolio	Online Electronic Resources for e-portfolios (Dr. Helen Barrett) http://electronicportfolios.org/	<i>Electronic portfolios provide access to digital artifacts and can be used for on-going formative assessment.</i> <ul style="list-style-type: none"> ▪ Moodle ▪ Student-created wikis
Reading	Online OfficeLive Word Google Doc ,	<ul style="list-style-type: none"> ❖ Responses to Text <ul style="list-style-type: none"> ○ Anticipation Guides <ul style="list-style-type: none"> ▪ Create electronic guide for pre- and after reading, student reflection ○ Focused listing, Quick Writes, Two-Minute paper, One Sentence Summary, Six Word Description <ul style="list-style-type: none"> ▪ <i>Wallwisher</i>, e-mail, blogs, word processing—use for exit strategy, mid-lesson check, save, reflect, expand ❖ Writing <i>Multimedia, links, reviewed to extend, clarify text, not just for effect.</i> <ul style="list-style-type: none"> ○ Language Experience Stories <ul style="list-style-type: none"> ▪ Capture student responses. Save and use for re-reading checks, language exercises. ○ Rebus writing <ul style="list-style-type: none"> ▪ Use graphic organizers, word processing applications using pictures and text. Assess student recognition, background knowledge, transition to text. ○ Cloze exercises <ul style="list-style-type: none"> ▪ Use word processing to design. Students complete, review, build upon. ○ The <i>Process</i> <ul style="list-style-type: none"> ▪ <i>Pre-Writing, Zero draft</i> <ul style="list-style-type: none"> ☐ Graphic organizers, concept maps, word processing applications for brainstorming, generating ideas, organizing thoughts. ▪ <i>First Draft</i> <ul style="list-style-type: none"> ☐ Previously saved pre-write draft used and expanded
Writing (individual or collaborative)	<i>Book Publishing</i> Lulu Scribus Mixbook	
Interviews	<i>Vocabulary</i> Visuwords	
Online Conversations	<i>Graphic Organizers/Concept Maps</i> Webspiration Gliffy Mindmeister	
Journal (individual, usually private)	<i>Web Conferencing</i> Elluminate Skype Chatzy DimDim	
Research	<i>Recorder</i> Gabcast	
	<i>Discussion Areas/Forums</i> Ning Moodle MixedInk TappedIn Wiki	
	<i>Collaborative resources</i> Wallwisher Online Debates , TIGed , ePals	
	<i>Social Bookmarking</i> Diigo Delicious	

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	<p>Weblogs Edublog Blogger, Weebly</p> <p><i>Microblogs/</i> <i>Backchannel</i> Edmodo Twitter CoverItLive</p> <p><i>Analysis</i> Wordle,</p> <p><i>Citations</i> Zotero, Citation Machine, or,</p> <p>Software Application such as: <i>MS Word</i>, <i>Pages</i>, <i>Kids Media</i> <i>Magic</i>, <i>Inspiration</i>, <i>Kidspiration</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Students could use online vocabulary tools, dictionary and thesaurus within software to select different words to support writing ▪ <i>Revising</i> <ul style="list-style-type: none"> <input type="checkbox"/> Tracked changes, comments from review by peers, teacher, personal reflection <input type="checkbox"/> <i>Analysis of emphasis</i> <ul style="list-style-type: none"> ○ Students place text in <i>Wordle</i> to determine emphasis. Revise as needed. ▪ <i>Editing</i> <ul style="list-style-type: none"> <input type="checkbox"/> After final revision, documents are edited based on review by self, peers, teacher ▪ <i>Publishing</i> <ul style="list-style-type: none"> <input type="checkbox"/> Digital books publishing, newsletters, posts to <i>Ning</i>, <i>blog</i>, <i>Moodle</i>, brochure, glogs (posters), ❖ Compare/Contrast <ul style="list-style-type: none"> ○ Student use of Graphic organizers, student-created Venn diagrams ❖ Interviews <ul style="list-style-type: none"> ○ Student use of online tools or software applications for outlines of questions. Revise after reflection. ○ Use online tools to capture phone interviews. Review for connection to objective for learning. ❖ Online Conversations/Responses to Prompts <ul style="list-style-type: none"> ○ <i>Skype</i>, <i>Blog</i>, <i>wiki</i>, <i>Ning</i>, <i>Moodle</i> discussion area, forum, <i>TappedIn</i>, <i>ePals</i>, <i>TIGed</i>, online Debates <ul style="list-style-type: none"> ▪ Review of student participation, depth of written/spoken conversation, collaboration and contribution ○ Microblogs/Backchannel
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		<ul style="list-style-type: none"> <ul style="list-style-type: none"> ▪ <i>Twitter, Edmodo, CoverItLive</i> <ul style="list-style-type: none"> • Use to support concise writing; design prompts for student response during educational movie watching, set up questions for use during class discussion, presentations, lectures. Review responses for depth of understanding. ❖ Journal <ul style="list-style-type: none"> ○ Teacher/student prompts or open-ended <ul style="list-style-type: none"> ▪ <i>Can be created using digital tools/software applications</i> <ul style="list-style-type: none"> ○ During class, at the end of class. Teacher reads and responds. Prompt can tie to what student learned, needs more clarification, specific connection between concepts, etc. ○ Buddy Journal <ul style="list-style-type: none"> ▪ <i>Can be created using digital tools/software applications</i> <ul style="list-style-type: none"> ○ Students share insights, thoughts, learning via journals with one another ❖ Research <ul style="list-style-type: none"> ○ Searching <ul style="list-style-type: none"> ▪ Students use advanced search features, refine searches; students use Boolean logic to further refine search. ○ Social Bookmarking <ul style="list-style-type: none"> ▪ <i>Diigo, Delicious</i>—review for appropriate and descriptive annotations, tags, resources tied to research, collaboration ○ Citations <ul style="list-style-type: none"> ▪ Review appropriate organization, citation of materials, links. Students use <i>Zotero</i> to cite resources. Review categorization, tags, relevance to research ▪ Students use appropriate protocol for citing sources, such as <i>Citation Machine</i>.
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<p>Digital Storytelling</p> <p>Illustrations</p> <p>Music creation</p> <p>Audio response</p> <p>Digital Photo Essays</p>	<p>Online <i>Comic tools</i> Toondo, Marvel Comics, Goanimate,</p> <p><i>Recorder</i> Audacity,</p> <p><i>Video, Photo</i> Animoto, VoiceThread, Flickr CreativeCommons Picnik</p> <p><i>Poster</i> Glogs,</p> <p><i>Maps</i> GoogleEarth, or</p> <p>Software Applications such as: <i>ComicLife</i>, <i>iMovie</i>, <i>iPhoto</i>, <i>PhotoStory</i>, <i>MovieMaker</i>,</p> <p><i>Image Editors</i> <i>Gimp</i>, <i>Seashore</i>, <i>PhotoShop</i>, <i>KidPix</i>,</p> <p><i>Audio</i> <i>Garage Band</i></p>	<ul style="list-style-type: none"> ❖ Student-designed comics, movies, digital art, digital music, vod/podcasts, photo essays, <i>GoogleEarth</i> tours can be used to determine if content demonstrates learning of material. ❖ Students can reflect on other student-created material and provide feedback, ask for clarification, etc. <ul style="list-style-type: none"> ○ Students/teachers can use other online tools such as blog entry, <i>GoogleDocs</i>, <i>Ning</i> or <i>wiki</i> discussion area or forum to provide feedback
<p>Calculations, Graphs, Charts</p> <p>Representations and Explorations, Game Design</p>	<p>Online OfficeLive Excel Google Spreadsheet, MathCast (Windows) GeoGebra, Squeak, Scratch, Logo, Alice, Google SketchUp Roblox <i>Math or Science</i> <i>Applets*(See Applets above)</i>, or</p> <p>Software Application such as: <i>Grapher</i> <i>(Macintosh)</i>, <i>MS Excel</i>, <i>Numbers</i>, <i>Geometer's Sketchpad</i></p>	<ul style="list-style-type: none"> ❖ Individual or collaborative explorations with opportunities for sharing insights, asking questions, reflecting on and revising thinking

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<p>Presentation</p>	<p>Online OfficeLive PowerPoint Slideshare, Google Presentation, YouTube, Prezi, Pecha Kucha, Google Earth, GoogleMaps, Glogs, Jing, or,</p> <p>Software Application such as:, <i>iMovie</i>, <i>MovieMaker</i>, <i>PowerPoint</i>, <i>Keynote</i></p>	<p><i>Prior to final presentation, use online or software applications to create checklists, rubrics, learning logs to be used for self and group reflection. Learning does not end with the final presentation. Even student choice of tool provides formative assessment data.</i></p>
<p>Student-Generated Questions</p>	<p>Online OfficeLive Excel, Google Spreadsheet, Doc, Wallwisher, or,</p> <p>Software Application such as: <i>MS Excel</i>, <i>MS Word</i>, <i>Pages</i>, <i>Numbers</i></p>	<ul style="list-style-type: none"> ❖ Use online tools or software applications to capture students' questions. Could be used as mid-lesson check, exit strategy, homework ❖ <i>Bloom*ing</i> <ul style="list-style-type: none"> ○ Set up Word processing table or form for input. Use small, cooperative learning group. Roles defined: reader, inquirer, answerer, friend. Read text, ask question, type response into doc/form. Students evaluate level using Bloom's (2001). Review for HOTS.
<p>Copyright</p>	<p>Code of Best Practices http://mediaeducationlab.com/code-best-practices-fair-use-media-literacy-education</p>	<p><i>21st Century learning includes access to print and digital material. Understanding of copyright guidelines is a necessary skill and should be part of the learning process.</i></p> <p><i>Include Copyright check in Rubrics</i></p>
<p>Feedback</p> <ul style="list-style-type: none"> ❖ <i>Oral**</i> ❖ <i>Non-Verbal**</i> ❖ <i>Written***</i> ❖ <i>Technology</i> 	<p>Online Google Doc, Blogs, wiki, Ning, Moodle, or,</p> <p>Software Application such as: <i>MS Word</i>, <i>Pages</i>, <i>graphic organizers</i>, <i>photos</i></p>	<p><i>All feedback should be descriptive and provided to student as close to immediate as possible.</i></p> <ul style="list-style-type: none"> ❖ Learning Log Feedback form <ul style="list-style-type: none"> ○ Use online tools or software applications to design form for both student reflection and teacher comments ❖ Self-assessment, Peer-to-Peer, Teacher and Student <ul style="list-style-type: none"> ○ Feedback via <i>Blog</i>, <i>wiki</i>, <i>Ning</i>, <i>Moodle</i> ❖ Think-Pair-Share, K, W, L <ul style="list-style-type: none"> ○ Students reflect on feedback, make adjustments ❖ Continuum <ul style="list-style-type: none"> ○ Design continuum using concept map w/pictures, word processing, images. Student places mark on where s/he falls on continuum

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		related to learning. Teacher reviews and places mark. Student and teacher talk about assessment and next steps.
Celebration	Online OfficeLive Google Doc. Blogs , Wiki, Ning, Moodle, or, Software Application <i>iMovie, iPhoto,</i> <i>PhotoStory,</i> <i>MovieMaker</i>	<ul style="list-style-type: none"> ❖ Homework ❖ Digital Gallery Walks ❖ Graphs of progress in learning, skills, goals, standards ❖ Selected portions of work as exemplars ❖ Video of student testimonials related to success ❖ Documentary of process and progress
<p>*Andrew Churches—Auckland, New Zealand **Oral and non-verbal examples are not included in this document. ***For this document, Written responses are via technology</p>		

Note 1: The Intel Education Initiative provides a wealth of resources and examples of formative assessment tools and their uses. <http://educate.intel.com/en/AssessingProjects/AssessmentStrategies/>

Note 2: View Tom Barrett’s world-wide collaborative project surrounding uses of some of the digital tools mentioned above: <http://tbarrett.edublogs.org/interesting-ways/>

Note 3: The Council of Chief State School Officers (CCSSO) provides links to other Formative Assessment resources.

Go to:

http://www.ccsso.org/projects/scass/projects/formative_assessment_for_students_and_teachers/11541.cfm

or

http://www.ccsso.org/projects/scass/projects/formative_assessment_for_students_and_teachers/11472.cfm

Formative Assessment (quote)

“...formative assessment is pedagogy and clearly cannot be separated from instruction. It is what good teachers do. The distinction lies in what teachers actually do with the information they gather. How is it being used to inform instruction? How is it being shared with and engaging students? It's not teachers just collecting information/data on student learning; it's what they do with the information they collect.”

Garrison, C., Ehringhaus, M. (n.d.). *Effective Classroom Assessment: Linking Assessment with Instruction*. Retrieved October 8, 2009, from

<http://www.nmsa.org/Publications/WebExclusive/Assessment/tabid/1120/Default.aspx>

References

Hicks, T. (2009). *The digital writing workshop*. Portsmouth, NH: Heinemann.

McTighe, J., & Wiggins, G. (2004). *Understanding by design: Professional development workbook*. Alexandria, VA: Association for Supervision and Curriculum Development.

Richardson, W. (2006). *Blogs, wikis, podcasts: And other powerful web tools for classrooms*. Thousand Oaks, CA: Corwin Press.

Tomlinson, C.A., & McTighe, J. (2006). *Integrating differentiated instruction and understanding by design: Connecting content and kids*. Alexandria, VA: Association for Supervision and Curriculum Development.

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Tuttle, H. G. (2009). *Formative assessment: Responding to your students*. Larchmont, NY: Eye on Education.

Wiggins, G., & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.