Changing Systems to Personalize Learning
Teaching to Each Student

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THE EDUCATION ALLIANCE at Brown University

Northeast and Islands Regional Educational Laboratory (LAB)

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Acknowledgments

Personalized teaching is not a one-way street. Students need to see the workings of their teachers' minds as much as the teachers need to see the workings of their students' minds.

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About This Workshop

To do the work of personalized teaching, teachers must all share certain beliefs in common, perhaps the most important of which is that "every child can learn."

PREFACE

Welcome to the *Teaching to Each Student* workshop.

This workshop guidebook introduces teaching methods that allow students with different skills, aspirations, and interests to succeed in meeting the same standards. It is designed to facilitate workshops by the Secondary School Redesign team of The Education Alliance at Brown University but can be used easily by any educator or group of educators who want to support the growth and renewal of personalized instruction in their schools. The worksheets and protocols throughout the guide are also available as $8^1/_2$" x 11" PDF files on the CD ROM at the back of the book for your convenience in working with full-size documents or replicating the exercises in the future.

Teaching to Each Student responds to the following recommendations from *Breaking Ranks: Changing an American Institution*, a report on the high school of the twenty-first century by the National Association of Secondary School Principals (NASSP), in partnership with the Carnegie Foundation for the Advancement of Teaching:

- Each high school community will identify a set of essential learnings—above all in literature and language, mathematics, social studies, science, and the arts—in which students must demonstrate achievement in order to graduate.

- The high school will integrate its curriculum to the extent possible and emphasize depth over breadth of coverage.

- Teachers will design work for students that is of high enough quality to engage them, cause them to persist, and when successfully completed, result in their satisfaction and their acquisition of learning skills and abilities valued by society.

- Teachers will know and be able to use a variety of strategies and settings that identify and accommodate individual learning styles and engage students.

- Teachers will teach in ways that help students develop into competent problem solvers and critical thinkers.

- Teachers will integrate assessment into instruction so that assessment does not merely measure students, but becomes part of the learning process.

INTRODUCTION

Imagine that you are a ninth-grade student at Tidewater High School. The ninth and tenth grades have recently been organized into smaller learning communities. Yours, known as the "Marine Science Academy," often focuses on real issues confronted by the local fishing industry that employs your family, friends, and neighbors. Tidewater's City Council is currently considering whether or not to lease city-owned offshore waters to salmon farmers. This would improve the local economy, but if the farm-bred salmon escape, they might crossbreed with the wild salmon that inhabit the waters nearby. Students and teachers in your academy decide together to include the salmon dilemma in your next unit of study.

Units of study in your school are planned around the "big ideas" in each subject area. The ideas often have interdisciplinary ramifications. This unit is no different. The idea is described thus in the unit description: "The concept of natural selection is important in science, mathematics, history and literature. It has changed the way we see and understand the world. We must therefore be able to think about it flexibly and talk about it accurately."

In biology class you and your classmates ask, "If farm-bred salmon escape, what traits might be inherited?" The question fits into the study of evolution in the state's mandated science curriculum. Normally your teacher would have taught the topic later in the year, but she has been able to move the study up on the calendar to accommodate the salmon project. Teachers and students agree to divide the class into several "expert" groups. Each group will research one aspect of the project within a specific timeline. Then, each group will share its important concepts and information with the rest of the class. One group plans to create and read aloud sophisticated children's books that provide an overview of the topic, including the geology of the fossil record, a brief history of the concept, and basic scientific principles. Another group decides to create Webquest presentations on case studies of evolution in action. You were tempted to participate in the children's book group because you have artistic skills. But because you have had some difficulty understanding the principles of assortment as presented in the textbook, the teacher has challenged you to use those skills instead in a group that will teach the rest of the class how to interpret Punnett squares.

In mathematics class you and your classmates are answering the question, "At what ratios might inherited traits from farm-bred salmon persist?" As part of the integrated curriculum plan, the teacher is using the chapter on ratio in the Sequential Math A textbook to assign investigations into that topic. Indeed, one of the reasons your academy adopted the salmon project was the timing of the ratio unit in the prescribed sequence of study in the Math A program. After the "pure math" investigations, your math teacher will guide you to an understanding of how the mathematical laws of assortment work in your study of genetics. In the end, you will be able to apply the Hardy-Weinberg Law to make predictions about trait distribution when varieties of salmon are crossbred. You have come to enjoy mathematics because your teacher models the mathematical thinking effectively first, then provides you with the opportunity to work in a cooperative group of your choice to solve relevant problems. You also enjoy comparing your solutions to the solutions of other groups at the end of your workshop time. Though you still have some difficulty reading for understanding in the textbook, the teachers and your classmates are able to help you individually during workshop time. You find that you really enjoy writing in your math journal about your progress. You have had an opportunity, too, to work in an advisory group outside the classroom. The group has helped you to develop a personal learning plan that includes the goal of participating more actively in mathematics. Your advisory group has helped you to make better choices about the groups you join. You no longer gravitate solely to your friends, but to people who you know will "improve your game," as your advisory group friends put it.

Also as part of this integrated curriculum, in social studies class you are researching the history of the idea of natural selection and its impact on society, from the upheavals in religious doctrine that began in the nineteenth century and continue today, to the appearance of eugenics movements, to contemporary issues of genetic engineering. You are a member of a group that is creating a timeline to show the progression of thought that made the concept of natural selection possible. The timeline includes the development of the scientific method in Greece, the revival of Greek ideas in the Renaissance, the general acceptance of science in the Enlightenment, and its application in the Industrial Age. Your timeline group is part of a "jigsaw" model. Other groups are research-

ing such topics as the biographies of major figures and specific events like the Scopes Monkey Trial. Your jigsaw group will develop a brochure for the community, to give citizens the background they need for their approaching decision. You are amazed at the insights you are having. You have realized, for instance, that ideas don't just come from anywhere. Real people, with individual personalities generated them, sometimes at great risk. This is even true of mathematics. You learn that it was a Muslim culture that generated algebra, which you can see now is of great use in making this local community decision. Indeed, you have recommended that this be included in your timeline. You enjoy your social studies class in part because you can share this insight with the class at the end of the period when students are encouraged to speak up and share the connections they are making. The insight will become a potential thesis paper in your project portfolio.

The drama group is preparing a student production of Inherit the Wind. While you are not acting in their production, you are reading the play in English class and writing monologues from the points of view of the different characters, which will be performed as sidebars to the drama group production. You are nervous about performing, but you are getting lots of support in rehearsals from your response group. It helps that every student is expected to perform. In addition, every student who needs it has been promised the support necessary to build confidence. As added reinforcement, you report your progress in your English journal. You know the teacher will read your entries if you flag them and will always be at the other end of that lifeline. After the performances, you will be studying the craft of the persuasive essay to prepare the arguments that you will offer to the Tidewater City Council. Even now you are creating a bank of vocabulary words, concepts, and phrases from all of the disciplines to support your argument. When it comes to vocabulary, you particularly enjoy graphic organizers, the "concept definition maps" and "word sorts" that help bring the words to life. Your research in social studies has made you something of an expert on the origins of some of the relevant mathematics words. It has occurred to you to that it might be interesting to include in your group's social studies brochure the origins of the word salmon itself, which has a long pedigree stretching from Latin, through French, then Middle English usage.

When it is time to take the standardized tests at the end of the year, your teachers identify the standards you have already met within the context of the curriculum and rehearse the test with you but don't otherwise find it necessary to do extensive "test prep." You know the importance of taking the tests seriously because you are fully aware of their role in your overarching personal learning plan. Even so, your teachers call you the night before to make sure you're getting a good night's rest and greet you when you come to school the morning of the tests to encourage you. You do well on the test and feel a sense of accomplishment as you look forward to continuing with your cohort the next year…

This narrative about a student from "Tidewater High School" is a composite scenario that includes instructional elements already in practice in schools around the country. It represents only one of a potentially infinite number of scenarios. We call the instruction associated with the scenario "personalized teaching." Keefe and Jenkins' (2000, p. xv) define personalized instruction as "…the effort on the part of a school to take into account individual student characteristics and needs, and flexible instructional practices in organizing the student learning environment." Personalized teaching is the yin to the yang of personalized learning.[1]

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[1] See also *Personalized Learning* (Clarke, 2003), a guidebook for the *Personalized Learning* workshop.

DiMartino (2003) describes the relationship between personalized teaching and personalized learning:

> " *Throughout the high school years, students are growing increasingly determined to explore their uniqueness and assert an independent pathway into adult life. Young adults are driven to create and express a personal role in the adult world around them. Facing adult challenges in a highly complex society, high school students respond actively to learning opportunities in high school when they can assume increasing responsibility for plotting their own course. Changing high schools so every student meets common standards while designing and pursuing a unique pathway toward adult roles is the purpose of personalized learning…"* (p. xix)

Personalized teaching, is, then, the act of "changing high schools" to support personalized learning.

Most of the elements of personalized teaching are not new. Indeed, they have a long history, chronicled in Keefe and Jenkins' *Personalized Instruction: Changing Classroom Practice* (2000): "non-graded education, continuous progress education, individualized instruction, individually guided or prescribed education…(p. 37)." As Keefe and Jenkins point out, however, "Each of these concepts is concerned with personalized education but in a limited way. Personalization is broader in scope, more systematic in organization, and more authentic in its goals and strategies." Organizations from John Dewey's Laboratory school (p. 19) to the National Association of Secondary School Principals' Model Schools Project (p. 21) have attempted to embody the ideals of personalized teaching in the past. Contemporary initiatives that understand the broad scope of personalized teaching include the Learning Environments Consortium International (p. 25) and the Coalition of Essential Schools (p. 28). Our purpose here is not to replicate Keefe and Jenkins' comprehensive chronicle, but rather to build upon that chronicle by investigating further successes in personalized teaching and providing a few useful tools to extend its reach.

We need to dispel one potentially obstructive misconception before proceeding: personalized teaching is not individualized teaching. Keefe and Jenkins (2000) identify an extensive typology of approaches to personalized instruction, all of which offer useful strategies and tactics that have many overlaps with each other. Useful as they are, however, some of the strategies have been poorly implemented in the past and teachers may have negative feelings about them. Individualized instruction in particular is associated with programs for students with special needs and Individual Education Plans (IEPs). When we talk of personalizing instruction, we are not talking about asking secondary general education teachers to develop IEPs for each of their students and to deliver a separate packet of materials to each and every one of them. As Clarke and Frazer (2003) put it:

> …*personalization is not the same as individualization… The difference between individualization and personalization lies in control. 'How much does the student direct the process of his own learning?' The answer to that question plays out in **student** [our emphasis] commitment."* (p. 178)

In personalized instruction, then, teachers are invited to diagnose individual student characteristics, yes, but to then design an interactive learning environment within which a student can respond, not an IEP to which the student must comply.

We described one interactive environment above. Frazer (2003) further describes personalized teaching in three New England schools—the Gailer School in Shelburne, Vermont; Souhegan High School in Amherst, New Hampshire; and Thayer Jr./Sr. High School in Winchester, New Hampshire:

> *In all three of these schools, teachers write curriculum appropriate for the students before them, engaging students in the curriculum development process. Textbooks are rarely used as the basis for a course, and bells do not ring to delineate periods of time, since time is crafted to the needs of individual classes and/or teams. In*

each school, students can be found actively negotiating their assignments if they are asked to do something that doesn't seem relevant, challenging or interesting to them. While many members of a class are writing essays to express their understanding of a text, for example, another student might be creating a work of art, a model, or an oral presentation. Students in all three schools engage in advisory groups designed to link each student closely and personally to an adult and a small group of peers for support." (p. 90)

In mapping the process of school reform in five Professional Development Schools in Vermont, Clarke (2003, p. 313) found that instructional innovation was unique to each school but all qualified as other examples of personalized instruction:

■ A cross-disciplinary investigation of Newton's laws carried out in a simulation of armed global aggression on the playing fields of a rural high school;

■ The process of converting experiences in community-based learning to a plan for Personalized Learning Plans for all students at a city high school;

■ The development of an imaging lab at a suburban high school, where students learn to create computer-animated graphics for local civic and business organizations;

■ The development of an interdisciplinary global perspectives course at another suburban school in which students use sources from English and history to answer the question, "What does it mean to be human?"

■ A unit of study at a resource-poor rural high school in which students learn geography, geology, mathematics, and graphic design by completing a land-use plan for 100 acres of Vermont cut out at random from a topographic map of the state.

Clarke (2003) observes that:

> *Good teaching starts with a problem and raises a question.*
> *Questions should be personal, inviting each student to explore a*
> *wide range of information from a variety of sources…Focusing on*
> *problems, questions, information expression, and standards,*
> *learning can become personal for each high school student—*
> *and each teacher."* (p. 84)

Any method requiring creative design carries the risk of failure. Fisher (2003, p. 106) identifies the danger inherent in student-oriented techniques—that they will "stall and diverge from a goal." She finds an answer in the practices of "democratic" classrooms, where rubrics are used to reflect the shared purpose of the school community. "In such classrooms, freedom is modified by collective purpose and individual accomplishment is recognized by shared standards." She found that:

■ Democratic classrooms are places where students have choice not necessarily in what they learn, but in how they learn it and how they demonstrate understanding of what they have been asked to learn.

■ Democratic classrooms provide learning experiences that celebrate the diverse talents of all learners and provide multiple opportunities to stretch thinking without penalty when students initially fall short of their goal.

■ Democratic classrooms are collaborative—as opposed to competitive—workplaces, where students demonstrate respect for diverse views, styles, and abilities.

■ Avoiding chaotic individualism, democratic classrooms celebrate high performance by each student using rubrics that apply to all.

Fisher discusses the function of focusing questions and Socratic Dialogue in democratic classrooms:

> *Like any kind of content, learning through dialogue must be done through practice. Especially, young adults must recognize both the promise and pitfalls of struggling with large questions in a social context where all views will differ…. In a democratic high school, student engagement in dialogue and debate becomes the foundation of their engagement with the larger community."*
> (pp. 108-9)

Personalized teaching, then, implies a new role for the teacher, who is becoming, in Fisher's word (p. 109), a "facilitator." The changing roles of teachers are contextualized by Keefe and Jenkins (2003) when they describe three types of learning environments: the traditional, the transitional, and the interactive.

Traditional Environments: The organizational pattern found most often in American schools is based on nineteenth-century factory models, scientific management theory, the behavioral research of Thorndike and Skinner, and the learning hierarchies of Gagne and Bloom. They focus on uniform behavior, administrator and teacher control, and measurement. The behaviorist approach stresses assessment (everything must be measured), specific objectives, curricular scope and sequence, explicit teaching and direct instruction, and reinforcement strategies of reward and punishment…

Transitional Environments: Since the 1930s, many schools have attempted to restructure, either to provide a more flexible curriculum (as in the Eight-Year Study) or to better meet the needs of large urban populations (as in the Effective Schools Movement), or simply to provide a more responsive learning environment for today's children (as in Individually Guided Education). The intent usually has been to *modify* the existing behaviorist pattern of traditional schooling. The stimulus has been a growing concern for the needs of immigrant children, low achievement among minority youth, or the results of new research…

Interactive Environments: We use this term "interactive" here to describe school environments that are communities of learning, characterized by reflective and thematic curricular organization, authentic pedagogy and assessment, and personalized instruction. A small number of schools have been working by design for the past two decades to achieve these learning environments… (pp. 5-14)

In this work we are clearly about the business of moving schools from traditional or transitional to interactive learning environments. This demands a level of commitment that Gray-Bennett (2003, p. 296) describes as "radical." In describing the implications for high schools in New England of the Commission on Public Secondary Schools' new Standards of Accreditation, which required that schools "commit to school wide learning goals that apply to all students," she said that:

> The reason such a commitment to essential learning is radical is that it challenges the commonly held notion of the purpose of a school. In New England, most high schools practice a purpose of delivering knowledge. This purpose is frequently encouraged by state accountability and school evaluation systems that focus on explicit, often innumerable, learning goals and learning experiences by discipline. Such a discipline-specific state focus encourages fragmentation and isolation of departments.

> "The commission's new standard on Mission and Expectations for Student Learning required, instead, that teachers, in effect, be hired to help students achieve the school's learning goals through the vehicle of their own subject area. Instead of subject area knowledge being the end, it was the means. The new standard on Mission required that teachers work together and share responsibility for ensuring that students achieve the school's fundamental learning goals." (pp. 296-297)

There's the rub for teachers using traditional methods: "Instead of the subject area knowledge being the *end*, it was the *means*." And teachers were required to "work together and share responsibility." We are asking many of our teachers to do nothing short of redefining themselves, their jobs, and the purposes of their schools. Gray-Bennett continues:

> **"** *The requirement that schools take as their purpose the one-on-one achievement of learning by all students in the school is the ultimate form of personalization. It puts the student in the center. It places the teacher in a secondary, supportive role."* (pp. 300-1)

To change their beliefs about the purposes of schools, teachers and the organizations that support them must see the teachers themselves as learners. As supervisors, coaches, and mentors, we must personalize our approach to them as much as we expect them to do of the students. Indeed, Gray-Bennett, in her story of the new accreditation process in New England above, talks of how the commission enlisted Bob Mackin and the LAB at Brown to initiate a change in their self-study process to look at "the personalized learning of the faculty regarding the personalized learning of students." She concludes that, "A redesigned school cannot itself be student centered and student personalized unless teachers have the skills to redesign their own practice" (p. 301).

In a personal communication with Edorah Frazer (2003), John Clarke describes the structural and attitudinal changes necessary to create a personalized environment in schools:

- Mission: from academics to a community of learners
- Systems: from efficacy to responsiveness
- Organization: from hierarchy to collaboration
- Curriculum: from covering content to pursuing lines of inquiry
- Instruction: from subjects to students
- Student Learning: from seat time to self-direction (p. 96)

Souhegan High School, mentioned earlier, is an example of a school that accomplished a successful transformation to an interactive learning environment. Robert Mackin (2003), consultant to New England's Commission on Public Secondary Schools' new Standards of Accreditation initiative, also mentioned earlier, was the principal at Souhegan and describes that transformation, especially reinforcing Clarke's prioritization of the sense of mission:

> "Unlike many schools that have achieved great success under the leadership of a dynamic principal, only to see their efforts and energy dissipate when that leader departed, Souhegan was different. It was mission-driven. The overriding belief in students— in respecting them, in trusting them, and in recognizing that they all had the capability to achieve high standards—was as much a part of the curriculum as were graduation requirements. The mission has become such an embedded and essential part of the overall school culture that it allows Souhegan to transcend the idiosyncrasies of any given leader or teacher or superintendent. Until the mission changes, the school will move forward with them or without them. But how does a school establish such a powerful sense of mission with such widespread support? It begins with a basic attitude shift." (p. 200)

We believe that to ensure the sustainability of change, not only the minds of the faculties but the minds of all of our educational citizens must change, or, in cases where minds have already changed, those minds must be supported in its continuation. Donaldson and Marnik (2003), in discussing Maine's Promising Future's Movement, describe how a basic attitude shift looked at the statewide level when the state commissioner of education J. Duke Albanese created a new entity entitled the Center for Inquiry on Secondary Education (CISE) to oversee their reform effort:

> "*…Maine's approach has required that state-level promoters listen sincerely to the frustrations, challenges, and beliefs of teachers, principals, superintendents, and parents—even when they appear to contradict the philosophy and vision of Promising Futures. If trust is to be built, individuals must be engaged in a genuine conversation about their students' learning and their own practices, for it is through these conversations that they can seek and find their own best solutions. CISE staff have approached local schools ready to both explain and advocate for the vision embedded in Promising Futures, but they visited those schools also as learners, ready to listen and talk with others to identify how CISE and state can support and facilitate each school in the monumental effort to succeed with every student.*" (p. 282)

Here then, is a sense of mission in action, where all participants are supporters and facilitators of the mission itself, not so much ruling and regulating but talking and listening, engaging in dialogue, learning continuously. This is not a one shot deal, a flavor of the month that will vanish with the next trend, but a permanently installed process of development.

While there are many encompassing rings to the target of *Teaching to Each Student*, the central focus is teachers:

> "*…several of the standards called for professional development to focus on critical teaching and learning issues. They asked that schools provide time and opportunities for teachers to engage in intensive needs-based professional development as opposed to the traditional one-shot professional development workshop. The standards require that schools encourage personal engagement on the part of faculty in the personalized learning experiences of students and to gauge students' learning strengths and needs on an ongoing basis. A redesigned school cannot itself be student-centered and student-personalized unless teachers have the skills to redesign their own practice. The standards required that they receive the training and support to learn to change their practice.*" (Gray-Bennett 2003, pp. 301-2)

Seager and Jorgenson (2003) put it this way in their retrospective study of long-term change of three American high schools:

> School staffs need to develop the beliefs and skills to 'operationalize' their vision through concrete practices and to make a commitment to ongoing dialogue and collaborative action over the period of time it takes to accomplish significant change. Our study involved looking at a decade or more of activity and, in spite of substantial progress on many fronts, in none of the schools was the work 'done.' Moreover, based on the experiences of these schools, the success of reform also becomes increasingly likely as increasing numbers of staff take personal and professional responsibility for achieving the vision." (p. 262)

In his study of the Professional Development schools of Vermont, Clarke (2003) discovered that ongoing dialogue is necessary not just among teachers but among all of the players:

> In a human organization, interactions across organizational lines weave the organization together, transferring energy and engendering a shared vision of purpose at the same time. In the schools in this study closest to 'systematic momentum,' interactions across organizational lines created a network for energy exchange that extended from the classroom to the boardroom. Only when communication is constant can innovation at one level of the organization force neighboring levels to adapt. When communication stops, innovation also stops, starved of energy required for growth…. High schools grow toward reform when all the parts interact constantly, forming an organism flexible enough to adapt to the pace of change in the surrounding environment." (p. 316)

Creating "an organism flexible enough to adapt to the pace of change in the surrounding environment"—a school that does not resist but responds to and evolves within the changing conditions of culture and politics—does not happen because the federal, state, or city governments mandate it (though mandates clearly help, as we see in New England). It happens because people begin to think and communicate differently, "across organizational lines," as Clarke puts it. That is why this workshop does not simply "introduce teaching methods that allow students with different skills, aspirations, and interests to succeed in meeting the same standards" as we stated in the Preface. It also provides rudimentary instruments to facilitate trans-organizational communication.

The effects of personalized teaching on students' engagement and performance are well understood. In reference to integrated curriculum, Fine and Somerville (1998) say:

> The curriculum is cohesive—the many subject and course offerings fit together and create a solid, well-rounded education. Flexible scheduling and faculty teamwork allow for a level of depth and an interdisciplinary approach that provides students with a much richer educational experience." (p. 106)

What may be less well understood and perhaps as important for the long-term viability of school reform is the effect on the *teachers*. Wasley and Lear (2000) write that:

> In some of the strongest small schools, we saw that faculty members worked hard to identify professional-development opportunities that helped improve the school, that strengthened their own professional skills, and positively affected student achievement…collegial interaction while learning new things can extend the depth of everyone's understanding." (p. 65)

One teacher, in a recent conversation with a Smaller Learning Community team of teachers, said, "I would have called in sick this morning if I weren't a member of a team." When teachers talk to each other about ideas and teaching strategies as well as about their students' needs, they internalize the collegial academic model that will most excite their students to explore those same ideas and use the strategies. Personalized teaching is thus not an isolated, or isolating, phenomenon. On the contrary, it combats the deadening effects on learning that result from teachers' isolation and anonymity in large school settings. Almost all teachers find this emotionally fulfilling and personally energizing. Teachers who met weekly on a *Breaking Ranks*™ Smaller Learning Community team at Roosevelt High School in Yonkers, New York wrote the following comments about the effect of team conversations on their instruction:

1   It helps develop students' academic skills.
2   It enhances teachers' collaboration.
3   It fosters good parent and teacher relationship/rapport.
4   It brings students to focus on thoroughly exercising their fullest potential.
5   Teamwork promotes collaboration, student success. (Imperial, 2003)

There were some effects on dealing with our students. For example:

■   Being aware of their basic needs (e.g., food)
■   Providing materials such as pencils/paper
■   Having meetings (individually) with students
■   One-on-one help
■   Saturday practice
■   Ideas given by team members on how to approach certain class-room issues
■   Inputs on betterment of one's teaching were also suggested by students' freewrites
■   Becoming more humane (Lastra, 2003)

These are teachers who have begun to appreciate the power of personalized teaching, not only to change students' lives but also to invigorate their own.

Using this workshop to practice

To begin, or to reinforce, this process of change and invigoration, the *Teaching to Each Student* workshop immerses educators in an experience of what personalized teaching looks and feels like. It is structured to last for one day of professional development time. Directions, graphic organizers, examples, and protocols are supplied to enable a facilitator to conduct the workshop straight from the book. Participants will leave with the understanding that to implement personalized teaching in their classrooms, all stakeholders must continue to participate with each other in dynamic conversations about curriculum, instruction, and assessment. No one-day workshop can provide the sustained, needs-based support that is necessary to fully implement personalized teaching in a school, but conducting the workshop in a number of schools on a pilot basis has led us to believe that it is an effective way to generate momentum.

The Smaller Learning Communities team at The Education Alliance has discovered that momentum will not be sustained, however, unless the work is undertaken systematically in five key dimensions: Purpose, Organization, Content, Assessment, and Leadership. *Teaching to Each Student* is therefore accompanied by its companion volume: *The Personalized Teaching Toolkit*,[2] which explores these dimensions in depth and offers schools resources to continue the implementation of personalized teaching in their schools.

Archimedes said, "Give me a firm spot to stand on and a lever long enough and I shall move the world." Descartes said, "Let me have extension and motion and I shall remake the world." The *Teaching to Each Student* workshop and *A Personalized Teaching Toolkit* hope to provide the leverage necessary to move the best practices into place, remake our educational worlds, and generate engaging and fulfilling experiences for teachers even as the students achieve more than we ever dreamed possible.

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[2] To be published by The Education Alliance at Brown University in 2004. For information, contact The Education Alliance, (800) 521-9550 ext. 235.

Orientation for Facilitators

School is supposed to be full of hope, and it's a place where you go to find out how magical your mind is…

FACILITATOR'S OVERVIEW

(5 min.)

The *Teaching to Each Student* workshop is designed as a program for one day of professional development time. A facilitator can conduct the workshop alone for a group of up to perhaps 20 participants. If the group is larger than 20, the facilitator will want the assistance of co-facilitators.

Although it is to be expected that teachers and school administrators will predominate at the workshops, other stakeholders are encouraged to attend as well. Students, in particular, can add a much-needed perspective to the planning process included in the workshop. The facilitator will want to use or revise the workshop agenda (p. 27). While there is a certain logic to the order of activities in the present agenda, facilitators may want to experiment with the order. They will certainly want to adapt the workshop activities based on their assessment of the needs of participants. Rationale and instructions for facilitating each of the steps are included throughout this guidebook in shaded boxes (such as this one) for easy identification.

Note that facilitators should insert breaks as they see fit as the agenda unfolds. The schedule is timed for 6 hours, with two 15-minute breaks and a 45-minute lunch break.

FACILITATOR'S CHECKLIST

Facilitators of the *Teaching to Each Student* workshop will need to create a packet containing the following items, all of which can be found in this workshop guide or ordered using the following information:

- The agenda, adapted to the participant group

- The CAPSOL Survey Form—One NCR form per participant. To order/re-order CAPSOL Form "B," call (800) 578-6930, email capsol@stylesoflearning.com, or visit the web at http://www.stylesoflearning.com. Please allow two weeks for delivery.

- The following study sheets, protocols, and graphic organizers:

  What Is Personalized Teaching?
  Directed Freewriting Protocol
  Directed Freewrite: "What's going on in my classroom?"
  Trends and Insights Graphic Organizer
  Jigsaw Protocol
  Jigsaw Group Organizer
  Example Projects A, B, and C
  Sample Curriculum Planner
  Personalized Teaching Planner
  Critical Friends Protocol
  Critical Friends Feedback Form
  What the Research Says
  Action Plan Worksheet
  Directed Freewrite: "New visions of my classroom"
  Comparing and Contrasting Freewrites
  Connections
  Chalk Talk

Note: For your convenience in printing additional and/or full-size originals, each of these documents is available as a PDF file on the Teaching to Each Student *CD ROM located at the back of this workshop guide.*

FACILITATOR'S GUIDELINES

Time	Activity & Description	Materials
20 minutes	Getting Started Read and Discuss Quotes by Ruth Simmons and Anthony Alvarado Discuss "Understanding" and "Essential Questions" Walk Participants Through Agenda	**Workshop Agenda (p. 27)**
5 minutes	What is Personalized Teaching?	**Keefe and Jenkins quote; list of *Breaking Ranks™* Recommendations (p. 29)**
30 minutes	Directed Freewrite: "What's going on in my classroom?" Notation of Trends and Insights	**Directed Freewriting Protocol (p. 31)** **Directed Freewrite Form (p. 32)** **Trends and Insights Graphic Organizer (p. 34)** **Chart paper, markers**
30 minutes	Learning Styles Inventory Exercise	**CAPSOL Survey (p. 37–39)**
40 minutes	Immersion in Project and Unit Plan Exemplars	**Jigsaw Protocol (p. 41)** **Jigsaw Group Organizer (p. 43)** **Project Examples A (p. 44), B (p. 52), and C (p. 61)**
10 minutes	Shared Reading of Curriculum Planner	**Sample Curriculum Planner (p. 81)**
30 minutes	Planning Session Prelude	**Personalized Teaching Planner (p. 94)**
60 minutes	Planning Session	**Personalized Teaching Planner (p. 94)** **Critical Friends Protocol (p. 97)** **Critical Friends Feedback Form (p.98)**
10 minutes	Full-Group Share of Experience Working With Planner	**Completed Personalized Teaching Planners**
10 minutes	A Brief Review of the Research	**What the Research Says (p. 101)**
10 minutes	Record an Action Plan	**Action Plan Worksheet (p. 103)**
20 minutes	Directed Freewrite: "New visions of my classroom"	**Directed Freewrite Form (p. 105)** **Comparing and Contrasting Freewrites (p. 106)**
10 minutes	Connections or Chalk Talk	**Connections Protocol (p. 108)** **Chalk Talk Protocol (p. 110)**

Teaching To Each Student Workshop

If we are going to personalize our teaching, we must be able to gear it to the way our students learn. All of us process information differently, in how we receive directions, in how we organize our offices, in how we present materials.
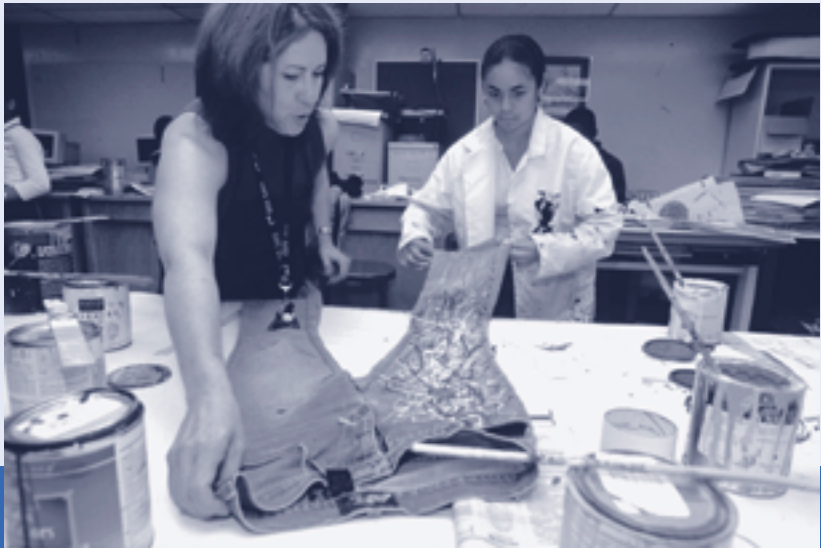
To begin the workshop, facilitators will want to focus the participants, introduce themselves and other key individuals in attendance, and state the general purpose and parameters of the workshop.

After introductions, facilitators ask participants to read the quotations at the top of the agenda (p. 27) and explain that the first was made by Ruth Simmons, President of Brown University and the first African-American woman to head an Ivy League university. The second was made by Anthony Alvarado, past superintendent of Community School District 2 in New York City. He is noted for his single-minded focus on professional development in literacy, which transformed the district's culture. The quotes are included because they encourage the development of the intellectual lives of both students and teachers. The overarching theme of this workshop is thus to focus on our intellects as professionals, that we may be better prepared to cultivate the intellectual lives of students.

Facilitators will next want to focus participants' attention on the terms, "Understanding" and "Essential Questions," also on the workshop agenda. The terms "Essential Questions" and "Understanding" are used specifically because they reflect the vocabulary participants will encounter later in the planning phase of the workshop. The agenda is thus intended to model what teachers might do in their own planning.

Facilitators will also want to point out that research supports the workshop's premise and that participants will later have the opportunity to consider highlights of this research. Facilitators might emphasize that we are changing the culture of our schools—essentially creating professional learning communities out of the "factories" they have traditionally been considered to be. The critical difference between a factory and a community is the nature of the dialogue within the institutions. The workshop will give us the structures and the vocabulary to better conduct these all-important conversations.

Facilitators now walk participants through the agenda, pointing out that the planning period is a kind of climax to the day, where they will get their hands dirty actually beginning the process of planning or revising projects and units.

WORKSHOP AGENDA

Developed by Dale Worsley, with Elizabeth Fox, Dr. Joan Landzberg, and Dr. Ann Papagiotas

Quotes

"A school ought to be a magical place where you are queen or king, and where what you get to do is to focus on your intellect, and on what you can accomplish as a human being, and you come to understand what your life can be…School is supposed to be full of hope, and it's a place where you go to find out how magical your mind is and how terrific it will be when you develop your mind to its full potential."

—Ruth Simmons, President of Brown University, quoted in *The Washington Post*, March 21, 2001

"You can predict the level of instruction in a school by the level of the intellectual conversation among the adults."

—Anthony Alvarado, in a presentation at the National Association of Secondary Schools Principals' Annual Conference, February 24, 2003

Terms

Understanding: Students perform at higher levels when their teachers participate with each other in dynamic conversations about curriculum, instruction, and assessment.

Essential Questions: How can we structure the conversations at our schools to make them more dynamic? What vocabulary will best serve to enhance these discussions?

Agenda

Introduction: *Breaking Ranks™* Recommendations and Purpose of Today's Workshop

Directed Freewrite: "What's going on in my classroom?"— Trends and Insights

Learning Styles Inventory Exercise

Immersion in Project and Unit Plan Exemplars

Shared Reading of Curriculum Planner: Rationale, Structure, Vocabulary, and Content

Planning Session: Prelude

Planning Session

Full-Group Share of Experience Working with Planner

A Brief Review of the Research

Action Plans

Directed Freewrite: "New visions of my classroom"

Connections or Chalk Talk

Suggestions for Further Work: *A Personalized Teaching Toolkit*

WHAT IS PERSONALIZED TEACHING?
(5 min.)

The ultimate purpose in changing the culture of our schools through dialogue is to personalize the teaching for our students. Facilitators will want to define "personalized teaching" by having participants quickly read the Keefe and Jenkins definition and the *Breaking Ranks*™ recommendations that follow. This is not the time for discussion but for brief orientation. Facilitators might want to emphasize that the definitions and recommendations are the beginning of our conversation today, in that they provide us with key concepts and vocabulary.

Personalized instruction is *"…the effort on the part of a school to take into account individual student characteristics and needs, and flexible instructional practices in organizing the student learning environment."* (Keefe and Jenkins, 2000, p. xv)

The following *Breaking Ranks*™ recommendations pertain to the personalization of teaching:

- Each high school community will identify a set of essential learnings—above all in literature and language, mathematics, social studies, science, and the arts—in which students must demonstrate achievement in order to graduate.

- The high school will integrate its curriculum to the extent possible and emphasize depth over breadth of coverage.

- Teachers will design work for students that is of high enough quality to engage them, cause them to persist, and when successfully completed, result in their satisfaction and their acquisition of learning skills and abilities valued by society.

- Teachers will know and be able to use a variety of strategies and settings that identify and accommodate individual learning styles and engage students.

- Teachers will teach in ways that help students to develop into competent problem solvers and critical thinkers.

- Teachers will integrate assessment into instruction so that assessment does not merely measure students but becomes part of the learning process.

Source: National Association of Secondary School Principals (NASSP). (1996). *Breaking Ranks: Changing an American institution.* Alexandria, VA. Reprinted by permission of publisher.

DIRECTED FREEWRITE:
"WHAT'S GOING ON IN MY CLASSROOM?"
(30 min.)

A great way to get conversations started with others is to first have a conversation with ourselves. Facilitators will invite participants to follow the Directed Freewriting Protocol on the next page to address the topic, "What's going on in my classroom?" Facilitators should emphasize that this question is intentionally general and open-ended. Any answer, no matter how seemingly tangential, may prove to be of value. Participants may want to use the blank form provided on page 32 to record their freewrite.

Directed freewriting is a way to discover what one thinks about a topic in an unpressured, non-judgmental way. E. M. Forster said, "How do I know what I think until I see what I say?" Similarly, through directed freewriting we find out what we think in the act of writing, rather than deciding self-consciously what we think before we write. It is a useful tool for assessing prior knowledge before studying a topic more deeply. It is also useful for discovering changes in one's understanding by repeating the exercise with the same prompt after studying a topic.

Directed Freewriting Protocol

The Rules:

>For a given period of time, write all thoughts that come to your mind on a given topic. Write continuously, without stopping. Errors of syntax, grammar, and punctuation are of no importance. There is no right or wrong way to write your thoughts. If you don't have more to say, you may simply write, "I don't know what to say." It is important, however, to continue to write, as new and surprising insights may occur unexpectedly. We can compare freewriting to taking a sample of water from a flowing river. We need to catch the water throughout the designated time or the sample will be incomplete. In this case we are taking a "sample" of what flows in our minds.

Sometimes freewriting may be produced with no intention to share. In this protocol it is produced with the intention that it be shared. As participants may have written material that would make them uncomfortable to read, they should be given the option to mention the kind of material they wrote rather than to read their writing directly. Participants are encouraged, however, to read what they wrote verbatim and not to extemporize on what they wrote. Other participants in team or table groups will listen attentively, with pen in hand to take notes. The notes will prove useful in discussions after members of the group have shared their writing.

Note that this is a useful practice for developing reading, writing, speaking, listening, and presenting skills in a classroom. The non-judgmental aspects make it ideal for cultivating a climate where all students are free to take the risks necessary to develop their ideas and their skills.

Directed Freewrite: "What's going on in my classroom?"

Once participants have followed the Directed Freewriting Protocol, facilitators request that team or table groups discuss any trends they might have noted among the samples of writing. Teams will assign a recorder to note these trends and relevant insights on the Trends and Insights Graphic Organizer on page 34. Recorders for the team or table groups will report these trends and insights out to the whole group. Facilitators may find it useful to record significant trends and insights on chart paper that can be posted on the walls for later reference. Or the table groups themselves might record their trends and insights on chart paper to be posted.

Trends and Insights Graphic Organizer

TRENDS	INSIGHTS

LEARNING STYLES INVENTORY EXERCISE

(30 min.)

Facilitators remind participants that our purpose here is to enrich our vocabulary of words, ideas, and experiences to make the conversations more dynamic. A critical piece of the vocabulary is that pertaining to our students' learning styles. If we are going to personalize our teaching, we must be able to gear it to the way our students learn. All of us process information differently, in how we receive directions, in how we organize our offices, in how we present materials. Facilitators might mention the scenario of the student who tells the guidance counselor that "Mr. or Mrs. So-And-So can't teach!" while at the same time the teacher is telling colleagues in the teacher's lounge, "That student can't learn!" Facilitators might want to briefly elicit similar scenarios from the participants.

Facilitators now provide each participant with a CAPSOL Style of Learning Assessment survey form, as illustrated on pages 37–39. Facilitators must emphasize strongly that the assessment is not a test but only an experience, a way to use vocabulary and start a conversation. Allow ample time to complete the inventory. Some participants will have trouble scoring. This is a function of a specific style. Some people will need quiet and some will talk. These behaviors also represent different styles.

Once participants have scored the inventory, facilitators make available color-coding labels and invite those with a high-preference auditory style to wear yellow dots, high-preference visual style to wear blue dots, and high-preference kinesthetic style to wear green dots. Those with a mix of all three learning styles wear red dots. All of those who are high-preference auditory style may then be invited to stand and move to one corner of the room, visual style to another corner, kinesthetic style to a third corner. Those combining all three learning styles should be asked to meet in the middle of the room. While participants are standing, discuss for a few minutes the implications of belonging to the different groups.

Facilitators will now invite participants to reconfigure themselves by different categories. High-preference intrapersonal (individual) learners move to one end of the room and high-preference interpersonal (group) learners move to the opposite end. Those who are both stay in the middle. The key here is to have people observe that they could be grouped with different people for different characteristics. This mirrors the make-up of the students they have in their classrooms.

The next (and last) part of the activity is to have all of the high-preference global learners move to one end of the room and all of the high-preference sequential learners move to the opposite end. Those combining both learning styles once again move to the middle. This should generate further discussion on why we need to personalize teaching, and give us common terms to use in collegial conversations back at our schools.

CAPSOL© Style of Learning Assessment-Form B

By: John M. Conrath Ph.D. & Howard Henderson Ed.Sp.

Name _____

(Please circle the answer which best describes you)

#	Statement	Always Like Me (4)	Generally Like Me (3)	Sometimes Like Me (2)	Never Like Me (1)
1.	I remember what I read better than what I hear.	4	3	2	1
2.	I learn better if someone lectures to me rather than reading silently to myself.	4	3	2	1
3.	When I make or create learning tools for my studies it helps me to remember.	4	3	2	1
4.	I complete more work when I work alone.	4	3	2	1
5.	When I really have a lot of work to do I like to work with 3 or 4 colleagues.	4	3	2	1
6.	I can say the answer to a question better than I can write it.	4	3	2	1
7.	Assignments which I write are easy for me to do.	4	3	2	1
8.	I like to follow step by step directions.	4	3	2	1
9.	I like to draw pictures.	4	3	2	1
0.	I understand a problem that is written down better than one I hear.	4	3	2	1
1.	When I do math problems, I say the numbers to myself.	4	3	2	1
2.	I learn best by building, baking or doing things.	4	3	2	1
3.	I like to work by myself.	4	3	2	1
4.	I like to learn in a group because I learn from others in my group.	4	3	2	1
5.	I would rather tell how something works than write how it works.	4	3	2	1
6.	I like doing written assignments.	4	3	2	1
7.	I like to organize my work.	4	3	2	1
8.	I like to daydream.	4	3	2	1
9.	I would rather read a story than listen to a story.	4	3	2	1
10.	I remember information I hear better than information I read.	4	3	2	1
11.	I like to accomplish tasks with my hands, like repairing objects, etc.	4	3	2	1

#	Statement	4	3	2	1
22.	I learn best when I study alone.	4	3	2	1
23.	I complete more work when I work with someone.	4	3	2	1
24.	I think I speak better than I write.	4	3	2	1
25.	The information I write on paper sounds better than when I talk about the information.	4	3	2	1
26.	I usually have a place for everything.	4	3	2	1
27.	I like to work on many things at one time.	4	3	2	1
28.	I remember instructions best when I read them.	4	3	2	1
29.	Saying something I am trying to remember over and over helps me remember better than writing an item over and over.	4	3	2	1
30.	I like to make things with my hands.	4	3	2	1
31.	I study best when no one is around to talk or listen to.	4	3	2	1
32.	I can learn more working with a group of my classmates than I can working by myself.	4	3	2	1
33.	I would rather tell about something I have learned rather than writing it out.	4	3	2	1
34.	I would rather write the answers to a test than tell the answers.	4	3	2	1
35.	I make lists for things I have to do.	4	3	2	1
36.	I often leave trouble finishing tasks I am supposed to do.	4	3	2	1
37.	I do well in classes where most of the information has to be read.	4	3	2	1
38.	I understand more from talking about a subject in class than from reading about it.	4	3	2	1
39.	I understand what I have learned when I make something for the subject.	4	3	2	1
40.	I can't think as well when I work with someone else as when I work alone.	4	3	2	1
41.	I like to study with other people.	4	3	2	1
42.	I would rather tell a story than write it.	4	3	2	1
43.	My thoughts that I write on paper or a word processor sound better than when I talk about the topic.	4	3	2	1
44.	I work on one thing until it is finished.	4	3	2	1
45.	I like to create my own way of doing things.	4	3	2	1

DIRECTIONS: Read each question. Circle the four(4) if the statement always describes you. Circle the one(1) if it is never like you. Circle the two(2) if it is sometimes like you, and circle the Three(3) if it is generally like you. Please respond with the first answer that comes to mind. Please do not look back and review previous answers. To score, tear off this sheet when finished.

INSTRUCTIONS FOR SCORING

There are 5 rows of scores for each mode. For example, notice that the 5 rows of visual (V) are shaded. The number circled in each row is the score for that row. Total the scores in the five rows for each mode. The highest possible score is 20 and the lowest possible score is 5. Mark the score for each mode on the CAPSOL Style of Learning Profile.

A high score (16 through 20) indicates a high preference for that particular mode.

A low score (5 through 9) indicates a low preference for that particular mode. It is likely the student will not function well in this mode. There are suggestions on the back of this sheet to enhance a student's preference to operate in this mode.

CAPSOL Style of Learning Profile

	MODE	LOW PREFERENCE												HIGH PREFERENCE				
(V)	Visual	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(A)	Auditory	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(BK)	Bodily-Kinesthetic	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(I)	Individual	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(GR)	Group	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(OE)	Oral Expressive	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(WE)	Written Expressive	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(S)	Sequential	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(GL)	Global	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

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HIGH PREFERENCES

VISUAL — PERCEIVING THE WRITTEN NUMBER AND WORD
1. View films, videos and other such visual materials, estimate amounts.
2. Take notes during presentation.
3. Work problems on graph or chart paper.
4. Use workbooks and notebooks.
5. Use imagination and think in pictures.

AUDITORY — PERCEIVING THE SPOKEN NUMBER AND WORD
1. Use cassette or CD recorders to listen to recorded directions.
2. Be involved in classroom lectures and discussions.
3. Practice or review out loud.
4. Participate in oral reports, debates and plays.
5. Talk through problems—look for similarities.

BODILY-KINESTHETIC — INVOLVING ALL SENSES IN THE LEARNING PROCESS
1. Use plays, pantomime, debate and other such action activities.
2. Use task cards and demonstrations.
3. Use simulations or hands-on examples that demonstrate the same principles.
4. Use rhythm when learning lists.

INDIVIDUAL LEARNER — PREFERENCE TO STUDY AND WORK ALONE
1. Use computers, tape recorders and VCRs.
2. Have a quiet place to work and learn alone.
3. Use learning approaches that allow you to work alone, such as computers or programmed instruction.
4. Use programmed learning and instructional packages.
5. Keep a log to chart your progress, chart your progress.

GROUP LEARNER — PREFERENCE TO STUDY AND WORK IN A GROUP
1. Use small group techniques such as discussion, quality circles, panels, cooperative or task teams to address problems.
2. Use project teams.
3. Be involved in simulating what is being learned.
4. Use team responsibility activities.
5. Build team vision, mission and timelines.

ORAL EXPRESSIVE — DESIRE TO SPEAK TO INDIVIDUALS OR A GROUP
1. Present oral reports.
2. Use panel discussions and debates.
3. Put thoughts on cassettes.
4. Participate in class discussions and lectures.
5. Participate in sales demonstration for a better mousetrap.

WRITTEN EXPRESSIVE — DESIRE TO DO WRITTEN WORK
1. Use written reports, essays, journals, logs, and notes.
2. Investigate writing programs, word processing, and chat on the web.
3. Use lecture note taking.
4. Wait 5-10 seconds after a question is asked to provide time to think.
5. Provide for creative writing experiences.

SEQUENTIAL — PROCESSING STEP BY STEP
1. Provide and develop outlines.
2. Provide words in a step by step description.
3. Use phonetic methods for language.
4. Divide descriptions into small parts and analyze the parts.
5. Use crossword puzzles, skill exercise and worksheets.

GLOBAL — PROCESSING BY UNDERSTANDING THE WHOLE
1. Provide a general overview prior to discussion. Address goals of the presentations.
2. Involve fantasy, humor and appeal to emotions.
3. Experience presentations then reflect, then dissect the whole picture.
4. Use skimming techniques.
5. Drawings, graphs, pictures, and imaginative words in stories or descriptions.
6. Provide opportunities to think about thinking.

LOW PREFERENCES

VISUAL — PERCEIVING THE WRITTEN NUMBER AND WORD
1. Read materials that are enjoyable
2. Write out all math computations.
3. Pay close attention to colors and shapes.
4. Practice using computer games, reading graphs, charts, maps, and other visual devices.
5. Closely observe and draw familiar objects such as trees, plants and houses.

AUDITORY — PERCEIVING THE SPOKEN NUMBER AND WORD
1. Talk about familiar things.
2. Repeat to others what has been heard.
3. Repeat things under your breath.
4. Practice listening skills recalling funny or important quotes.
5. Become familiar with audio cassettes tapes and CDs'.

BODILY-KINESTHETIC — INVOLVING ALL SENSES IN THE LEARNING PROCESS
1. Handle familiar items and describe or draw these items.
2. Become involved in plays, singing, dancing, sports, or other such multisensory activities.
3. Use activities which involve body movements.
4. Become involved in art, cooking, sewing or other such activities.
5. Make models, use Legos, and build models.

INDIVIDUAL LEARNER — PREFERENCE TO STUDY AND WORK ALONE
1. Show and tell things that have been completed alone.
2. See how something is done and then practice doing it alone.
3. Work alone on ventures such as drawing, writing, making a collection, etc.
4. Participate in study skills programs.
5. Imagine doing something alone.

GROUP LEARNER — PREFERENCE TO STUDY AND WORK IN A GROUP
1. Share ideas with others.
2. Encourage openings in groups for all to participate.
3. Provide activities that encourage interaction among participants
4. Provide an open mind to ideas of others.
5. Review social skills.

ORAL EXPRESSIVE — DESIRE TO SPEAK TO INDIVIDUALS OR A GROUP
1. Discuss topics which are familiar.
2. Reassure others verbally to participate by speaking.
3. Assist in understanding of self and improve self concept.
4. Look for opportunities for peer interaction.
5. Read written reports aloud.

WRITTEN EXPRESSIVE — DESIRE TO DO WRITTEN WORK
1. Be involved in writing about things which are familiar.
2. Review basics of writing.
3. Compose short, concise, quality reports.
4. Use COMPOSITION PAIRS.
5. Use webbing(clustering) for related ideas.

SEQUENTIAL — PROCESSING STEP BY STEP
1. Practice organizing objects.
2. Develop outlining skills.
3. Practice writing step by step directions. For example, how to make a peanut butter and jelly sandwich.
4. Take things apart and then put them back together.
5. Classify objects according to size, shape and color, -compare and contrast, prioritize.

GLOBAL — PROCESSING BY UNDERSTANDING THE WHOLE
1. Use music to encourage imagination.
2. Develop skills in clustering (WEBBING).
3. Practice skimming when reading materials.
4. Practice imagining familiar objects.
5. Forecast what the project will look like when completed.

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IMMERSION IN PROJECT AND UNIT PLAN EXEMPLARS
(40 min.)

Having revisited and enriched our vocabulary on students' learning styles, facilitators can now invite participants to consider a sampling of unit and project plans that hold the promise of addressing these styles while meeting their curriculum demands. Participants may have designed similar unit and project plans. The ones in the *Teaching to Each Student* workshop are not included as perfect models but as examples from real-life classrooms that were designed under the ordinary, sometimes pressure-packed, conditions in our schools. They function as touchstones for our conversation. The exercises will invite participants to criticize the plans as well as to glean ideas from them.

To prepare for their immersion in the project plans, participants need to familiarize themselves with the next activity, the Jigsaw Protocol.

Jigsaw Protocol

The Jigsaw is a cooperative learning technique created by Elliot Aronson that allows participants to become experts in a specific area and then to share that expertise with each other so that all participants understand the entire lesson. The protocol is as follows:

1 Divide participants into four to six jigsaw groups. The exact number of groups will depend upon the number of parts into which you divide the lesson. The groups should be diverse in terms of gender, ability, race, and ethnicity.

2 Give each participant within each group one part of the lesson, usually a text. It is this one part of the lesson on which he/she will become an expert. For example, if you are planning a service project with your advisory at a food bank, one text may be on the causes of hunger, a second on the extent of hunger in this country and your community, a third on the food bank you will be partnering with, and a fourth on the types of projects groups have done previously to help end hunger.

3 Allow time for participants to read and become familiar with that text on their own.

4 Create "expert groups" by having all participants who are reading the same text meet for a focused discussion.

5 During this meeting, participants raise any questions they have, highlight the key findings in their text, and discuss what they will share when they return to their original jigsaw group.

6 Have participants return to their jigsaw groups. Each group should choose a facilitator and a timekeeper.

7 Have the facilitator ask each participant to share his/her expertise with the group, allowing time for clarifying questions. Participants should be taking notes on each other's presentations. The timekeeper should ensure that no one person dominates the group.

8 Once the groups are finished sharing, participants may be held accountable for understanding all parts of the lesson through various assessment tools.

Adapted from the Jigsaw Protocol at http://www.jigsaw.org. Reprinted with permission.

A group leader will then divide group members into three "expert groups":

- Expert group A will study and informally discuss Project A: Life on the Farm…Designing a Model Farm.
- Expert group B will study and informally discuss Project B: World Religions.
- Expert group C will study and informally discuss Project C: The School of Marine Science Exit Project.

Members of the expert groups will want to use the Jigsaw Group Organizer to take notes on their assigned projects. These notes will be useful later when explaining the projects to their jigsaw groups.

Facilitators should emphasize the importance of reading the introductory pages of the projects, which are intended to answer commonly asked questions and to guide the reading of the projects. Facilitators should themselves be familiar with the projects to field any additional questions that might arise.

Once the jigsaw groups have discussed the three projects, facilitators request that they share their observations, reflections, and questions with the whole group. Facilitators use chart paper or overhead transparencies to record comments in three categories: "What did you find in the designs that was (1) useful, (2) problematic, and (3) potential solutions to problems?" The comments will remain posted for the remainder of the workshop.

It is important at this juncture for facilitators to keep the overarching purpose in mind: to build a vocabulary (one that is enriched by experience) for ongoing conversations about curriculum, instruction, and assessment. To that end, facilitators should urge participants not to dwell too long on the examples but to move ahead to the planning process.

Jigsaw Group Organizer
What did you find that was useful?
Why?
What did you find that was problematic?
Why?
What solutions do you propose to solve the problems?
Why are these solutions effective?
Other notes:

Example Project A
Life on the Farm…Designing a Model Farm

The Project

Life on the Farm…Designing a Model Farm is a three-week project designed by Suzanne Dwyer for her 8th Grade Earth Science class at the New York City Lab School for Collaborative Studies. Included here are the project introduction and supporting rubrics. Other support materials from the original project are not included here.

Suggestions for Reading

For the purpose of informing their jigsaw colleagues about the design of this project, workshop participants are encouraged to focus on the details on the introductory page and more generally on the rubrics that follow.

The School

The Lab School is an urban, 6-12 grade public secondary school of 740 students with screened admissions and a special education inclusion program. It has a graduation rate near 100%, 12% free lunch, and a student population of 50% White, 13% Black, 11% Hispanic and 26% Asian. Co-directors Sheila Breslaw and Robert Menken founded the school based on their success in creating a program for low-performing, educationally short-changed students in another high school. The mission of the Lab School focuses on collaborative problem solving among students and staff alike. The co-directors foster the same instructional methods in the Lab School that they developed in their program for challenged students.

Life on the Farm—Designing a Model Farm
Earth Science: Mrs. Dwyer

Having spent several weeks learning about soil structure and productivity you will now have the opportunity to apply what you know in order to help feed the world. You and your group will be creating (on paper) a model of a functioning farm. Each of you will have an expert role and be responsible for researching a particular aspect of farming. You will work as a farm production group (this is a technical name, though you can choose to name your own farm) with four others. Important to the success of your farm is being able to recognize yourselves as skilled members of a team, a larger agricultural community, a society who all depend on your vision of the "bigger picture."

Ask yourself regularly: how are living things connected? Recognize cycles between nature and life. Are there certain things that you can do on your farm that can be viewed as supporting nature and her processes, or might they be exploitative? Will "profiting" from your farm monetarily now prove to be beneficial to you and your family in the long term? Who are you ultimately responsible to: the land? yourself? Make a dream farm, but support your ideas with real life questions and "nitty gritty" logistics.

Content
The following paragraphs describe the "expert groups." Each of you will have questions specific to your area of expertise that you will address through your research. Additional ideas will be ones that you yourself (with my guidance) will develop naturally as you explore your topics. There are, however, a few required topics that you as an expert (and a member of a farm production group) cannot ignore and these are indicated below. A more detailed rubric of criteria will be provided.

Physical Geographer
Know your region including: country's climate, natural disasters to which your land might be vulnerable, terrain (topography), elevation, what is traditionally grown in this area and why, and soil type. In addition you will be responsible for creating a calendar for the farm, which includes when to plant, harvest, etc.

Crop Specialist

You will manage the logistics of the farm: what will be grown on the farm, how much will be grown. Will you grow only one crop or several? What is crop rotation and is it appropriate to your farm? What kinds of seeds will be used? Biogenetically engineered seeds? What is the growing cycle of these plants? What nutrients are needed for the crops to thrive? What are the pests, fungi, etc., that could threaten your crop?

Horticulturalist

Determine the philosophy of the farm. Will you grow organically or conventionally? What does this really mean technically and legally? (There are scientific regulations applied to both forms of agriculture.) Depending on the country of your farm, there may be regulations that may vary from U.S. regulations on chemicals used in farming…find out about this. What herbicides and fertilizers will be used (be specific)?

Hydrologist

You will need to determine how to irrigate the farm. You will need to create a water budget for your farm as well as make a map of where your farm exists within the watershed system. You will be in charge of the designing and documenting (blueprint/map) of the farm but all must contribute to it. What buildings will be necessary and how will they be designed for efficiency?

Business Manager

You will be responsible for learning about how to keep the farm "afloat." What is the current price of your crop(s)? What tools and/or animal labor will be used for planting and harvesting, milking cows, etc.? What does all this cost? Will you need loans? You must determine the size (acres or hectares) of the farm that you will be able to keep. Where will your workers come from? Are they immigrants? Are there problems trying to hire only seasonally employable help? Are there any farmer or farm workers unions and organizations that can provide you with support if you need it? You will plan a calendar along with the Physical Geographer.

Rubric for Business Manager
Crop Market Knowledge Includes:

MINIMUM EFFORT	PASSING	STRONG PERFORMANCE	EXCELLENT PERFORMANCE
Labor Indicates: immigrant vs. indigenous workers; seasonal vs. full-time help	Indicates: immigrant vs. indigenous workers; seasonal vs. full-time help; gives rationale for one or other	Passing PLUS specific recommendations for one type of labor over another	Enhanced understanding of the idea of productivity and responsibility in planning how to manage labor and costs; researches unions
Equipment and Supplies Indicates: own vs. lease/rent; high tech vs. traditional; machinery vs. human power	Gives rationale for: own vs. lease/rent; high tech vs. traditional; machinery vs. human power	Passing PLUS specific recommendations for your farm as to the superiority of one mode of operation vs. another	
Budget Issues Indicates: crop costs vs. selling price; crop insurance vs. none; loans vs. capital funding	Gives rationale for: crop costs vs. selling price; crop insurance vs. none; loans vs. capital funding	Passing PLUS names of specific programs offering insurance and funding	Does some research into different lending programs
Operations and Distribution Lists: seasonal vs. regular hours; export vs. local distribution; methods of distribution	Gives rationale for: seasonal vs. regular hours; export vs. local distribution; methods of distribution	Passing PLUS specific methods and reasons for operations	
National and Regional Economic Climate Gives less than *passing* requirements	Indicates: government regulations; govt. subsidies vs. loans; % GNP for your crop; type of economy	Gives specifics beyond but related to passing category	Contacts an expert or gives financial analysis of (agrarian) economy of country
Bibliography Contains fewer than two resources	Contains two resources, and includes most important information; one citation included	Contains no fewer than three resources and includes most important information; two citations included	Contains no fewer than four resources; three citations included

Rubric for Horticulturalist
Agricultural Knowledge Includes:

MINIMUM EFFORT	PASSING	STRONG PERFORMANCE	EXCELLENT PERFORMANCE
Philosophy Defines simple philosophy of conventional or organic methods	Compares and contrasts conventional vs. organic, giving two pros and two cons for each method	Makes a convincing argument as to the superiority of one method of farming over another and gives a minimum of three pros and three cons	Enhanced understanding of the idea of productivity and responsibility in defining philosophy
Fertilizers In line with soil profile, names a fertilizer	In line with soil profile, gives two types of fertilizer and tells why used	In line with soil profile, gives two types of fertilizers and explains complexity in applications due to differing soil conditions	Discovers some alternatives to standard techniques and documents their specific application to your farm conditions
Pesticides/ Herbicides Lists pesticides and herbicides	Lists a minimum of two pesticides and herbicides and documents that they are effective for your problem	Gives passing requirements and argues for the biological/technological advantage of using one type over another	Does some research into the pros and cons of experimental biological/ technological methods
Plant Diversity Tells one way how plant diversity vs. monocultural farming effects the natural soil	Elaborates on the choice of plant diversity vs. monocultural farming, giving one pro and one con	Provides passing information and discusses plant diversity pros and cons using examples of other biomes	Gives well-researched examples of areas of biological diversity (citing long-term research that has been done), and explains how this bears on your farm
Bibliography Contains fewer than two resources	Contains two resources and includes most important information	Contains no fewer than three resources and includes most important information	Contains no fewer than four resources

Rubric for Physical Geographer
Regional Knowledge Includes:

MINIMUM EFFORT	PASSING	STRONG PERFORMANCE	EXCELLENT PERFORMANCE
Country Includes: population; industrialized or developing? minerals mined; natural resources, (i.e., oil?)	Includes minimum and mentions shortage or abundance of resources	Includes minimum and a discussion of shortage or abundance of resources	Any unusual stresses on government (i.e., war)? Is environmental quality a priority for this area of the world? Why or why not? Unusual info that can be related to productivity (i.e., birthrate, conversion)
Climate Has graphs but they are inaccurate and lack conversions	Has strong performance but graphs are inaccurate	Includes graphs: 12-month precipitation w/ annual average; 12-month temperature w/annual average; must include metric conversion scale	Includes extra graphs with information on micro regions
Natural Disasters (can be a result of human ignorance or poor planning) lists main disasters that effect land erosion	Lists main disasters and explains briefly their effect on land erosion	Meets passing PLUS lists pros and cons of effects on the land	Includes prevention(s) taken to alter effect on land
Terrain Lists basic land forms and water features in and on land	Discusses specific land forms of the region and identifies some that will assist your farm	Includes general and specific land features and explains the advantages and disadvantages of these features for growing; water is included	
Crops Traditionally Grown Identifies less than four crops	Identifies four to six crops	Identifies more than four crops and describes what in particular about the region allows them to thrive there	Identifies the crops' origins. Were they brought from other lands? Are there cultural choices for growing crops?
Soil Profile Includes soil profile	Includes soil profile and weak prescriptions for improving soil fertility	Includes soil profile and prescriptions for improving soil fertility	Explains land use in the region. Is it used for crops only or has it several purposes in one area?
Bibliography Contains fewer than two resources	Contains two resources, and includes most important information	Contains no fewer than three resources and includes most important information	Contains no fewer than four resources

Rubric for Crop Specialist
Agricultural Knowledge Includes:

MINIMUM EFFORT	PASSING	STRONG PERFORMANCE	EXCELLENT PERFORMANCE
Crops Chooses a crop best suited to environment and explains one reason why it's suitable	Includes minimum and adds another crop with explanation of suitability	Makes effective use of five natural resources in choosing three or more crops to grow; explains why they are productive to grow	Enhanced understanding of the idea of productivity in planning what and how to grow your crops
Acreage Indicates size of the farm	Indicates dimensions for fields and two reasons why the size is accurate	Indicates dimensions for each field and shows knowledge of why these sizes result in a productive farm	Researches specific statistics about the area
Seeds Indicates source/economy where seeds are derived from	Indicates minimum and makes a decision that shows why one seed is chosen over another	Gives basics and indicates the biological technological advantage to using one seed type over another	Does some research into pros and cons of experimental seed technology
Nutrients Lists two nutrients needed for your specific crops and two nutrients that are missing from your land	Gives minimum, describes what fertilizers you will add, and briefly explains why	Gives basics and explains what can be done to improve structure of soil, including fertilizer and more	Gives creative solutions to deficits in soil (i.e., intercropping)
Threats to Crops Gives one predator and one other threat to each crop	Gives two predators and two other threats to each crop	Gives two predators and two other threats and proposes at least two solutions in combating the problem (must be compatible with your farm philosophy)	Contacts an expert such as Agricultural Extension Service in U.S. area and gets their suggestions
Bibliography Contains fewer than two resources	Contains two resources and includes most important information	Contains no fewer than three resources and includes most important information	Contains no fewer than four resources; contains quotes

Rubric for Hydrologist
Agricultural Knowledge Includes:

MINIMUM EFFORT	PASSING	STRONG PERFORMANCE	EXCELLENT PERFORMANCE
Watershed Creates an inaccurately detailed map of the regional watershed	Creates an accurate map of the regional watershed	Creates a well-detailed and accurate map of the regional watershed	Enhanced detail and accuracy included on the map
Farm Location Places farm in watershed with no or inaccurate reason	Explains scientifically but briefly why the farm is established in a point within a watershed system	Explains in depth, in scientifically accurate terms, the best location for the farm	Researches specific statistics about the area
Water Budget Creates a chart for yearly water usage but it is incomplete or inaccurate	Creates an accurate chart for yearly usage	Creates a chart for water usage and discusses water conservation issues	Consults with a specialist and gives a detailed plan for conservation
Irrigation Lists one techno-logical method for irrigating crops	Explains what technology will be used for irrigation system	Explains in depth the technology that will be used for irrigation	Researches alternative forms of technology for irrigation that are applicable to your climate
Bibliography Contains fewer than two resources	Contains two resources, and includes most important information	Contains no fewer than three resources and includes most important information	Contains no fewer than four resources; contains quotes

Source: Suzanne Dwyer, New York City Lab School for Collaborative Studies. Reprinted with permission.

Example Project B
World Religions

The Project

World Religions is a two-month "module" (multi-disciplinary unit) designed and refined collaboratively over several years by 9th and 10th grade teachers Avram J. Kline, Rebecca Krucoff, Joel Lowy, Jody Madell, and Alison Ritz at The New York City Museum School (NYCMS). The pages reproduced here are a small but representative fraction of the total support materials.

Suggestions for Reading

For the purpose of informing their jigsaw colleagues about the design of this project, workshop participants are encouraged to carefully read the introductory page and scan the remaining pages to get a sense of the overall character of the unit before examining any details of particular interest to the reader.

The School

The Museum School is an urban, 6-12 grade public secondary school of 400 students with screened admissions to guarantee a heterogeneous population, and with a graduation rate of 75% (compared to 51% at similar schools). Originally founded by Ron Chaluisan and Sonnet Takahisa, all students participate in a rigorous academic program, regardless of their exam history. In addition to standardized tests, students show evidence of meeting standards by engaging in extended observation, questioning, research, synthesis and analysis, written, oral and visual presentations, and reflection.

Source: Avram J. Kline, Rebecca Krucoff, Joel Lowy, Jody Madell, and Alison Ritz at The New York City Museum School (NYCMS). Reprinted with permission.

World Religions: Course Description

Why are there floods?
What causes thunderstorms?
Why do the seasons change?
Why do people get sick?
Why are some people poor and others wealthy?
How should people treat each other?
Is there any way for people to gain more control over the natural world?
What is the meaning of life?
Why am I alive?

How would you go about trying to answer these questions today? Would you consult science? Religion? Both? Neither? Would you look in books? Talk to people? Would you spend time thinking on your own? For almost all of human history people have turned to religion to answer such fundamental questions as those above.

In this course we will study how five major world religions (Hinduism, Buddhism, Judaism, Christianity, Islam) and two ancient religions (Egyptian and Greek) have helped people make sense of their world. Over the next several months we will read about these religions, and we will also talk to people who have different religious beliefs, visit religious sites, and study religious objects found in museums and in sacred spaces here in NYC.

As we explore world religions, you will create several presentations to share your ideas and knowledge with class members. Finally, you will create a presentation to show a guest what fascinates you about world religions.

World Religions: Survey of Dahesh Museum

Today, Devorah Block, an educator from the Dahesh Museum, will give us a presentation about what fascinates her about world religions. We can use her tour as a way to begin thinking about making tours.

Before the tour: Explore the area you have been assigned by looking at the objects in your area and answering the following questions.

1   Topic of your area (read the label):

2   What sorts of objects are in your area? (Paintings, drawings, etc.)

3   What religions are depicted?

4   What topics are depicted?

5   If you were to make a tour of this exhibit for a family member, which objects from this area would you include? Why?

World Religions: Tour Reflection and Evaluation

In two months you will begin working on your own presentation about world religions. Take a few minutes now to reflect on Devorah's tour and to evaluate it. She is an experienced presenter. Think about what you can learn from her work.

1   What did Devorah do to get you interested?

2   Why do you think she chose the objects she did?

3   Based on the survey you did before her presentation, what difficulties do you think she faced in her planning?

4   What did she do that you will want to do on your family tour of the Met?

World Religions: Writing Prompts

Use any or all of these prompts during pre-writes and reflections when we visit sacred spaces and other module sites.

Before:

First Glance
> The first thing I notice is …
> My eye is immediately drawn to …

Deeper Observation
> Looking closer, I notice …

Emotional/Visceral Response
> This [place/area/object] reminds me of the time …
> This [place/area/object] makes me feel …

Curiosity and Speculation
> I wonder …
> I think this must mean . . .

After:

Wow
> I was struck by …
> Now I'm fascinated by …

Understanding
> Now I know that …
> The purpose behind … is …
> The [teacher/guide/religious leader] pointed out …

Further Inquiry
> I'd like to know more about …
> I'm left wondering …
> I wish I had asked …
> When I come back, I must find out more about …

World Religions: Family Tour Outline

Your final project for this module will be to create a tour for a member of your family. The topic of the tour will be: "What Wows Me About World Religions." In other words, you'll find a theme in world religions that intrigues you, and you will develop a tour about that theme. You will use the collections of the Metropolitan Museum of Art. We have studied five major world religions this year: Buddhism, Christianity, Hinduism, Islam, and Judaism, and two ancient religions: Egyptian and Greek. For your presentation, you will discuss only three. You will pick a total of three objects (one for each religion), and you will use those objects to wow a family member. Below is the outline that you will use for your tour. Next week we will begin work on the tour by reviewing all of the religions and talking about how to select objects.

Today, bring home the flyer for the tour and arrange a time that will be convenient to both you and your family. You should let us know as soon as you know which day you will attend.

I   Introduction

In the grand hall

- Explain your theme and why you picked it

- Say a few words about what you will be showing on the tour

- Get your family involved by mentioning things that you think will interest them

II   Body

A   First Object:

1   Name, date, origin of object

2   Discussion of significant visual elements of the object

(You may want to first ask your family member a question or two to get them to look closely at the object.)

3   Explanation of how the object connects to your theme

4   Explanation of how the object connects to a core belief of the religion

5 You may want to discuss other core beliefs

6 Reference to another museum or sacred space, (you may want to bring your floor plans with you!) such as:

- a similar or related object you saw in another museum

- how object, ritual or story is reflected in the space, or

- a story about your own experience of the sacred space we visited

B. **Transition:** The transition is part of the tour. You need to plan what you will say as you walk. You may want to ask a question relevant to the topic, or tell a relevant story about something you have seen or heard.

C. **Second object:** Same as A, and 6. Comparison or connection between the objects, core beliefs, or sacred spaces.

D. **Transition:** Same as B

E. **Third Object:** Same as C

III Conclusion

- Closing ideas on your theme to point out similarities and differences

- You may want to mention other religions not covered in your tour

- You may want to refer back to your introduction

- Ask your guest to fill out a questionnaire/evaluation

Presentation Rubric

Content: Development of theme

FAIL	APPROACHING	MEETS	EXCEEDS
Theme is vague. No "wow" is included. Objects and stories do not connect to theme. Terms are used incorrectly. Specific similarities and differences between civilizations are not discussed.	Theme is stated in introduction. Objects and stories connect vaguely to theme. Objects and stories give listener some sense of the religion discussed. Relevant terms are used correctly. Specific similarities and differences between civilizations are not discussed. Theme is vague. No "wow" is included.	Theme is clearly defined. Theme is stated in introduction. Presenter explains what wowed them about the theme. Objects and stories help listener understand the theme. Each object and story helps listener understand a big idea of its respective religion. Relevant terms are explained. Specific similarities and differences between the religions are discussed.	**Everything from Meets—and:** Theme is creative or unusual. Theme is developed with detail. Subtle comparisons are made among religions.

Content: Use of objects

FAIL	APPROACHING	MEETS	EXCEEDS
Audience is not directed where to look. Fewer than three objects and/or three religions are discussed. No references are made to other locations and objects seen during the module. Order that the objects are presented in does not make sense.	Three objects from three different religions are included. Audience is not directed where to look. Objects connect only vaguely to theme. Discussion of other objects and locations is vague or not clearly linked to the rest of the tour. Order that the objects are presented in does not make sense.	Audience is directed where to look. Objects and elements of objects discussed connect to theme. Three objects from three different religions are included. Objects from other locations are discussed in the presentation. Religious sites visited during the module are discussed in the presentation. Objects are presented in an order that makes sense.	**Everything from Meets—and:** Connections among objects is made clear. Through the presenter's description, listener is able to picture other objects and locations.

Communication			
FAIL	**APPROACHING**	**MEETS**	**EXCEEDS**
Is vague. Is distracted or fidgets.	Speaks too fast, softly and/or in a monotone voice. Is distracted or vague.	Presenter asks one thought-provoking question of the guest. Speaks clearly, slowly, and directly to audience. Looks at audience frequently.	**Everything from Meets—and:** Knows his/her audience and how to "wow" them. Uses voice to convey enthusiasm.

Preparation			
FAIL	**APPROACHING**	**MEETS**	**EXCEEDS**
Has not prepared an outline.	Brings outline or index cards. Reads directly from notes.	Presentation follows outline. Presentation is rehearsed, does not need to read from notes.	See "meets."

Example Project C
The School of Marine Science Exit Project

The Project

The School of Marine Science Exit Project is a three-week project designed by teacher Jennifer Ford and staff developer Dale Worsley for a 30-student cohort of would-be ninth graders who had been held back in the eighth grade. The students themselves named the program "The School of Marine Science," as it was located in a building on the lower Hudson River and many of their studies involved marine life. The project was created near the end of the first semester under less than ideal conditions. The director of the program and teachers had either quit or been asked to leave, and the conditions were chaotic, with rampant misbehavior, fighting, and incidents of drug use. The exit project was designed in a couple of hours after school, with support materials developed along the way. The program quickly turned around with a rigorously enforced ladder of consequence for misbehavior and engagement on the part of the students in inquiry work on topics of their own choosing. Half of the students were able to pass to the ninth grade as a result of their work on the project. The other half continued to perform in a scholarly way until the end of the year when the majority of them were also admitted to high school. The project is indebted to Erick Gordon and his work with Ken Macrorie's *The I-Search Paper* (1980).

Suggestions for Reading

For the purpose of informing their jigsaw colleagues about the design of this project, workshop participants are encouraged to focus on the details and structures on the introductory page and more generally on the support materials that follow. (Not included here are sample I-Search papers, concept maps and the like, which also supported student work on their projects.) The student paper, "Jessica's I-Search," is included as an example of how one capable but disoriented student was able to find her voice and gain insights into the profound obstacles impeding her progress in life (pp. 69-79). Participants may not have time to read this during the workshop but might want to scan it now and return to it later.

It should be noted that while not all of the exit project papers were as literate as Jessica's (not the student's real name), all but a couple of the students did finally produce projects of quality.

The School

The student-named "School of Marine Science" was a temporary, yearlong program of about 30 students of various ethnicities who had failed to pass into the ninth grade in New York City's Community School District 2. It was intended to provide personalized instruction of sufficient rigor to pass the students into high school.

School of Marine Science Exit Project

Project Description

On the 29, 30, and 31st of this month you will present an "exit project" to a small panel of friends and teachers. The project is an opportunity to meet one of the more important criteria for passage to high school. It will consist of three components: written, artistic, and oral. You will choose the topic of your project, submit a proposal, and research it with our help and the help of your classmates.

- ■ The written component will take the form of an "I-Search" essay (to be described separately).

- ■ The artistic component may be a drawing, a song, a diorama, a model, a collage… your choice. This is a place to let your hidden talents emerge!

- ■ The oral component will consist of a short explanation of your project to the panel. The panel will then ask questions.

Note: Don't freak out. We will support you and in special cases find alternatives to some of these components. Enjoy this project—it's *yours!*

Timeline: Thursday, 1/11 .... Proposal Due
Friday, 1/12 .... Develop Rubric
Tuesday, 1/16 – Friday, 1/19 .... Writing Workshop, Research
Monday, 1/22 .... I-Search Draft Due
Tuesday, 1/23 – Friday, 1/26 .... Art Component, Rehearsal
Monday, 1/29 – Wednesday, 1/31 .... Presentations

Proposal: (A) Topic
(B) Guiding Question
(C) Prior Knowledge/Existing Work
(D) Research Questions
(E) Ties to Math, Science, Social Studies
(F) Ties to Marine Themes

School of Marine Science Exit Project

I-Search Paper Guidelines

I.   Introduction
   A.   I have always been interested in birds, so for this project, I chose to study which birds live in New York City and which ones migrate through the city
   B.   My Guiding Question was: Which birds live in New York and which pass through on migration?

II.   Known Facts: I already knew some things about birds in the city, for example…
   A.   Fact about birds in the city
   B.   Fact about birds in the city
   C.   Fact about birds in the city

III.   Other things that interested me about birds in the city were…
   A.   Research question/My answer
   B.   Research question/My answer
   C.   Research question/My answer

IV.   I used many different resources, such as…
   A.   The Internet/Info
   B.   City park rangers/Info
   C.   Library books/Info

V.   Conclusion: Through this project I grew as a learner because I…

School of Marine Science Exit Project

To extend your writing and enhance your project…

- Write a pretend letter to someone involved (Joe Montana, George Pataki…)

- Do a directed freewrite on your topic

- Draw a cartoon about yourself researching or your topic

- Make a brochure about your topic (this could be your artistic component)

- Write your I-Search as a journal or diary (Today I…)

- Write a newscast to include in your I-Search paper and read it for your oral presentation

- Write a poem or song about your topic or your personal discoveries

- Write a travel guide or manual to include in your paper

- Make a questionnaire to pass out to the class

- Write a mock test on your topic

- Write from the point of view of a boat, a fungus, Paul McCartney, a river…

You get the idea—think of original ways to develop your ideas!

School of Marine Science Exit Project

I-Search Portfolio Checklist

Please check off these items *as they are completed!!*

Written work

Topic proposal letter: _____Rough draft   _____Final draft

Outline
(bubble or Roman numeral):   _____Rough draft   _____Final draft

Visual component
proposal letter: _____Rough draft   _____Final draft

Essay: _____Rough draft   _____Second draft

                                                    _____Final draft

Handouts

Please keep copies of ALL the handouts you receive!

Proposal Guidelines   _____

Calendar   _____

Jessica's I-Search   _____

Outline Guidelines   _____

School of Marine Science Exit Project Rubric

January 2001

Below Standards	Approaching Standards	Meeting Standards	Exceeding Standards
☐ No topic proposal letter	☐ Topic proposal letter draft	☐ Topic proposal letter is completed to final draft	☐ Topic proposal letter is completed to final draft
☐ No outline/bubble chart	☐ Outline/bubble chart draft	☐ Outline/bubble chart is completed to final draft	☐ Outline/bubble chart is completed to final draft
☐ No drafts of essay	☐ One draft of essay	☐ More than one draft of essay – clear revisions	☐ Many drafts of essay – clear revisions
☐ No final essay	☐ Final essay still has mistakes	☐ Final essay is polished and nearly error free	☐ Final essay is polished and completely error free
☐ No visual component	☐ Has guiding question	☐ Guiding question is clear	☐ Guiding question is insightful
☐ Did not present work	☐ Answers fewer than three research questions	☐ At least three research questions are answered	☐ More than three research question are answered
	☐ Uses fewer than two resources	☐ At least two resources were used	☐ More than two resources were used
	☐ Ties to science, social studies, math, and marine themes are weak	☐ Topic is tied to science, social studies, math, and marine themes	☐ Topic is tied to science, social studies, math, and marine themes
	☐ No visual component or sloppy visual component	☐ Visual component is neat and applies closely to topic	☐ Visual component is applicable and creative
	☐ Presentation is not clear, no eye contact, not able to answer questions	☐ Presentation is clear, eye contact is made, and questions can be answered	☐ Presentation is clear, eye contact is made, and questions can be answered

School of Marine Science Exit Project Checklist

Name: _____

1/25/2001

Write in what you still need to do for each part of your project:

TOPIC PROPOSAL LETTER	OUTLINE	ESSAY: ROUGH & FINAL DRAFT

VISUAL COMPONENT LETTER	VISUAL COMPONENT	PRESENTATION

Source: School of Marine Science, New York City Community School District 2. All materials reprinted with permission.

School of Marine Science Exit Project

Example I-Search Paper

JESSICA'S I-SEARCH

INTRODUCTION/BACKGROUND

After considering the selection of a topic for my final presentation, I have made the decision to deliver a presentation about something that has concerned me as a drug user. The proper terminology that I should really use is that, "I am an addict!" I am still negotiating this disease that I will believe will be with me for the rest of my life. What occurred to me one day was that there were other family members who were addicts or other family members who engaged in recreational drugs.

Looking at my family tree, I discovered the following. My father was a drug addict as a teenager. I know also that my father's father, my grandfather used alcohol. As a matter of fact, he was an alcoholic. My mother's mother, my grandmother, was an alcoholic also. My mother used marijuana for a short period of time as a young teenager. She is still a recreational user. My mom also drinks, when the "moon is full." My sisters are recreational drinkers. I have a first male cousin on my mom's side who uses marijuana regularly. We were born on the same day and we are seven years apart. Yes, he is older. He is my favorite cousin, not because we are able to 'party' together but because he has always been there for me. He has never judged me or criticized me. I need to share with you that my boyfriend of eight months is also a drug addict.

In reviewing the above, I would like to begin the search for answers that will improve my life and the life of my children and other people's children who will face this very difficult and disturbing disease. I want to be prepared to answer those difficult questions and provide significant answers that are true, not government promoted or opinions from people who think they know what they are talking about. I want to remember one thing that my answers may be right but there is lots of room for other solutions.

The information in this proposal is substantiated and correct to my knowledge. I have used the Internet in gaining access to medical, health, social, emotional avenues that are approved by all of the major governmental agencies. I am also using information that was obtained from a stay in detoxification known as detox. I spent one month in Arm's Acre in Carmel, New York as well as the library. I am not using information from the streets and chat rooms on the Internet.

GENETICS

In reviewing the documentation on the web at the National Institute on Drug Abuse (NIDA), I happened to come across material that provided support for my belief that genetics plays an important role in addiction. In one study that ran for over 25 years, the NIDA has funded the research to study and compare brain wave patterns in marijuana users and nonusers. They also looked at abnormalities in the sperm in the men who use marijuana, and look to determine what damage it does to the infant of a mother who uses marijuana. The research that they have developed came from many minority groups. This resulted in their request for studies on the Role of Behavior Genetics Research in NIDA's Vulnerability to Drug Addiction Initiative. This means that the government is ready to pour a lot of money into research in the following gap area categories. Besides new investigative studies they are looking to do more studies on minority populations to whom previously developed models may not apply...That means that I have to wait until the NIDA and other organizations start clinical trials with minority groups. I hope that this new research will be available during my lifetime!

DRUGS

Marijuana

Marijuana has many names like pot, herb, grass, weed, mary jane, reefer, aunt mary, skunk, boom, gangster, kif and ganja. Marijuana is mostly smoked for a better high. It can also be eaten for less effect. The expected high includes a mild sate of euphoria, relaxed inhibitions, impaired memory, and also impaired attention span.

What is marijuana?

The technical name is Tetrahydrocannabinol or more known as THC. THC is the main ingredient in the marijuana. In a small measurement, it is a billionth of a gram. THC affects the hypothalamus, which in turn, affects the pituitary, which regulates the endocrine function and hormones controlling the sexual organs, which include the testes, ovaries, placenta, also, other essential elements in the reproductive system, which also stays in the breast milk.

What effects (emotional and physical) does marijuana have on infants?

One hundred percent of babies born to heavy marijuana users have abnormal behavior effects, also include but are not limited to slow response to visual stimulant, exaggerated tremors and exaggerated startles. Babies are born with distinct high pitch shrill cat-like cries, which is a symptom of their own withdrawal from the drug. Physical characteristics show small heads, abnormal facial features, slower growth, and neurological problems. Mothers who smoke marijuana less that three times per week during pregnancy deliver infants that weigh 95 grams smaller that the normal infant. Mothers who use marijuana more that three times each week deliver baby's 139 grams smaller than the average baby does.

Cocaine/crack

Cocaine comes from the leaves of a cocoa plant. It supplies its user with euphoria, alertness, confidences and heightened sensitivity.

What is cocaine/crack?

The technical name is cocaine. On the street it is known as coke, snow, C, and lady. It can be snorted or injected. When the substance is chemically changed, usually with baking soda and water, it produces little pebbles or rocks that can be smoked. In this state it is called crack.

What effects (emotional and physical) does cocaine/crack have on infants? Babies born from a mother who used cocaine during nursing time have a high rate of neurological behavior problems, congenital malformations and death. Babies are at increased risk for malformations of the genitourinary tract, meningitis, sudden infant death syndrome, strokes and chromosomal defects. Many infants are born mentally retarded and physically damaged. Infants are also born below average size because of the restricted blood flow to the placenta. When mothers use heavily while nursing babies will go through withdrawal. Symptoms are similar to adults who go through withdrawal at detox centers. The infant must have medication to ease the discomfort. The child will start to show a classic irritability and the non-existent bond toward others. Also, spontaneous abortion and premature detachment of the placenta are known direct effect of cocaine abuse.

What is heroin?

It comes from a poppy plant, which grows in high altitudes. Heroin is also known as horse, china white, and junk. It is a potent narcotic that is white in color and looks like sugar. It can be smoked or injected to produce euphoria, drowsiness and slowed respiration. User's report that ten seconds after they inject themselves, they feel a rush of extreme pleasure. The also report a calm, more mellow high which ends with a dreamy stage where all their problems just go away. Heroin puts them in a good relaxed mood. When the user starts to sober up or withdrawal, they are ready to go find the next fix.

What effects (emotional and physical) does heroin have on infants?

Heroin addicted mothers are more likely to miscarry or give birth to a dead baby. It has been reported that infants delivered prematurely also showed retarded growth. If the infant survives it must go through detox to withdraw from the drug. Symptoms include sweats, cries fretfully, trembles and convulsions. The infant is also extremely sensitive to all types of noises. The infant will have difficulty sucking or swallowing milk. Surviving infants are smaller than average and have smaller heads. There is an increased risk for sudden infant death syndrome. Infants who survive will have to learn about the disabilities that may affect them in later life.

What are quaaludes?

Methaqualone is yet another drug that is harmful. The drug is a depressant, which causes the user to feel and have slurred speech, hallucinations, disorientation and drunken behavior. Quaaludes are taken orally in tabs, a form of a pill. Quaaludes can also be injected. Quaaludes are sedative-hypnotic drugs, which can restrict the flow of oxygen in the mother's fetus causing oxygen deprivation that can cause brain damage to the fetus.

What effects (emotional and physical) does quaaludes have on infants?

When a pregnant woman is detoxing from quaaludes she may enter labor prematurely. If the infant lives, he or she is lethargic, poor muscle tone, and has difficulty sucking milk. The baby's central nervous system may be depressed. Also its behavior might be distorted because of withdrawal

effects from the drug. When the infant gets older, their attempts at communication become virtually are impossible. They are unable to read, write or understand. These children are severely learning disabled.

What is phencyclidine?

Phencyclidine is also known as PCP or angel dust. PCP comes from the hallucinogen family because it produces hallucinations, visual illusions, alters perceptions of one's own body and increases emotionally. This drug is a veterinary anesthetic used to put large animals to sleep for surgery.

What effects (emotional physical) PCP have on infants?

A pregnant mother can cause a degenerative pattern to exist in her young infant. Six months of age the babies exhibit jitters and agitation seen at birth. Three months later the infant cannot understand how to use their hands. At the end of the first year, the intelligent quotient (IQ) begins to drop. Twenty to twenty-four months the infant cannot coordinate their tongue to form words. The tone of the muscles in the head is much like the characteristics of cerebral palsy. The PCP is known to stay in the infants systems to cause further lasting damage.

Thinking back to my original thinking about the relationship of genetics to drugs, is there any wonder that the evidence that I just produced supports my instincts that drugs damage the genetic foundation of healthy youth capable of achieving great things without using drugs.

I would like to ask parents the following question. In reviewing the severe damage inflicted on these poor innocent children through the abuse of illegal drugs by their parents: Was that the "trip" really worth this child's shot at a normal life?

POEM: DRUGS

When you don't have me
You need me.
When you don't got me,
You go to get me.
When you try to leave me alone,
Your body still needs me and calls for me.
When you find me and use me,
You feel heaven rush through your blood, mind and soul.
Got your paycheck.
Go to the spot.
Where's your paycheck now?
Down the drain where you maybe are throwing your infant.

QUESTIONS TO CONSIDER

Do genetics have a connection to drug abuse? Are there a relationship and a pattern of abuse in families? If so, what can we do to stop the spread of abuse to children of parents who abuse drugs?

There is definitely a connection a drug abuse and addiction. I have resented information from the NIDA who is calling for more studies on minority groups and their patterns of drug abuse. We know that there is a tremendous amount of information that stems from the use of approved drugs that have hurt babies. Thalidomide (spelling) was a drug taken off the market when children were born with wilted arms and legs. In my package you will find bibliography of over 100 studies that deal with Genetics and Substance Abuse.

Also, the minority studies will show the patterns of families who have been addicted throughout the generations.

Education must get the message out to parents and children to hopefully stop this disease from spreading.

What is the youngest age for drug addiction?

Newborn infants that are born from drug addicted mothers who will have to deal with the problems of addiction for the rest of their lives.

How much money is going down the drain for drugs?

The sale of illegal drugs brings in billions of dollars. For example, if there are estimated 5.1 million regular marijuana users nationwide, including some 500,000 or more in New York, we know there is a huge market for the drug. A nickel bag is capable of making three joints, which equals one blunt and the cost of that is $5.00, we can only just imagine how many millions of dollars are spent on just that one drug. In some parts of New York, dealers will only deal with dime bags, which costs $10.00. A dime bag of hydro (marijuana that is grown under water and is more potent) will only make one joint or one blunt.

Cocaine is sold in 20 pieces or 50 pieces. That means $20.00 or $50.00. For 20 pieces, users get 10 thin lines of cocaine, 50 pieces brings about 25 lines. Lines are sniffed or added to a marijuana blend, which are then called woolies. We know there are thousands of cocaine users in this country and hundreds of millions of dollars are spent. If you look at the Columbian drug wars, families are fighting for market share and it is a very dangerous game. The United States is giving South America millions of dollars to support their military and police departments to fight the war on drugs from their shores. The United States' strategy is to cut the source so that it doesn't come into the United States. It is hard to imagine the millions and millions of dollars that are spent on illegal drugs.

Do drug education programs work?

From my point of view, I was in a drug education program and I am still a user. In looking at all of the people that I spent time in the program with, they admitted that they were still using. The people that I know in programs used a product called Quick Flush to avoid detection during the urine testing.

In my experience, I believe that drug programs do not work for users who have used for a long time.

I do believe that school drug education programs can work if educators are realistic. Children in early grades after spending time in drug education are convinced that they will not use drugs. When I was fourth grade, I said, "It will never be me, I will never touch a cigarette, a joint or any of that

stuff." Unfortunately, children grow up and go through adolescence and those are very tough. There is a lot of peer pressure to do things that are not healthy. Kids start smoking because they think it is cool. They want to look like other people or just relax. When I first picked up a cigarette and took a pull, I felt very relaxed and it felt good. The next thing I tried was weed and that really relaxed me.

School drug education programs have been around for about 40 years. We still have a drug problem in this country.

Should drug users be criminalized and thrown in jail or should they get the support and relief so that they can function effectively without the use of drugs?

Articles 220 and 221 of the NYS Penal Law are directly aimed at unlawful traffic in mind-affecting drugs. They set criminal penalties for possession or sale of drugs considered harmful or subject to abuse. The seriousness of the offense and penalty imposed upon conviction depend upon the individual drug and the amount held or sold. The NY State Law classifies possession of 25 grams of marijuana as a violation. Penalties range from $100 dollars to $250 fines and/or up to 15 days in jail, depending on whether it is the first, second, or third offense.

Possession of more than 25 grams but not more than eight ounces is a misdemeanor and possession of more than eight ounces is a felony. Sale of 25 grams or less is a misdemeanor; sale of more than 25 grams is a felony. There are many laws on the books for possession, use and sale of other illegal drugs. If one gets caught with any drug besides marijuana, and if they do not have a great lawyer, then they are going to jail for a minimum of a year or more.

What is the most effective way drug abusers can be helped?

I believe that if users spend at least a year in a drug rehabilitation program for a year that would be helpful. Spending 28 days is not enough to help the user get over their cravings for drugs or alcohol. More money needs to be spent on rehabilitations.

Why aren't the anti drug advertisements helping to fight the war on drugs? Why aren't they effective?

The commercial, which comes to mind, is the one that says, "You can pass it on." I hate that advertisement because you see a kid taking a couple of pulls, passing it on to the next who says no, on to the next and they say no. It is not realistic.

The next one is when a female takes an egg and says, "This is your brain off drugs." She takes a frying pan and says, "This is your brain on drugs." She then smashes the egg with the frying pan. She then points to all the dinner plates and smashes them with the frying pan and says, "This is what happens to you and your family." She then clears everything off the counter and says, "This is where your money goes." I think that this is one is more realistic and could work!

CONCLUSION

From looking at all this information and looking at my life, a lot of things connected. When my father was a teenager, his drug of choice was heroin. But then he had to stop when he met the love of his life, my mother. My mother was not interested in marrying my father and heroin. My father's decision to stop drugs involved the need to take a medication to ease the discomfort of the withdrawal from the drug. The drug was called methadone. But, that was not the end of my father's drug problem. Over a period of years still before I was a glimmer in my parent's eyes, he began to use cocaine and marijuana. I can say that drug killed my father, not only illegal drugs but legal drugs too. My father died because his heart grew too big. I know that sounds like why would someone die with a big heart. That is what the cocaine use did to my father. Your heart is a muscle and when you use cocaine it makes your heart work faster and faster and through this action the heart gets bigger and bigger. That's not all of it. My father was taking legal drugs at the time. My father's high blood pressure pill and the methadone that helped him to respond to the effects of withdrawal for so many years caused calcium to build up in his heart. In the end it was a combination of all the drugs he had used during his lifetime, which caused him to have a fatal heart attack.

My family are not bad people just because some of them use or have used drugs. But there is one question, which I believe is true after this completing this research. I believe that because of my genetic map, that I had a more of a chance of becoming a drug addict. I believe that the research that is being done today will prove my theory.

I also believe that for future generations this information is very important. Two people, one a drug addict and the other an alcoholic can affect the destiny of their children. Parents need to understand that their behaviors in illegal drug use can affect the lives and future of their children.

HOW THIS I-SEARCH PROJECT CONNECTS TO SCIENCE, MATH, AND HUMANITIES?

My topic connects to science and math for the following reasons: Science because of the effects of drugs on the body and its systems and the effect on babies from mother's milk. Math because of the money and statistics of users. Drug use connects to humanities because of the thousands of pages of criminal law that are on the books and the legislation that is pending in city, state, and federal governments.

SURVEY

I developed a survey but unfortunately I was not able to give it to our class in school. The following questions would have been asked.

- How do you feel about the following drugs? Angel Dust, weed, cocaine/crack, heroin, mushroom, tabs, opium, crystal method, speed and Valium.

- Are you a user of drugs? If so, what is your drug of choice?

- Did you start using drugs because of peer pressure? _____

- Did you start using drugs because you wanted to? _____

- Are you a member of a minority?

- Did your grandparents use drugs or alcohol?

- Did your parents use drugs or alcohol?

- Do you feel that your reason for using drugs was something that came out of your genetic map?

- How much money do you spend in to support your habit?

- How do you feel about people who use drug?

- What is detox?

- What do you think about detox?

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SHARED READING OF CURRICULUM PLANNER:
RATIONALE, STRUCTURE, VOCABULARY, AND CONTENT

(10 min.)

The Personalized Teaching Planner is the main act of this workshop. It is a way to sort ideas about curriculum, instruction, and assessment before writing a unit or project plan. It may be used by individuals or by integrated teams of teachers. Before participants use it, they need to understand its rationale, structure, and vocabulary. Facilitators should walk them through it in a shared reading (facilitator explains the text as all focus on it). They will first want to explain that it was used to help plan the first two of the exemplar projects and was implicit in the planning of the third. The Sample Curriculum Planner that follows (pp. 81–83) includes entries that help to understand the categories of the planner. Elements of the planner are inspired by Grant Wiggins' and Jay McTighe's *Understanding by Design*. Teachers will want to consult that resource for a deeper understanding of many of the elements.

Sample Curriculum Planner

(Curriculum, Instruction, Assessment)

Note: The sample entries in this curriculum planner are quoted, derived, or imagined from a variety of sources. They are not meant to represent a coherent unit of study or to be comprehensive in any way but to provide an array of examples to facilitate discussion of the planner. Elements in this planner are inspired by Grant Wiggins' and Jay McTighe's Understanding by Design. *For further information, contact Dale Worsley, The Education Alliance, cdw1@columbia.edu.*

Core beliefs that guide my teaching:

- With flexibility, teachers can bring art to the demands they must meet.
- Good teaching means good planning, using the strengths of the students, accommodating learning styles, and being prepared to provide technical support.
- Mindful creativity is essential to deep learning.
- Students must be empowered to think and dream for themselves, to make discoveries on their own.

Mandates to which my teaching must conform (standards, tests, school initiatives, departmental maps, grade-team collaborations, yearlong curricular goals, etc.):

- Standards
- State curriculum
- District, school initiatives
- Academy theme

Understandings I would like students to grasp:

- The function of history may not be so much to make the past familiar as to make it strange. (History)
- We can find our own place in a poetic tradition. (English)
- Statistics is the organization of data to help understand important things more objectively so we can make better decisions. (Mathematics)
- Natural selection provides a good biological explanation of how different species, including human beings, got here. (Science)
- Democracy is grounded in mathematical principles. (Integrated)
- You are what you eat. (Integrated)

Common misconceptions about the subject of our study:

- History is a way of making the past familiar. (History)
- Poems are born complete, purely by the imagination. (English)
- There is only one right way to solve word problems. (Mathematics)
- Evolution is always a gradual process. (Science)
- The plurality method of voting always produces the winner preferred by a majority of voters. (Integrated)
- The theory of evolution began with Darwin. (Integrated)

Essential questions that will guide my students' inquiry:

- Why did the Europeans "discover" America instead of the Asians? (History)
- How do poetic traditions begin? (English)
- Is zero something or nothing? (Mathematics)
- Is the Earth in balance? (Science)
- Are historical novels a good way to learn history? (Integrated)
- Is mathematics discovered or created? (Integrated)

Skills necessary to achieve understanding:

- The ability to make inferences from primary documents (History)
- The ability to use critical vocabulary and literary terminology (English)
- The ability to model as well as to investigate mathematical operations (Mathematics)
- The ability to collect, analyze, synthesize, and present data (Science)
- The ability to create a web site (Integrated)
- The ability to collaborate (Integrated)

Knowledge necessary to achieve understanding:

- The relative distribution of wealth in the era under study (History)
- The functions of rhyme in the sonnet forms (English)
- The formulas for perimeter, circumference, area, surface area, and volume of many types of figures (Mathematics)
- Cell structure and function relationships; regulation and biochemistry; and energy and photosynthesis (Science)
- Etymologies of basic Greco-Latin vocabulary (Integrated)
- The names and dates of significant cultural, historical, and scientific developments (Integrated)

How understanding will be assessed:

- Performance tasks
- Projects
- Quizzes, tests, academic prompts
- Observations, work samples, dialogues
- Student self-assessment

Learning activities / instructional strategies that accommodate learning styles:

- Shared, guided, independent reading of primary documents (History)
- Memorize and illustrate or perform literature; reflect on process (English)
- Introduce problem; students work in groups in areas of the classroom that have different environmental conditions such as light, level of noise, etc., share strategies in "lesson study" format (Mathematics)
- Design and execute lab experiment in groups; compare results (Science)
- Note above activities and innumerable others applicable across disciplines

Timeline:

- Yearlong integration into curriculum
- Connecting activity between curriculum units
- A discrete sequence of days or weeks
- Beginning/concluding activity to quarters/terms
- Others

Resources:

- Visiting experts
- Internet resources
- Textbooks
- Primary documents
- Community organizations and institutions
- Etc.

In their "walk-through" of the planner, facilitators will want to make participants aware that the categories are included in a particular order. While participants ultimately do not have to follow the order mechanically, they should understand why it is so structured. It generally follows the "backwards planning" model, where the desired outcomes are established before activities and lessons are designed. We will look at one section at a time, using the entries in the sample planner to help us grasp the meaning of the categories.

Core beliefs that guide my teaching:

To do the work of personalized teaching, teachers must all share certain beliefs in common, perhaps the most important of which is that "every child can learn." Nevertheless, teachers might have more particular views that will guide them. For instance, if a teacher believes that "With flexibility, teachers can bring art to the demands they must meet," then that teacher is well advised to build explicitly flexible time into their timeline. If a teacher believes that "Mindful creativity is essential to deep learning," then they will want to be sure that materials and time be provided for students to exercise their creativity and to reflect on their work. Another reason for teachers to articulate their beliefs is to be able to make them explicit to the students. Personalized teaching is not a one-way street. Students need to see the workings of their teachers' minds as much as the teachers need to see the workings of their students' minds. In fact, teachers may want to have their students articulate their beliefs about learning as well.

Here are a few additional statements of belief (including one by this writer) that might provide models for workshop participants:

"Designing lessons for understanding begins with what we want students to be able to do and proceeds to the evidence we will accept that they have learned it. Only then does it turn to how they will learn it. Along the way we must be clear about what we want the students to understand, and what we mean by understanding."
—Ron Brandt, Introduction to *Understanding by Design*

"It's not so important to get the glory. It's much more important to get something that works. It's a better way to live. If you are trying to solve the big problems by pure thought, it's very solitary and it's very competitive and the people who don't succeed are mostly unhappy."
—Freeman Dyson, in a *New York Times* interview

"The most unfair thing we can do as teachers is to treat all students alike."
—Rexford Brown in *Schools of Thought*

"My ultimate goal in teaching is to use every part of my experience and education, along with my intuition and skill, to liberate students to pursue their personal visions with passion and discipline."
—Dale Worsley

Mandates to which my teaching must conform (standards, tests, school initiatives, departmental maps, grade-team collaborations, yearlong curricular goals, etc.):

After our beliefs, mandates are the other great determinant of what happens in our classrooms. State standards and state and/or district curricula specify the skills and knowledge that we must address. These are the goods that must be delivered, so to speak. They are why we were hired. We might also be mandated to go beyond just the delivery of skills and knowledge, however. Some schools require us to work with certain themes, through magnet programs, for instance, or through decisions made by "Smaller Learning Community" teams. A substantial amount of professional development time and energy needs to be dedicated to these mandates if teachers are new to them, or if new initiatives have come to us. While the *Teaching to Each Student* workshop does not afford us the time to go into great detail on the mandates that we must meet, by the time we design our lessons we will want to have sorted them out in careful detail.

Understandings I would like students to grasp:

Many teachers get so caught up in teaching skills and knowledge (sometimes phrased, "what our students should know and be able to do") that they neglect to address what it is that the students are supposed to under-

stand. The planner helps them to articulate the difference. Where a fact is simple and easy to restate: "A sonnet is written in fourteen lines," an understanding is "complex, sophisticated and often counterintuitive" (Wiggins and McTighe, 1998, p. 5). Understandings provide context for study and motivate students. All of us, perhaps most of all struggling students, need context to be able to make sense of our studies, and by extension, the world.

The idea of "understanding" is so critical to the use of the planner that facilitators may want to elaborate on it further. Imagine a ninth grade mathematics class in which students are studying stem-and-leaf plots, frequency histograms, cumulative frequency histograms, box-and-whiskers plots, etc. Imagine in that classroom a student who, according to his own words, says, "I like to play basketball, football, and video games. I don't like math…" The student also says, when asked to write in a directed freewrite on statistics, which he has been studying for three weeks, "I think the word statistics means that it is like a count of something, like a census of America or how much students are in a school, and it has something to do with math." The student may well know how to plot a histogram but has only the haziest idea of what statistics are. The student lacks understanding. His lack of understanding in all probability is a factor in his stated dislike of mathematics. If the student understood how he might use statistics to improve his basketball game, he might not only like mathematics but also begin to succeed at it.

We recommend that teachers articulate the understandings of their subjects in ordinary English, so that students can grasp the essential ideas before being asked to demonstrate their skills and knowledge in academic language. If students are captivated by the idea that "Human beings actually exist in the form that we do because of natural selection," they will be more motivated to learn the academic terminology they will need to employ to pass tests and move ahead in school. Imagine encountering this language before becoming interested in the power of the topic to help you make sense of the world: "Natural selection is the differential ability of different expressions ('phenotypes') of underlying structures ('genotypes') to survive and reproduce in a particular environment." Yet the student might be able to take pride in using that language if brought to it through the motivated inquiry engendered by true understanding.

At this point, facilitators should let teachers know that they will soon have an opportunity to draft the deeper understandings of their units and projects in this workshop.

Common misconceptions about the subject of our study:

Students often have theories, if not firm beliefs, about the way the world works. Education might even be defined as the process of correcting misconceived theories and beliefs. Research (cited below) shows that beliefs about teaching are extraordinarily difficult to change. So, it seems, are beliefs about the way the world works. A big feature of a well-designed curriculum will be to solicit students' thoughts to detect and assess the way students make sense of things. A student who believes that poems are created purely by the imagination will make a far less competent poet than one who understands that poems are created from models, are stimulated by perceptions and thoughts as well as feelings, and usually involve making connections between things already known or perceived. A student who believes that there is only one way to solve a math problem will feel alienated from mathematics for fear of not knowing that algorithm or of misapplying it. Mathematics becomes the problem rather than the solution to the problem. A simple directed freewrite revealed the student's misconception about statistics above. KWL charts and other graphic organizers and protocols such as anticipation guides are equally useful in identifying misconceptions and setting students on the path to more accurate understandings.

Essential questions that will guide my students' inquiry:

Having established the deep understandings that we will want our students to develop, we need essential questions to engage them and to help organize our curriculum. As Wiggins and McTighe (1998) put it:

"After we have identified an objective as requiring uncoverage, how do we more deliberately and practically design units and courses to develop student understanding? How might we take a mass of content knowledge and shape it to engage and focus student inquiry? One key strategy is to build curriculum around the questions that gave rise to the content

knowledge in the first place, rather than simply teaching students the 'expert' answers found in textbooks." (p. 26-27)

Wiggins and McTighe go on to say:

"At the heart of all uncoverage, then, is the deliberate interrogation of the content to be learned, as opposed to just the teaching and learning of the material. While this focus may sound odd, it points to an important truth about coming to understand: Knowledge must be more than mentioned or referred to in indiscriminate ways. Important ideas must be questioned and verified to be understood." (p. 27)

Every nuance of phrasing becomes critically important in creating essential questions. The question, "Is the Earth in balance?" worked in an earth science classroom because it focused students' studies on the counteracting forces within the core, the crust, the atmosphere, and the solar system. Its simplicity made it memorable. Students were able to refer to it repeatedly to check their growing understanding. Journal entries on more particular forms of the question allowed their teacher to assess their understanding regularly.

Essential questions might be considered the open-ended "mother questions" from which more leading progeny may be born that guide students to knowledge and activities within units. "What are the forces that cause the Earth's crust to change?" is a question that leads students to the facts that will allow them to better answer the question, "Do these forces throw the Earth out of balance?" This question in turn leads to reflections on the debatable overarching question, "Is the Earth in balance?" It is possible that students' perspectives might be further broadened by an interdisciplinary question posed by a team or even a school. "What does it mean to be a citizen of the Earth?" might be such a question.

The act of drafting and debating essential questions is at the center of the intellectual conversations we believe to be necessary to the personalization of learning. Teachers in the workshop will do this shortly after facilitators finish walking them through the planner.

Skills necessary to achieve understanding:

Above we discussed the importance of distinguishing among understanding, skills, and knowledge. The term "skills" refers to what we want the students to be able to *do* at the end of a course of study. National, state, and district standards often focus on performance skills in given disciplines, and we will want to map them into our curriculum, but we may also want to articulate, model, develop, and assess additional skills. If we expect our students to do effective group work and to conduct meaty student-directed discussions, we will want to model and assess the development of these skills as well.

Knowledge necessary to achieve understanding:

We also described the category "knowledge" above and distinguished it from the terms "skills" and "understandings." Facilitators will want participants to be especially clear about this particular distinction. Traditional core teachers have often only taught "knowledge," so to speak, and may have difficulty seeing the difference between "knowledge" and "understanding" in the planner's schema. To be able to name the causes and goals of the Bolshevik revolution may seem like a kind of understanding, but we want students to debate, with rigor, the more open-ended question, "Did the Bolshevik revolution succeed?" We might want them to come to the deeper understanding, perhaps, that "Revolutions cause changes but do not necessarily produce progress." This is not a fact, but an understanding that requires students to know additional facts, such as the figures and events of the American and French revolutions as well.

Teachers are thus advised to identify the "mass of content knowledge" that they will be shaping into their curriculum only after they have determined the deeper understandings.

How understanding will be assessed:

Facilitators will want to note that in the logic of the planner, we have still not begun to plan lessons. Having established the important big ideas, the questions that will guide students' inquiry, and the skills and knowledge associated with the ideas, we need now to determine how it is that we will

assess the understanding. The projects that we have investigated earlier are good examples of reasonably well-designed assessments, upon which we can base summative evaluations, but formative assessments can also include journal entries, conversations, observations, checklists, quizzes, academic prompts, and the like. Assessment should be seen as the *constant* feedback we need to personalize instruction for students. Planning in a traditional classroom that focuses entirely on content will leave students behind for the sake of "coverage."

Wiggins and McTighe actually describe six "facets" of understanding (explanation, interpretation, application, perspective, empathy, and self-knowledge), which need to be investigated further to make the planning process complete (1998, pp. 44-62). Wiggins and McTighe urge us to "think like assessors" (p. 63) in designing ways to determine whether students have achieved understanding. They would have us address the following questions, "Given our account of the facets, what follows for assessment? What is evidence of in-depth understanding as opposed to superficial or naïve understanding? Where should we look and what should we look for to determine the extent of student understanding? What kinds of assessment tasks and evidence needs will anchor our curricular units and thus guide our instruction?" (p. 63). Rubrics need to be designed, perhaps in collaboration with the students, in light of these questions, to set graduated criteria of quality for their work. Personalization will not happen without clear expectations.

Learning activities / instructional strategies:

At last we come to the design of our learning activities, our "lesson plans." In a depersonalized classroom this is probably where we would have begun. In a personalized classroom this is where we culminate the process. And we do this with certain ideas in mind. We do it with an understanding of the students, of their developmental levels, their learning styles, their learning histories (Keefe and Jenkins, 2000, p. 47). We do it with expert background in our content, so that we may be confident enough to allow our students to initiate much of their own inquiry. And we do it with a will to apply and experiment with the best teaching practices, ones that assess students' prior knowledge and build into the lesson structure opportunities to construct their meaning.

It is useful sometimes in designing lessons to ask, "What do my students need to rehearse in order to become better practitioners of the discipline, (i.e., better historians, scientists, mathematicians, readers, and writers)?" A thorough understanding of the pedagogical theory of differentiated instruction is useful here, to avoid the trap of "teaching the subject, but not the child."

Further professional development, and certainly a regimen of intellectual conversations in the context of our schools as professional development laboratories, is critical to the development of good lessons. The development of particular lessons is not in the scope of today's workshop, but tools and models for these conversations are included in this book. For now, we look at two other categories in the planner that will help us to jump-start the process of personalization.

Timeline:

If we have decided in our American history course that issues in the country's westward expansion merit special and lengthy focus, we may want to give that unit more time in the sequence of our curriculum (assuming we are moving through events chronologically). But what will that do to our unit on the world wars? If we have been working toward deeper understandings through essential questions, have been shaping the skills and knowledge carefully, and have been giving our students the opportunity to develop their research and communication skills accordingly, we might well be able to adapt. We might use projects and project portfolios for the westward expansion unit and jigsaw structures and presentations for the world wars unit, thereby extending one unit and shortening the other with no loss of coverage. Timelines are thus meant to be used flexibly. They are included in this planner to allow us to adjust the "scope and sequence" of our work in the context of teaching for understanding.

Resources:

Similarly, the planner category of "Resources" is included to stimulate a special focus on finding the resources that will be critical for personalization. Textbooks in a personalized classroom will be only one of many

resources. For one thing, textbooks are usually pitched above the reading level of many students in the grade for which they are designed (Miller, 2000). In mathematics textbooks, the concepts may be grade-level appropriate, but the reading level can be beyond the grade level by as many as three years (Braselton and Decker, 1994). Additionally, textbooks are not usually written in accordance with our core beliefs, the deep understandings we want to achieve in our particular setting, or the essential questions we will be using. They do often contain information of use, however, making them excellent resources. In a personalized classroom that seeks to demonstrate both the internal logic and beauty of a subject as well as its relevance, teachers will want to consider primary documents, experts, museums, video and audio tapes, live performance—a panoply of resources. Students' learning styles and readiness will also dictate the resources. A considerable amount of time will be spent investigating, acquiring, developing, and creating resources. The planner provides an opportunity to brainstorm and begin the journey to the best resources to support learning.

Facilitators will have wanted to make the above points as succinctly as possible as they introduce the planner. Now is not the time to debate the planner or its elements but simply to become familiar with it enough to experiment. The experiment begins now, with "Planning Session Prelude."

PLANNING SESSION PRELUDE
(30 min.)

Having taken a tour of the planner, facilitators should remind participants that they will break into team planning sessions in a few minutes. In the planning sessions, participants are encouraged to fill out their planners beginning with any category they like. But it is important to keep the big picture in mind, both about their own and their team members' curricula.

For this reason, participants are invited first to spend a few minutes working silently to think of a new unit or project or an old one that needs revising, and to roughly draft ideas for the "Core Beliefs," "Understandings," and "Essential Questions" sections of their blank planners. Facilitators guide participants as they work, making suggestions and taking notes on issues that arise and interesting ideas to share later with the whole group.

Participants work silently for a few minutes before they share what they wrote in team or table groups. Facilitators listen carefully to these conversations to glean further ideas to report to the whole group. When groups have had time to read their work to each other, facilitators share interesting observations with the whole group and take questions about the process.

Personalized Teaching Planner

(Curriculum, Instruction, Assessment)

Core beliefs that guide my teaching:

Mandates to which my teaching must conform: (standards, tests, school initiatives, departmental maps, grade-team collaborations, yearlong curricular goals, etc.)

Understandings I would like students to grasp in my curriculum unit:

Essential questions that will guide my students' inquiry:

Common misconceptions about the subject of our study:

Skills necessary to achieve understanding:

(What do you want students to be able to do?)

Knowledge necessary to achieve understanding:

(What do you want students to know?)

How understanding will be assessed:

Learning activities / instructional strategies that accommodate learning styles:

Timeline:

Resources (including the technology you need and how you will get access to it):

PLANNING SESSION

(60 min.)

Participants break out individually or in groups of choice, and to other spaces if they like, to continue working with the planner. This step is highly flexible in time and depth. If teams and facilitators are prepared, days could be spent developing curriculum plans for a semester or a year. Integrated teams and departments as well as individuals can work from the planner to structure projects and units.

During a summer planning session, breakout seminars could be held on the development of guiding questions, the incorporation of standards, portfolio assessment, differentiated instruction, or any other relevant topic to meet the particular needs of teachers. Time could also be scheduled to gather resources and visit trip sites.

In this one-day workshop, however, participants should be given sufficient time to draft their initial ideas. They are encouraged to loosely follow the Critical Friends Protocol after drafting their ideas if they have time. The protocol would be followed more strictly with more thoroughly developed project and unit plans.

Critical Friends Protocol

Note: This is not meant to be a judgmental or evaluative exercise. It is an opportunity for you to share your work-in-progress with peers and receive thoughtful feedback. The intent is that the comments you receive will help you to deepen and improve your work and that your colleagues will have a better understanding and appreciation of the work that you plan to do with your students. The entire process should take no more than an hour. Each teacher or group of collaborating teachers will be paired with another teacher or group of collaborating teachers for this process. That allows for no more than a half hour for each presentation/critique.

1 **Present your project plan** (10 minutes maximum)
Be as prepared as possible to present your plans efficiently. It will help if you have been able to write a project description and make copies for colleagues. Focus on areas in which you are especially interested in getting feedback. It may be helpful to frame one or two questions around criteria from the rubric. Participants listen and take notes on the Critical Friends Feedback Form.

2 **Clarifying questions** (5 minutes maximum)
Questions for clarification purposes only. They should require a quick response.

3 **Feedback on the curriculum plan** (10 minutes maximum)
The presenters should decide if they want all positive comments first and then constructive comments and questions, or vice versa. The presenter(s) listen and take notes but will wait until the end to respond.

4 **Presenter(s) respond to any comments that they wish to**
(5 minutes maximum)

5 **Critical friends give completed feedback forms to presenter**
Presenters and critical friends now switch roles.

Teachers using the Critical Friends Protocol will find the following feedback form helpful. Presenting teachers can take away written comments to digest later at their leisure.

Critical Friends Feedback Form

Name of Presenter:

Your Name:

Praise:

Questions:

Polish:

FULL-GROUP SHARE OF EXPERIENCE
WORKING WITH PLANNER

(10 min.)

After getting their hands dirty with the planner, the facilitator will want to gather the whole group together again. Facilitators share what they observed and participants share their experiences.

A BRIEF REVIEW OF THE RESEARCH

(10 min.)

Until now it has been our intention to generate an experience of immersion for the participants. With the experience, they are more likely to appreciate citations from research that affirm and consolidate their understanding of what it takes to create a personalized classroom. Facilitators may now direct their attention to this concise list of citations (p. 101). Participants may want to conduct a "spirit reading," where, after someone reads the first citation, the next citations are read in order by those who are moved to read them. After the "spirit reading," participants are encouraged to briefly share observations they may have in response to the research findings.

What the Research Says…

The National Center for Research on Teacher Learning has determined that personalized teaching is viable when…

- …teachers develop "…a philosophy that views teaching as helping students comprehend the implications of new ideas and information for their existing understandings." (p. 2)

- …teachers understand that students are diverse "…cognitively, socially, culturally, ethnically, linguistically…." (p. 2)

- …teachers understand that they need to "learn what they need to know to support new learning for all students." (p. 1)

- …stakeholders understand that, "Teachers need opportunities…to try out new approaches and to assess the effects of these approaches." (p. 1)

- …stakeholders understand that "…professional development must be stitched into the work routine of teachers, not tacked onto the work day or week." (p. 1)

- …stakeholders understand that, "Teachers must figure out what the goals imply for what they do and what they know. Teachers must gradually blend their customary ways with new approaches to helping students learn. Understanding complex tasks and ideas requires substantial time: time to understand new goals, to test out new ideas, to assess their effects, to adjust the approach, and time to assess again. Teaching is just such a task." (p. 2)

- …stakeholders understand that, "Teachers must be very knowledgeable about the subjects they teach. Without deep and flexible understanding of content, teachers are handicapped in the critical task of helping diverse students find points of access to the school curriculum." (p. 2)

Costa and Garmston (1994) note that:

- "Whether they verbalize them or not, educators hold deep beliefs about their work, their students, the role of schools in society, the curriculum, and teaching. Furthermore, these beliefs are grounded in and congruent with deep personal philosophies. These philosophies are powerful predictors of behaviors, and they drive the perceptions, decisions and actions of all players on the educational scene." (p. 70)

- "Since belief systems don't change easily, the older we become, the less likely we are to change. However, change does occur in two instances. If the prevailing culture begins to shift its values persistently and pervasively, we may begin to move our thinking in like directions. Teachers also adapt their belief systems to accommodate new realities." (p. 70)

Teaching to Each Student

THE EDUCATION ALLIANCE at Brown University

RECORD AN ACTION PLAN

(10 min.)

Participants are invited to assess their needs and to contemplate next steps, then to record them in an action plan, which will help to remind them what to do when they are ready to move ahead.

The action plan is the screwdriver in the workshop, an all purpose tool, largely self-explanatory, useful for setting a goal, planning steps for achieving the goal, identifying helpers, listing necessary resources, forming a timeline, and visualizing the outcome.

Action Plan Worksheet

"A school ought to be a magical place where you are queen or king, and where what you get to do is to focus on your intellect, and on what you can accomplish as a human being, and you come to understand what your life can be…."
—Ruth Simmons

Name: _____ Date: _____

Goal: _____

Reason for the goal: _____

What I will do:	Who will help me:	What I will need to do it:	When I will do it:	How I will know I have done it:

DIRECTED FREEWRITE:
"NEW VISIONS OF MY CLASSROOM"

(20 min.)

Following the same directed freewriting protocol that we used previously, participants use the Directed Freewrite form on the next page and write for three minutes on the prompt "New visions of my classroom" and share their writing—verbatim—with members of table or team groups.

The facilitator invites them to compare and contrast this freewrite with the first one, paying particular attention to changes in tone and vocabulary. Some participants may wish to share their observations with the whole group. A graphic organizer is provided (p. 106) to help participants compare and contrast their passages of writing.

Directed Freewrite: "New visions of my classroom"

Comparing and Contrasting Freewrites

Observations on tone of freewrite "What's going on in my classroom?"	Observations on tone of freewrite "New visions of my classroom"

How is the tone similar/different?

Observations on vocabulary of freewrite "What's going on in my classroom?"	Observations on vocabulary of freewrite "New visions of my classroom"

How is the vocabulary similar/different?

CONNECTIONS OR CHALK TALK

(10 min.)

Facilitators familiarize participants with the Connections protocol and conduct the protocol with the whole group, noting that this protocol and all of the activities can be replicated in school and classroom. If there is not enough time for this protocol, then facilitators might want to hang chart paper around the room and provide markers for participants to write their final comments in a Chalk Talk format. Both protocols are included here.

Connections

Connections is a way for people to build a bridge from where they are or have been (mentally, physically, etc.) to where they are going and what they will be doing. It is a time for individuals to reflect—within the context of a group—upon a thought, a story, an insight, a question, or a feeling that they are carrying with them into the session, and then to connect it to the work they are about to do. Most people engage in Connections at the beginning of a meeting, class, or gathering.

There are a few things to emphasize about Connections for it to go well…

- It is about connecting people's thoughts to the work they are doing or are about to do.
- Silence is ok, as is using the time to write or just sit and think. Assure people that they will spend a specific amount of time in Connections, whether or not anyone speaks out loud. Some groups—and people within groups—value the quiet, reflective times above all else.
- If an issue the group clearly wants to respond to comes up in Connections, the group can decide to make time for a discussion about the issue after Connections is over.

The "rules" for Connections are quite simple:

- Speak if you want to.
- Don't speak if you don't want to.
- Speak only once until everyone who wants to has had a chance to speak.
- Listen and note what people say but do not respond. Connections is not the time to engage in a discussion.

Facilitating the process is also straightforward. Begin by saying "Connections is open," and let people know how long it will last. A few minutes before time is up, let people know that there are a few minutes remaining, so that anyone who hasn't yet spoken might speak. With a minute or so to go, let the group know that you will be drawing Connections to a close and ask again if anyone who hasn't spoken would like to speak. Before ending, ask if anyone who has spoken would like to speak again. Then, end.

Ten minutes is usually enough time for groups of 10 people or fewer, 15 minutes for groups of 11–20 people and 20 minutes for any groups larger than 20 people. Connections generally shouldn't last more than 20 minutes. People can't sustain it. The one exception is where there is a group that has been together for a period of time doing intensive work and it is the last or next to last day of their gathering.

Some people will say that Connections is misnamed, because people don't connect to (or build on) what other people have said. However, the process is a connecting one; and powerful connections can still occur even though they are not necessarily the result of back and forth conversation.

Source: National School Reform Faculty. Reprinted with permission.

Chalk Talk

Chalk Talk is a silent way to reflect, generate ideas, check on learning, develop projects, or solve problems. It can be used productively with any group—students, faculty, workshop participants, committees. Because it is done completely in silence, it gives groups a change of pace and encourages thoughtful contemplation. It can be an unforgettable experience.

Format

Time: Varies according to need, can be from 5 minutes to an hour.

Materials: Chalk board and chalk or paper roll on the wall and markers.

Process:

1 The facilitator explains VERY BRIEFLY that Chalk Talk is a silent activity. (No one may talk at all. Anyone may add to the chalk talk as they please.) You can comment on other people's ideas simply by drawing a connecting line to the comment. It can also be very effective to say nothing at all except to put finger to lips in a gesture of silence and simply begin with #2.

2 The facilitator writes a relevant question in a circle on the board. Sample questions:

- What did you learn today?
- So what? Or now what?
- What do you think about social responsibility and schooling?
- How can we involve the community in the school, and the school in community?
- How can we keep the noise level down in this room?
- What do you want to tell the scheduling committee?
- What do you know about Croatia?
- How are decimals used in the world?

3 The facilitator either hands a piece of chalk to everyone or places many pieces of chalk at the board and hands several pieces to people at random.

4 People write as they feel moved. There are likely to be long silences—that is natural, so allow plenty of wait time before deciding it is over.

5 How the facilitator chooses to interact with the Chalk Talk influences its outcome. The facilitator can stand back and let it unfold or expand thinking by:

- circling other interesting ideas, thereby inviting comments to broaden
- writing questions about a participant comment adding his/her own reflections or ideas

Source: Coalition of Essential Schools. Reprinted with permission.

A Personalized Teaching Toolkit

Facilitators remind participants that this is just the beginning of the conversation. The dialogue will continue in departments, on teams, and among critical friends. The dialogue will include administrators, parents, students, staff developers, and consultants. Teachers will no longer be working in isolation, behind closed doors, but in open classrooms where they are free to take risks, to experiment, to share their results, to revise and try again.

To help them in their efforts, *Teaching To Each Student*'s companion volume *A Personalized Teaching Toolkit* provides further resources—some useful for personal research, others for text-based seminars, others to organize conversations around instructional plans or student work. Participants' next steps should be determined on their assessments of what activities are possible and dynamic at their sites. The facilitator might discuss with the full group the kinds of things they imagine happening next at their sites and refer them to the appropriate resources.

A Personalized Teaching Toolkit will be available in 2004. Request copies by contacting The Education Alliance at Brown University, (800) 521-9550, ext. 235, or by emailing Dale Worsley, cdw1@columbia.edu.

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It is important for facilitators to keep the overarching purpose in mind: to build a vocabulary (one that is enriched by experience) for ongoing conversations about curriculum, instruction, and assessment.

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