



THINK IT DESIGN IT MAKE IT

**POWERED BY
DONOR GENEROSITY,
MIDDLE SCHOOL'S
DESIGN THINKING
APPROACH ACTS AS
CATALYST IN THE
STEM+ ERA**



TDM teacher Tim Phillips and students build trebuchets

YOU MIGHT WONDER HOW making a ladybug launcher represents the cutting edge of 21st century learning.

But in the capable hands of Janet Vande Berg, science teacher and one of three Think It! Design It! Make It! (TDM) instructors in the Middle School, the project's learning outcomes epitomize many of the goals Ravenscroft teachers have for their students: thinking creatively, applying classroom skills to real-world challenges, collaborating effectively with others and being persistent despite setbacks.

Known to aficionados as “design thinking,” this approach transcends traditional classroom subjects and creates opportunities to explore curricula in new ways. It’s also extremely popular, as evidenced by the 78 students enrolled in TDM this year. As Vande Berg put it, “It’s the hottest elective out there.”

TAILOR-MADE FOR TODAY'S EDUCATIONAL LANDSCAPE

Design thinking is, in many ways, tailor-made for today's educational landscape. With demand for skills in science, technology, engineering and math (STEM) growing, Ravenscroft is committed to helping students develop greater competency in these subjects. At the same time, research has suggested that lessons grounded in real-world problems make a lasting impact on learning.

Students in courses rooted in design thinking follow the inquiry process: consider the problem, brainstorm

solutions, test ideas and refine their design based on results. Because these electives are pass/fail, students are more willing to take risks on new ideas.

“This approach reinforces the learning cycle,” said Tim Phillips, another science teacher on the TDM team. “Students make more meaning because they have the opportunity to get feedback and revise.”

Phillips’ TDM students have designed, built and tested trebuchets, those catapults of old. As with Vande Berg’s ladybug launcher (which uses rubber ladybugs), teams are challenged to design a model that will throw a golf ball the greatest distance. Working toward a tangible outcome keeps them motivated and engaged.

But there’s more: because the emphasis is often on user needs, design thinking encourages empathy, which makes it a great fit with Lead From Here.

This year’s TDM II class, taught by science instructor Melissa Spainhour, has been tasked with addressing



TDM II teacher Melissa Spainhour and students discuss design options for Dining Hall signage

a campus-wide need: communicating guidelines for Ravenscroft's recycling and compost program. They're collaborating with the school's sustainability coordinators, science teachers Marcia Ostendorff and Patrick Knox, to design signs for the Dining Hall that will help everyone — even Ravens with still-developing literacy skills — identify what on their lunch tray can be recycled or composted.

"That wasn't our original project," Spainhour explained, "but there's a real need there. That's what design thinking is."

MADE POSSIBLE BY DONORS PAST AND PRESENT

The cultivation of design thinking in the Middle School is the result of forward-thinking professional development for teachers as well as their having access to the right equipment and materials — both of which have been made possible by the generosity of donors past and present.



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— TDM II TEACHER MELISSA SPAINHOUR ON THEIR SIGNAGE PROJECT

"As with any innovative practice, implementing this model has taken training and exposure to the ideas," said Denise Colpitts, head of the Middle School. "We started with some 'early adopters' of problem-based learning, going first to a local STEM conference."

Since then, Phillips, Vande Berg, Spainhour and colleagues have attended conferences and workshops in methodology, equipment use and classroom applications. (Vande Berg has also attained a master's degree in STEM Education.) With the 2015 gift of the MakerSpace by Ravenscroft grandparent and trustee Kevin Keim, interest in integrating design thinking into the curriculum has remained high.

As the MakerSpace has opened the door for students to learn and grow, the generosity of other Ravenscroft supporters has done the same for teachers.

While funding for professional development is built into the operational budget each year, some donors have earmarked contributions specifically for this kind of opportunity. Endowed funds such as the Lichten Family Professional Growth Fund (1992) and the Maynard Faculty Enrichment Fund (2001) and others designated for the math, science and/or computer science departments, including the Neeb Family Endowment Fund (1991) and the Boyd Family Endowment Fund (2001), have helped experienced teachers stay current in their content areas and explore new approaches to teaching and learning.

Colpitts said these funds reflect "a legacy of donor generosity that has advanced professional development at Ravenscroft. We have donors who endowed funds 20 years ago, and they're being used to support professional development today."

TDM students use detailed sketches and 3-D models, such as this one representing the school's compost/recycling/trash stations, to flesh out concepts and visualize their projects



WHERE GREAT THINGS COME FROM

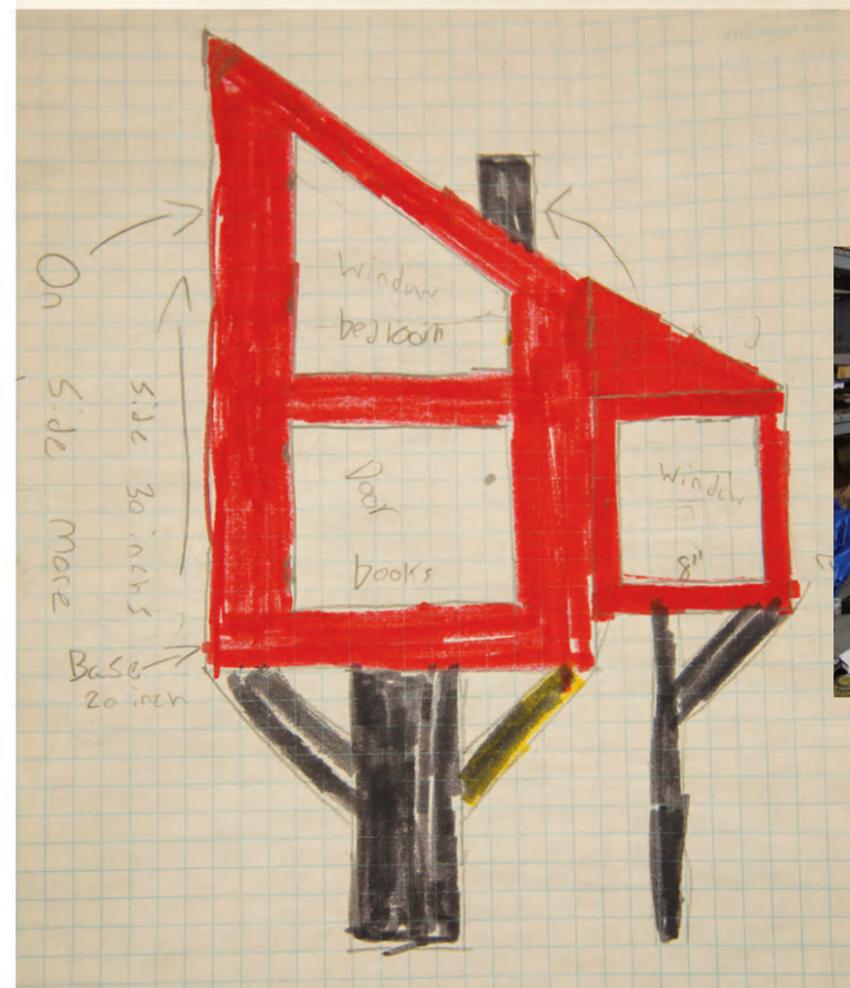
WHEN JANET VANDE BERG challenged her TDM students to create Little Free Libraries as a service project, she asked master craftsman Charles Riddick in the Buildings & Grounds Department to help. He was thrilled to collaborate with students.

"I like the Lead From Here program and want to be involved," he said, "to share some of the knowledge I've gained over the years."

With Lower School counselor Chris Harper, a woodworking enthusiast, Riddick guided students through drawings, templates, wood cutting and construction. Some students came up with complex designs — which, Vande Berg chuckled, is a hazard of design thinking — but Riddick was delighted to bring their visions to life. "I was excited that the kids had such a creative mindset," he said. "That's where great things come from."

With Melissa Spainhour implementing a "Construction for Service" program for community service, such as building window planters or bird houses for Habitat for Humanity, Riddick is looking forward to more projects. The shop's recently acquired Shopsmith woodworking machine — donated by Nancy and Paul Fayard, grandparents of Asher '24, Anna '25 and Parker '29 Sonntag, on behalf of their great-uncle Jay Phipps — has him feeling energized about the possibilities for student learning.

"Hands-on experiences make for a well-rounded individual," he said. "I want to support that here." R



TDM teacher Janet Vande Berg (at top) and Buildings & Grounds technician Charles Riddick work with students on their Little Free Libraries, which will be placed across the North Raleigh area