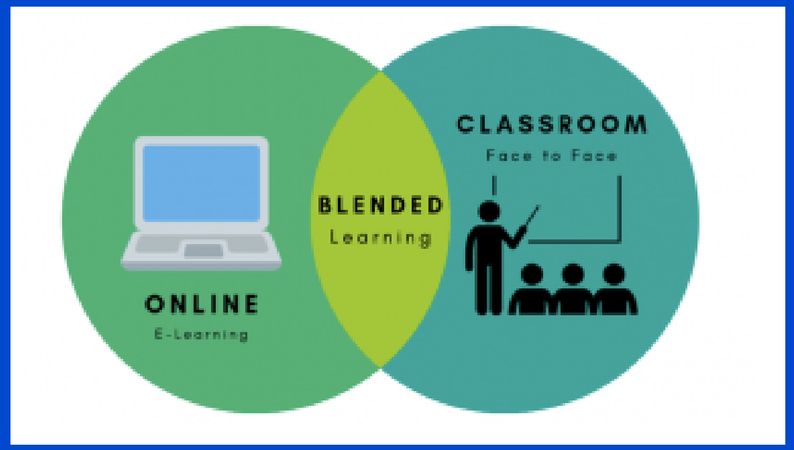
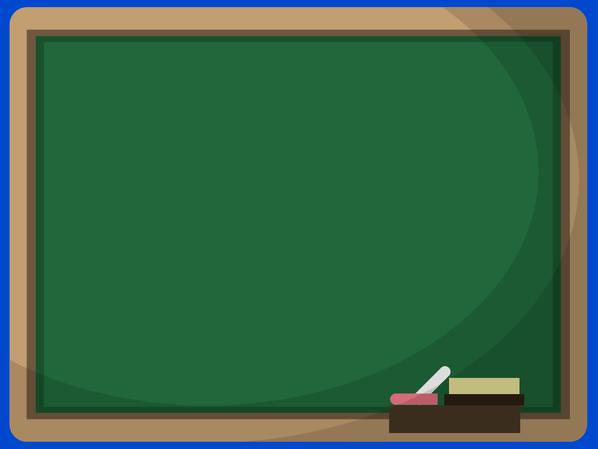
Roadmap to Blended Learning and STEAM Education

For School Leaders

PREPARED BY ALPHONSE DEVASIA

Blended Learning





Blended learning is when part of their content is online with the student being able to control some aspects of time, place, path or pace of learning AND part of their content is learned in a traditional classroom.

Components of Blended Learning

Personalized Online Learning with LMS

Mini Lessons designed for the specific objective.
Digital multimedia content.

Teacher led small group instructions

Guided practice.
Differentiated sessions.

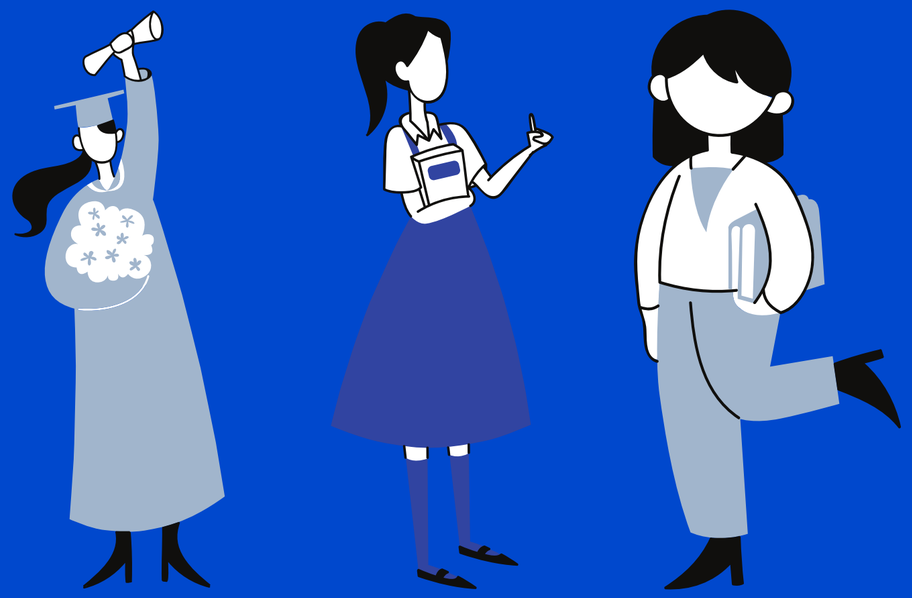
Collaboration

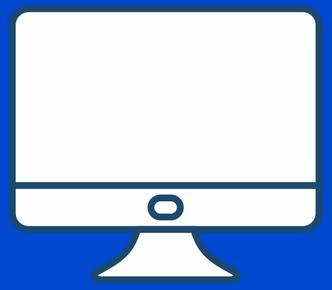
Group activities in peer groups.
Online discussion forums to foster peer learning.

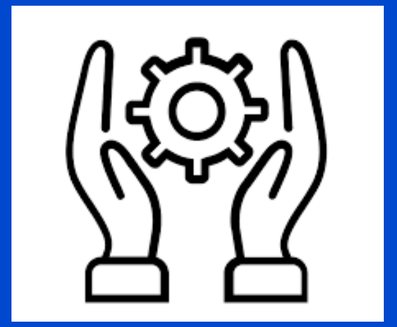
Individual

Independent practice at school or at home.
Projects and activities focussing on future ready skills.

Advantages of Blended Learning





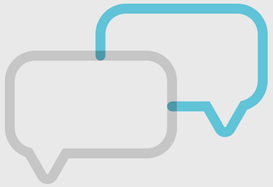


- Take advantages of **technology**
- More time spent on **practical skills training**
- Scale and reach **more students**
- Become **less reliant on paper** heavy process
- **Save** operational costs

Steps for developing Blended Learning courses

Have a plan - the big picture

Involve staffs and students



Set clear learning goals

Have the right teaching resources

Monitor, refine and repeat

LMS

Learning Manangement System

- LMS is a software application or a web based application used to plan, implement and assess a learning process.
- A LMS provides instructor a digital space with a way to create and deliver content, monitor student participation and assess student performance.
- It can also provide participants with the ability to use interactive features such as discussion forums, video conferencing and live discussions.

Steps to select an LMS

LMS Platforms

Open source

moodle

ATUTOR

Eliademy
Democratizing education with technology

Sakai

SaaS

schoology

CANVAS

absorb

Edmodo

other platforms are also available

ADDITIONAL APPLICATIONS(AS REQUIRED)

AUTHORING TOOLS

- Google Classroom
- Adobe Captivate
- Articulate 360
- Teachable
- OPENedx
- Lectora Online
- LearnDash
- Schoolx
- Eurekos

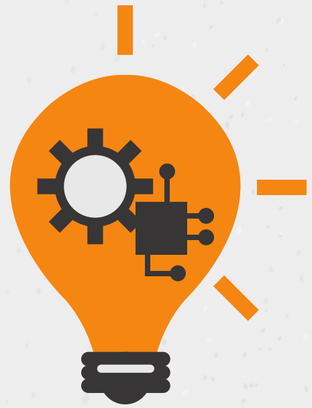
VIRTUAL SYNCHRONOUS LEARNING

- Blackboard Collaborate
- Adobe Connect
- Cisco Webex
- GoTo Meeting
- Big Blue Button
- Teleskill
- Onsync
- Zoom

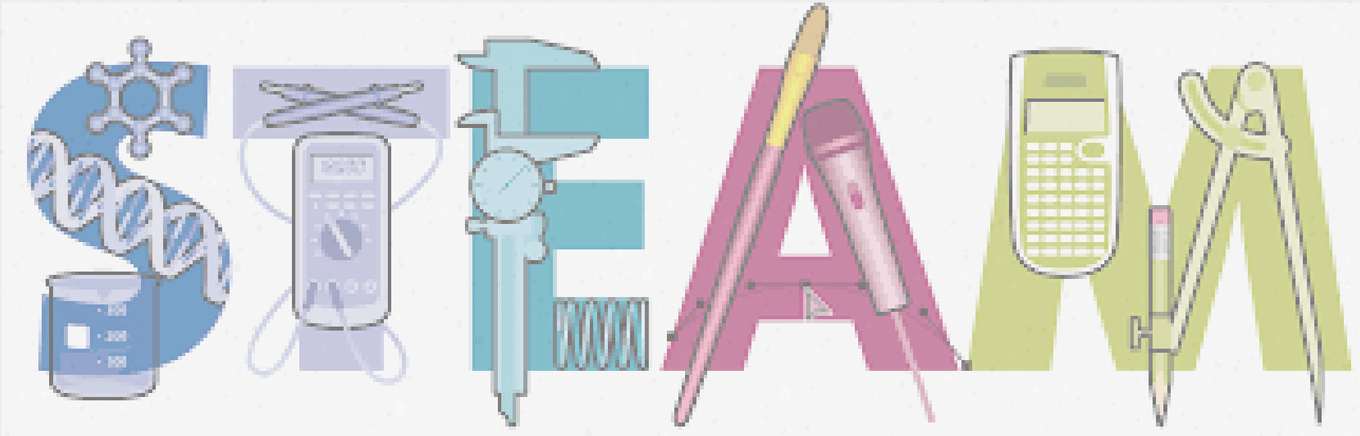
STEAM Education

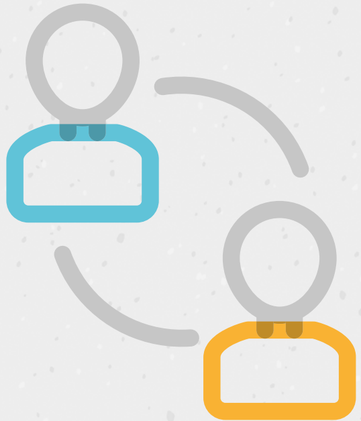
STEAM Education is an approach to learning that uses **Science, Technology, Engineering, the Arts and Mathematics** as access points for guiding student inquiry, dialogue, and critical thinking.

Benefits of STEAM Education



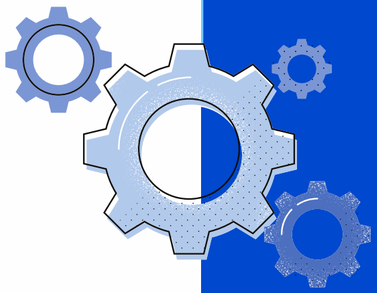
- Students take thoughtful risks
- Engage in experiential learning
- Persist in problem-solving
- Embrace collaboration
- Work through the creative process





Designing and Teaching STEAM Curriculum

- Add more hands-on projects
- Include real world problem solving activities
- Integrate and apply the learning
- Encourage questioning and wondering
- Give kids more control of their learning



STEAM Platforms

Hardware(Hw) and software(Sw) applications to promote STEAM Education

KUBO ROBOT

Levels: EY, PY
Platform: Hw

WEEMAKE ROBOT

Levels: EY, PY
Platform: Hw, Sw

SPHERO

Levels: PY, MY
Platform: Hw, Sw

STRAWBEES

Levels: EY, PY, MY
Platform: Hw, Sw

TOKYMAKER

Levels: PY,MY
Platform: Hw, Sw

BBC MIRCO:BIT

Levels: PY, DP
Platform: Hw, Sw

TELLO DRONE

Levels: MY, DP
Platform: Hw, Sw

MBOT SERIES

Levels: PY, MY
Platform: Hw, Sw

AIRBLOCK

Levels: MY, DP
Platform: Hw, Sw

LEGO BRICKS

Levels: EY, PY
Platform: Hw

LEGO WEDO 2

Levels: EY, PY, MY
Platform: Hw, Sw

LEGO BOOST

Levels: PY, MY
Platform: Hw, Sw

LEGO MINDSTORM EV3

Levels: MY, DP
Platform: Hw, Sw

CRETILE ELECTRONICS

Levels: PY, MY, DP
Platform: Hw

SNAP CIRCUITS

Levels: PY, MY
Platform: Hw

SAM LABS

Levels: PY, MY, DP
Platform: Hw, Sw

ARDUINO

Levels: MY, DP
Platform: Hw, Sw

RASPBERRY PI

Levels: MY, DP
Platform: Hw, Sw

IOT - ESP 8266

Levels: MY, DP
Platform: Hw, Sw

TINKERCAD - 3D MODELING

Levels: PY, MY
Platform: Sw

FUSION 360

Levels: MY, DP
Platform: Sw

MIT APP INVENTOR

Levels: PY, MY, DP
Platform: Sw

THUNKABLE

Levels: MY, DP
Platform: Sw

SCRATCH

Levels: EY, PY, DP
Platform: Sw

STENCYL

Levels: MY, DP
Platform: Sw

PROJECT GUTS

Levels: PY, MY
Platform: Sw

STARLOGO NOVA

Levels: MY, DP
Platform: Sw

KERBAL SPACE PROGRAM

Levels: MY, DP
Platform: Sw

LOOKING GLASS

Levels: MY, DP
Platform: Sw

TYNKER

Levels: PY, MY, DP
Platform: Sw

MINECRAFT:EDUCATION

Levels: MY, DP
Platform: Sw

SWIFT PLAYGROUNDS

Levels: MY, DP
Platform: Sw

KODULAR

Levels: MY, DP
Platform: Sw

PYTHON

Levels: MY, DP
Platform: Sw

AI, ML

Levels: DP
Platform: Sw

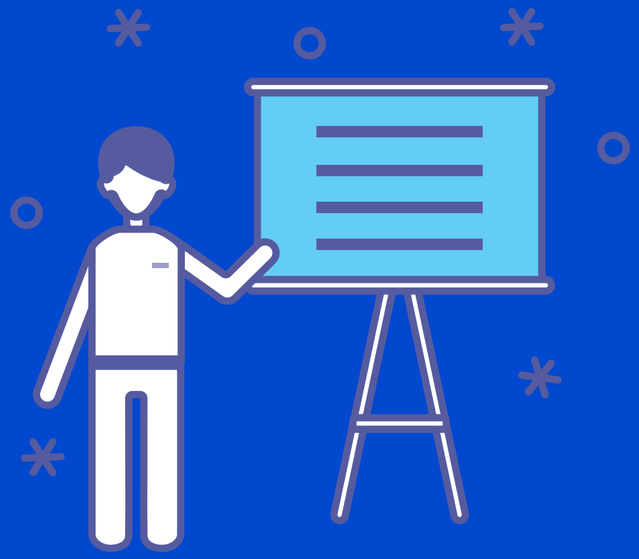
DATA SCIENCE

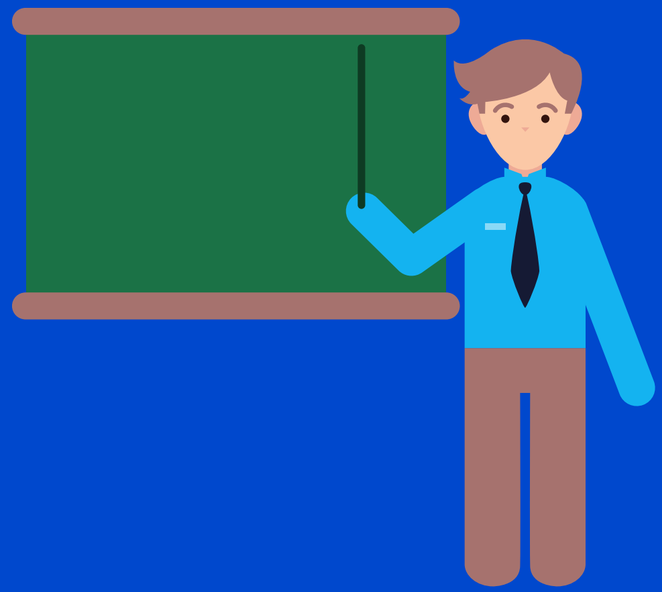
Levels: DP
Platform: Sw

Engaging all stakeholders in blended learning and STEAM education

Students

- Adapting students to the new digital learning environment.
- Teaching digital literacy.
- Motivation and overcoming sense of isolation in online sessions.
- Gamification of the learning process.



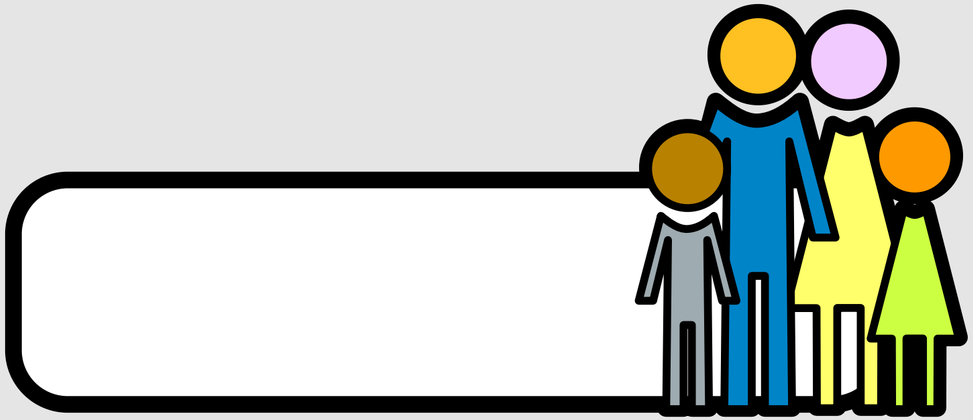


Teachers

- Designing and developing great multimedia learning content leveraging technology.
- Alignment of learning process with digital standards and assessments.
- Professional development for all staff in STEAM practices and principles.
- Continuous teacher training with constructive feedback on online teaching.
- Certification programs on using technology in Education

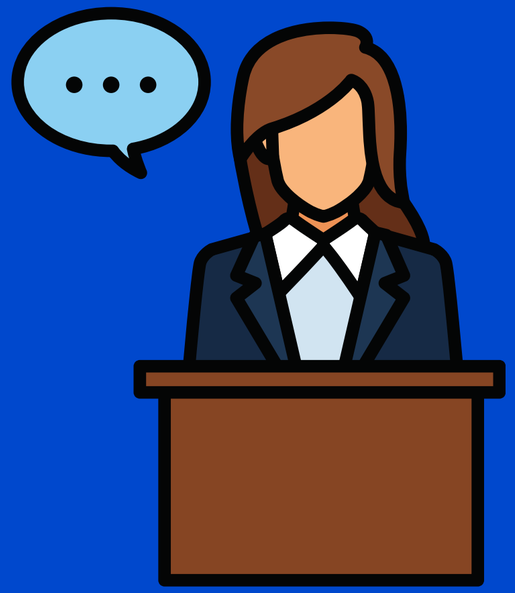
Google Certified Educators

Apple Certification for Teachers



Parents

- Creating a learning environment that is engaging, fun and distraction free.
- Adjust to accommodate a new way of teaching and learning.
- Supporting children to adapt to the blended learning approach.



School Leadership

- Creating a LMS platform that’s easy to adapt, accessible with age appropriate and well structured content.
- Collaborative planning, including a cross-section of teachers on each team.
- STEAM mapping for the curriculum and assessment design process.

Conclusion

"By the time today's preschooler enters the workforce, 65% of the jobs that will be available don't even exist today." - Cathy N. Davidson

When planned and executed properly, blended learning is not just useful in delivering a ***high quality learning experience*** for students, but also in collecting evidence of that delivery.

STEAM education fosters the essential 21st-century skills of ***collaboration, creativity, critical thinking and communication***. This prepares our students to not only live in an unknown world but prepares them to build that future world.