Chapter 1 : Bibliography | Assessment for Learning

This article is a review of the literature on classroom formative assessment. Several studies show firm evidence that innovations designed to strengthen the frequent feedback that students receive about their learning yield substantial learning gains. The perceptions of students and their role in.

Medals and Missions Feedback: Medals and Missions Professor John Hattie found that Feedback has more effect on achievement than any other factor. They concluded in agreement with Professor Hattie that formative assessment has a huge effect on learning quality. Research reviews are the best advice available to us, much better than individual pieces of research, or individual opinions. This is information about what a student has done well, e. Grades and marks are measurements not medals. Medals are information about what exactly was done well. This is information about what the student needs to improve, correct, or work on. It is best when it is forward looking and positive. Again, measurements such as grades do not usually give this information. One way to help you give medal and mission feedback and to clarify goals is to use assessment proformas. You can download some examples below. Adapt them or devise your own to suit your students and your subject. Make sure the most important skills expressed in the criteria. You can also use tests and quizes formatively and use other formative teaching emthods which can be found on the active learning page. Download tests and quizes that fix. I have summarised these in the form of an Action Research Proposal. This enables you to read about best practice and then try it out. Ideally you work with a colleague do discuss the issues and give each other support. One great way of giving students feedback is to use formative teaching methods. In some cases, especially where students lack self confidence, these methods have been found to double attainment. Download giving medals Feedback is so important, and it is so very rarely done well. You will benefit from reading chapters 6 and 43 of Teaching Today 3rd Ed so you really understand this vital topic. There will probably be a copy in your library.

Chapter 2 : Research background | Assessment for Learning

T This article is a review of the literature on classroom formative assessment. Several studies show firm evidence that innovations designed to strengthen the frequent feedback that students receive about their learning yield substantial learning gains.

Clymer and Dylan Wiliam Standards-based grading systems can improve how we communicate learning expectations to students. Imagine, for a moment, a school that has an eight-week marking period, with students receiving a grade each week. Lesley starts out with four As but ends up with four Cs. Overall, of course, she gets a B. Chris, on the other hand, starts out with four Cs but ends up with four As. He gets a B too. But who has learned more? In terms of overall achievement, Chris, with his four final As, seems to have mastered the content for the marking period and really deserves an A. Conversely, Lesley, with her four final Cs, seems far from mastering the content, but she gets a B because of her good start. Perhaps more remarkable, such improvements have occurred even when achievement is measured using standardized tests. To be effective, however, assessment for learning must be integrated into assessment of learning systems. In the United States, this means that in addition to taking into account fluctuations in student learning, teachers must still assign grades. Consequently, educators need to develop and implement a system that supports both the formative and summative functions of assessmentâ€"formative, in that teachers can use evidence of student achievement to adjust instruction to better meet student learning needs; and summative, in that teachers can amass the information to provide a final grade for a marking period. Some years back, Terry Crooks reviewed more than studies of the effect of assessment practices on students. He concluded that using assessment for grading purposes had completely overshadowed using assessment to support student learning. Indeed, considerable evidence showed that many common grading practices actually lowered student performance. The Meaning of Feedback In reviewing more than 3, research reports on the effects of feedback in schools, colleges, and workplaces, Kluger and DeNisi found that only of these studies were carried out with enough rigor and reported on in enough detail to be reliable. In other words, in almost two of every five carefully controlled scientific studies, performance would have been better had the feedback not been given. When the researchers looked to see what kinds of feedback caused this decline in performance, they found that it was feedback that focused on the person, rather than on the task. When feedback focused on what the person needed to improve and on how he or she could go about making such improvements, learning improved considerably. He pointed out that a feedback system a room thermostat, for example has four essential features. It provides A way to identify the current value of some system parameter. A way to set the desired value of some system parameter. A way to compare these two values, to see whether they are the same. A way to change the current value of the parameter to bring it closer to the desired value in the event the values differ. In the case of the room thermostat, there is a device for measuring the current room temperature, a setting for specifying the desired temperature, a mechanism for comparing these two, and, of course, some wires that lead to the air conditioner or the furnace so that if there is a mismatch, we can do something about it. Given the evidence about the negative effects of grading practices in U. We do not believe that the evidence supports such extreme action for two reasons. Second, we believe that appropriately designed grading systems can help identify where students are in their understanding and what they need to do to improve. Assessment that Supports Learning Black and Wiliam contended that the starting point for any integrated assessment system must be the formative purpose. Teachers can always aggregate fine-scale data on student achievement to provide a grade or other summary of achievement, but they cannot work out what the student needs to do next on the basis of a grade or score. The first requirement is a standards-based record-keeping system. For the record to serve as more than merely a justification for a final report card grade, the information that we collect on student performance must be instructionally meaningful. Knowing that a student got a B on an assignment is not instructionally meaningful. Knowing that the student understands what protons, electrons, and neutrons

are but is confused about the distinction between atomic number and atomic mass is meaningful. This information tells the teacher where to begin instruction. The second requirement of an assessment system that supports learning is that it should be dynamic rather than static. Grades based on the accumulation of points over time are counter-productive for several reasons. First, this approach encourages shallow learning. In most classrooms, if students forget something that they have previously been assessed on, they get to keep the grade. Second, not altering grades in light of new evidence of learning sends the message that the assessment is really a measure of aptitude rather than achievement. Students who think they will do well will engage in the assessments to prove how smart they are, whereas students who think that they are likely to fail will disengage. When assessment is dynamic, however, all students can improve. Assessing 8th Graders in Science During the â€" school year, we conducted a pilot study on grading in an 8th grade physical science class in Quakertown Community School District. This suburban district located 30 miles from Philadelphia enrolls approximately 5, students. Strayer Middle School, where the pilot study took place, is a Title I school, with 22 percent of students receiving free or reduced-price lunch. Each marking period focuses on 10 content standards, which are derived from the state standards. For example, the first marking period in 8th grade physical science focuses on 1 the appropriate use of laboratory equipment; 2 metric unit conversion and labeling; 3 calculating density; 4 applying density floating, sinking, layering, thermal expansion ; 5 density as a characteristic property; 6 the phases of matter at a molecular level ; 7 gas laws; 8 communication graphing ; 9 communication lab reports ; and 10 inquiry skills. Students might be required to complete a lab about the density of soda, in which they learn why some cans of soda float whereas others sink, and to pass a lab quiz in which they must measure, without their lab partners, the mass, volume, and density of solids and liquids. For the standard relating to metric unit conversion and labeling, the teacher might ask students to take a quiz on metric conversion, observe the use of units in the lab, and show mastery on relevant test items. The student consistently meets and often exceeds the content standard. The student, with relative ease, grasps, applies, and extends key concepts, processes, and skills for the grade level. The student regularly meets the content standard. The student, with limited errors, grasps and applies key concepts, processes, and skills for the grade level. Red Beginning or below basic: The student is beginning to, and occasionally does, meet the content standards, or the student is not meeting them. The student is beginning to grasp and apply key concepts, processes, and skills for the grade level but produces work that contains many errors. The final grade for the marking period is based on the aggregate level of proficiency displayed in the 10 content standards. To receive an A, students need to master at least 90 percent of the required content, earning a minimum of 18 points. A student can achieve this with 10 greens 20 points , 9 greens and 1 yellow 19 points , 9 greens and 1 red 18 points , or 8 greens and 2 yellows 18 points. A grade of B reflects 80 percent mastery a minimum of 16 points , and a C reflects 70 percent mastery a minimum of 14 points. If the interview reveals that the student has not mastered this material, the teacher provides the student with additional practice and multiple opportunities to learn it. If a student does not master the content by the end of the marking period, the grade for that marking period reflects this lack of mastery. But if the student masters the content by the end of the school year, then that increase is reflected in the end-of-year grade. The end-of-year grade is the percentage of mastery on all 50 standards and not an average of the five marking period grades. A crucial feature of this assessment system is that no grade is final until the end of the marking period. While students are learning, the teacher maintains a record of the current evidence of achievement. One particularly effective way to keep this record is by using an electronic spreadsheet see fig. Screenshot of a Portion of a Teacher Grade Book One particularly useful feature in Excel that facilitates data analysis is the option to color cells differently. The teacher can give cells different traffic light colors, providing an immediate display of student achievement. The rows indicate the skills and topics that individual students have and have not mastered. The columns show how well the entire class has or has not mastered a specific content area. This information is formative because it helps the teacher adjust instruction to better meet student needs. The data shown in Figure 1 suggest that this group of students has a good grasp of standards 3 and 10, whereas standards 1, 2, 5, and 6 merit further attention. In the pilot

study, the teacher kept the students apprised of their traffic light ratings through weekly progress reports. Individual assignments were not allocated a single color or grade. Instead, the teacher reviewed student work for evidence of mastery on one or more of the standards and recorded this information in a grade book that designated one page for each standard. In a lab report on the density of pennies, for example, the student would receive a traffic light score for the graphing standard, for the inquiry-skill standard, for the calculation of density standard, and so on. Students were encouraged to act on the feedback by providing additional evidence of mastery or by revising their work to improve both their understanding and ratings. Student Reaction In May , we asked a sample of 19 students to explain the new grading approach. All but one student understood that their achievement at the end of the marking period was more important than their achievement when a topic was first introduced. They understood that they were expected to improve as a result of instruction and not expected to arrive at school already knowing the content. Many students shifted from a performance orientation to their work, in which the goal is to get the highest grade, to a mastery orientation, in which the goal is understanding Dweck, Students said that they understood more, focused more on learning important concepts, and were more relaxed because the teacher judged their performance on the basis of their understanding. One immediate, if unanticipated, outcome was the change in classroom atmosphere. Students became more engaged in monitoring their own learning. They repeatedly asked for clarification, from their peers and from the teacher, to ensure their understanding. A majority of students preferred this system to the previous one. Several students indicated that the provisional, rather than final, nature of the grading system was an important benefit, noting that it enabled them not only to revise their grades as they improved their understanding but also to see what they were good at and where they needed to improve. Other students noticed that the new assessment system focused more on learning than on performance. Earning points and percentages became less important than understanding the content. Responding to a question about teacher feedback, several students mentioned how helpful it was to receive feedback that not only indicated what was incorrect but also provided some idea of how to improve or correct it. This greatly helped students revise their work. The pilot study also revealed some other notable reactions. Under the new assessment system, two-thirds of the students saw the teacher as a coach, one-fifth saw the teacher as both a coach and a judge, and only one in 10 students saw the teacher solely as a judge. Three-fourths of the students noted that they prepared for tests, and half of these students indicated that this was a change from the previous year. Half the students thought they were doing better in science that year, and half thought they were doing the same. No students believed that they were doing worse in science than the previous year, despite the possibility that their scores could be revised downward as a result of new evidence. The Effect on Student Achievement Because this was a pilot study with just a single classroom, any quantitative information about the achievement of this class relative to other classes must be regarded as merely indicative.

Chapter 3 : Black and Wiliam | Studer Education

Several of the accounts described in this section involve both self-assessment and peer-assessment, Peer-assessment as such is included in several accounts of the development of group collaboration as a part of classroom learning activity.

Yet Layered Curriculum goes even further along this continuum by allowing the student to direct the path of their own learning. Far from a self-directed, empowering approach, the assessment that takes place in most classrooms today would be classified as summative assessment. Such methods would include rote activities, multiple choice tests, concentration on recall of specific details, testing which is dependent upon recall of facts and information rather than understanding , and evaluations which comprehensively occur at the conclusion of a unit of learning. These methods of evaluating student progress tend to lean towards a norm- based approach in which students are ranked and compared against each other, as opposed to being motivated and spurred on by their own learning. In the Layered Curriculum classroom, teacher and student are in constant, close communication. Using the oral defense method, teachers prompt students to focus on what they are learning, to probe their knowledge for further understanding. The fact that this interaction takes place one on one, teacher to student, cannot be overlooked insofar as its more meaningful import to the student. The teacher who employs oral defense not only fosters a personal and mentoring relationship with particular students, but also each student receives a "mini tutoring" session that targets their own specific understanding. With the exception of an ably served special education student, such specificity and personal relationships are absent in a traditional classroom, which would emphasize showmanship of the few at the expense of many less able or extroverted speakers. Layered Curriculum not only makes assessment explicit to the student, but also rests far more control and responsibility upon the student, who is empowered to guide their own learning process. True, the onus is on the teacher to design coherent units and make learning goals and objectives explicit to students. Yet, the student of a Layered Curriculum classroom not only may plan their own learning route to a desired objective, but also may choose the method by which they would most easily assimilate the material, or those methods which are most attractive to them. The use of rubrics for various video, audio, or written work products is endorsed by the methods of formative assessment and is a Layered Curriculum classroom staple. However, as employed by Layered Curriculum method, the use of rubrics further objectifies performance standards while emphasizing mastery, and allows the student increased mediation over their grade. If a project is submitted that falls short of the standards outlined in a rubric, the student may often have enough feedback and time in order to resubmit the product and improve their grade. Yes, the teacher gives up the ability to strike down student hopes with a swift pen and a dismissive mark. Yes, the student gains mastery as they labor to perfect their work products to meet a clearly defined standard. What a far cry from the traditional method, where a teacher despairs of ever getting students to perform re-writes and editing of previously submitted material. For that student, the effort is "not worth it" because he or she has already missed the desired objective- hitting a high mark on the first try. That the objective might be contained in the process does not occur to the student encased in such a system, as learning is de-emphasized in favor of summative evaluations. The concept of formative assessment, embedded as it is within the precepts of a Layered Curriculum classroom, may not seem to offer much enlightenment to the Layered Curriculum LC teacher. The Layered Curriculum teacher may not consider themselves to be a relationship builder, nor a mediator of meaning. Yet, by performing the teaching role in such a personalized manner, the LC teacher enables students to connect the warmth of personality with learning and so enhances the meaning of the experience for student and teacher alike. Removed from the dictatorial position at the front of the classroom, the teacher is freed to become a mediator of learning, and the student is emboldened to develop a caring relationship with their teacher. As such, the richness of the learning exploration is magnified. It is a much-ignored tenet of the profession that students best recall those teachers whom they had the closest, most meaningful relationship with. Frequently,

such associations bleed over into the student developing an affinity for the entire subject as well. What more could a teacher ask for than a student who develops a continuing interest in a given subject area? In closing, one must conclude that though the goals of formative assessment are indeed practiced in the Layered Curriculum classroom, the methods of Layered Curriculum itself supercede the goals of formative assessment. Where formative assessment seeks to make assessment meaningful and provide feedback to improve teaching, Layered Curriculum targets the entire learning process at all levels, see Bloom as well as accountability; in the process LC provides meaningful feedback and formative assessment. Indeed, Layered Curriculum goes further by wresting the entrenched power of choice from the teacher and placing it in the hands of the student, giving the student power over how they are assessed, and over what material. Assessment and classroom learning. Assessment in Education, 5 1: Inside the black box: Raising standards through classroom assessment. Phi Delta Kappan, 80 2: Accessed online October 10, The concept of formative assessment. Improvements in mathematics performance as a consequence of self-assessment in Portuguese primary school pupils. British Journal of Educational Psychology, 64 3: Office of Education Research Consumer Guide. Assessment and Classroom Learning, key points extracted. Accessed online October 10, http: Assessment in Education 5 1.

Chapter 4 : Feedback: Medals and Missions - Geoff PettyGeoff Petty

The study showed that higher achieving students were able to look past this while other students were not. Another study done by White and Frederiksen [25] showed that when twelve 7th grade science classrooms were given time to reflect on what they deemed to be quality work, and how they thought they would be evaluated on their work, the gap between the high achieving students and the low achieving students was decreased. By examining the different levels of work, students can start to differentiate between superior and inferior work. Feedback[edit] There has been extensive research done on studying how students are affected by feedback. Kluger and DeNisi [26] reviewed over three thousand reports on feedback in schools, universities, and the workplace. Of these, only of them were found to be scientifically rigorous and of those, 50 of the studies shows that feedback actually has negative effects on its recipients. Feedback is often given in the form of some numerical or letter grade and that perpetuates students being compared to their peers. The studies previously mentioned showed that the most effective feedback for students is when they are not only told in which areas they need to improve, but also how to go about improving it. The next thing students tend to do is to ask other students in the class for their grade, and they compare the grade to their own grade. Questioning[edit] Questioning is an important part of the learning process and an even more important part is asking the right types of questions. Questions that promote discussion and student reflection make it easier for students to go on the right path to end up completing their learning goals. Here are some types of questions that are good to ask students: Wait time[edit] Wait time is the amount of time that is given to a student to answer a question that was posed and the time allowed for the student to answer. Mary Budd Rowe [28] went on to look at the outcomes of having longer wait times for students. Students are able to speak to one another in a language that they are more comfortable with than they would be with an instructor. The insight of a fellow student might be more relatable than that of a teacher. Students tend to accept constructive criticism more from a fellow student than from an instructor. While students are in the process of peer-assessment, a teacher can more easily take command of the learning going on. Formative assessment is also known as educative assessment, classroom assessment, or assessment for learning. Methods[edit] There are many ways to integrate formative assessment into Kâ€"12 classrooms. For example, researchers developed generative activities Stroup et al. Others developed strategies computer-supported collaborative learning environments Wang et al. Purpose[edit] Formative assessment, or diagnostic testing as the National Board of Professional Teaching Standards argues, serves to create effective teaching curricula and classroom-specific evaluations. Students are encouraged to think critically and to develop analytical skills. P Scot et al. The following are examples of application of formative assessment to content areas: In math education[edit] In math education, it is important for teachers to see how their students approach the problems and how much mathematical knowledge and at what level students use when solving the problems. That is, knowing how students think in the process of learning or problem solving makes it possible for teachers to help their students overcome conceptual difficulties and, in turn, improve learning. In that sense, formative assessment is diagnostic. In math classes, thought revealing activities such as model-eliciting activities MEAs and generative activities provide good opportunities for covering these aspects of formative assessment. Feedback examples[edit] Here are some examples of possible feedback for students in math education: Then we add one more variable. Try to find them and fix them. Can you find a way to work it out? Can you use elimination now to solve them? Can you explain the advantages and disadvantages of each method? Can you make up your own more difficult problem? Talk to Katie about the differences with the two. In classroom, short quizzes, reflectionals journals, or portfolios could be used as a formative assessment Cohen, Teachers and students both use formative assessments as a tool to make decisions based on data. Formative assessment occurs when teachers feed

information back to students in ways that enable the student to learn better, or when students can engage in a similar, self-reflective process. The evidence shows that high quality formative assessment does have a powerful impact on student learning. Black and Wiliam report that studies of formative assessment show an effect size on standardized tests of between 0. The effect size is the ratio of the average improvement in test scores in the innovation to the range of scores of typical groups of pupils on the same tests; Black and Wiliam recognize that standardized tests are very limited measures of learning. Formative assessment is particularly effective for students who have not done well in school, thus narrowing the gap between low and high achievers while raising overall achievement. Research examined by Black and Wiliam supports the conclusion that summative assessments tend to have a negative effect on student learning. Model-eliciting activities MEAs are ideally structured to help students build their real-world sense of problem solving towards increasingly powerful mathematical constructs. Teachers do not prompt the use of particular mathematical concepts or their representational counterparts when presenting the problems. Instead, they choose activities that maximize the potential for students to develop the concepts that are the focal point in the curriculum by building on their early and intuitive ideas. Generative activities[edit] In a generative activity, students are asked to come up with outcomes that are mathematically same. Students can arrive at the responses or build responses from this sameness in a wide range of ways. The sameness gives coherence to the task and allows it to be an "organizational unit for performing a specific function. In addition, as a complementary to all of these is to modify and adapt instruction through the information gathered by those activities. In computer-supported learning[edit] Many academics are seeking to diversify assessment tasks, broaden the range of skills assessed and provide students with more timely and informative feedback on their progress. Others are wishing to meet student expectations for more flexible delivery and to generate efficiencies in assessment that can ease academic staff workloads. The move to on-line and computer based assessment is a natural outcome of the increasing use of information and communication technologies to enhance learning. As more students seek flexibility in their courses, it seems inevitable there will be growing expectations for flexible assessment as well. When implementing online and computer-based instruction, it is recommended that a structured framework or model be used to guide the assessment. In UK education[edit] In the UK education system , formative assessment or assessment for learning has been a key aspect of the agenda for personalised learning. The Working Group on 14â€"19 Reform led by Sir Mike Tomlinson , recommended that assessment of learners be refocused to be more teacher-led and less reliant on external assessment, putting learners at the heart of the assessment process. Teachers can decide what minor modifications or major changes in instruction they need to make so that all students can succeed in upcoming instruction and on subsequent assessments. Teachers can create appropriate lessons and activities for groups of learners or individual students. Teachers can inform students about their current progress in order to help them set goals for improvement. Students take responsibility for their own learning. Students can become users of assessment alongside the teacher. Students learn valuable lifelong skills such as self-evaluation, self-assessment, and goal setting. Students become more adept at self-assessment [44] [45] [46] Common formative assessments[edit] The practice of common formative assessments is a way for teachers to use assessments to beneficially adjust their teaching pedagogy. The concept is that teachers who teach a common class can provide their classes with a common assessment. The results of that assessment could provide the teachers with valuable information, the most important being who on that teacher team is seeing the most success with his or her students on a given topic or standard. It is essential to note that the purpose of this practice is to provide feedback for teachers, not necessarily students, so an assignment could be considered formative for teachers, but summative for students. What do we want students to know and do? How do we know they are learning? Common formative assessments are a way to address the second question. Teachers can collect data on how students are doing to gain understanding and insight on whether students are learning, and how they are making sense of the lessons being taught. After gathering this data, teachers can proceed to develop systems and plans to address the third and fourth questions and, over several years, modify the first question to fit the learning needs of their specific students.

In tandem, they can also share the strategies they used in the classroom to teach that particular concept. With these things in mind, the teacher team can make some evaluations on what tasks and explanations seemed to produce the best student outcomes. Teachers who used alternate strategies now have new ideas for interventions and for when they teach the topic in upcoming years. Teacher teams can also use common formative assessments to review and calibrate their scoring practices. Teachers of a common class should aim to be as consistent as possible in evaluating their students. Comparing formative assessments, or having all teachers evaluate them together, is a way for teachers to adjust their grading criteria before the summative assessment. Through this practice, teachers are presented with an opportunity to grow professionally with the people who know them and understand their school environment. To make the practice of teacher teams, common formative assessments, and power standards the most advantageous, the practice of backwards design should be utilized. Backwards design is the idea in education that the summative assessment should be developed first and that all formative work and lessons leading up to that specific assessment should be created second. It is unrealistic to think that every student will get every topic perfect and ready to take the summative assessment on a prescribed schedule.

Chapter 5 : Formative assessment - Wikipedia

Consistent with most definitions of formative assessment (Black & Wiliam, ; Shepard,), we conceptualise such assessment as a process that requires the active engagement of both teachers.

Chapter 6 : Improving the Way We Grade Science - Educational Leadership

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Chapter 7 : Classroom Assessment Techniques | Teaching & Learning Services | RIT

Black, P & Wiliam, D , 'Assessment and Classroom Learning', Education: Principles, Policy and Practice, March, vol 5, no 1, pp The ten research-based principles of Assessment for Learning provide further information.