



THE IMPLEMENTATION OF STEAM IN PRIMARY SCHOOL TEACHER PRESERVICE TEACHER EDUCATION IN UNIVERSITAS PENDIDIKAN INDONESIA

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AGENDA

1. PRESERVICE TEACHER EDUCATION IN INDONESIA

2 . STEAM ON PRESERVICE TEACHER EDUCATION

3. DISCUSSION

INDONESIA IN THE WORLD MAP



Indonesia



EDUCATION INDONESIA FACTS (2016) :

Population: 261 million; Compulsory Education : 9 years;

Type of Curriculum : Competency Based Curriculum (since 2004).

Primary school : 150.400 schools, 25,5 milion students; 1,4 million teachers

Junior Secondary school: 37.100 school, 10,1 million student ; 628.000 teachers

Senior Secondary school: 13.200 school, 4,7 millions students; 307. 000 teachers

Vocational school : 13.600 schools; 4,9 millions student; 292.212 teachers

High Institution/Univ: 99 public, 3.100 private ; with 2,3 students

**PRESERVICE TEACHER
EDUCATION IN INDONESIA**

TEACHER EDUCATION IN HIGHER LEVEL IN THE LAST 5 DECADES



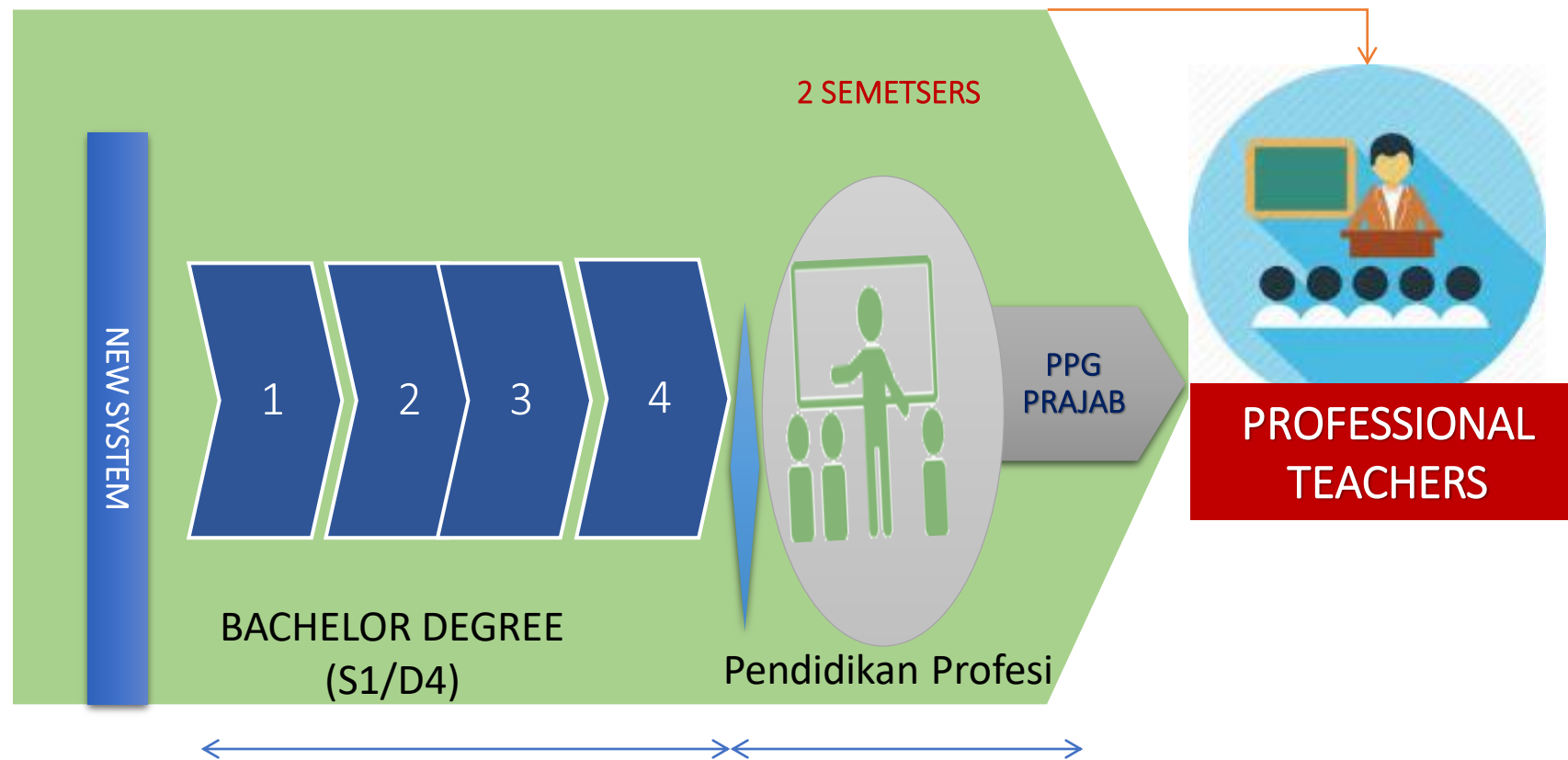
- ☐ INTEGRATED PROGRAM
- ☐ MOSTLY USING CONCURRENT CURRICULUM MODEL RATHER THAN CONSEQUITIVE MODEL
- ☐ PROVIDING AKTA 4 PROVIDING (TEACHING CERTIFICATE) FOR THOSE WHO HAVE NO BACKGROUND IN EDUCATION

THE LAW ON TEACHERS AND LECTURERS (LAW NO. 14/ 2005)

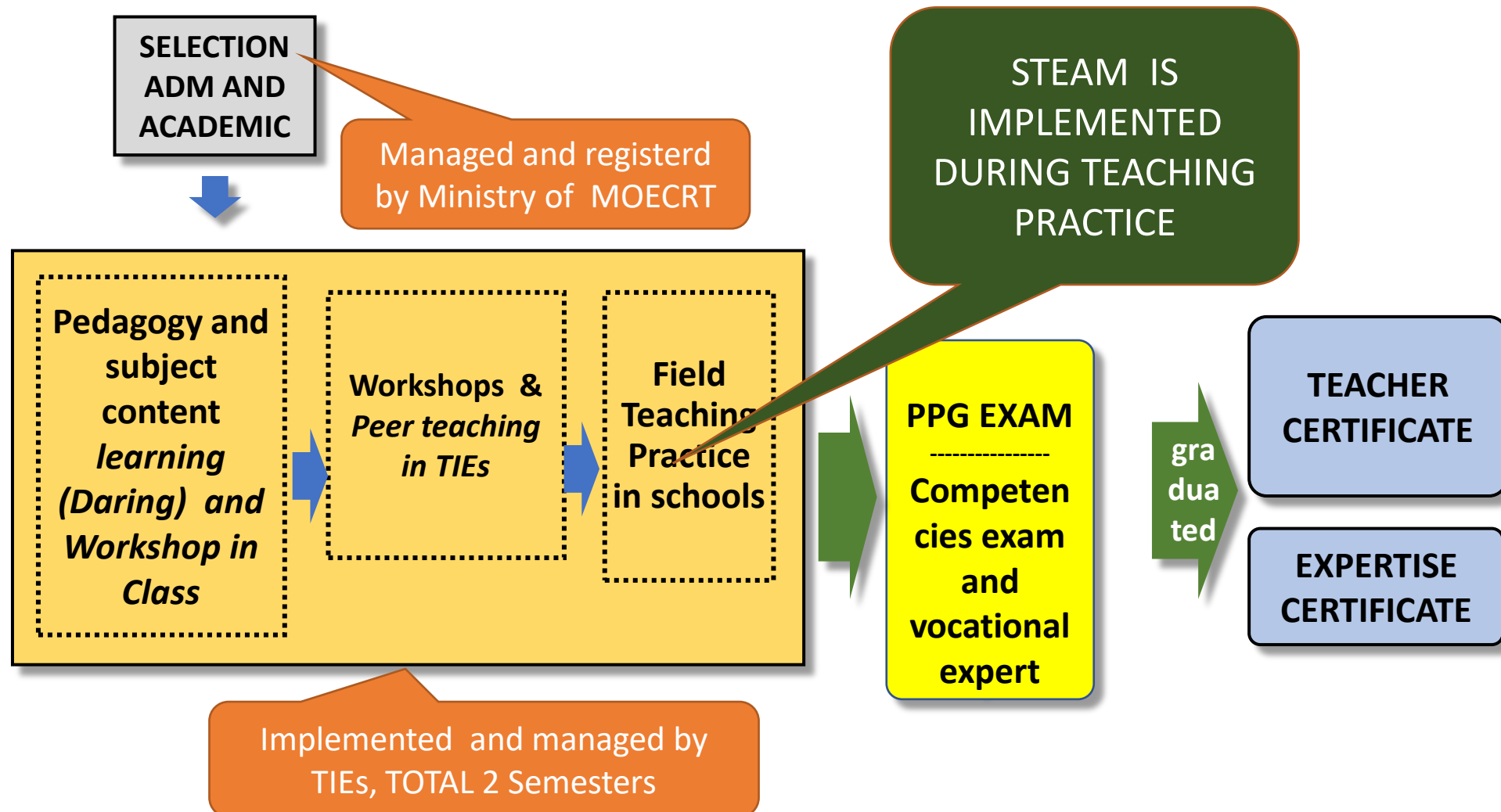


- ❑ It requires all teachers first to hold an academic bachelor's degree, and second to successfully complete a certification process.
- ❑ The law also set minimum competency standards and introduced two new sets of professional allowances, giving teachers incentives to complete certification and to work in remote areas.

PRE SERVICE TEACHER EDUCATION PROGRAM



FLOW OF CHART TEACHER PROFESSIONAL EDUCATION PROGRAM



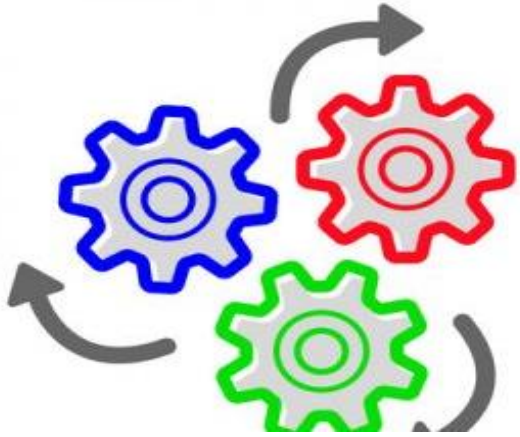
**STEAM ON PRESERVICE
TEACHER PROGRAM**

STEAM BASED ON EXPERIENCES DURING PRESERVICE PROGRAM



- ❑ During Practice Teaching for Future Teacher, we explores strategies to equip students with the skills and knowledge they'll need to be successful teacher in a 21st century workforce.
- ❑ There has been a growing emphasis on STEAM — the educational discipline that engages future teacher around the subjects of Science, Technology, Engineering, Arts and Math.
- ❑ We believe that STEAM as an essential component of 21st century education. In an ever-changing, increasingly complex world, it's important that nation's youth are prepared to bring knowledge and skills to solve problems, information.

WHAT IS STEAM



STEAM is an educational approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student

- inquiry,**
- dialogue, and**
- critical thinking.**



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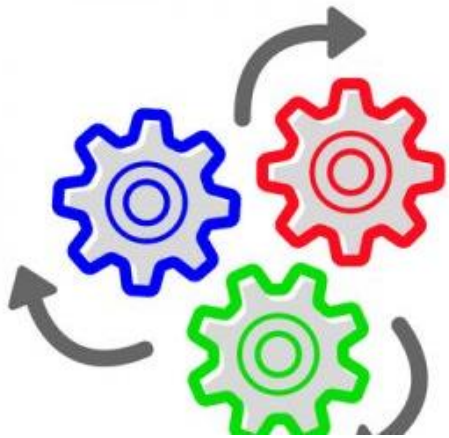


- ☐ **STEAM is an educational discipline that aims to spark an interest and lifelong love of the arts and sciences for students.**
- ☐ **Science, Technology, Engineering, the Arts and Math are similar fields of study in that they all involve creative processes and none uses just one method for inquiry and investigation.**
- ☐ **Teaching relevant, in-demand skills that will prepare students to become innovators in an ever-evolving world is paramount, not only for the future of the students.**



STEAM is an approach to education that empowers students to be curious learners who seek creative solutions to real-world problems;

This helps them develop the soft and hard skills necessary to succeed in future life, their careers, and wherever else life takes them.



WHY STEAM IS IMPORTANT FOR TEACHERS

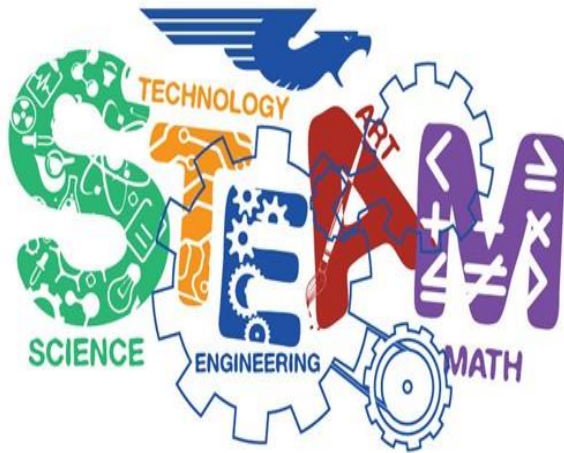


- ❑ **STEAM empowers teachers to employ project-based learning that crosses each of the five disciplines and fosters an inclusive learning environment in which all students are able to engage and contribute.**
- ❑ **As opposed to traditional models of teaching, educators using the STEAM framework bring the disciplines together.**
- ❑ **Through this holistic approach, students are able to exercise both sides of their brain at once.**



WHY STEAM IS IMPORTANT

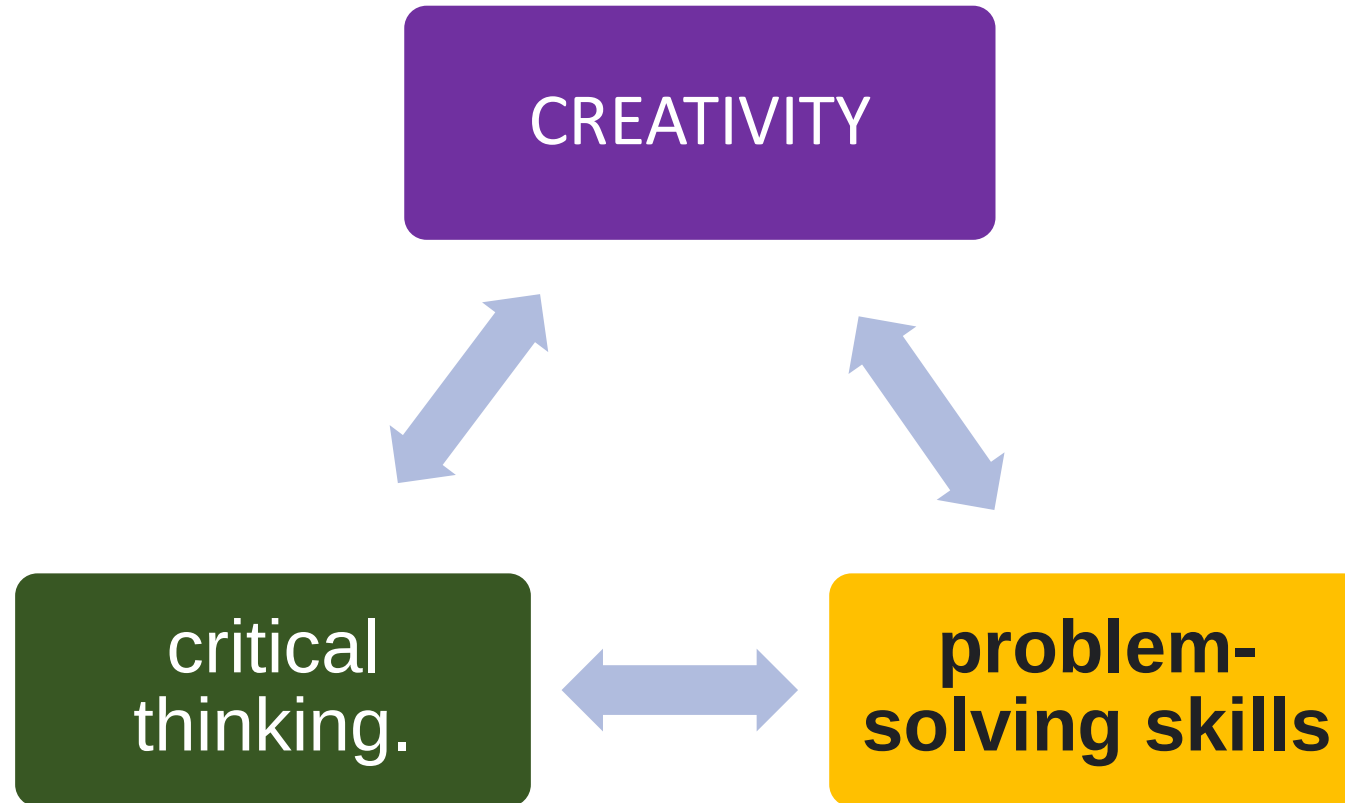
During teaching Practice, STEAM investigates the same concepts, but does this through inquiry and problem-based learning methods used in the creative process





- ❑ STEAM programs expose students to “big picture” concepts seen in the real, physical environment.
- ❑ The hands-on approach that STEAM education encourages can also benefit even individuals in working collaboratively.

BENEFITS OF STEAM FOR STUDENTS





SOME WAYS TO SHAKE STEAM LESSON

Use the Teach
Unplugged
Method

Brainstorm
Project

Learn Through
Conversation

Create User
Stories Before
Design

Connect Daily
Lessons with Each
Project.

1. The using of Unplugged Method



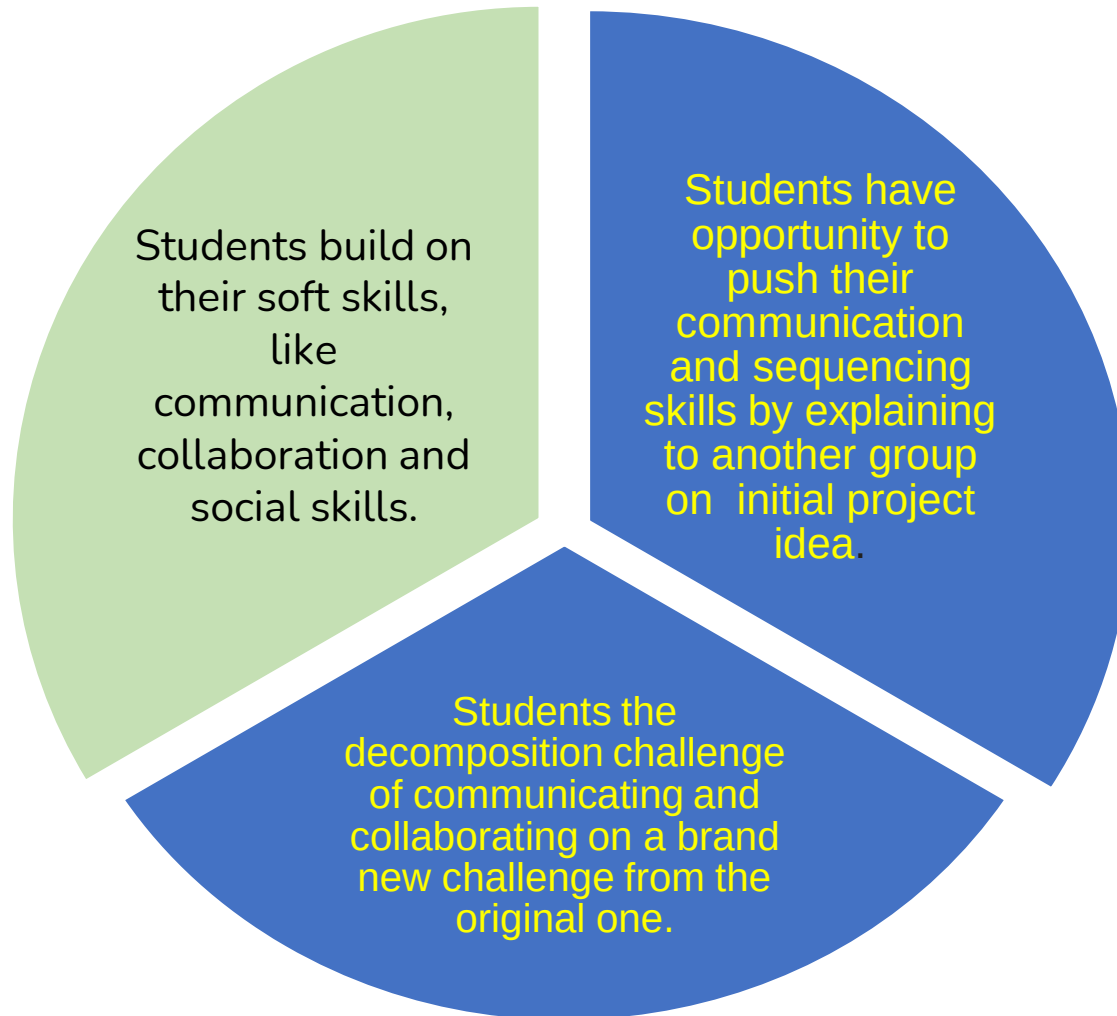
- ☐ Teaching Unplugged is a method that aims to strip away all forms of external stimuli
- ☐ The model recommends temporarily removing many distractions or sources of “barriers” between teachers and students.
- ☐ There’s so much stimuli in the classroom that anything can become a distraction.
- ☐ This can be a great exercise for kicking off a STEAM lesson in the classroom. STEAM learning approach is inclusive with all of the subject areas that it covers,

2. Brainstorm Project



- ❑ Implementing STEAM in your classroom helps students visualize real world context through working on projects that provide solutions to everyday problems.
- ❑ students working in groups, they build on their soft skills, like communication, collaboration and social skills.
- ❑ Gives students the opportunity to push their communication and sequencing skills by explaining to another group on initial project idea.
- ❑ Gives students the decomposition challenge of communicating and collaborating on a brand new challenge from the original one.

Brainstorming Project on STEAM



3. Learn through Conversation (LTC)



- ❑ Learn through Conversation (LTC) is the idea that students can speak productively in class while the teacher listens. By dividing learners into groups to talk to one another, this can often result in student-to-student teaching moments.
- ❑ Model for STEAM in the classroom is that many students struggle with speaking about math, science and technology.
- ❑ Learning through conversation gives these students the chance to speak to one another about what they've learned and pose questions to one another when something doesn't make sense.

4. Create User Stories



- ☐ In the context of a STEAM classroom, future teacher could have his /her students practice classification (categorizing) and brainstorming, prior to their project design.
- ☐ This can help students collaborate, communicate and understand how the user will ultimately engage with their project.
- ☐ students will communicate with one another more effectively, use computational thinking skills to break down the project into smaller pieces and think critically on how to prioritize

5. Connect Daily Lessons



- ❑ By STEAM program, teacher may find time before and after school, may feel like the most your curriculum can afford.
- ❑ Teachers need a way to reinforce the content being taught, and that's where the method of regular practice come in.
- ❑ This way makes STEAM learning alive in the classroom with daily activities that keep the concepts top-of-mind for students and inspire their power of learning

FINAL NOTES

1. STEAM educational approach enjoys the conceptual clarity for teachers and future teachers to design, implement and evaluate didactic interventions based on those educational approaches.
2. STEAM educational interventions are centered on the creativity of teachers and future teachers. STEM education was proven to be of a more nature, by centering the analysis on the products created by the students.
3. STEAM education generated positive effects on student creativity. However, not all future teachers have capabilities in designing and implementing STEAM approach properly.



THANK YOU



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