Property of
Bedminster Township School

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Bedminster Township School

Technology Plan 2022-2025

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Level I. District

1.01 – Bedminster's Vision for Digital Learning

Our children are growing up in a technology driven world as new developments in technology occur every day. The Bedminster School community recognizes that teachers can be assisted more effectively with technology in instruction and students can be provided with an enhanced learning environment through the use of technology. For our students to utilize today's technological resources, we need to provide a high-quality education for all students. Here in Bedminster, we strive to be:

An exemplary 21st Century learning community
A school whose students are prepared to excel in a complex, interconnected, changing world
A school where our teachers are adult learners who have the administrative support, and the professional obligation, to become educational leaders
A school where our teachers will spend time sharing and collaborating through technology giving them time to work more closely with students

In order to remain current and meet our students' needs in a rapidly changing world, we will monitor, review, and assess the effectiveness of the materials and methods used. As new possibilities emerge, we will be prepared to determine what is best for our students and provide for them, as we are able, seeking input from our Educational Technology Committee.

1.02 – District Infrastructure

Our LAN and external bandwidths are each 1Gbps supported by an MDF and four IDF's layered with Extreme Fiber 5000 series switches. This provides 1Gbps at all network nodes. 70 Wireless Access Points are interconnected via an Extreme XIQ Cloud Server and are used throughout the school capable of 802.11n and 802.11ac. They provide wireless connectivity throughout the Bedminster School building, able to accommodate a high density of wireless devices in all areas of the building.

64 Laserjet networked printers and 5 Xerox copiers are provided throughout the building. All printing is centralized through a Windows Print Server. The Print Server allows easier management of the printers and copiers, which will be useful with our semi-paperless goal.

99% of the classrooms are equipped with interactive whiteboards and document cameras for effective digital instruction. We have 3 full computer labs with 20 or more PC desktops. All students are 1:1 with HP 11 G6 and HP 14 G8 Chromebooks. Music has a 1:1 ratio of iPads for students.

1.03 – Teaching and Learning within the District

Technology Curriculum

The technology curriculum is closely aligned with The National Educational Technology Standards (NETS) from the International Society for Technology in Education (ISTE). Each grade level has one or more projects that align with 8.2 and STEM-focused projects. Several are outlined below.

Classes focus on critical thinking, problem solving using the design process. Activities and projects include computer programming, animation, game design, career investigation and digital citizenship.

For the courses in technology and design technology, the following are some highlights:

- Focus is on the integration of technologies within all areas of the curriculum and providing Internet safety and digital citizenship skills in all grades.
- Elementary (K-3) and middle school (5-8) students engage in cross curricular activities that are aligned to the New Jersey State Learning Standards (NJSLS) for Computer Science & Design Thinking and Media Arts: Artistic Processes. In addition, the ISTE Standards for Students serve as another framework for student learning in a digital world. Broadly, the NJSLS address the following areas: Computing Systems, Networks and the Internet, Impacts of Computing, Data & Analysis, Algorithms & Programming. The ISTE standards are based on student centered active learning with the goal of preparing young people to be productive citizens in a digital world. The overarching themes include: Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator and Global Collaborator.
- Elementary students use a variety of digital tools including Google Classroom, GSuite (Docs, Slides, Sheets, Drawing, Forms, Jamboard), Microsoft (Word, PowerPoint, Excel), keyboarding (QwertyTown), computer coding (Code Monkey, Scratch), reading (Starfall, Epic, Tumblebooks, RazKids), math (Starfall, BigIdeas, IXL, Prodigy), database (BrainPOP, PebbleGo, Wixie), and multimedia creation (Wixie, FlipGrid, Screencastify) applications for creating products that demonstrate acquired skills and knowledge across all curricular areas.
- Middle School students take Applied and Design Technology classes as part of their "specials" rotation. Special emphasis is placed on artistic multimedia creation using a variety of digital tools. In 5th grade, students build a foundation of skills and knowledge which is revisited and added to as they progress through 8th grade.

- Students use Google Classroom for accessing and managing all curricular materials, as well as submitting work. Students also use Google Docs, Slides, Sheets, Forms, Drawing and Jamboard to create original work. Other tools that students have access to include Code Monkey, FlipGrid, BrainPOP, Screencastify, WeVideo, Khan Academy, and Scratch. Students are encouraged to experiment, try new creation methods and discover new tools. Student choice and differentiation empower all learners to be successful self-advocates, while gaining exposure to a wide range of digital tools to make original work.

- The 4th grade technology course has students using additional features in Google Apps for Education and Google Classroom. Students also work on creating digital story projects, beginning coding activities and work with Raspberry Pi kits. Students work on a career project presentation and also will begin exploring the use of programmable robotics through Sphero. In addition, students will be working with introductory computer programming through a variety of platforms which include, CodeMonkey, Lighbot and other similar venuses. Students continue to build appropriate keyboarding skills through a school-enabled program, Type to Learn. In addition, supplemental learning of latitude and longitude that aligns with the 4th grade curriculum involves students working with Google Earth to identify appropriate locations and points of latitude/longitude around the world. Students explore design, resource, products made, fixing, repairing and how people react to these products.

- The 5th grade Technology course has students working on taking apart/putting back together computer desktops. Students also build and program computers using Raspberry Pi, monitors and other devices. Students also learn podcasting skills, email and the full suite of Google Apps for Education applications through a project-based approach. Students continue to explore coding activities through Codemonkey.org, Khan Academy's computer programming offering, CS First, Spheros and other similar platforms. Students will work on developing programming skills through creating interactive games using hyperlinks through Google Slides, Powerpoint and/or other appropriate tools. Students continue to build upon keyboarding skills through Type to Learn.

- In separate 5th grade Applied Technology, classes incorporate math through measurement and geometry, while creating original pieces of art on the computer. Students also make a kaleidoscope and learn about the science concepts that make the kaleidoscope work.

- The 6th grade Technology course incorporates building effective presentation skills, advanced keyboarding strategies, spreadsheets/forms and Robotics I. Topics covered include engineering, building the robots, programming, pseudo-code and developing real-life understanding of mathematical concepts Students learn how to complete mathematic, engineering and computing skills. Specific focus is on understanding proportional reasoning concepts through the use of a differentiated educational approach that has been researched and proven to be

effective in developing these mathematical skills as well as increasing student intrinsic motivation to learn. Students will also complete computer programming fundamentals through VEX Virtual Robotics activities. The teacher for the course is a certified Robotics Instructor for the EV3 robot and for VEX Virtual Robotics. Other areas of computer programming will be supplemented through a variety of coding platforms. Students continue to build upon keyboarding skills through Type to Learn.

- 6th grade Applied Technology classes also incorporate math through measurement, proportion and ratios, in addition to using spreadsheets for budgeting. Time permitting, they translate data from their mechanical drawings and floorplans to create a scale model of a room they have designed.
- The 7th grade Technology course incorporates Robotics II with EV3 Robots and LEGO Mindstorms Programming. Robotics and Virtual Robot Brick developed for grade 7 and is taught in sequence from the material in Robotics I taught in grade 6 of the Technology course. Topics covered include engineering, building the robots, programming, pseudo-code and developing real-life understanding of mathematical concepts. Emphasis moves towards the use of sensors with robotics and how they interact with the physical environment. Students also will work on programming a Roomba to create independent projects. Students continue to work on keyboarding, coding through Google Earth navigation program, Students will also complete computer programming fundamentals through VEX Virtual Robotics activities. The teacher for the course is a certified Robotics Instructor for the EV3 robot and for VEX Virtual Robotics. Other areas of computer programming will be supplemented through a variety of coding platforms. Students continue to build upon keyboarding skills through Type to Learn.

- 7th grade Design Technology students build a pinhole camera to learn about light rays and how the eye works. This activity extends and supports their instruction in digital photography.
- The 8th grade Technology course has students coding through a variety of programming activities including code.org, and the Beauty and Joy of Computing, a program designed to spark student's interest in programming. Students create apps for mobile devices through MIT's App Inventor program and develop a prototype for an app to solve a real-life problem. Students use a variety of technology tools, including spreadsheets, presentations to complete a real-life stock market project. Students explore careers related to technology and create databases from scratch and create queries, reports and analysis of them. Students will also complete computer programming fundamentals through VEX Virtual Robotics activities. The teacher for the course is a
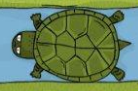
certified Robotics Instructor for the EV3 robot and for VEX Virtual Robotics. Other areas of computer programming will be supplemented through a variety of coding platforms. Students continue to build upon keyboarding skills through Type to Learn.

- 8th grade Design Technology classes have an overarching theme of problem solving, logic and computational thinking. Activities include programming, logic puzzles, building a 3D puzzle and career investigations.
- Robotics Club and FLL- Bedminster School has developed a competitive and engaging robotics club program in combination with First Inspires and partake annually in FLL Tournaments. The teams have won first place in the game portion of the tournament, which focuses heavily on programming and completing tasks in a given time period. Another team won an award for the best mechanically designed robot in a different year. The size of the teams are between 4 and 9 members per FLL rules. In addition, the team has worked together to build projects and present to solve real-world problems. The project built include a water-filtration system, solar-paneled roads for de-icing and other projects that aim to solve real-life problems.

- Bedminster School's computer club has students involved in building and programming through Minecraft for Education. Students also work on understanding components of a computer, building and exploring individual interests related to computer science.

MINDSTORMS® EV3 Core Set.

Robot Trainer

Level II. School

2.01 – Technology Plan

Goal 1:   Bedminster School students, teachers and staff will use virtual learning technology to communicate effectively with the global community.

Objective(s):   Increase the community's awareness of Bedminster School's place in the community.

Action Plan for Goal 1			
Activities	Individual(s) Responsible	Resources	Timeline
The Staff will use social media like Facebook, Twitter, School Website and Class Dojo to keep the community up to date with School Events and Activities.	Administration, Staff	Facebook, Twitter, School Website, Class Dojo	09/2022 – 06/2025
All Bedminster Staff will be committed to keeping their online webpages up to date and current.	All Staff	School Website	09/2022 – 06/2025
The Student Information System, Genesis, will be utilized more to connect with students and parents because it is cloud-based to allow more streamlined access for scheduling conferences and registration.	Technology Manager	Genesis	09/2022 – 06/2025

Goal 2:   Bedminster School will add more STEM Infused Projects to current courses

Objective(s):   As stated in our School Vision, we strive to be an exemplary 21st Century learning community whose students are prepared to excel in a complex, interconnected, changing world.

Action Plan for Goal 2			
Activities	Individual(s) Responsible	Resources	Timeline
Further school-wide initiative related to school-wide computer coding development completed in technology course.	Technology Manager, Technology Teachers, Director of Instruction	Code Monkey	09/2022 – 06/2025
IRobot Corporation Create 2 Programmable Roombas. Student-led constructionist projects for this in technology course and/or robotics club.	Technology Manager, Technology Teachers, Director of Instruction	iRobot STEM Manager Roomba	09/2022 – 06/2025
Elementary LEGO Club & LEGO Robotics Club	Technology Manager, Technology Teachers	Grants	09/2022 – 06/2025
Expanding robotics club to a second group of students who are in 4th through 6th grade and explore the VEX Robotics along with further development with EV3 Robotics.	Technology, Mathematics and Science Teachers	Partnership with local robotics clubs has begun.	09/2022 – 06/2025

Further school-wide initiative related to development of higher-order computer coding development completed in technology course.	Technology Teachers	Code.org, the Beauty and Joy of Computing training from Cal Berkeley (no cost to district).	9/2022 – 6/2025
Sphero Education and Create 2 Programmable Robots for using in technology courses, robotics and/or computer clubs.	Technology Teachers and Club Advisors	iRobot STEM manager and products.	9/2022 - 6/2025

Professional Learning Plan		
Goal #	Initial Activities	Follow-Up Activities
1	Teacher-led professional development to foster technology integration into curricula areas.	Ongoing support by technology teachers/facilitators throughout the school year to foster technology integration on an individual basis.
2	Continued use of storage and sharing of documents via Google Suite and similar applications	Expansion into Google Apps for Education
3	Continued use of school sites, social media to communicate with parents and community members.	Surveys to gauge efficacy.
4	Continued development of the LEGO and robotics clubs to support STEM learning. In addition, specific grade level projects that foster STEM in grades, which include programming development, engineering, prototypes and similar activities. Community and local partnerships with robotics groups in the area to foster learning for teachers and students.	Continued online and community partnerships.

Budget			
Goal #	Activity	Funding Source (Federal/State/Private/District)	Amount
1	Continue using Professional Development in Google Apps, Go Guardian and other applications that foster technology integration within the curriculum.	District	$3,000
2	Continue Xerox Managed Printing Services and Copier Maintenance Contract.	District	$3100/month
3	Genesis – Student Information System Continued widespread use of collaborative technologies, such as Google Apps for Education.	District	$11,500 annually
3	Update Teacher Websites through Google Sites create by Technology Teacher and Technology Manager	District	$0 – No cost to District.
3	Use of School Facebook and Twitter Accounts	District	$0 – No cost to District.
4	VEX Robotics and/or additional LEGO robotics accessories, including motors and replacement parts. Practice kits for annual projects form FIRST Robotics.	Percentage paid by PTO Grant, District and other potential grant sources	$4000

Stakeholder Assurance

I agree to the contents in this educational plan, and the assurance that I will be involved in the implementation of this Technology Plan for Digital Learning.

Involvement in the implementation of this Plan may include: reviewing the progress of meeting the goals and objectives, being responsible for completing one or more activities in the action plan, participating in the revisions of the plan.

Stakeholder Name	Stakeholder Title	Stakeholder Signature
Dr. James Puglia	Teacher of Technology	
Erik Johnsen	Technology Receptionist	
Gary Steinert	Technology Assistant	
Kevin Pickett	Technology Manager	