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JACQUELINE GRENNON BROOKS is an associate professor in the Department of Curriculum and Teaching at Hofstra University, Hempstead, N.Y., where ANDREA S. LIBRESCO and IRENE PLONCZAK are assistant professors. They wish to thank Martin Brooks for his valuable comments and contributions to this article.
The National Research Council (NRC), after an enormous effort to explore the science of learning, states: “One of the hallmarks of the new science of learning is its emphasis on learning with understanding.” The teacher behaviors and the school structures discussed in the NRC’s report are aligned with our research on constructivist teaching, which involves the quest to better understand how students “come to know,” how they form concepts and make meaning around complex phenomena, and how teachers can offer instruction that is responsive to the ever-changing cognitive capacities of the students.

What do students need in their classrooms for meaningful learning to occur? Students need spaces of liberty. We use this term to refer to intellectual opportunities — both those created by curricular and instructional choices that support students’ intellectual liberty and those created by the conditions of the education system that support such liberty. These spaces of liberty for students can occur only when their teachers have their own spaces of liberty.

SPACES OF LIBERTY: MAKING CHOICES

Is curriculum delivered to students or is it negotiated with them? Our premise is that teachers make many curricular and instructional choices when they are alert to the concepts embedded within student questions. We call this process negotiating the curriculum within spaces of liberty, and we argue that this negotiation affords a more equitable education to all students. Student questions are fundamental to learning, and curriculum choice is fundamental to teaching. When learners see their role in the process, they work with teachers to unfold the curriculum in synchrony with their own quests for understanding. This is good learning — and good teaching.

Unfortunately, when students and teachers conceive of schooling only as the systematic delivery of prescribed ideas and information, they can’t free themselves to recognize learning as a process of negotiation in which students’ questions are linked to the concepts and standards of the curriculum. We argue that, even within a system structured around standardized testing, students can exercise their power to raise questions, and teachers can exercise their power to make choices about how to explore those questions.

Questioning and choice are possible, even within today’s reckless accountability system. Recognizing their own spaces of liberty empowers students to take responsibility for their learning and teachers to take responsibility for their practice. Students can reveal what they know and don’t know, and teachers can make accountable curricular choices in response. In that spirit, we present the following set of educational choices that profoundly affect student learning.

THE JOURNEY OR THE RACE?

The original definition of a “curriculum” was a track or course used for racing in ancient Rome. Today, the word still conjures a race. We want all children to hurry along a single path and get to the end as soon as possible. But, as we hurry along the curriculum, we miss the adventure of the trip. We miss people with different ideas who change and enlarge our perspective. We miss the opportunity to learn about content and process from our errors. We miss scholarship. We miss the time to think. Learning is not a race from point to point. It is a journey that changes pace, changes course, and, ultimately, changes us.

We associate Leonardo da Vinci with curiosity, a quest for continuous learning. Indeed, if we are to learn continuously, we must wonder, because it is by asking ourselves questions that we initiate and sustain our quest for answers. A teacher’s job is to keep children wondering. But today, we often find ourselves wondering what went wrong. Our schools, for the most part, don’t foster much wondering. We must do better.

Let’s consider two high school math classes, both following the ninth-grade syllabus, both using the same textbook, and both studying imaginary numbers. In one class, the students sleep, with sweatshirt hoods pulled over heads cradled in the crook of their arms. Meanwhile, the teacher defines and explains procedures for calculating with imaginary numbers. In another classroom, some students are trying to figure out how to calculate the square roots of different negative numbers, while several others are writing questions about the calculations on the “wonderment” board, the space their class has designated for keeping track of questions that have not yet been answered. In the first classroom, the curriculum is a race, with some students not showing up at the starting line; in the second, it is a journey, with everyone somewhere along the path.

In the first classroom, both the teacher and the students know that the curriculum is the textbook, so the students can sleep or not. If and when the students are motivated to get information about imaginary numbers, they can simply read the textbook. The teacher knows that during that class period on that day, with or without student questions, pages 34-38 will be “covered.”
In the second classroom, the teacher presents the students with problems to work on but does not know whether their quest for solutions will lead them to discover the need for a system of imaginary numbers. Some of the preparation for this second class requires reviewing work from the day before, and some has been a lifetime in making. And, for some of what happens in class that day, there is no preparation. The teacher makes real-time, ongoing assessments of student learning. Both teacher and students need to be alert and engaged during the entire journey.

A teacher who sees learning as a journey fosters original research. For example, while observing the phenomenon of refraction, some students wonder if the “bending” effect of the pencil in the glass of water is a characteristic of light or of water. The teacher asks if they think there will be a difference if the liquid is not water. One student suggests putting the pencil in oil. The students jointly investigate and initially rule out water as responsible for the bending effect. However, when one student notices a different degree of bending in the oil than in the water, the students realize that the question is probably more complicated than they originally thought. So some of the students return to their textbooks to seek information, while others google “the bending pencil,” and still others gather up different equipment and media for more tests of their own. This original research activity was generated by the students and supported by the teacher, and it still fell within the topic and concepts of the prescribed syllabus. This is what we mean by a space of liberty. This is where learning occurs.

Teachers who view learning as a journey pay attention not only to the cultural norms that shape the setting in which the classroom exists, but also to the cultural norms that the students bring with them into the classroom. The teacher is assessing all the time. For example, a group of students in a fourth-grade class are trying to predict whether different fruits will float or not. A Colombian boy in this New York classroom makes a gesture. He taps on the fruit as he would normally do with an arepa, which is a type of bread prepared in most Colombian households. This tapping is done to verify that the arepa is baked thoroughly and so has air inside it. It will sound “ready to eat.” The teacher in this class, alert to the journey but not understanding the meaning of tapping on the fruit, asks the child why he does this and finds out much about this student’s thinking: he knows something about density, even if he can-
not use the word properly; he understands something about how the parts of systems work together, even if he doesn’t use the word “system”; and he can coordinate multiple variables at the same time.

Another teacher studies decimals with her class and notices that three of the children, recent immigrants from Latin America, continually put a point in whole numbers once they reach four figures (e.g., 1,000 rather than 1,000) and a comma between a whole number and a decimal fraction (e.g., $25,65 rather than $25.65). Seeing a consistent pattern and noticing that all three children make the same “mistake,” the teacher calls the children together, orally gives them a problem to solve, and asks them to explain their computations. It is then that she learns that the children are not making a mistake at all. They are consistently and accurately using the notation of their homelands. Decimals are represented by a comma in most of the countries of the Western world, except for the Anglophone countries. In other words, the whole and the fraction are separated by a comma instead of a point. This difference can be a source of confusion for students who are recent immigrants unless the teacher recognizes and honors the cultural differences in how we represent numbers.

Teachers who see opportunities for choice and seize them not only seek understanding of the questions and curiosities of their students, they reveal their own questions and make their own curiosity a part of classroom learning.

AUTHENTIC ENDEAVORS OR REPEATED REHEARSALS?

Authentic classroom activities, useful and applicable to our everyday life experiences, become real endeavors for students, not repeated rehearsals for what life may possibly bring in the future. Classroom activities inspired by real-life problems identified by the students, for which a variety of hypotheses or potentially viable solutions exist, are explored and analyzed enthusiastically.

A third-grade lesson on family interdependence provides an example. In a curriculum unit on communities around the world, students begin by considering a question from the curriculum guide: How do different members of a Yoruba family in Lagos, Nigeria, typically help one another to get the things they need, as compared to typical U.S. families? The teacher in this classroom anticipates that the issue of stereotyping will arise early in the class discussion, given that the men in Yoruba families are responsible for sewing and Yoruba women are responsible for farming. Although not required in the social studies syllabus, the teacher brings into the classroom Anthony Browne’s *Piggybook*, a picture book in which an overworked and underappreciated mother leaves her swinish husband and two sons to fend for themselves — and they literally turn into pigs. Ultimately, she returns, the family divides the chores democratically, and peace is restored. The teacher engages the students in reflecting on family roles, stereotyping, and family interdependence.

In this class, the prescribed curriculum about family interdependence gives rise to student-generated questions about the lives of their own families and the stereotypes that they, themselves, hold. Students interview their mothers about the tasks they perform for the family, sometimes following them around and keeping track of the time their mothers spend doing household chores and caring for children. They use these data to prepare for a class discussion on the fairness and possible stereotypical nature of the distribution of tasks. The mothers of the children in this class are quite vocal about the interviewing and timekeeping assignment, and many have used their children’s collected data to negotiate with other family members for a more equitable distribution of responsibilities.

In this example, a picture book brought in to expand the lesson prompts the children’s inquiry about their own families, a direction not originally expected by the teacher. The teacher determines that the students are cognitively and academically ready for a more in-depth lesson on the concepts of interdependence and stereotyping, so she uses their interest as the spark to
foster deep understanding of these essential concepts.

This teacher made a significant curriculum choice — she created a space of liberty. She took a risk inherent in all authentic inquiry and supported student learning that extends beyond the scope of the assignment while still adhering to grade-level topics and concepts. The curriculum, coupled with the discourse generated from the added book, transformed a relatively simple exercise into a quest for understanding that revealed much about the complexity of real life. This is an example of the “what” — the content — being set by the state or district, but the “how” — the method — being determined by the individual teacher, who adapted the content to the specific context of her classroom in that particular year. And the “how” becomes the “what.” How we learn becomes what we learn.

CONSTRUCTIVIST OR TEST-BASED CURRICULUM?

While there are major differences between these two types of curricula, an important commonality exists: they both can prepare students for success on tests. However, student success on tests is a by-product of constructivist-based teaching, not its primary goal. Its primary goal is to afford teachers and students the spaces of liberty that allow them to construct unifying concepts in various disciplines. This opportunity does not typically exist in test-based curricula.

Let’s look at a constructivist-based curriculum in an urban middle school classroom in which the ninth-grade students express the need to have access to sports facilities. Such facilities are typically scarce in the high-poverty, densely populated neighborhoods of their city. The students suggest renovating the school’s multipurpose room so that it can be used as a gym.

As the project begins, the students measure the current spaces and design new spaces in the multipurpose room, thereby meeting the curriculum standards related to measurement and three-dimensional design. They write letters to potential sponsors and donors of gym equipment, thereby addressing the language arts standards related to formal letter writing. The students study the impact of exercise on the human body, meeting the living environment science standards related to the functions of the human body. They also study the science behind pulleys, weights, and other gym equipment, thus satisfying the physical science standards with regard to simple machines. Finally, they discuss health and recreation in different societies and so cover social studies standards related to differences in values of different cultures.

In this example, as the students propose ideas, the teacher connects those ideas to the learning standards and uses them to highlight and reinforce foundational concepts and skills. With knowledge of what students need to understand about the topic of pulley systems, the teacher judges that the students’ use of the colloquial “easier to pull” is the necessary precursor to understanding the scientific term “mechanical advantage.” The teacher introduces this new vocabulary, along with the associated concept of proportionality and the related computational skills.

This teacher addresses the ninth-grade curriculum standards that are embedded within a project generated, designed, and executed by students. When standards are really meaningful, they emerge from such real endeavors. The interdisciplinary language and math challenges situated within this social science and science project provide an intellectually rich experience through which students and teachers learn, reinforce, and apply skills and concepts. In doing so, they are also preparing rigorously for tests of any kind.

SPACES OF LIBERTY: SETTING CONDITIONS

If a negotiated curriculum based on constructivist learning theory, sequenced through children’s questions, and guided by teacher judgment is preferable to the prescribed implementation of a curriculum designed and vetted by specialists, then why are we not seeing more examples of such a curriculum? Is it that teachers simply cannot create such curricula? We think not. Is it that students are incapable of taking responsibility for their learning? Again, we think not. Is it that teachers and students perceive sanctions against such an exercise of choice? Perhaps. Is it that teachers and students do not see themselves as co-creators of curriculum, co-designers of instruction, and thinkers within spaces of liberty? Probably, and sadly, so.

States and districts have made curriculum choices aligned with state and federal testing programs, and they have made it clear to students and teachers, often explicitly, that the main goal is to score well on standardized tests. Doing anything that interferes with that goal places the whole school at risk. In an era when comparisons between neighboring districts and states are widely published, test scores carry significant political capital. Given this emphasis on test scores, it is reasonable to ask whether constructivist-based curriculum and
instruction produce students who can score well on the standardized tests that currently exist. It turns out that they can and do.

After a rigorous study of 669 classrooms, the Washington School Research Center reports that a strong relationship exists between constructivist teaching practices and student achievement on the Washington Assessment of Student Learning (WASL). On a promising note, regression analyses show that constructivist teaching predicts student achievement even beyond the effects of family income. On a disturbing note, although constructivist teaching was evident in just 17% of all classrooms, there exists a negative correlation between constructivist teaching and school-level family income.

Linda Darling-Hammond has used the term “powerful and equitable teaching and learning” when describing constructivist settings and reports that, while such settings are rare, particularly in urban schools, they are noteworthy in the student achievement that they produce. School districts in San Francisco, New York, and Connecticut offer examples. Mike Schmoker describes diverse schools in diverse settings using constructivist teaching practices that result in student success on exams. In a comparative study of college environmental science courses using identical materials, learning resources, student questionnaires, and examinations, Thomas Lord reports that “students in constructivist classes performed significantly better on exams, rated the course higher, and participated more in campus and regional environmental support efforts than students in traditional classes.”

The understandings that students build within constructivist classrooms allow them to score well on tests and also take home memorable lessons, rather than leave unmemorable bits of information at the classroom door.

When NCLB makes learning into a race, turns the curriculum into repeated rehearsals for a test, and deforms instruction into preparation for the pursuit of high test scores, how can students and teachers conceive of learning as a journey?

consider the following conditions necessary.

A broad background. First, teachers need a strong liberal arts background or special content-area education that affords them a big-picture view of essential concepts. When their thinking is rooted in essential concepts and the structure of the discipline, teachers can be alert to how student questions fit into the important concepts of the curriculum, and they can help students connect ideas and search for conceptual patterns within and across disciplines. Too often, however, teachers leave college with a background made up of fragment-
risk behavior. They want the classroom curriculum to be a series of rehearsals for the tests. They frequently distribute test-preparation materials that mimic the tests, and they even create pacing charts that schedule teachers’ test-preparation curriculum for specific hours and days. These scenarios run counter to even the most rudimentary understanding of developmental learning and the recommendations of the national teaching associations.

Just as teachers make choices within spaces of liberty in the curriculum, liberal arts and content-specialty professors, education professors, staff developers, and school leaders need to create conditions that allow teachers to perceive the power of choice and to exercise curricular and instructional autonomy within their spaces of liberty.

And, of course, students need support in exercising the courage necessary for all new learning. Courageous teachers help students find their spaces of liberty.

**SPACES OF LIBERTY IN AN IMPERFECT WORLD**

Conditions that permit teachers to be autonomous are rare today. This is a big problem. While we are working to create conditions for enhanced student learning through enhanced teacher development, we must also look at how best to serve the teachers who are in the schools now, most of whom have not had access to such supportive conditions. Perhaps their own education did not expose them fully to big-picture views. Perhaps their school leaders do not fully support teacher autonomy. Do we simply hand ill-prepared or unsupported teachers a prepackaged curriculum with pacing charts? We think not, though when the conditions for their full success do not yet exist, it might seem hard to justify doing otherwise. But consider the following situation.

A novice teacher exercising choice and autonomy within the curriculum, even when making the inevitable “rookie” mistakes, creates a more dynamic learning environment than he or she would by implementing a static, rehearsed, and paced lesson sequence. A dynamic curriculum, for all its imperfections, is better than the lifelessness of a static one. A dynamic curriculum brings openness, intellectual exploration, a forum for diverse perspectives, and the opportunity for creative expression.

It is preferable for a teacher to make mistakes in the role of co-investigator than to be shoehorned into the role of mere implementer. Teachers and students who wander down wrong pathways may find that their original information, although correct, was incomplete, or they may choose to abandon their current pathway and redefine their original concepts. Teachers on a journey, even at the beginning of that journey, become role models who think deeply, address inherently complex academic problems, and make errors on the road to better performance.

We need to acknowledge that teacher judgment and decision making are important, even when the teacher is a novice at curriculum decision making. Indeed, in the age of standards and mandates, teacher decision making is crucial to the capacity to fine-tune the classroom to the needs of the students. Teachers are “curricular-instructional gatekeepers,” and federal, state, and local policies need to recognize them as such.

**A NEW ‘SOFT BIGOTRY’**

With his testing mandates, President Bush is not diminishing the “soft bigotry of low expectations” for students; he is creating a new soft bigotry of low expectations for teachers. This is a problem for all schools — rich and poor; urban, suburban, and rural; high-performing and low-performing. In some wealthy communities, parents and students, recognizing these dangers, have protested that the required assessments are eating up weeks of class time. This loss of time to testing has narrowed the spaces of liberty and led to the virtual disappearance of meaningful, multiweek, interdisciplinary studies.

If wealthy districts are finding their spaces of liberty shrinking, then we can be sure that in the poorer districts, those spaces of liberty are becoming virtually invisible. Teachers in low-income districts are more likely to be deliverers and implementers of packaged curriculum. Thus students in such districts, often children of color, become consumers of a steady diet of scripted lessons. In addition, a “support gap” exists in low-income schools, where new teachers are less likely than their counterparts in high-income schools to receive mentoring and support from experienced colleagues.

So the spaces of liberty are shrinking in all districts, but more so in low-income districts and for children of color in particular. Some may argue that rising test scores are more important than these intellectual spaces. Indeed, one premise of NCLB is that the constant pressure of a rigid testing program will somehow generate more learning in the classroom and that this increased learning will show up in higher test scores. But this hasn’t happened. While some state scores have risen in the last few years, students’ scores on the National Assessment...
of Educational Progress (NAEP) have not followed suit. In fact, the gap between the two testing systems has widened over the last several years, calling into question the validity of the state tests. And the gaps between the average NAEP scores of white students and those of children of color have widened as well.

SPACES OF LIBERTY FOR LIFELONG LEARNING

There are some who believe that getting rid of the testing required by NCLB will solve our educational problems. We don’t. Throughout this article we have argued that, with or without NCLB, both students and teachers need spaces of liberty for meaningful learning.

NCLB doesn’t generate learning. Instruction generates learning. Student interest generates learning. Interesting questions generate learning. And learning is not linear, as most of today’s policies presume. Learning spirals; it starts and stops; it jumps and circles back. Learning is a complex phenomenon, and we need policies that honor that complexity. We need policies — and appropriate funding — that create conditions for learning.

Although John Dewey is not frequently quoted with respect to testing and measurement, we find that his contributions are strong in this area as well. Dewey described education as life, not as preparation for life. Students live much of their lives in school, and how well a school helps them live their lives is the measure of a school’s real yearly progress. We need to measure current learning in terms of the types of questions posed, the details of student artifacts created, the depth of the essays crafted, and the totality of the products that students construct.

This type of assessment of yearly progress requires thinking, autonomous teachers who can situate units of study in contextual problems, highlight the conceptual framework of the curriculum, and document student learning by analyzing students’ engagement with the curriculum. This expertise requires teachers with the facility and the power to make ongoing assessments of students and adjust their work accordingly. These are high expectations, indeed, but anything less would be a disservice to our nation’s students. For if, as President Bush suggests, we must fight the soft bigotry of low expectations for students, then we must do so by creating — and continually supporting — high expectations for their teachers.

Our world has many problems that require lifelong learning to solve. And lifelong learning requires spaces of liberty. Let’s create them. And then the cycle of low expectations can end.

5. The use of this term is inspired by Irene Plonczak’s personal experience as a middle school teacher in an urban school in Caracas, Venezuela, where the principal and teachers used the term in Spanish, espacios de libertad.