

## Extended STEM Vocabulary Progression Table (Verbs)

B2 (Upper-Intermediate)	C1 (Advanced)	C2 (Proficiency)
build	construct	fabricate
1. Engineers build prototypes to test concepts in a controlled setting.	2. Architectural teams construct models that consider environmental impacts.	3. High-tech manufacturers fabricate parts with precision for aerodynamics.
solve	resolve	rectify
1. The team devised algorithms to solve complex optimization problems.	2. Engineers resolve critical system faults under stringent deadlines.	3. Technicians rectify discrepancies to maintain regulatory compliance.
improve	enhance	optimize
1. Researchers continually improve algorithms to increase computational speed.	2. The project aims to enhance material resilience in extreme conditions.	3. They optimize processes to reduce resource consumption and maximize output.
test	validate	verify
1. Scientists rigorously test hypotheses under varied conditions.	2. Experimental findings are validated through peer-reviewed methods.	3. Engineers verify system performance to meet international standards.
measure	assess	quantify
1. Researchers measure variables meticulously to ensure accurate results.	2. They assess risk factors impacting the structural integrity of designs.	3. Scientists quantify emission levels to meet environmental benchmarks.
fix	repair	restore
1. Technicians fix mechanical issues to minimize downtime in production.	2. The maintenance team repairs equipment to prevent recurring faults.	3. Specialists restore original configurations after significant updates.
plan	design	devise
1. Engineers meticulously plan each phase of project implementation.	2. They design systems to maximize efficiency and reduce redundancy.	3. Experts devise innovative solutions for sustainable infrastructure.
use	apply	utilize
1. Engineers use advanced modeling techniques in simulations.	2. Researchers apply statistical methods to evaluate results rigorously.	3. Professionals utilize available data to predict system behavior.

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study	analyze	examine
1. Scientists study long-term effects of exposure to specific compounds.	2. Analysts analyze trends to anticipate potential market shifts.	3. Engineers examine each component to ensure strict quality standards.
change	alter	modify
1. Engineers change structural parameters to adapt to design constraints.	2. Technicians alter configurations to suit new project specifications.	3. Researchers modify procedures to address emerging technical challenges.
apply	implement	deploy
1. Physicists apply Newton's laws to predict the motion of objects in free fall.	2. Quantum mechanics principles are implemented to analyze particle behavior.	3. Researchers deploy advanced simulations to study gravitational interactions.
calculate	derive	compute
1. Physicists calculate forces acting on a body in uniform circular motion.	2. Scientists derive equations to model electromagnetic fields.	3. Researchers compute energy levels in complex quantum systems.
detect	identify	discern
1. Physicists detect gamma rays using specialized sensors.	2. High-energy physics labs identify new subatomic particles in accelerators.	3. Researchers discern subtle shifts in particle trajectories using detectors.
emit	radiate	disperse
1. Heated bodies emit infrared radiation in a thermal physics context.	2. Stars radiate energy as light and heat through nuclear fusion.	3. Radioactive materials disperse alpha particles as they decay.
assemble	integrate	synthesize
1. Engineers assemble turbine components for optimized power generation.	2. Robotics experts integrate sensors to enhance autonomous navigation.	3. Aerospace engineers synthesize composite materials for durability.
design	develop	engineer
1. Engineers design hydraulic systems for efficient fluid transfer.	2. The team develops automated systems to streamline assembly lines.	3. Structural engineers engineer foundations to withstand seismic forces.
analyze	evaluate	examine

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1. Structural engineers analyze stress points on bridges.	2. Engineers evaluate thermal conductivity in material testing.	3. They examine fault tolerance in electrical circuits under load.
simulate	model	replicate
1. Engineers simulate aerodynamic conditions for vehicle design.	2. Chemical engineers model reaction kinetics in reactors.	3. Researchers replicate environmental conditions to test material resilience.
monitor	observe	survey
1. Environmental scientists monitor water quality in ecosystems.	2. Researchers observe climate patterns to predict global changes.	3. Ecologists survey biodiversity levels across habitats.
measure	quantify	assess
1. Ecologists measure soil nutrient levels to evaluate fertility.	2. Scientists quantify carbon emissions from various energy sources.	3. They assess ecosystem health based on species diversity.
adapt	adjust	modify
1. Conservationists adapt reforestation strategies based on climate.	2. Projects adjust irrigation systems to meet water conservation goals.	3. They modify habitat boundaries to protect endangered species.
encode	encrypt	cipher
1. Data scientists encode data for secure storage in databases.	2. Security experts encrypt sensitive information in transit.	3. Researchers cipher algorithms to secure blockchain transactions.
program	code	develop
1. Software developers program AI algorithms for image recognition.	2. The team codes instructions for microcontrollers in IoT devices.	3. Machine learning specialists develop models for pattern detection.
optimize	refactor	enhance
1. Engineers optimize code for faster processing in embedded systems.	2. Developers refactor legacy code to improve performance.	3. The team enhances algorithms to handle large data sets efficiently.
react	combine	synthesize
1. Chemists react elements to form new	2. Laboratory procedures combine reagents to	3. Researchers synthesize organic compounds

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compounds in labs.	analyze reactivity.	for pharmaceuticals.
dissolve	dilute	precipitate
1. Chemists dissolve solutes to prepare chemical solutions.	2. The laboratory dilutes acid solutions for safe testing.	3. Solutions precipitate under specific conditions for analysis.
neutralize	balance	stabilize
1. Laboratory processes neutralize pH in chemical treatments.	2. Technicians balance equations in stoichiometric calculations.	3. Chemical engineers stabilize reactive compounds for transport.
sequence	decode	map
1. Biologists sequence DNA to understand genetic coding.	2. The team decodes genomes to identify hereditary traits.	3. Geneticists map chromosomes to trace gene expression.
culture	grow	propagate
1. Biologists culture cells to study cellular functions.	2. The lab grows bacteria in controlled environments for analysis.	3. Botanists propagate plant species in greenhouse settings.
observe	record	document
1. Biologists observe behavior in animal species for research.	2. Researchers record gene mutations under specific stimuli.	3. They document plant growth patterns to study adaptation.
observe	detect	discern
1. Physicists observe particle collisions to understand fundamental forces.	2. Quantum detectors detect subatomic particles at high precision.	3. Researchers discern faint signals in cosmic background radiation.
calculate	approximate	extrapolate
1. Students calculate velocity using distance and time.	2. Physicists approximate solutions when exact values are not possible.	3. Scientists extrapolate data trends to predict future particle behaviors.
assemble	construct	fabricate
1. Engineers assemble components of the machine during final installation.	2. Civil engineers construct bridges to span large distances.	3. Aerospace manufacturers fabricate fuselage sections with composite materials.

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enhance	upgrade	innovate
1. Engineers enhance material strength to withstand extreme conditions.	2. The team upgrades software to improve processing capabilities.	3. Biomedical engineers innovate techniques for less invasive surgery.
protect	preserve	conserve
1. Conservationists protect endangered species through breeding programs.	2. Environmentalists preserve natural habitats from human encroachment.	3. Researchers conserve resources by developing sustainable practices.
monitor	survey	audit
1. Scientists monitor air quality to track pollution levels.	2. Ecologists survey ecosystems to study biodiversity.	3. Agencies audit environmental compliance across industries.
process	analyze	interpret
1. Systems process data to provide real-time insights.	2. Data scientists analyze large datasets for trends and patterns.	3. AI models interpret user behavior to enhance user experience.
compute	approximate	forecast
1. Algorithms compute optimal solutions for logistical problems.	2. The AI approximates potential outcomes based on limited data.	3. Predictive models forecast weather changes with accuracy.
dissolve	react	precipitate
1. Solids dissolve in solvents to create homogeneous solutions.	2. Reactants in a lab experiment combine to produce a new compound.	3. Under specific conditions, chemicals precipitate into solid form.
filter	purify	distill
1. Filtration is used to separate solids from liquids.	2. Chemists purify compounds to remove impurities.	3. Distillation is employed to isolate pure substances from mixtures.
cultivate	propagate	genetically engineer
1. Biologists cultivate bacterial cultures for study.	2. Botanists propagate plants through cutting techniques.	3. Geneticists genetically engineer crops for increased resilience.
sequence	map	genotype
1. Scientists sequence DNA to understand	2. Researchers map genes to	3. They genotype organisms to predict

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genetic composition.	identify hereditary patterns.	disease susceptibility.
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