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HOW CAN YOUTH CULTURAL PRACTICES (AND POPULAR CULTURE) INFORM CLASSROOM PEDAGOGY?

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Educators have used youth cultural practices and popular culture to inform classroom pedagogy; more powerful would be to ***integrate habits of working*** *into the teaching and learning of mathematics. I will quickly define important concepts of 'culture' and 'everyday practice,' using contemporary social theory, before outlining my main new idea:* ***teachers and curriculum designers can be more responsive to the changes in contemporary culture and youths' outside-of-school lives by modifying the "ways of working" rather than focusing on mathematics content analysis or the preparation of exemplary curriculum materials.*** *I will provide several concrete classroom examples in illustrating how this can work.*

Les éducateurs ont employé les pratiques culturelles de la jeunesse et la culture populaire pour informer la pédagogie de salle de classe; plus puissant soyez ***d'intégrer des habitudes de travailler*** *dans l'enseignement et de l'étude des mathématiques. Je définirai rapidement des concepts importants de culture populaire et de pratique journalière, 'en utilisant la théorie sociale contemporaine, avant de décrire ma nouvelle idée principale:* ***les professeurs et les concepteurs de programme d'études peuvent être plus sensibles aux changements de la culture contemporaine et l'extérieur-de-école de la jeunesse par modifier les "manières de travailler" plutôt que de se concentrer sur l'analyse du contenu de mathématiques ou la préparation des matériaux exemplaires de la programme d'études****. Je fournirai plusieurs exemples concrets de salle de classe en illustrant comment ceci peut fonctionner.*

METHOD

Youth cultural practices can usefully inform and influence the ways we work and learn in the classroom. Understanding the ways that youth accomplish creative work in their everyday lives outside of school, we can organize classroom experiences so that youth can use the same ways of working in school mathematics. Ethnography is a form of qualitative research: the researcher works to understand lived practices, by 'looking, listening, collecting, questioning, and interpreting' (Sunstein and Chiseri-Strater 2000, 1). Ethnographers come to understand how the people they are studying make meaning in the world, realizing that they know little and the people who are part of the phenomena - the "natives"- know a lot (Gallas 1994). When we make this analogous to teaching, it is our job as teachers to figure out how our students are mathematicians, instead of assuming that they are not or that they need to be taught how to be: the students become the teachers about what they know and do.

A teacher influenced by ethnographic practices recognizes that the student is involved in a practice, a craft, a habit of mind and body that enables the student to do the work of the popular culture form. The teacher must work to understand the how and why of the youth's popular culture practice, because it is one way in which the student makes meaning in the world. Here's how you know when you are achieving this: You have a student and she's a poet. She is not just reading Vaclav Havel and Tupac Shakur; she's reading all over the place; watching and thinking in so many seemingly disparate ways that contribute to and make it possible for her to make meaning in this popular culture form. Or, you've got a student, and she is a mathematician. She is not just doing math homework or number crunching all day; she's thinking in creative, disparate and diverse ways that inform what she does as a mathematician.

Understanding youth cultural practices requires that we look at youth as inherently creative problem solvers, posers, solution-finders, etc. The teacher enters her/his room assuming that her/his students are already some form of mathematician, scientist, poet, architect, etc. Karen Gallas (1994), a grade 1-2 teacher, "suspend[s] [her] disbelief as a teacher and [leaves her] judgment in abeyance in service of a child's development" (96). She references her experience with John (age 7) who, in science class, says that rap is science because 'rap is so exciting when you, when you never went to a rap concert, it's so exciting, like micro- and they're electric too…' Gallas writes, 'Rather than my 'teaching' John what science was, we struggled together to understand his changing picture of science' (96). Edward Said (1993) would describe Gallas as a 'professional amateur', someone who doesn't limit themselves through their special knowledge of a discipline. Experts, Said contrasts, only feel comfortable approaching problems, issues, and ideas through their rarified knowledge. When someone presents an expert with a problem that grows out of their craft of popular culture, an expert often feels that s/he can't even discuss it because it is beyond the purview of her/his expertise. What they know has nothing to do with the problem. Teachers, too, often think of themselves or approach their subject as experts. A math teacher may see her/his job as teaching how to factor polynomials, and therefore cannot afford the time to link mathematics with national elections, or even be able to entertain a provocative tangent related to everyday life. Teachers as professional amateurs, on the other hand, voraciously pounce on these opportunities to think about things differently and learn from others. They relish the chance to get involved in conversations where they can take what they know and grow new understandings. They see their students as allies in a common project, expecting to learn from their students not just how to be a better teacher or how to understand fractions in a new way but also about the world in general. Students' experiences in popular cultural practices are resources for the 'professional-amateur' teacher's own understandings of academic subject knowledge in particular and the world more broadly.

Youth involved in popular cultural practices are professional amateurs as well. Consider Karl, a *Zine* writer, whose cultural practice is to write handmade publications that he distributes to friends and through independent bookstores and CD stores. What makes Karl a professional amateur is the range and variety of things that he does that somehow influence how he writes his *Zines*. For example, he reads widely and disparately (including *The Economist*, comic books, and *On the Road* by Jack Kerouac); he sculpts, makes films, attends rallies, views films, writes music, listens to music, plays pool with friends, and volunteers at a soup kitchen. He doesn't pursue these experiences because of his interest in *Zine* writing; nevertheless, they inform and influence what and how he decides to write. Like Gallas, teachers who understand popular culture as a craft provide a space where students can see for themselves that the skills and concepts that they are developing within their popular culture practices are assets in the classroom. All of Karl's varied experiences can be used in the classroom to do the work of the class. Thus we are avoiding a deficit model of teaching: the student is not an empty vessel. Students as professional amateurs see their craft as informing and influencing the way they engage in the work of the class. They see academic disciplines and their popular cultural practices as equal resources for their work. Karl might do similar work in math class: reading widely from different sources including other students' summaries of what they have discoverer or invented around non-continuous functions; organizing meetings to plan a class newsletter, forming an editorial board; recording images from films, sculpture, and comic books that can be used in his mathematics investigation; organizing a weblog of challenge problems for students around the world. The point is not to use the ways of working literally, but as a metaphor for the kinds of thinking and doing that happen in the classroom.

AVOIDING THE FALSE PROBLEM OF MATHEMATICS EDUCATION

As teachers, we are always trying to find something to do with our students. The problem is, our search for the best activities is never over; we're always hunting for more ideas. Jean Lave (1997) captures this perpetual crisis of teaching, comparing a curriculum that supports the cultural practices of youth with a curriculum that delineates what practice must be:

The problem is that any curriculum intended to be a specification *of* practice, rather than an arrangement of opportunities *for* practice (for fashioning and resolving ownable dilemmas) is bound to result in the teaching of a misanalysis of practice … and the learning of still another. At best it can only induce a new and exotic kind of practice … In the settings for which it is intended (in everyday transactions), it will appear out of order and will not in fact reproduce "good" practice. (Lave 1997, 32)

My approach to mathematics curriculum is more sustainable than the kind of curriculum that is built from daily lessons and one-off activities. It is *a way of being in the classroom*, not a collection of methods of teaching. Implementing this sort of curriculum gives teachers a 'solution' to the problem of constantly trying to find one day, one month or one hour of something to do in the classroom. Lemke (1997) reminds us that 'practices are not just performances, not just behaviors, not just material processes or operations, but meaningful actions, actions that have relations of meaning to one another in terms of some cultural system' (43). Thus, building a 'common culture' of 'professional amateurs' in our classrooms enables our students to 'learn not just what and how to perform, but also what the performance means' (Lemke 43). We build with our students a 'community of classroom practice' through a conception of popular culture as craft: One must know the meaning in order to appropriately deploy the practice, to know when and in what context to perform.

Maxine Greene (1986) once wrote:

To engage with our students as persons is to affirm our own incompleteness, our consciousness of spaces still to be explored, desires still to be tapped, possibilities still to be opened and pursued…We have to find out how to open such spheres, such spaces, where a better state of things can be imagined…I would like to think that this can happen in classrooms, in corridors, in schoolyards, in the streets around. (p. 29)

Modeling our pedagogy on popular culture 'craft', we begin to affirm our own incompleteness as well as our consciousness of spaces still to be explored - incomplete in that we do not know everything about our students; realms of popular cultural practices are still to be explored with our students. To support the crafts of youth culture in our classroom is to open and pursue new possibilities. Perhaps a better state of things can be imagined when we move away from the hierarchy of high culture vs. low culture to a more common culture, where students as professional amateurs seize upon both academic disciplines and popular culture practices as resources for their work. New things might happen in classrooms, corridors, schoolyards, and the streets if the culture of the streets informs the way we work in classrooms. Youth cultural practices enacted as ways of being in the classroom make each student "present" as who they really are, not just in the role of a student but as someone who knows 'what they want to do today'.

CONCLUSIONS/PROJECTIONS

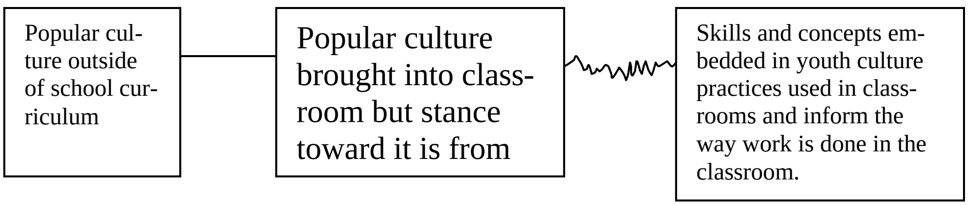
I disagree that 'subjects like music, computing and even some aspects of humanities are easier to discuss with schoolmates, and thus become preferred subjects'; instead, let's have students discuss mathematics with classmates in the same ways that they talk about music, computing and humanities. I disagree that 'mathematics … needs a strong, long-term commitment from the individual (based on deep mental concentration and cumulative, systematic appropriation of knowledge), within an appropriate environment (...silence).' I argue instead that the commitment will grow through personal connections to a self-designed investigation or experiment. Such mathematics fosters social connection rather than 'social isolation', and routes to consumption rather than distraction.

Can mathematics be taught in such a way as to become a subject that can be shared with schoolmates, a 'social medium'? Yes: Learning from youth cultural practices and taking a stance as ethnographer of everyday life, teachers make the ways of working in the classroom more closely approximate the ways of working that youth exhibit when they are productive, creative scholars and craftspeople outside of school. Schooling can be a vibrant context for youth to demonstrate the *funds of knowledge* that they bring with them to school, rather than a place of disconnect and the delay of future gratification. **Can the cultural values inherent in some aspects of mathematics be linked to other more popular subjects?** Yes: However, this occurs most effectively *not* through looking for clever connections to other subjects, *nor* by using other subjects as the motivating 'hook' that 'tricks kids into learning math', but instead by allowing those modes of thinking and working that students find personally meaningful to inform the ways that they work within school mathematics. **How should we change our content and teaching methods in order to cope with this issue?** My presentation is an explicit response to this question, based on my own ways of organizing classroom experiences, informed by my professional development work with teachers over the past 10 years. Observing and interviewing youth, we notice that they accomplish creative work by finding their own ways to meet criteria for the work that is valued; making their own decisions about how to use their time; and by multi-tasking. Most importantly, they take what they have learned and find on their own some way to put their work back out into the world, so that their connections with people outside of their immediate (school) work have an impact either on these other people or on themselves.

Some basic elements of the pedagogy I recommend: 1) Start a unit with a common exploration of the global issues of main theme; 2) Provide time for students to explore their own interests related to the theme; 3) Organize class time so that students can help each other identify personal or small group investigations; 4) Introduce mini-lessons on skills and concepts as related to the investigations that students have designed themselves; 5) Provide a deadline for putting one’s work back out into the world; 6) Organize an archaeology of the work accomplished that facilitates students’ awareness of the skills and concepts they have learned through their work, and of their ability to apply what they have been learning in new contexts.

What could be the role of new technologies? Professional amateurs - students who work as mathematicians using the skills and concepts that they bring with them from youth cultural practices into the classroom - examine this very set of questions themselves as part of their work. In the process, they come to appreciate the ways that scientific, aesthetic, and other types of inquiry can inform their work in important ways. **Can the creative side of mathematical activity be incorporated into classroom tasks?** Using popular culture in school is not a new idea, and we can learn from other teachers’ work. Here are some common ways that popular culture is used in the classroom: as entertainment and motivating force; as a connection to the ‘real world’; as a unit of study; as social critique. While I have had success with each approach, I have come to realize that they don’t take advantage of what popular cultural practices have to offer: the ways in which youth engage in the practices - how they do what they do.

Missing is Aristotle’s idea of *tekhne*: ‘the art in mundane skill and, more significantly, in day-to-day life...an intrinsic aesthetic or crafting that underlies the practices of everyday life... ‘a reasoned habit of mind in making something’’ (Cintron, 1997, xii) To explain this, I have developed a continuum of popular culture curriculum:



On one end of this continuum the popular culture artifact or practice is outside the State Standards and school curriculum frameworks. To the right of this approach, students take on the roles of someone in popular culture. Students in English might publish their own *Zines*. Students may be filmmakers in history and graffiti artists in math. While there’s a fine line that may be hard to see at first, I place myself to the right of this stance. I concern myself with the artificiality of playing a role, a subtle yet significant issue: Normally students play the role of ‘student’ in a classroom; if we ask them to play the role of graffiti artist, fashion critic, or film director, how is the experience of learning all that different from the same old classroom that doesn’t concern itself with popular culture (Appelbaum 2000)? In the classrooms on the left or middle of the continuum, the teacher has chosen one popular culture experience, artifact, or set of practices; s/he still must extrinsically motivate students. In my conception (to the right) I build instead on the skills and practices that students use in their engagement with and participation in popular culture, transporting these habits of mind and body into the classroom work at hand. I *design an infrastructure* for how we will work together in the classroom, *rather than an overt structure*, to support and capitalize on the wealth of skills and concepts that youth bring with them into the learning environment from all of the cultural work they are doing on the "outside."

MATHEMATICS CURRICULUM FOR MILLENIAL STUDENTS

The current generation of *millennial children*, especially in the US, are shaped by cultural messages, including 'be smart – you are special' (children's TV, special stores for youth products, special magazines and other media, recreational programs); 'leave no one behind' (be inclusive of other ethnicities, races, religions and sexual orientations); 'connect 24/7' (it is good to be interdependent on/with family, friends, teachers); 'achieve now' (go to the right school, university, etc.); and 'serve your community' (think of the greater good). Mathematics experiences should be designed so that they can enact the values of these messages; they feel special and unique, sheltered (others often take the risks for them), confident (they have been told they are great since birth), team-oriented (from group pedagogies in school to participation in team sports to play-dates), achievement-focused (need to accomplish something they can point to), pressured (want the experience to contribute to recognition), and conventional (unlike baby-boomers who criticized adults, they share many values with the adults in their lives).

The five-part structure (see chart next page) centers the above feelings by leading students through investigations of their own design, identifying findings and results by members of the community of mathematicians, relying on the class as a support team that helps individuals think through their ideas and/or leads to small group collaborations, and facilitates students' making an impact on the larger community based on what they have accomplished; the end of the experience enables them to recognize what they have learned and achieved, and to see that they have met goals that adults have set for them. The teacher to introduces critical skill and concept goals and ways of working as a mathematician (e.g., Polya, Mason et al., Brown and Walter) through mini-lessons or 'clinics', understood by the students as helping them to accomplish their own investigations.

The special-ness of each student is established in tandem with a 'team' through the *opening* and *developing the investigation*; initial experiences also satisfy conventionality (the topic is chosen by adults) and shelter (impossible to fail at identifying what one wants to accomplish, what one already knows about a topic). We introduce Polya, Mason, and Brown/Walter first by identifying how students already use these strategies on their own, and then as tools for helping them get unstuck when they do not know what to do next. Classroom conversations elicit ideas from other students as part of the supportive team, and highlight everyone as doing something special contributing to others' learning. Students use Polya's 'looking back' to repeatedly identify what they have achieved so far. Treating students as mathematicians refining their techniques to further achieve, we are taking advantage of students' confidence in themselves while also helping them meet pressures for success from family and society. At the same time, taking the accent off mastering prescribed mathematics material, and shifting the emphasis to using such material to see what they might be able to do with it, we make risk-taking easier, accommodating the need for shelter. Putting the work out into the world helps students use what has been done so far to connect with others outside of the class, working for the good of the larger community. The archaeology phase helps students see that they have indeed achieved, and to apply skills and concepts learned to other contexts beyond the specific investigation carried out.

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<table>
<tr><th>Part 1</th><th>Part 2 through Part 4</th><th>Part 5</th></tr>
<tr>
<td>Opening
Creating the Issue

Finding the Question
Generating the Interest</td>
<td>Doing the Investigation
Three weeks devoted to active engagement in student designed investigation around curricular themes, issues, conflicts, problems</td>
<td>Archaeology
Making explicit the knowledge gained</td>
</tr>
<tr>
<td>Open-ended activities to elicit student-generated questions about issues or problems related to discipline concepts, curricular topic, or theme

Materials needed: Mathematicians' Notebooks, Criteria, books, Center materials, films, speakers, field trips, to help stimulate interest

Envisioned activities:
Quickies; Center work modeling Polya Phases, Specializing and Generalizing, and Problem Posing; Improv warm-ups; Discussions; lists of questions; experiments, background information

Culmination:
Each student identifies mathematically interesting and potentially significant ideas that they have been working with at a center (on posters, in discussions, in their notebooks, etc.); Students identify the center they will return to for their own investigation.</td>
<td>Three parts devoted to mathematical investigations. Class time devoted to discussing work done, strategizing next steps, organizing mini-lessons and workshops on ideas generated by students, and putting the work back out into the world.

Materials needed:
Mathematician's Notebooks; Criteria specifications; conference forms; peer feedback; teacher feedback; center materials; new tools and materials as needed for investigations; assessment vehicles.

Envisioned activities:
Interviews, experiments, debates, in-class writing and work time, peer-review of work in progress, reading discussions, mini-lessons and workshops developed by teacher, initiated by students, guest speakers, planning sessions, etc.
<table>
<tr><th>Developing the Investigation</th><th>Doing the Investigation</th><th>Putting the Work Back Out Into the World</th></tr>
<tr>
<td>Activities: Quickies, Center Work, Polya Phases, Problem-Posing; Improv; Reflecting on their work; Discussions

Assessment:
Student work sample analyses; Center observation notes; Targeted interviews

Culmination:
Peer strategy session</td>
<td>Can start this part sooner if students identify their investigation.

Activities: Quickies, Center Work, Polya Phases, Problem-Posing; Improv; Reflecting on their work; Discussions of student work on large posters; mini-lessons and workshops as needed

Assessment:
Student work sample analyses; Center observation notes; Targeted interviews

Culmination:
Students identify a mathematically significant idea coming out of their investigation.</td>
<td>Activities: Quickies; Improv; Writing about the idea; brainstorming in groups; getting ideas up on big sheets of paper; practice meeting with potential audiences; actually doing the work of putting the work back out into the world.

Questions guiding the critical activities:

What do you want to do with what you've learned? What should you do? Do something that impacts on you, or that impacts on other people.

Assessment:
Student work sample analyses; Center observation notes; Targeted interviews

Culmination: Taking the action of work back out into the world. Debriefing of the experience</td>
</tr>
</table></td>
<td>Time devoted in class to look back at the work done, to name what has been learned, and to extend it into new areas and directions.

Materials needed:
Mathematician's Notebooks; tests & other evaluation instruments; manipulatives; new problems

Activities: Quickies, Improv;
Core curriculum and Standards based conversations where investigations are linked to school, city and state expectations; challenges presented by teacher to show students they can utilize skills and concepts developed in their investigations; activities that encourage students to transport the skills and knowledge they learned to other areas.

Culmination:
Class addresses these questions:
What should we do next?
Starting a new project
Leave taking, goodbyes, and plans for a reunion.</td>
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