

Integrasi Laboratorium Virtual dalam Pembelajaran Daring

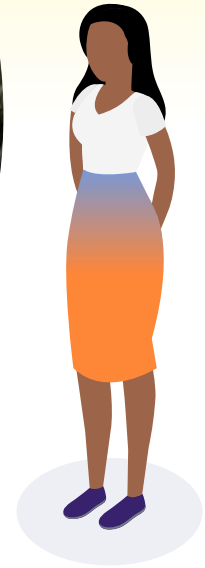


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Selamat Pagi!

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Remember that schools are not closed. School buildings are closed. The teachers and staff are working harder than ever.



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Pembelajaran Daring

Mari Berefleksi



Gap Generasi Guru-Siswa



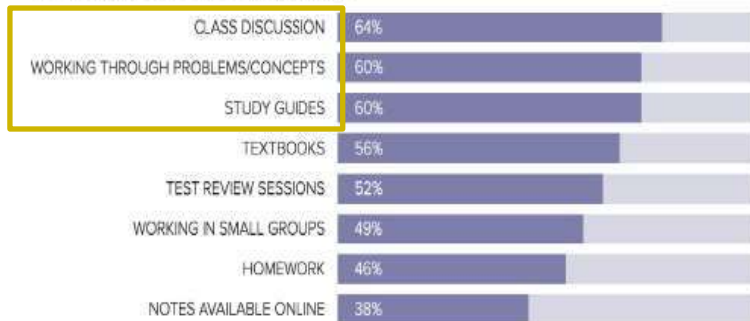
Chart 1: An overview of the working generations

Characteristics	Maturists (pre-1945)	Baby Boomers (1945-1960)	Generation X (1961-1980)	Generation Y (1981-1995)	Generation Z (Born after 1995)
Formative experiences	Second World War Rationing Fixed-gender roles Rock 'n' Roll Nuclear families Defined gender roles — particularly for women	Cold War Post-War boom "Swinging Sixties" Apollo Moon landings Youth culture Woodstock Family-orientated Rise of the teenager	End of Cold War Fall of Berlin Wall Reagan / Gorbachev Thatcherism Live Aid Introduction of first PC Early mobile technology Latch-key kids; rising levels of divorce	9/11 terrorist attacks PlayStation Social media Invasion of Iraq Reality TV Google Earth Glastonbury	Economic downturn Global warming Global focus Mobile devices Energy crisis Arab Spring Produce own media Cloud computing Wiki-leaks
Percentage in U.K. workforce*	3%	33%	35%	29%	Currently employed in either part-time jobs or new apprenticeships
Aspiration	Home ownership	Job security	Work-life balance	Freedom and flexibility	Security and stability
Attitude toward technology	Largely disengaged	Early information technology (IT) adaptors	Digital Immigrants	Digital Natives	"Technoholics" — entirely dependent on IT; limited grasp of alternatives
Attitude toward career	Jobs are for life	Organisational — careers are defined by employers	Early "portfolio" careers — loyal to profession, not necessarily to employer	Digital entrepreneurs — work "with" organisations not "for"	Career multitaskers — will move seamlessly between organisations and "pop-up" businesses
Signature product	 Automobile	 Television	 Personal Computer	 Tablet/Smart Phone	Google glass, graphene, nano-computing, 3-D printing, driverless cars
Communication media	 Formal letter	 Telephone	 E-mail and text message	 Text or social media	 Hand-held (or integrated into clothing) communication devices
Communication preference	 Face-to-face	 Face-to-face ideally, but telephone or e-mail if required	 Text messaging or e-mail	 Online and mobile (text messaging)	 Facetime
Preference when making financial decisions	 Face-to-face meetings	 Face-to-face ideally, but increasingly will go online	 Online — would prefer face-to-face if time permitting	 Face-to-face	 Solutions will be digitally crowd-sourced

*Percentages are approximate at the time of publication.

Bagaimana Generasi Z belajar?

MOST HELPFUL TOOLS FOR LEARNING

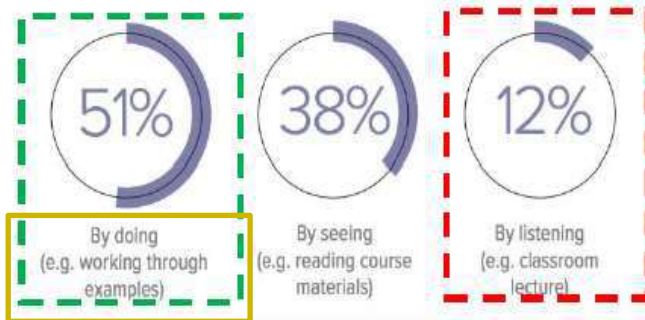


TOP 5 WAYS GEN Z RESEARCHES COLLEGES



1. USE ONLINE COLLEGE RESOURCES
(e.g. College Greenlight, MyMajors, College Board)
2. VISIT SPECIFIC SCHOOLS' WEBSITES
3. GET ADVICE FROM TEACHERS/COUNSELORS
4. CONSULT WITH PARENTS/FAMILY MEMBERS
5. TALK TO FRIENDS

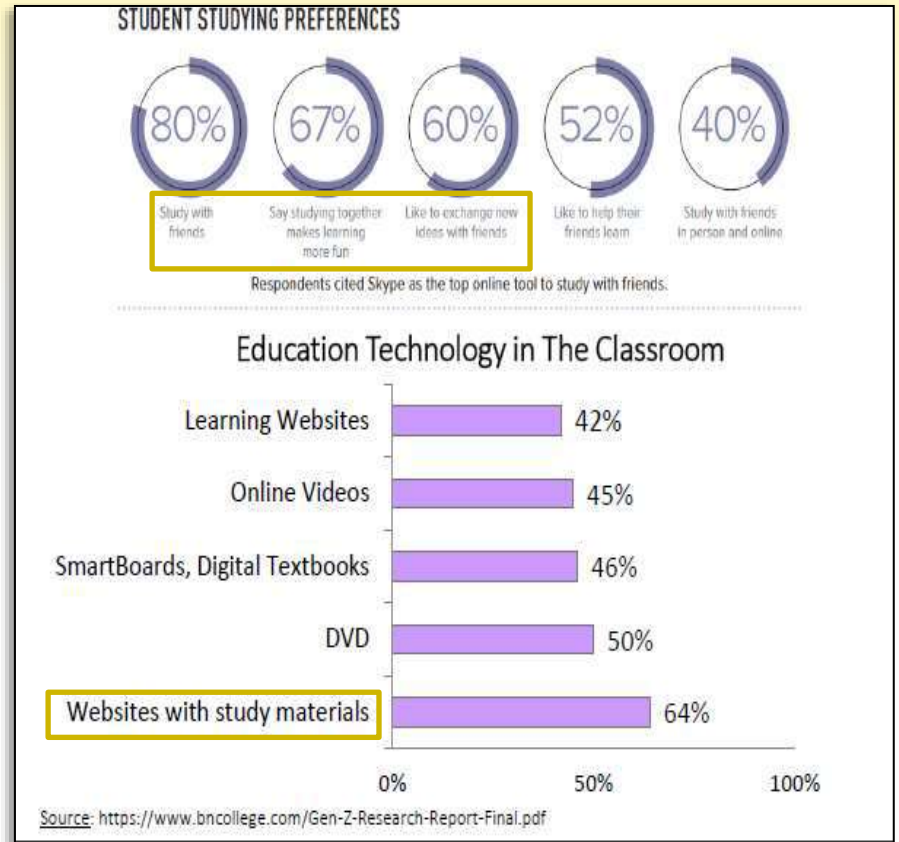
HOW DOES GEN Z LEARN?



SOURCE: Barnes & Noble College | Getting to Know Gen Z – Exploring Middle and High Schoolers' Expectations for Higher Education

How do Gen-Z learn?

Gen-Z are applied learners who work well together and independently



Prinsip Pembelajaran Daring

- ▶ *Shift Paradigm : Learning Revolution and Student-centered Learning*
- ▶ *Synchronous vs Asynchronous*
- ▶ *4Cs : Communication, Collaboration, Critical Thinking, Creativity*
- ▶ *4Cs : Content, Cohort, Coach, Context*



Perubahan Paradigma

- ▶ Siswa mempelajari apa yang mereka sukai dan apa yang relevan bagi mereka.
- ▶ Guru berperan sebagai fasilitator, bukan sumber informasi (Guru diharapkan menguasai literasi digital dan selalu up-to-date).
- ▶ Komunikasi bersifat individual sehingga pendokumentasiannya sangat penting.
- ▶ Pembelajaran bisa berlangsung kapan saja dan di mana saja (cyber world).

Revolusi Belajar

- ▶ Siswa belajar menyelesaikan masalah sepanjang hayat.
- ▶ Guru berperan sebagai fasilitator bagi siswa untuk menemukan pengetahuan.
- ▶ Siswa belajar secara individual, global, kolaboratif, dan digital.
- ▶ Siswa memperoleh guru dan pengalaman global.
- ▶ Belajar dapat dilakukan di mana saja dan kapan saja.
- ▶ Kualitas pembelajaran merata.

Synchronous vs Asynchronous

Live Synchronous (Langsung)

- Belajar pada waktu dan lokasi yang sama
- Aktivitas : ceramah, diskusi, praktek, workshop, seminar, proyek

Virtual Synchronous (Maya)

- Belajar pada waktu yang sama tetapi lokasi berbeda
- Aktivitas : kelas virtual, konferensi audio, webinar

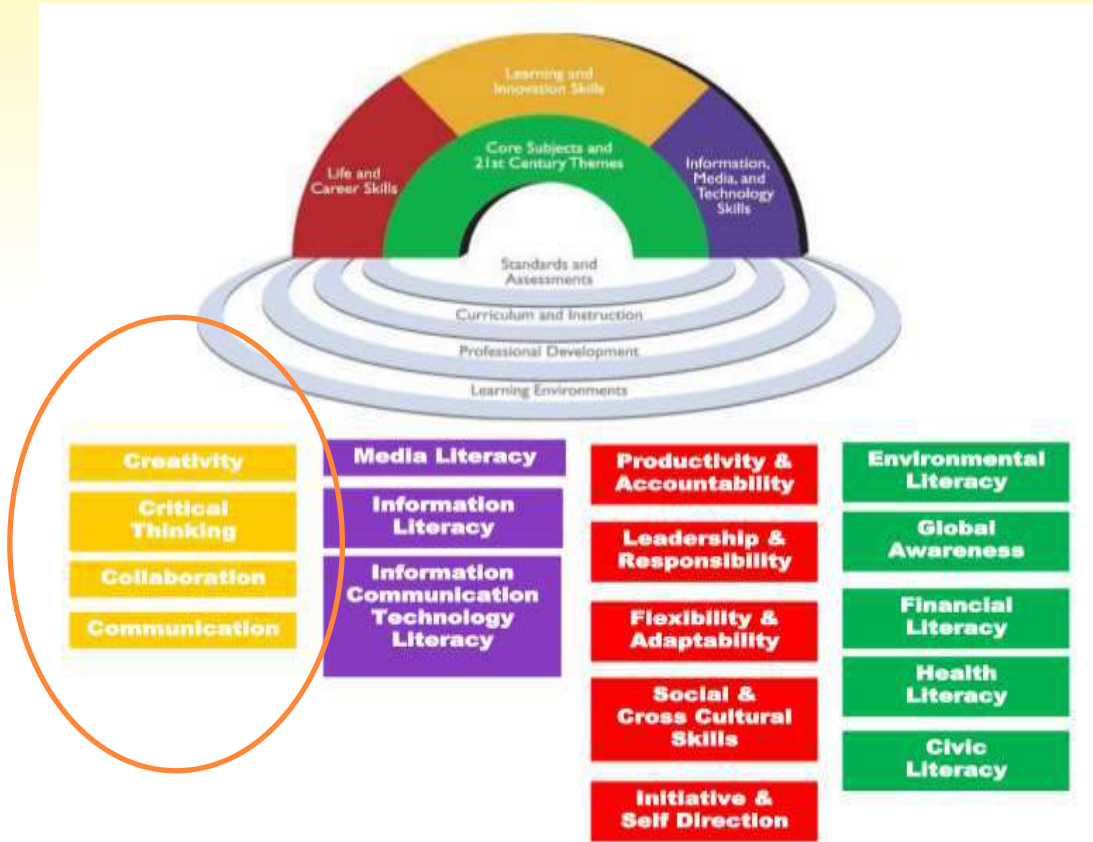
Self-Paced Asynchronous (Mandiri)

- Belajar kapan saja, di mana saja, tentang apa saja, tanpa orang lain
- Aktivitas : membaca, menonton, mendengar, studi daring, simulasi, praktek, latihan, role play, tes, publikasi (jurnal, blog, wikipedia, artikel, dll)

Collaborative Asynchronous (Kolaboratif)

- Belajar kapan saja, di mana saja, tentang apa saja, dengan siapa saja
- Aktivitas : partisipasi dalam diskusi secara daring, penugasan daring secara individu atau kelompok, publikasi (jurnal, blog, wikipedia, artikel, dll)

4Cs Skills and Competencies



Tantangan

Ketidakhadiran Guru
(*the absence of teachers*)



4Cs : Mendesain Kehadiran Guru



4Cs : Mendesain Kehadiran Guru

CONTENT

- ▶ Berhati-hati memilih, mempersiapkan, atau membuat konten yang dapat digunakan siswa untuk berinteraksi dan belajar.
- ▶ Berangkat dari konteks, dikaitkan dengan konten, dievaluasi kevalidannya.
- ▶ Prakonsep, kekinian, relevan, menarik, aplikatif, ada feedback dan dokumentasi.

COHORT

- ▶ Merancang interaksi di antara peserta didik yang benar-benar dapat memfasilitasi keterlibatan dan pembelajaran.
- ▶ Ada *virtual group* untuk berkomentar, berdiskusi, dan presentasi.

4Cs : Mendesain Kehadiran Guru

COACH

- ▶ Berhati-hati membedakan kehadiran dan intervensi guru untuk berinteraksi dengan siswa dan terutama memberi umpan balik yang konstruktif.
- ▶ Ada forum diskusi dan umpan balik secara virtual dan informal.

CONTEXT

▶ Apa bedanya?

- ▶ Ruang kelas ➡ Ruang apa saja
- ▶ Hadir di kelas ➡ Belajar konten
- ▶ Jadwal kelas ➡ Daftar tugas dan deadline



transform

don't just translate
from keeping things "normal"
to design for the "new normal"



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RPP Daring

Integrasi Laboratorium Virtual



▶ Bagaimana KBM daring saya?

Persiapan

Terstruktur

Terdokumentasi dengan baik

Dapat diakses kapan saja
dan di mana saja

Pelaksanaan

Menembus ruang dan waktu

Komunikasi fleksibel

Berorientasi pada capaian
pembelajaran

Evaluasi

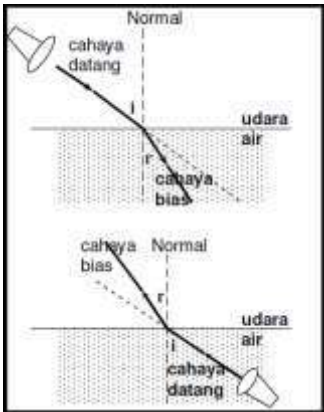
Berfokus pada problem solving

Menerapkan HOTS

Batasan

Materi

IPA Terpadu



Virtual Laboratory

PhET Simulation



Learning Management System

G-Suite



▶ Contoh RPP Daring

**“NOT MANY THINGS, BUT MUCH”
NON MULTA SED MULTUM**

Latin Proverb

► Pusing??? Berat?????



MGMP IPA

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Laboratorium Virtual

Mari Bereksplorasi



Tools apa yang bisa dipakai?

Presensi



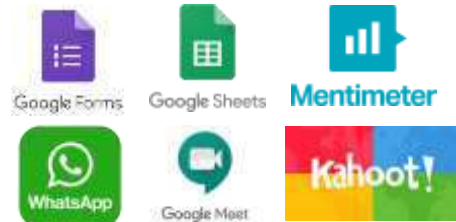
Diskusi



Folder



Tes/Kuis



Feedback



Refleksi



Laboratorium Virtual

Authoring



Simulasi



Video



Komik Digital



E-books



Grafik

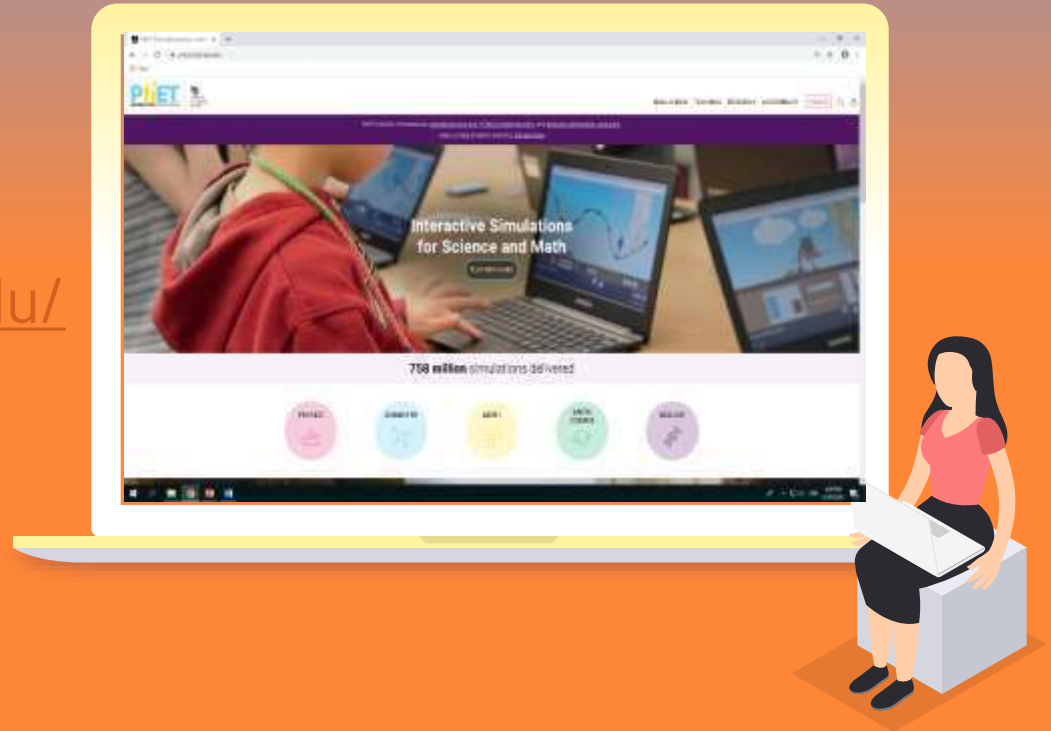


Prinsip Penggunaan Laboratorium Virtual

- ▶ Dieksplorasi dan dicoba dulu
- ▶ Konsep benar
- ▶ Sumber terpercaya
- ▶ Disesuaikan dengan tujuan pembelajaran
- ▶ Ada petunjuk / pedoman penggunaan yang jelas

PheT Simulations

<https://phet.colorado.edu/>



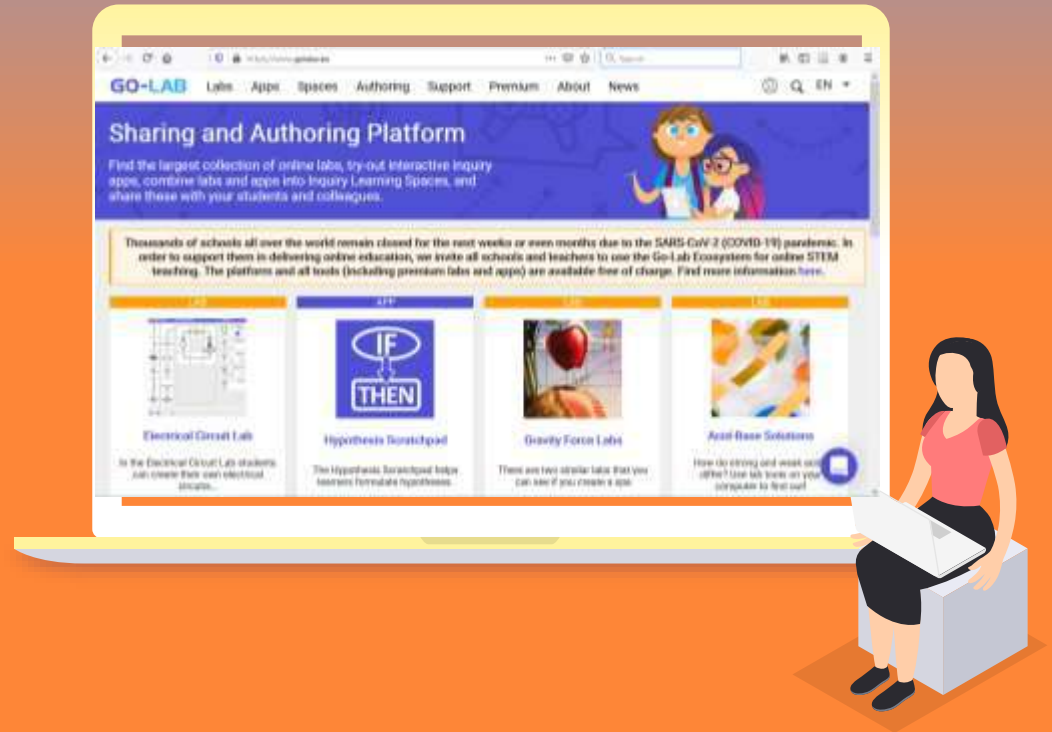
Contoh Laboratorium Virtual



- ▶ Akses : *offline dan online*
- ▶ Kategori : bidang studi, jenjang pendidikan
- ▶ Materi : paten dari University of Colorado
- ▶ Bahasa : sebagian besar bisa diterjemahkan ke Bahasa Indonesia

Go-labz

<https://www.golabz.eu/>



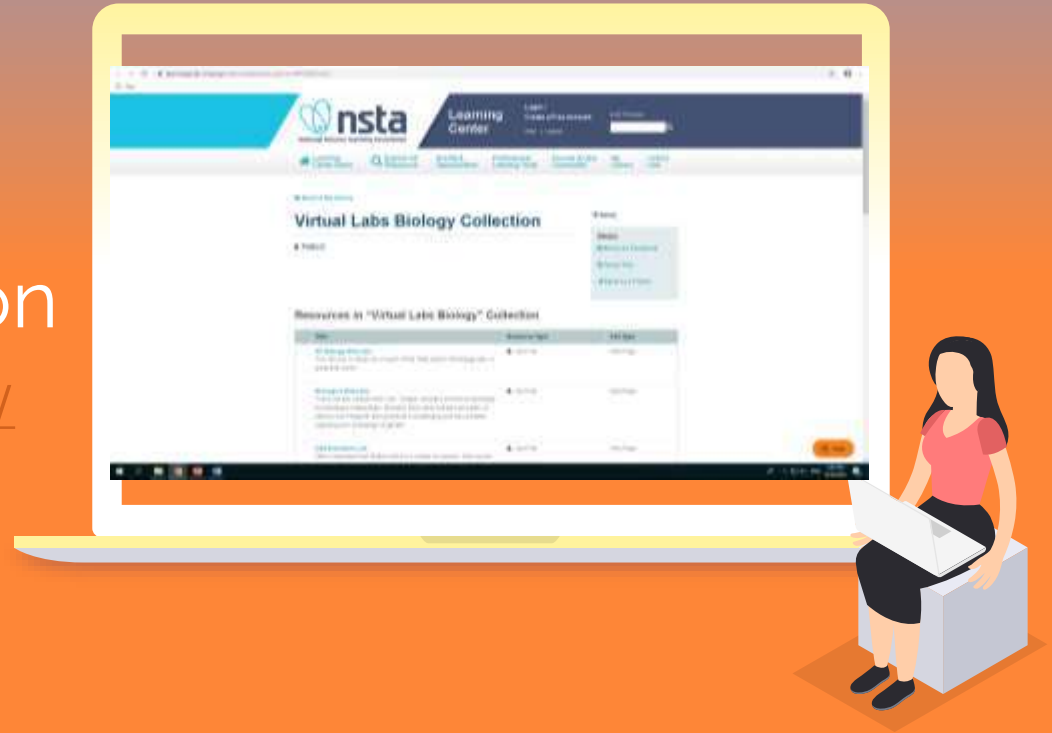
LabXchange

<https://www.labxchange.org>



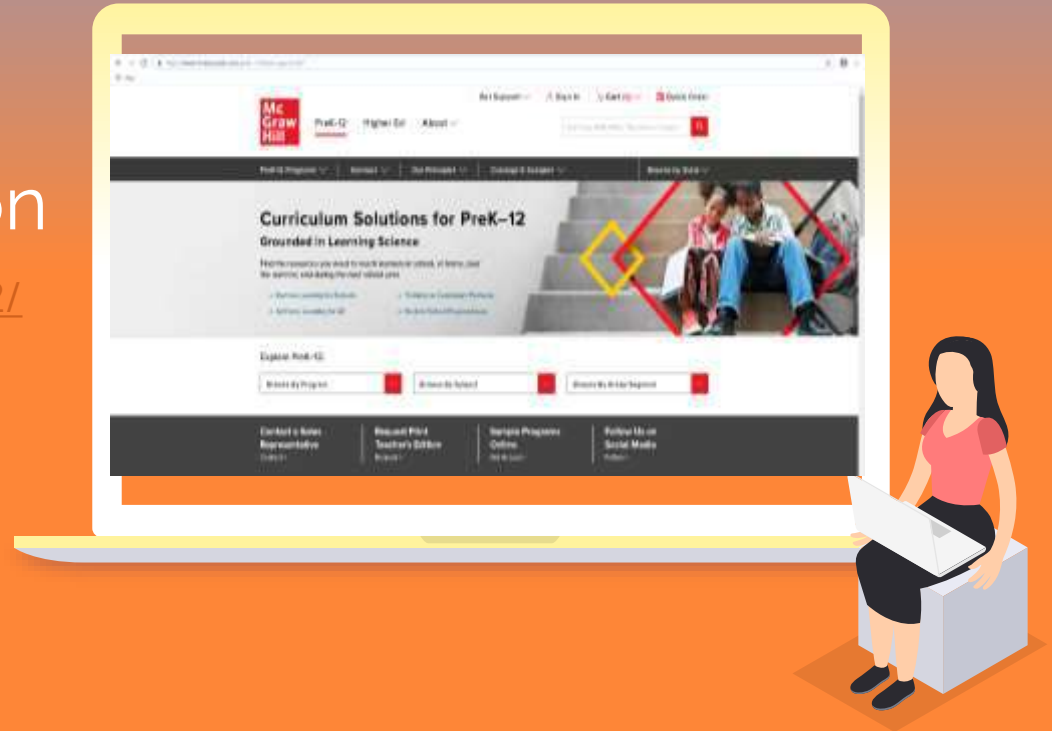
National Science Teaching Association

<https://learningcenter.nsta.org/>



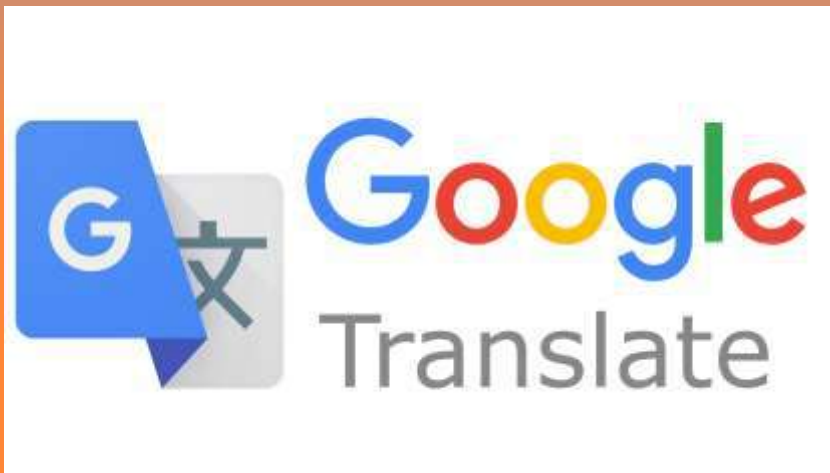
McGraw Hill Education

<https://www.mheducation.com/prek-12/>





Takut Bahasa Inggris??



Diskusi

- ▶ Relevan : fasilitas dan konteks



“The measure of intelligence is the ability to change.”

~ Albert Einstein

Referensi

- ▶ Ngopi YPA-MDR #1
- ▶ Webinar UBCHEA : Education in Emergencies
- ▶ Webinar P3I UKSW : Tata Laksana Pembelajaran Daring
- ▶ Partnership 21
- ▶ Berbagai penelitian tentang integrasi simulasi PhET dalam pembelajaran dan modul praktikum mandiri

