DOWNLOAD PDF CLASSROOM TEACHING AND LEARNING

Chapter 1 : Chapter Effective Learning and Teaching

Whenever one person defines himself or herself as the sole leader, provider, and catalyst for improved classroom learning, any school with more than 15 teaching faculty immediately confronts a lack of schoolwide instructional focus and assistance.

Introduction to Learning Theory This program introduces the main themes of the course. Teacher interviews and classroom footage illustrate why learning theory is at the core of good classroom instruction and demonstrate the broad spectrum of theoretical knowledge available for use in classroom practice. Go to this unit. Learning As We Grow: Featured are a first-grade teacher, a seventh- and eighth-grade science teacher, and a senior physics teacher, with expert commentary from University of California at Santa Cruz professor Roland Tharp and Yale University professor James P. Building on What We Know: Cognitive Processing This program covers how prior knowledge, expectations, context, and practice affect processing and using information and making connections. Featured are a first-grade teacher, a ninth- and 10th-grade mathematics teacher, and a special education teacher, with expert commentary from Stanford University professor Roy Pea. Different Kinds of Smart: Featured are teachers who share a class of five- through eight-year-olds, including several mainstreamed special needs students, and a ninth- and 10th-grade social studies teacher, with expert commentary from Howard Gardner. Emotions and Learning This program introduces ways to create an emotionally safe classroom to foster learning and to deal effectively with emotions and conflicts that can be obstacles. Featured are a fifth-grade teacher and an eighth-grade band teacher, with expert commentary from Daniel B. Culture and Learning This program discusses how culturally responsive teaching enables students to create connections, access prior knowledge and experience, and develop competence. Featured are a sixth-grade teacher and two ninth-grade teachers, with expert commentary from University of Wisconsin professor Gloria Ladson-Billings and University of Arizona professor Luis Moll. The program features a fifth-grade teacher and a ninth- through grade teacher, with expert commentary from Tufts University professor David Elkind, Yale University professor James P. Cognitive Apprenticeship This program demonstrates how teachers help their students develop expertise and accomplish complex tasks by modeling, assisted performance, scaffolding, coaching, and feedback. It features a fifth- and sixth-grade teacher and an 11th- and 12th-grade English and social studies teacher, with expert commentary from University of Michigan professor Annemarie Sullivan Palincsar. Metacognition This program explores how thinking about thinking helps students better manage their own learning and learn difficult concepts deeply. The program features a senior English teacher and a sixth-grade teacher, with expert commentary from University of Michigan professor Annemarie Sullivan Palincsar and Lee S. Shulman, president of the Carnegie Foundation for the Advancement of Teaching. How We Organize Knowledge: The Structure of the Disciplines This program covers the ways in which the organization of knowledge and understanding can influence learning. Featured are a fourth-grade teacher, a 10th-grade biology teacher, and a ninth- through 12th-grade teacher, with expert commentary from Lee S. Learning and Transfer This program describes what conditions are needed for knowledge and skills learned in one context to be retrieved and applied to a novel situation, and how different teaching strategies can increase the possibilities for transfer. The program features a fourth-grade teacher and a seventh- and eighth-grade teacher, with expert commentary from Lee S. This program takes a second look at classrooms seen previously to show how motivational techniques work in concert with other learning theories. Pulling It All Together: Creating Classrooms and Schools That Support Learning This program discusses how schools can organize for powerful learning through a coherent, connected approach to teaching and learning that is reinforced and supported by structural features. This session features the staff and students of two schools: Host Linda Darling-Hammond provides expert commentary.

Chapter 2 : Classroom Assessment Techniques (CATs) | GW Libraries

Flipping the classroom is a "pedagogy-first" approach to teaching. In this approach in-class time is "re-purposed" for inquiry, application, and assessment in order to better meet the needs of individual learners. Students gain control of the learning process through studying course material.

Guskey Teachers who develop useful assessments, provide corrective instruction, and give students second chances to demonstrate success can improve their instruction and help students learn. Large-scale assessments, like all assessments, are designed for a specific purpose. Those used in most states today are designed to rank-order schools and students for the purposes of accountabilityâ€”and some do so fairly well. But assessments designed for ranking are generally not good instruments for helping teachers improve their instruction or modify their approach to individual students. First, students take them at the end of the school year, when most instructional activities are near completion. And third, the results that teachers receive usually lack the level of detail needed to target specific improvements Barton, ; Kifer, The assessments best suited to guide improvements in student learning are the quizzes, tests, writing assignments, and other assessments that teachers administer on a regular basis in their classrooms. Teachers trust the results from these assessments because of their direct relation to classroom instructional goals. Plus, results are immediate and easy to analyze at the individual student level. To use classroom assessments to make improvements, however, teachers must change both their view of assessments and their interpretation of results. Specifically, they need to see their assessments as an integral part of the instruction process and as crucial for helping students learn. Despite the importance of assessments in education today, few teachers receive much formal training in assessment design or analysis. A recent survey showed, for example, that fewer than half the states require competence in assessment for licensure as a teacher Stiggins, Lacking specific training, teachers rely heavily on the assessments offered by the publisher of their textbooks or instructional materials. When no suitable assessments are available, teachers construct their own in a haphazard fashion, with questions and essay prompts similar to the ones that their teachers used. To use assessments to improve instruction and student learning, teachers need to change their approach to assessments in three important ways. Make Assessments Useful For Students Nearly every student has suffered the experience of spending hours preparing for a major assessment, only to discover that the material that he or she had studied was different from what the teacher chose to emphasize on the assessment. This experience teaches students two un-fortunate lessons. And second, they learn that they cannot trust their teachers Guskey, a. These are hardly the lessons that responsible teachers want their students to learn. Nonetheless, this experience is common because many teachers still mistakenly believe that they must keep their assessments secret. As a result, students come to regard assessments as guessing games, especially from the middle grades on. They view success as depending on how well they can guess what their teachers will ask on quizzes, tests, and other assessments. Some teachers even take pride in their ability to out-guess students. They ask questions about isolated concepts or obscure understandings just to see whether students are reading carefully. Students see these assessments as fair measures of important learning goals. For Teachers The best classroom assessments also serve as meaningful sources of information for teachers, helping them identify what they taught well and what they need to work on. Gathering this vital information does not require a sophisticated statistical analysis of assessment results. Teachers need only make a simple tally of how many students missed each assessment item or failed to meet a specific criterion. State assessments sometimes provide similar item-by-item information, but concerns about item security and the cost of developing new items each year usually make assessment developers reluctant to offer such detailed information. Once teachers have made specific tallies, they can pay special attention to the trouble spotsâ€”those items or criteria missed by large numbers of students in the class. In reviewing these results, the teacher must first consider the quality of the item or criterion. Perhaps the question is ambiguously worded or the criterion is unclear. Perhaps students mis-interpreted the question. Whatever the case, teachers must determine whether these items adequately address the knowledge, understanding, or skill that they were intended to measure. If teachers find no obvious problems with the item or criterion, then they must turn their

attention to their teaching. Analyzing assessment results in this way means setting aside some powerful ego issues. Can effective teaching take place in the absence of learning? Some argue that such a perspective puts too much responsibility on teachers and not enough on students. Even with valiant teaching efforts, we cannot guarantee that all students will learn everything excellently. Only rarely do teachers find items or assessment criteria that every student answers correctly. A few students are never willing to put forth the necessary effort, but these students tend to be the exception, not the rule. And teachers need this kind of evidence to help target their instructional improvement efforts. Follow Assessments with Corrective Instruction If assessments provide information for both students and teachers, then they cannot mark the end of learning. Instead, assessments must be followed by high-quality, corrective instruction designed to remedy whatever learning errors the assessment identified see Guskey, To charge ahead knowing that students have not learned certain concepts or skills well would be foolish. Teachers must therefore follow their assessments with instructional alternatives that present those concepts in new ways and engage students in different and more appropriate learning experiences. High-quality, corrective instruction is not the same as reteaching, which often consists simply of restating the original explanations louder and more slowly. Although teachers generally try to incorporate different teaching approaches when they initially plan their lessons, corrective instruction involves extending and strengthening that work. In addition, those students who have few or no learning errors to correct should receive enrichment activities to help broaden and expand their learning. Materials designed for gifted and talented students provide an excellent resource for such activities. Developing ideas for corrective instruction and enrichment activities can be difficult, especially if teachers believe that they must do it alone, but structured professional development opportunities can help teachers share strategies and collaborate on teaching techniques Guskey, , b. Faculty meetings devoted to examining classroom assessment results and developing alternative strategies can be highly effective. District-level personnel and collaborative partnerships with local colleges and universities offer wonderful resources for ideas and practical advice. Occasionally, teachers express concern that if they take time to offer corrective instruction, they will sacrifice curriculum coverage. Teachers who ask students to complete corrective work independently, outside of class, generally find that those students who most need to spend time on corrective work are the least likely to do so. As students become accustomed to this corrective process and realize the personal benefits it offers, however, the teacher can drastically reduce the amount of class time allocated to such work and accomplish much of it through homework assignments or in special study sessions before or after school. By pacing their instructional units more flexibly, most teachers find that they need not sacrifice curriculum coverage to offer students the benefits of corrective instruction. Give Second Chances to Demonstrate Success To become an integral part of the instructional process, assessments cannot be a one-shot, do-or-die experience for students. Instead, assessments must be part of an ongoing effort to help students learn. And if teachers follow assessments with helpful corrective instruction, then students should have a second chance to demonstrate their new level of competence and understanding. This second chance helps determine the effectiveness of the corrective instruction and offers students another opportunity to experience success in learning. Writing teachers have long recognized the many benefits of a second chance. They know that students rarely write well on an initial attempt. Teachers build into the writing process several opportunities for students to gain feedback on early drafts and then to use that feedback to revise and improve their writing. Teachers of other subjects frequently balk at the idea, howeverâ€”mostly because it differs from their personal learning experiences. Because of the very high stakes involved, each must get it right the first time. But how did these highly skilled professionals learn their craft? The first operation performed by that surgeon was on a cadaverâ€”a situation that allows a lot of latitude for mistakes. Similarly, the pilot spent many hours in a flight simulator before ever attempting a landing from the cockpit. Such experiences allowed them to learn from their mistakes and to improve their performance. Similar instructional techniques are used in nearly every professional endeavor. Only in schools do student face the prospect of one-shot, do-or-die assessments, with no chance to demonstrate what they learned from previous mistakes. All educators strive to have their students become lifelong learners and develop learning-to-learn skills. A mistake can be the beginning of learning. Some assessment experts argue, in fact, that students learn nothing from a successful performance. Rather,

students learn best when their initial performance is less than successful, for then they can gain direction on how to improve Wiggins, After all, these students may simply have failed to prepare appropriately. Certainly, we should recognize students who do well on the initial assessment and provide opportunities for them to extend their learning through enrichment activities. But those students who do well on a second assessment have also learned well. More important, their poor performance on the first assessment may not have been their fault. Maybe the teaching strategies used during the initial instruction were inappropriate for these students, but the corrective instruction proved more effective. If we determine grades on the basis of performance and these students have performed at a high level, then they certainly deserve the same grades as those who scored well on their first try. On the second or third try, however, they may reach the same high level of performance as others did on their first. Should these drivers be restricted, for instance, to driving in fair weather only? In inclement weather, should they be required to pull their cars over and park until the weather clears? Because they eventually met the same high performance standards as those who passed on their initial attempt, they receive the same privileges. The same should hold true for students who show that they, too, have learned well. Similar Situations Using assessments as sources of information, following assessments with corrective instruction, and giving students a second chance are steps in a process that all teachers use naturally when they tutor individual students. If the student makes a mistake, the teacher stops and points out the mistake. The teacher then explains that concept in a different way. The challenge for teachers is to use their classroom assessments in similar ways to provide all students with this sort of individualized assistance. Successful coaches use the same process. The coach then offers specific strategies for improvement and encourages her to try again. As the athlete repeats her performance, the coach watches carefully to ensure that she has corrected the problem. Successful students typically know how to take corrective action on their own. They save their assessments and review the items or criteria that they missed. Less successful students rarely take such initiative. After looking at their grades, they typically crumple up their assessments and deposit them in the trash can as they leave the classroom.

Chapter 3 : Teaching Methods

How to stress and teach kindness. These 21st-century skills are essential in order to be successful in this day and age. Jobs that may not have had a digital component in the past, may have one now. Ed-tech in the classroom prepares students for their future and sets them up for this increasing digital economy. Improved Retention Rate Student perceptions in the study believe that technology helps them retain information better. According to different a study, these students may be on to something. Eighteen 2nd grade students were challenged to complete a Power Point project about an animal. Sixteen out of the 18 students remembered more facts about the animal after completing the presentation. These results show that technology indeed helps students remember what they learn. For example, almost all apps allow for individualized instruction. Students can learn according to their abilities and needs. When they are not in school, just about everything that they do is connected in some way to technology. By integrating technology into the classroom, teachers are changing the way they used to teach lectures six hours a day and providing students with the tools that will take them into the 21st century. Technology changes by the minute, and as educators we need to keep up with the times in order to best prepare our students for this ever-changing world that we live in. Take time to learn about each element of ed-tech that you will incorporate into your classroom. When you do, you will find that technology can have a profound impact on your students learning. Do you embrace technology in your classroom? What benefits do you think technology has for your classroom? Feel free to share with us in the comment section below. We would love to hear your thoughts. Janelle Cox is an education writer who uses her experience and knowledge to provide creative and original writing in the field of education. She is also the Elementary Education Expert for About.

Chapter 4 : How Classroom Assessments Improve Learning - Educational Leadership

Online VS Classroom Education At first glance, online education might seem like an easy and undervalued way of obtaining your education. However, after years of testing and constant studies, online learning is gaining acceptance by the education industry as an acceptable and productive way of obtaining your education.

Sponsored Program Low Tech Approach to Learning While technology undoubtedly has changed education, many educators opt to use a more traditional, low tech approach to learning. Some learning styles require a physical presence and interaction between the educator and the student. Additionally, some research has shown that low-tech classrooms may boost learning. For example, students who take handwritten notes have better recall than students who take typed notes. Another downside of technology in the classroom may be that students exposed to spell check and autocorrect features at an earlier age may be weaker in spelling and writing skills. Ultimately, tailoring the learning experience to different types of learners is incredibly important, and sometimes students work better with a low-tech approach. Here are some examples of low technology usage in different teaching methodologies: Kinesthetic learners have a need for movement when learning. Teachers should allow students to move around, speak with hands and gestures. Students may participate in fieldwork, learning expeditions, projects or case studies to be able to apply knowledge learned in the classroom to the real world, rather than learning through the virtual world. Many types of vocational or practical training cannot be learned virtually, whether it be a laboratory experiment or woodworking. Through these different approaches to teaching, educators can gain a better understanding of how best to govern their classrooms, implement instruction, and connect with their students. Learn more about each one to find the best fit for your classroom. Teacher-Centered Methods of Instruction Direct Instruction Low Tech Direct instruction is the general term that refers to the traditional teaching strategy that relies on explicit teaching through lectures and teacher-led demonstrations. In this method of instruction, the teacher might play one or all of the following roles: As the primary teaching strategy under the teacher-centered approach, direct instruction utilizes passive learning, or the idea that students can learn what they need to through listening and watching very precise instruction. Teachers and professors act as the sole supplier of knowledge, and under the direct instruction model, teachers often utilize systematic, scripted lesson plans. Direct instruction programs include exactly what the teacher should say, and activities that students should complete, for every minute of the lesson. Because it does not include student preferences or give them opportunities for hands-on or alternative types of learning, direct instruction is extremely teacher-centered. Back to Top Flipped Classrooms High Tech The idea of the flipped classroom began in when two teachers began using software that would let them record their live lectures. By the next school year, they were implementing pre-recorded lectures and sharing the idea of what became known as the flipped classroom. Broadly, the flipped classroom label describes the teaching structure that has students watching pre-recorded lessons at home and completing in-class assignments, as opposed to hearing lectures in class and doing homework at home. Teachers who implement the flipped classroom model often film their own instructional videos, but many also use pre-made videos from online sources. A key benefit of the flipped classroom model is that it allows for students to work at their own pace if that is how the teacher chooses to implement it. From a technology perspective, the system hinges on pre recorded lessons and online activities, meaning both students and teachers need a good internet connection and devices that can access it.

Chapter 5 : Teaching with technology | Center for Teaching and Learning

Yale's Center for Teaching and Learning also features several reservable classroom spaces featuring white boards, smart touchscreens, and flexible seating / tables. These spaces are all reserved on an application basis.

Looking at Classroom Teaching and Learning Look around. Listen to the noisy swarm of students become suddenly quiet as students and teachers move into classrooms and doors close. What are students learning? How are teachers teaching? Should you open those doors and enter, or should you stay away? How often should you visit? What should you do once you enter? How do you discover what is really going on between teacher and students? What recognition can you give to teachers who are already excelling, or what assistance can you give to those who are floundering or who are simply making it through each year? What can you do, as only one person, with responsibilities for a teaching staff of or 25 or 7 in a school? As a school leader, you are bombarded with so many student needs, parent concerns, teacher concerns, and district and state requirements and paperwork that it seems futile to think of improving the teaching of every teacher. What, indeed, can you, as only one person, do? The above scenario depicts common concerns of those who have schoolwide responsibilities for a vast array of classrooms and teachers when they contemplate frequent visits to every classroom for the purpose of improving learning for all students. These successful schools typically have no greater amounts of time or resources than those where this scenario is a pipe dream, but the difference is how time, focus, and structure are used; how staff development, school improvement, personnel evaluation, and classroom assistance are used together; and how instructional leadership is defined and employed. Whenever one person defines himself or herself as the sole leader, provider, and catalyst for improved classroom learning, any school with more than 15 teaching faculty immediately confronts a lack of schoolwide instructional focus and assistance. Successful schools understand that the direct improvement of teaching and learning in every classroom comes via a constellation of individuals and groups who undertake a myriad of activities and initiatives. These activities and initiatives provide continual reflection and changing of classroom practices guided by the educational aspirations of the school. Much has happened in education in the past decade. Among the changes are new standards and assessments of learning; new accountability schemes; new roles and responsibilities for teachers; and new forms of observations, feedback, and critique. We have much more knowledge about powerful teaching and learning. We also have separate, additional knowledge about teaching and learning for the continuous improvement of schools in varying geographic contexts rural, urban, suburban and community contexts socioeconomic class, race, ethnicity, and gender. Who is the person in the opening paragraph of this chapter? Who are you as a professional and as a person? Are you a student, a principal, a beginning teacher, an experienced teacher, a grade or department head, a mentor, an instructional lead teacher, an assistant principal, a central office supervisor, a curriculum or staff development director, an associate superintendent, or a superintendent? You may hold a single role or have a combination of many. Another way of asking who you are is a question of personal identity: These personal identities are not absolutes, and they may seem irrelevant for a book on leadership for improving classroom teaching. But such identities of self and how those identities influence the perspectives of others can have a powerful impact on your efforts to open those classroom doors, possibly determining which teachers you really have access to and which understandings and priorities of learning you wish to see practiced behind the classroom doors. Lastly, who are you as a knower, a practitioner, and a communicator of excellent classroom learning? Are you certain about what good teaching is, what it looks like in action, and how students should interact, respond, and shine? Certainty can become arrogance and dogmatism, but uncertainty can become permissiveness and the acceptance of all teaching as having equal merit. Understanding your own beliefs about good learningâ€”whether inductive or deductive, individual or group, cooperative or competitive, paper-and-pencil-tested or performance-based, core knowledge or multiculturalâ€”is another element that can lower or raise barriers between you and what teachers do in the privacy of their own classrooms. So think about who you are as we begin to look at ways of structuring, observing, and improving individual teaching. Know thyself, said Socrates. Through the ages, knowing oneself has served as a prelude to and a foundation

for relating well to others. What you read here will be useful to your immediate school world and should raise new possibilities about what every student deserves: How Do Teaching and Learning Improve? How do teaching and learning improve? Consider the boxed statement on the next page. The answer is no mystery. I cannot improve my craft in isolation from others. To improve, I must have formats, structures, and plans for reflecting on, changing, and assessing my practice. The typical and infrequent drop-in visit by an evaluator a few times a year without continuous discussion, critiquing, and planning with others leads to the deadening and routinizing of practice and the diminishment of teaching as a profession. By definition, a profession is the work of persons who possess a body of knowledge, skills, and practices that must be continually tested and upgraded with colleagues. Research has found that faculty in successful schools always question existing instructional practice and do not blame lack of student achievement on external causes. Faculty in schools that have high intellectual standards and educate virtually all their students well work in collegial, critical ways with each other, clearly knowing what they want of all students and striving to close the gap between the rhetoric of education aims and the hard, professional work of practice. Successful schools stand in great contrast to mediocre and low-performing schools where faculty work apart from each other, without common purpose, and with self-centered beliefs that they are doing the best they can. We have now a substantial professional knowledge base on how schools succeed, how great teaching is accomplished, and how students learn well. The challenge is to use more fully what we have learned from this knowledge base. Without the cultivation of dissatisfaction and critique, without being clear about our purposes, and without the need to use a knowledge base in practice, we have no education and no profession. Organizing the Quest To improve classroom learning for all studentsâ€”preschool, elementary, middle, secondary, or postsecondaryâ€”we will use the organization of professional knowledge illustrated in Figure 1. Student learning is directly influenced by the first concentric circle: Educational leaders have the tools shown in the second concentric circle to improve classroom instruction: To have a powerful schoolwide effect, all of this work has to be embedded in the overarching third concentric circle:

Chapter 6 : Teaching & Learning Principles - Eberly Center - Carnegie Mellon University

Do you love using games in your classroom to engage students with their learning? I often use a game during a culminating activity after we have had a bit of content under our belts.

Teaching Should Be Consistent With the Nature of Scientific Inquiry Science, mathematics, and technology are defined as much by what they do and how they do it as they are by the results they achieve. To understand them as ways of thinking and doing, as well as bodies of knowledge, requires that students have some experience with the kinds of thought and action that are typical of those fields. Teachers, therefore, should do the following: Start With Questions About Nature Sound teaching usually begins with questions and phenomena that are interesting and familiar to students, not with abstractions or phenomena outside their range of perception, understanding, or knowledge. Engage Students Actively Students need to have many and varied opportunities for collecting, sorting and cataloging; observing, note taking and sketching; interviewing, polling, and surveying; and using hand lenses, microscopes, thermometers, cameras, and other common instruments. They should dissect; measure, count, graph, and compute; explore the chemical properties of common substances; plant and cultivate; and systematically observe the social behavior of humans and other animals. Among these activities, none is more important than measurement, in that figuring out what to measure, what instruments to use, how to check the correctness of measurements, and how to configure and make sense out of the results are at the heart of much of science and engineering. This puts a premium, just as science does, on careful observation and thoughtful analysis. Students need guidance, encouragement, and practice in collecting, sorting, and analyzing evidence, and in building arguments based on it. However, if such activities are not to be destructively boring, they must lead to some intellectually satisfying payoff that students care about. Provide Historical Perspectives During their school years, students should encounter many scientific ideas presented in historical context. It matters less which particular episodes teachers select in addition to the few key episodes presented in Chapter 10 than that the selection represent the scope and diversity of the scientific enterprise. Students can develop a sense of how science really happens by learning something of the growth of scientific ideas, of the twists and turns on the way to our current understanding of such ideas, of the roles played by different investigators and commentators, and of the interplay between evidence and theory over time. It is important, for example, for students to become aware that women and minorities have made significant contributions in spite of the barriers put in their way by society; that the roots of science, mathematics, and technology go back to the early Egyptian, Greek, Arabic, and Chinese cultures; and that scientists bring to their work the values and prejudices of the cultures in which they live. Insist on Clear Expression Effective oral and written communication is so important in every facet of life that teachers of every subject and at every level should place a high priority on it for all students. Use a Team Approach The collaborative nature of scientific and technological work should be strongly reinforced by frequent group activity in the classroom. Scientists and engineers work mostly in groups and less often as isolated investigators. Similarly, students should gain experience sharing responsibility for learning with each other. In the process of coming to common understandings, students in a group must frequently inform each other about procedures and meanings, argue over findings, and assess how the task is progressing. In the context of team responsibility, feedback and communication become more realistic and of a character very different from the usual individualistic textbook-homework-recitation approach. The nature of inquiry depends on what is being investigated, and what is learned depends on the methods used. Science teaching that attempts solely to impart to students the accumulated knowledge of a field leads to very little understanding and certainly not to the development of intellectual independence and facility. Science teachers should help students to acquire both scientific knowledge of the world and scientific habits of mind at the same time. Deemphasize the Memorization of Technical Vocabulary Understanding rather than vocabulary should be the main purpose of science teaching. Some technical terms are therefore helpful for everyone, but the number of essential ones is relatively small. If teachers introduce technical terms only as needed to clarify thinking and promote effective communication, then students will gradually build a functional vocabulary that will survive beyond the next

test. For teachers to concentrate on vocabulary, however, is to detract from science as a process, to put learning for understanding in jeopardy, and to risk being misled about what students have learned. Science Teaching Should Reflect Scientific Values Science is more than a body of knowledge and a way of accumulating and validating that knowledge. It is also a social activity that incorporates certain human values. However, they are all highly characteristic of the scientific endeavor. In learning science, students should encounter such values as part of their experience, not as empty claims. This suggests that teachers should strive to do the following: Welcome Curiosity Science, mathematics, and technology do not create curiosity. Thus, science teachers should encourage students to raise questions about the material being studied, help them learn to frame their questions clearly enough to begin to search for answers, suggest to them productive ways for finding answers, and reward those who raise and then pursue unusual but relevant questions. In the science classroom, wondering should be as highly valued as knowing. Reward Creativity Scientists, mathematicians, and engineers prize the creative use of imagination. Encourage a Spirit of Healthy Questioning Science, mathematics, and engineering prosper because of the institutionalized skepticism of their practitioners. In science classrooms, it should be the normal practice for teachers to raise such questions as: How do we know? What is the evidence? What is the argument that interprets the evidence? Are there alternative explanations or other ways of solving the problem that could be better? The aim should be to get students into the habit of posing such questions and framing answers. Avoid Dogmatism Students should experience science as a process for extending understanding, not as unalterable truth. This means that teachers must take care not to convey the impression that they themselves or the textbooks are absolute authorities whose conclusions are always correct. By dealing with the credibility of scientific claims, the overturn of accepted scientific beliefs, and what to make out of disagreements among scientists, science teachers can help students to balance the necessity for accepting a great deal of science on faith against the importance of keeping an open mind. Promote Aesthetic Responses Many people regard science as cold and uninteresting. However, a scientific understanding of, say, the formation of stars, the blue of the sky, or the construction of the human heart need not displace the romantic and spiritual meanings of such phenomena. Teachers of science, mathematics, and technology should establish a learning environment in which students are able to broaden and deepen their response to the beauty of ideas, methods, tools, structures, objects, and living organisms. Science Teaching Should Aim to Counteract Learning Anxieties Teachers should recognize that for many students, the learning of mathematics and science involves feelings of severe anxiety and fear of failure. No doubt this results partly from what is taught and the way it is taught, and partly from attitudes picked up incidentally very early in schooling from parents and teachers who are themselves ill at ease with science and mathematics. Far from dismissing math and science anxiety as groundless, though, teachers should assure students that they understand the problem and will work with them to overcome it. Teachers can take such measures as the following: Build on Success Teachers should make sure that students have some sense of success in learning science and mathematics, and they should deemphasize getting all the right answers as being the main criterion of success. After all, science itself, as Alfred North Whitehead said, is never quite right. Understanding anything is never absolute, and it takes many forms. Provide Abundant Experience in Using Tools Many students are fearful of using laboratory instruments and other tools. This fear may result primarily from the lack of opportunity many of them have to become familiar with tools in safe circumstances. Girls in particular suffer from the mistaken notion that boys are naturally more adept at using tools. Starting in the earliest grades, all students should gradually gain familiarity with tools and the proper use of tools. By the time they finish school, all students should have had supervised experience with common hand tools, soldering irons, electrical meters, drafting tools, optical and sound equipment, calculators, and computers. Support the Roles of Girls and Minorities in Science Because the scientific and engineering professions have been predominantly male and white, female and minority students could easily get the impression that these fields are beyond them or are otherwise unsuited to them. Teachers should select learning materials that illustrate the contributions of women and minorities, bring in role models, and make it clear to female and minority students that they are expected to study the same subjects at the same level as everyone else and to perform as well. Emphasize Group Learning A group approach has motivational value

apart from the need to use team learning as noted earlier to promote an understanding of how science and engineering work. Overemphasis on competition among students for high grades distorts what ought to be the prime motive for studying science: Competition among students in the science classroom may also result in many of them developing a dislike of science and losing their confidence in their ability to learn science. Science Teaching Should Extend Beyond the School Children learn from their parents, siblings, other relatives, peers, and adult authority figures, as well as from teachers. They learn from movies, television, radio, records, trade books and magazines, and home computers, and from going to museums and zoos, parties, club meetings, rock concerts, and sports events, as well as from schoolbooks and the school environment in general. Science teachers should exploit the rich resources of the larger community and involve parents and other concerned adults in useful ways. It is also important for teachers to recognize that some of what their students learn informally is wrong, incomplete, poorly understood, or misunderstood, but that formal education can help students to restructure that knowledge and acquire new knowledge. Teaching Should Take Its Time In learning science, students need time for exploring, for making observations, for taking wrong turns, for testing ideas, for doing things over again; time for building things, calibrating instruments, collecting things, constructing physical and mathematical models for testing ideas; time for learning whatever mathematics, technology, and science they may need to deal with the questions at hand; time for asking around, reading, and arguing; time for wrestling with unfamiliar and counterintuitive ideas and for coming to see the advantage in thinking in a different way. Moreover, any topic in science, mathematics, or technology that is taught only in a single lesson or unit is unlikely to leave a trace by the end of schooling. To take hold and mature, concepts must not just be presented to students from time to time but must be offered to them periodically in different contexts and at increasing levels of sophistication.

Chapter 7 : Anmelden â€“ Google Konten

Using Technology to Enhance Teaching & Learning Technology provides numerous tools that teachers can use in and out of the classroom to enhance student learning. This page provides an introduction to some of the most common.

Classroom Assessment Techniques CATs A Guide for Faculty and Teaching Assistants The following guide is designed to explain and give examples of how in-class assessment can enhance university teaching and learning. These techniques are based on the work of Angelo and Cross Classroom Assessment Techniques CATs are, typically, ungraded activities conducted in the classroom setting. Their purpose is to provide the instructor feedback on whether or not students understand course material so that adjustments can be made before the end of the term. Frequent use of CATs also can assure students that the instructor takes a genuine, active interest in their learning process throughout the course, before the summative assessment e. Frequent use of CATs: Provides regular feedback about student progress and can preempt misconceptions and poor performance on more heavily-weighted tests, quizzes, projects, etc. Gives insight into day-to-day teaching methods and student learning processes. It also can model to students the fact that learning is an ongoing and evolving process that can be modified as needed. Provides students with a means of gauging their own learning styles and then modify study strategies as appropriate. Helps students feel less anonymous in large class settings, since it is concrete evidence that the instructor cares about student learning. Provides "food for thought" for instructors as they reflect on their teaching and on a particular course at the end of term. The table below describes 8 techniques that can be easily adapted for and implemented in a classroom setting. Classroom Assessment Technologies Second Edition. Tips on implementation Start off simple by choosing a technique that easily fits your teaching style and classroom time limits. Conduct at least one CAT before the first major assignment, so that you can intercept any problems or questions before the fact. When you do any CAT, explain its purpose and your goal clearly to students. Report your findings to your students and let them know what you plan to do in terms of their feedback. Name What to do with the data Time required Minute paper During the last few minutes of the class period, ask students to answer on a half-sheet of paper: Review responses and note any useful comments. Low Chain Notes Students pass around an envelope on which the teacher has written one question about the class. Go through the student responses and determine the best criteria for categorizing the data with the goal of detecting response patterns. Discussing the patterns of responses with students can lead to better teaching and learning. Low Memory matrix Students fill in cells of a two-dimensional diagram for which instructor has provided labels. For example, in a music course, labels might consist of periods Baroque, Classical by countries Germany, France, Britain ; students enter composers in cells to demonstrate their ability to remember and classify key concepts. Tally the numbers of correct and incorrect responses in each cell. Analyze differences both between and among the cells. Look for patterns among the incorrect responses and decide what might be the cause s. Categorize student responses according to characteristics you feel are important. Analyze the responses both within and across categories, noting ways you could address student needs. Med One-sentence summary Students summarize knowledge of a topic by constructing a single sentence that answers the questions "Who does what to whom, when, where, how, and why? Evaluate the quality of each summary quickly and holistically. Note whether students have identified the essential concepts of the class topic and their interrelationships. Share your observations with your students. Med Exam Evaluations Select a type of test that you are likely to give more than once or that has a significant impact on student performance. Create a few questions that evaluate the quality of the test. Add these questions to the exam or administer a separate, follow-up evaluation. Try to distinguish student comments that address the fairness of your grading from those that address the fairness of the test as an assessment instrument. Respond to the general ideas represented by student comments. Med Application cards After teaching about an important theory, principle, or procedure, ask students to write down at least one real-world application for what they have just learned to determine how well they can transfer their learning. Quickly read once through the applications and categorize them according to their quality. Pick out a broad range of examples and present them to the class. Med Student- generated test questions Allow students to write test

questions and model answers for specified topics, in a format consistent with course exams. This will give students the opportunity to evaluate the course topics, reflect on what they understand, and what are good test items. Make a rough tally of the questions your students propose and the topics that they cover. Evaluate the questions and use the goods ones as prompts for discussion. You may also want to revise the questions and use them on the upcoming exam.

Chapter 8 : Looking at Classroom Teaching and Learning

Diversity in the Classroom Promoting diversity is a goal shared by many in American colleges and universities, but actually achieving this goal in the day-to-day classroom is often hard to do. The goal of this teaching module is to highlight a few of the key challenges and concerns in promoting diversity, and illustrate ways to incorporate an.

This page provides an introduction to some of the most common. Click here for classroom-specific information about the setup in many campus buildings. There are also numerous on-line resources about using technology to enhance teaching in a number of different ways. For example, Teaching with Technology 2 , from the Learning Technology Consortium, offers 17 peer-reviewed essays on using different kinds of educational technology, and the book can be downloaded for free. Below are links to resources on using specific types of teaching and learning tools. Blackboard SMU uses the course management system Blackboard. Access your Blackboard courses here. Tools designed for this purpose, such as PowerPoint, can be used well or used badly. Click here for resources that provide advice for thoughtful use of PowerPoint, as well as a few additional presentation tools. Classroom Response Systems "clickers" One way to encourage student engagement is by using electronic devices that allow students to record their answers to multiple choice questions and allow you to instantly display the results. The anonymity encourages participation, and their answers help the teacher know when further discussion is needed. Use of clickers can also serve as a catalyst for discussion. Click here to learn more about using response systems effectively. Online Projects and Collaboration Tools Technology can support student collaboration on creating new knowledge, reflecting on what they are learning, or working together to achieve a deeper understanding of course material. These articles provide ideas about their use and misuse. Information Visualization Tools Technology can also clarify and stimulate thought through transforming words into pictures. Here are some tools to help lead your students to think more critically by encouraging them to visually structure information. Flipping the Classroom How can we make the best use of the classroom time we have with our students? Sometimes a great way to move them toward higher levels of understanding is to move the lecture out of the classroom, and use in-person time for interactions that require applying, synthesizing, and creating. These resources explain the theory underlying this teaching method and provide practical suggestions for making it work. Podcasts Whether for a flipped class or just as a resource for your students, you may want to create a podcast that conveys information students need for initial learning or review. These articles discuss how to make and use podcasts effectively. Games What could be more engaging than a good game, used well? These articles discuss why a game may lead to deeper learning and give some examples of their use in higher education. Here are some ideas. Converting a Face-to-Face Course to an Online Course Teaching online, whether in a hybrid course or a wholly-online course, requires different techniques and different tools. Without the F2F contact, professors will need to be even clearer about setting and articulating expectations for digital work and participation. Encouraging interaction between professor and student and among students is an additional challenge, as is monitoring student learning as the course progresses. And various tools like Skype allow synchronous communications, while blogs and Twitter can encourage asynchronous interaction. Here are some ideas to get you started.

Chapter 9 : Flipping the classroom | Center for Teaching and Learning

In the student-centered classroom, teaching and assessment are connected because student learning is continuously measured during teacher instruction. Learn more about the different teaching styles that use a student-centered approach.

Do you love using games in your classroom to engage students with their learning? Here she gives you five games to play in your own classroom. What makes a good teacher? Though every individual will have a different answer, a good teacher is anyone who feels a sense of accomplishment after having taught a lesson well. This feeling only comes when you have done the best you could, and when you find that your students were engaged throughout the lesson and have learnt something new in the process. Some teachers can make interesting lessons boring, while others can make the most mundane lessons thought-provoking! One simple and effective way to encourage learning in the classroom and make it fun is to use fun classroom games and activities! Here are some ideas that may help. The Crazy Ball Game Prepare a questionnaire for the game based on a topic that you taught recently to the class. Divide the class into two teams and choose a student from one of the teams to answer the first question. If the chosen student answers correctly, she gets to throw a ball into one of three paper cups, each marked with 5, 10, or 15 points and get points for her team. Keep the points on a board so that the teams can follow the progress. The team with the maximum number of points wins. Prizes can be a homework pass, free time, extra computer time, and so on. The student has to figure out what the word on her forehead is by asking her peers for clues. Dart board Create a giant dart board and write a question each on the pies. Since creating a dart board involves a lot of math, you can consider replacing the topical questions with math quizzes and puzzles to double the fun! Then call upon students in random order to throw a dart and answer the question the dart hits! Feel free to bend the rules to accommodate enough pies so that each child gets a chance to answer. Prepare a questionnaire on a particular topic and make fake currencies and distribute them equally among your students. Allow them to wager their money based on how confident they feel about the question you ask. If they get the answer correct, they get to keep the money, else pass it on to the next player. Play a minimum of three rounds so that the cash is passed around enough number of times. The student who has the most money at the end of the game wins. Thumb Ball Get a light colored beach ball and write multiple questions on it. Then have the students sit in a circle. The objective of the game is to play catch. If she drops the ball, then you get to throw it back at the circle. Continue the game till all the questions have been answered. Simple games like these will not only help you practice lessons with your students in the class, but help the class bond too! She is constantly on the lookout for new and exciting ways to make learning an enjoyable experience. Corinne loves all things that scream out un-schooling, alternative education and holistic learning.