TVC Toolkit

A set of resources to accompany the book

Created by Nettrice R. Gaskins, PhD

SCAN ME

How to use this toolkit:

Who is the toolkit for?

The toolkit accompanies Techno-Vernacular Creativity & Innovation or TVC Book. It will be useful for a range of researchers, scholars, and practitioners in maker education and in STEAM learning settings.

The toolkit features six TVC habits of mind and practice which are useful the integration of tools in educational activities:

- Modulating
- Translating
- Encoding
- Patterning
- Repeating
- Combining

Each toolkit habit highlights and directs you to:

- useful tools
- resources
- videos, etc.

This toolkit has been designed as a learning resource which will be added to as the practice of culturally relevant making evolves. I welcome feedback from you and also suggestions on resources which could be included.

~ Nettrice R. Gaskins, PhD (and author / designer)

Modulating: Re-engineering Instruments

Photo: Courtesy of Onyx Ashanti

Onyx Ashanti's [BeatJazz system]() and other DIY projects can inspire students to break down an instrument into smaller parts, which can be independently created, modified, replaced, or exchanged between different systems.

For example:
https://www.instructables.com/Musical-Instruments-to-Make-at-Home

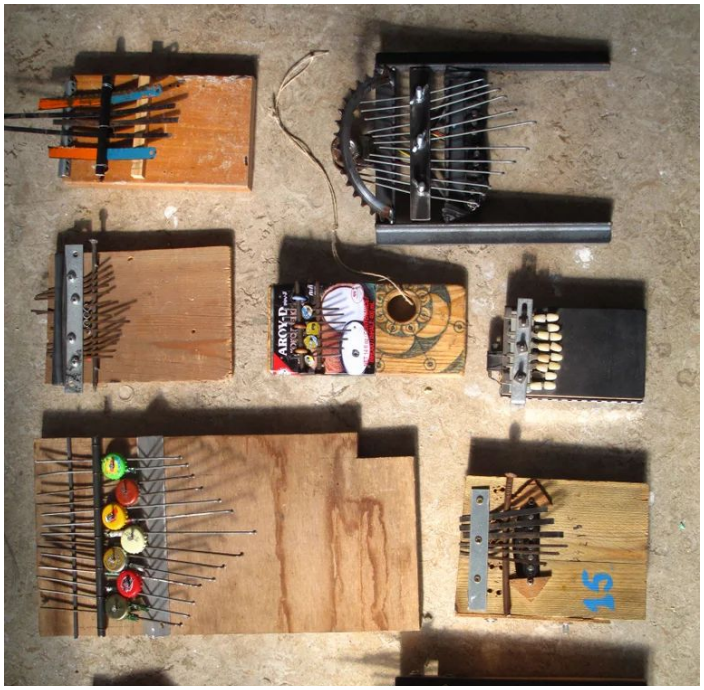
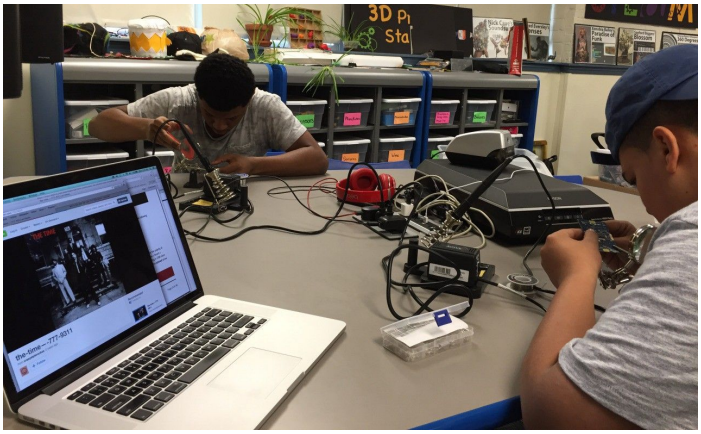


Photo: Courtesy of schaapkameel

Watch video about Onyx Ashanti:
https://www.youtube.com/watch?v=LNLP28onrks



Read about "purple constructionism":
https://nettricegaskins.medium.com/purple-constructionism-prince-in-the-makerspace-68e2dab79df7

Translating: Kinesthetics + Hoop Dancing

Photo: Courtesy of Heard Museum

Hoop dancing can be converted into kinetics (physics) to show relationships between motions and causes (e.g., forces and torques). Students can explore the kinesthetics (motion) in their own performances by making and using a photogate device, which uses a beam of light to measure the time an object is at a certain position.

For example (based on Nick Cave's Sound Suits): https://www.instructables.com/Wearable-Sound-Shields

Watch hoop dancing and hip hop: https://www.youtube.com/watch?v=t-4XlYv-gbs

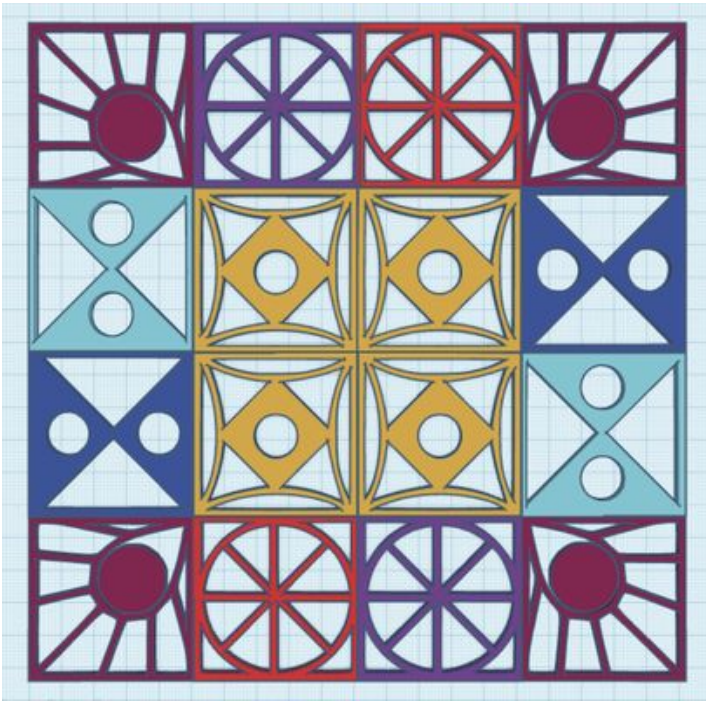
Watch photogate demo: https://www.youtube.com/watch?v=4lb4uWC-Yzg

Encoding: Geometric Transformations

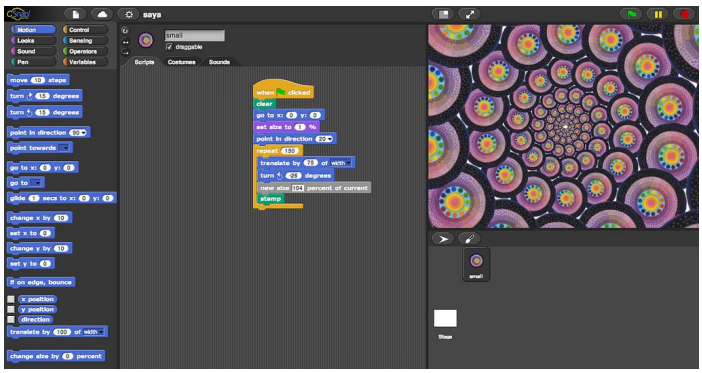
Photo: Courtesy of Sanford Biggers

Sanford Biggers' "Lotus" diagram and other cultural designs such as quilts can be used to demonstrate and practice the main types of geometric transformations: translation, rotation, reflection, and dilation.

For example:
https://www.instructables.com/3D-Quilt-Codes-the-Tinkercad-Cypher



Watch Sanford Biggers talk about "Lotus":
https://www.ted.com/talks/sanford_biggers_an_artist_s_unflinching_look_at_racial_violence



Use the Biggers CSDT based to remix traditional quilt designs:
https://csdt.org/culture/afrofuturism/index.html

Patterning: Weaving + Algebra + Computation

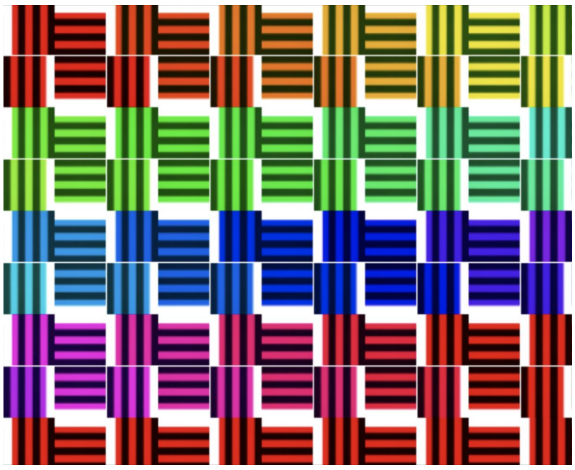
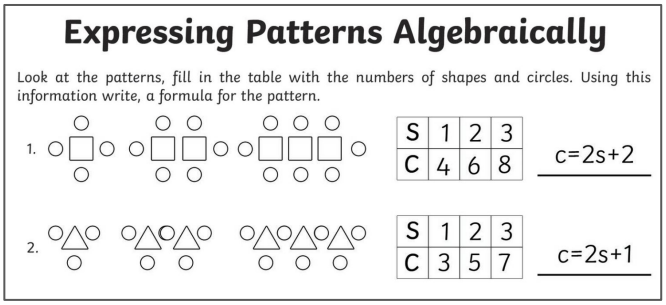


Photo: Courtesy of Nettrice Gaskins

Students can identify the patterns in Nontsikelo Mutiti's braided designs, number the motifs, and express the numbers algebraically. They can create patterns computationally: https://www.instructables.com/Computational-Remixing-and-3D-Modeling .



Expressing Patterns Algebraically

Look at the patterns, fill in the table with the numbers of shapes and circles. Using this information write, a formula for the pattern.

1.

S	1	2	3
C	4	6	8

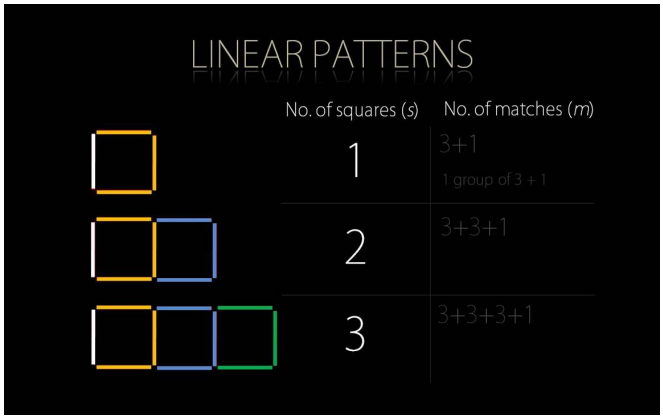
c=2s+2

2.

S	1	2	3
C	3	5	7

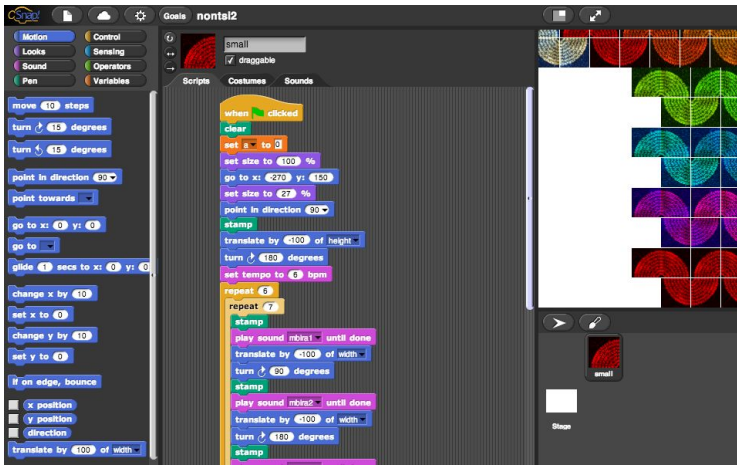
c=2s+1

Photo: Courtesy of Twinkl



https://www.youtube.com/watch?v=PhFhnUJIhw0

Read "Hair Braiding is Technology": https://www.recessart.org/nettrice-gaskins-critical-writing



Use the Nontsi CSDT: https://csdt.org/culture/afrofuturism/index.html

Repeating: Making + The ‘Get Down’

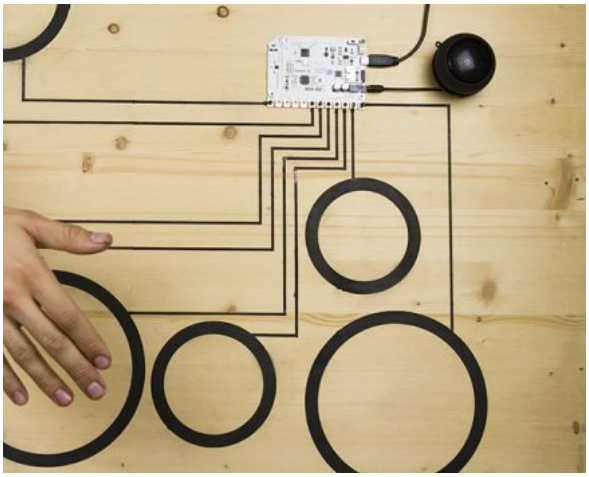


Photo: Courtesy of Bare Conductive

Students can practice looping the “get down” parts of songs and other DJing techniques by building their own control boxes or audio mixers and use a MIDI interface to play music using different sounds.

For example, students can use Bare Conductive’s Touchboard as a MIDI interface or follow the steps to create their own Mini UNTZtrument Midi Controller:

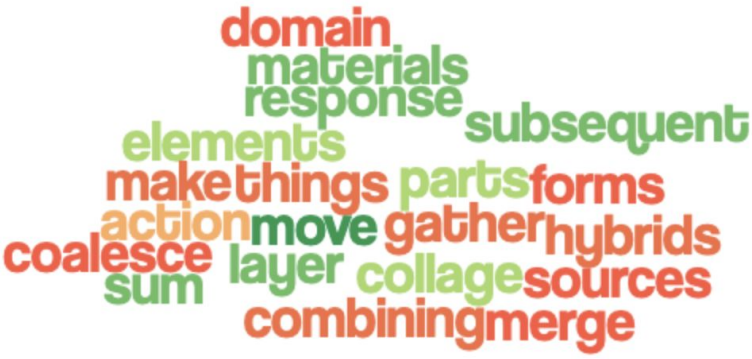
Photo: Courtesy of Adafruit

Watch DJ Flash talk about the “get down”: https://www.youtube.com/watch?v=fD7gsNbRv08

Read about making paintings into MIDI interfaces: https://www.bareconductive.com/blogs/community/art-and-decibels-interactive-painting-with-the-touch-board

Combining: Storytelling + Machines

Photo: Courtesy of Guillermo Bert



Guillermo Bert's "La Bestia" can help students communicate clearly and express themselves creatively using electronic devices such as Makey Makeys with objects to trigger stories. The Makey Makey replaces the computer keyboard and acts as a storytelling "interface."

For example try the "Weaving a Storytelling Interface" via Instructables: https://www.instructables.com/Weaving-a-Storytelling-Interface

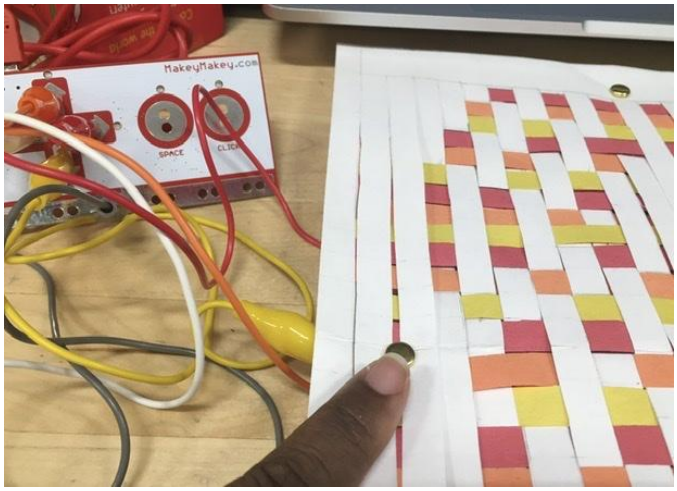


Photo: Courtesy of Makey Makey and Lesley STEAM

Watch video about Coded Stories: https://www.youtube.com/watch?v=vL-xkcRzJK8

Read about the Letters to José interactive book: https://www.bareconductive.com/blogs/community/letters-to-jose-an-interactive-book-to-tell-a-story-between-two-brothers

Getting Started: Culturally Relevant Design

Method	Activity
Design Cypher / Design Brief	Circle up and work collaboratively on a mini-project. For example, students can explore biomechanics and cyborgs.
Model/Demo	Watch video or visit website to learn about a cultural practitioner/artist. For example, participants can watch a video about Onyx Ashanti.
Design Mapping	Create design (concept) maps to link STEAM subjects to a BIG IDEA or theme. For example, students can design wearable technology based on a need or interest and link their ideas to specific concepts.
Thinkering / Tech Doodling	Build prototypes / iterate based on peer or community feedback.
Collaborative Peer Review	Review prototypes / projects; reflect on feedback and apply to future iterations.

More information: https://www.instructables.com/Culturally-Relevant-Design-Thinking

Other Resources

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Techno-Vernacular Creativity & Innovation (book):
https://mitpress.mit.edu/books/techno-vernacular-creativity-and-innovation

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Amelia Winger Bearskin's Wampum https://www.studioamelia.com/work/software

Gambiarra and TVC (paper) https://nime.pubpub.org/pub/aqm27581/release/1

Guillermo Bert's Encoded Textiles http://gbert.com/encoded-textile

Hip Hop Architecture Camp https://www.hiphoparchitecture.com

Hyphen-Labs' NeuroSpeculative AfroFeminism http://www.hyphen-labs.com/nsaf.html

LaJuné McMillian's Black Movement Project https://laja.me/Black-Movement-Project

LSTEAM Instructables (STAR Initiative) https://steam.lesley.edu/star-initiative

Mother Cyborg (Diana Nucera) https://www.unitedstatesartists.org/fellow/mother-cyborg

Neta Bomani's Dark Matter Objects https://netabomani.com/darkmatter

NGaskins' Instructables (LSTEAM) https://www.instructables.com/member/ngaskins

Quantum Black Futurism's Black Womxn Temporal
http://blackwomxntemporal.schloss-post.com

Salome Asega & Ayodamola (Ayo) Okunseinde's Iyapo Repository
http://www.iyaporepository.org/index.html

Stephanie Dinkins' Not the Only One https://www.stephaniedinkins.com/ntoo.html

Tahir Hemphill's Rap Almanac https://www.rapalmanac.com

Umba Daima's Black NFT Art https://www.blacknftart.co/about