PENREACH STEAM COMMUNITY OF PRACTICE MEETING: OVERVIEW

Date: 25-10-2021

1. PRESENTATIONS

1	Title	Introducing Living Maths
	Presenter	Steve Sherman
	Organisation	Living Maths
	Key Theme	STEAM Learnings from Living Maths
2	Title	Showcasing Studio SBA: how coding and robotics link with the arts
	Presenters	Ashby Mo
	Organisation	Studio SBA
	Key Theme	Advocacy for STEAM and 21st century learning, as it relates to making use of ICT under-resourced communities and schools.

2. MAIN DISCUSSION POINTS FROM PARTICIPANTS

Number of participants: 29

Presentations:

- Integrating the arts in STEAM can result in formulating authentic programmes that give the arts recognition.
- Collaboration on projects amongst teachers within the various parts of STEAM can also result in an efficient overlap in teaching the subjects.

Issues/Concerns:

- Integrating the arts should constructively extend and overlap two or more of the STEAM components. Prominence should be equally rendered to all the elements of STEAM

Useful Resources shared:

- **STEAM Resources Document** https://docs.google.com/document/d/1seRqpb4eZsgDyIg2rk5ubrJfrHD1MMokU3H9NZt1Ob0/edit?usp=sharing
- **Join the STEAM Facebook group to share guidance, practice and ask questions to teachers around the world:** https://www.facebook.com/groups/steam.learning

Setting the Scene

The facilitator, Susanna Oosthuizen, set the scene by inviting participants to check in by using an emoticon that best represents and describe their location or region. Outlining the theme and agenda, Susanna shared that the focus of the fourth CoP meeting was on advocating for STEAM and 21st century learning, as it relates to making use of ICT in rural and under-resourced schools.

Reflections on the past STEAM CoPs

The STEAM Community of Practice (CoP) aims to continue establishing a space to share ideas and best practice; and to probe relevant questions in and relation to STEAM. In order to stimulate conversations in the CoPs, various experts are invited to present and learnings are captured. This being the fourth and the last CoP for the year, the meeting was seen as an opportune time to reflect on the learnings from the previous CoPs.

Recap of learnings from the three STEAM CoPs that took place this year:

- **CoP 1:** The "Arts" in STEAM was addressed with the objective of ensuring that they are an "add in" and not an "add on" to the learning that takes place in the classroom. It was established that it is crucial to explore more examples on how else this can take place in local learning spaces. This can be done through creating and researching ways to integrate the Arts in STEAM.
- **CoP 2:** ECD and STEAM- the Arts are recognized as a crucial approach of learning and teaching in early learning. As learners proceed to formal education, learning becomes more STEM focused with an exclusion of the art component. This has led to a discussion on how early grades can be incorporated into later grades in formal schooling. To tackle this, the question "how would it benefit STEAM if children of different ages learn together?" was addressed.
- **CoP 3:** Issues regarding the incorporation of trans-disciplinary projects in the CAPs curriculum were identified. These projects require assessment strategies to be put in place.

Presentation 1: Steve Sherman (Living Maths)

A STEAM classroom goes beyond having an art section, a 3D printer, computers and whiteboards and the inclusion of science, technology, education and mathematics; it should also include the various and broad segments of the Arts such as music, dance, photography etc. All these should be integrated in a STEAM classroom and encompassed as not just art but the "Arts".

Merely assigning learners to draw money or the human body, is not integrating the arts component into mathematics or science. Integrating the arts should constructively extend and overlap two or more of the STEAM components. Prominence should be equally rendered to all the elements of STEAM. In other words, mathematics, science, technology and the arts should receive the same attention. Schools consistently make the mistake of permitting untrained STEM teachers to teach STEAM. These teachers cannot integrate the arts or effectively teach STEAM. Collaboration on projects amongst teachers within the various parts of STEAM can also result in an efficient overlap in teaching the subjects.

Why do we need STEAM?

There are changes in the job force and there will continue to be in the future. The skills and certification from 20 years ago show that individuals had to study in a certain way to secure employment, however, this has changed drastically. In the future, traditional curriculum vitae will be irrelevant; and creativity (analytical thinking) communication, collaboration, and critical thinking will form a crucial part of the selection process for employment. Therefore, creativity and the arts need to be promoted in schools as they form an integral part of the jobs of the future.

This video gives an outline of how "schools kill creativity". As learners move into the more formal education, creativity is not encouraged in formal education but remains a priority in primary schools and in early learning. More attention is given to STEM and learners are not encouraged to think creatively.

Click on the link below to see Sir Ken Robinson video:

https://www.ted.com/talks/sir_ken_robinson_do_schools_kill_creativity

Integrating The Arts (True Stories)

Integrating the arts in STEAM can result in formulating authentic programmes that give the arts recognition from this. Below are some videos that show the infusion of the arts in STEAM.

- **Cain's Arcade**. Cain started building an Arcade, using card boxes. This is a good example of how the arts and science can be infused together in a meaningful and significant way. From this idea, the Imagination Foundation emerged.

To learn more about Cains' Arcade see video on the link:

https://www.youtube.com/watch?v=faIFNkdq96U

- **The Global cardboard day of play**. Cardboard boxes are collected and a theme is generated. From the theme, a product is created encompassing all the components of STEAM. The design will be informed by the combinations of the different elements of the arts, sciences and mathematics and engineering components. Such activities do not only allow for play but also stimulate and promote creativity in learners.

Click here to learn more about the Global cardboard day of play:

https://cardboardchallenge.com/

- **Bridge building activity.** Learners choose a real-life situation that tackles real problems. From this project, real life solutions are created to tackle real life problems. A teacher in the USA, connected with a teacher and learners from a school in Kenya, however, learners experienced a challenge when travelling to school, as they needed to cross over a "bridge". He identified this as a problem and initiated a Bridge building project. In order to build a bridge, all those involved in the project had to learn designing, dimensions, fundraising and be able to infuse the arts in the implementation phase. This project allowed real life problem solving strategies and application.
- **Build a Classroom (Imaginary)**. Schools at a closer proximity can benefit from this project. The mathematical, creative and design components can be explored to design a real or imaginary classroom. In addition, collating presentations, surveys and collection of data can also be inclusive of the aesthetics in the classroom. Learners are always excited about getting involved in such projects.
- **Growing a Garden to supply vegetables to the school and community**. in putting together a gardening project, the design, irrigation strategies, writing and other aspects need to be integrated for it to be a STEAM project. The elements need to be brought together in this process.

Additional Ideas:

- **Building a city on mass**. This project allows for STEAM subjects to be integrated; it is an imaginary activity that enables the combination of STEAM elements for the project come to live.
- **Japan using Virtual and Augmented Reality**. These are virtual and augmented experiences, but learners learn to solve real life problems in an effective way. These are also creative pathways that can stimulate learners to be solution orientated. For instance, learners get to experience virtual flash floods, earthquakes and simulated smokes.

Learners in Japan experience virtual Flash Floods

Video can be accessed here: https://sq-al.facebook.com/unisdr/videos/the-waters-are-rising-japan-is-using-augmented-reality-to-teach-children-about-t/385102939859158/?__so__=permalink&__rv__=related_videos

- **The Google cardboard app** can be used as an interactive tool which includes virtual reality.
- **Elections.** the elements of STEAM can be used to design election campaigns, these can include designing posters, speeches, and can inform marketing decisions.

Questions and Answers

Question: How do we strengthen ineffective existing systems in education?

Answer: "It all starts at the top; the education system should have a vision which directs the changes and shifts that should occur. A professional body that assess basic education needs and the needs of the economic is required. All stakeholders should be involved in this process. In aligning skills to jobs, the industry can guide universities on relevant skills. To connect learners to opportunities, the UCT high school is a game changer as it creates a link between high schools and universities. The four Cs are important in this regard to future proof our country. The education system should not lower pass standards to accommodate learners but rather pushing learners to reach the standards is key".

Question: What are the indigenous ways to implement play-based learning in low socioeconomic spaces?

Answer: “Teachers are not developing STEM resources. They should collaborate in a way that will enable them to develop indigenous resources. Ideas can be drawn from other countries but should remain local and original. Teachers should gather together and develop resources drawing from other countries and use this to develop an indigenous knowledge system that will inform local STEAM based programmers that are relatable. “

Presentation 2: Ashby Mo (Studio SBA)

An artist perspective

Ashby showcased Studio SBA and how coding and robotics link with the arts, through a creative recovery approach. Ashby Mo described the creative recovery intervention as a coping mechanism and a lifeline. The book, The Artist’s Way by Julia Cameron, also helps artists to build courage and embrace themselves as artists. The creative recovery intervention is a program that runs for 12 weeks and involves various activities and exercises. An individual is required to write 3 pages in a notebook each day and integrate this with the activities in the manual. This activity includes capturing one’s thoughts each day. This process involves creativity which, in turn, enables individuals to find answers to the questions they may have in their personal, social and community spaces.

Two important things that the course teaches:

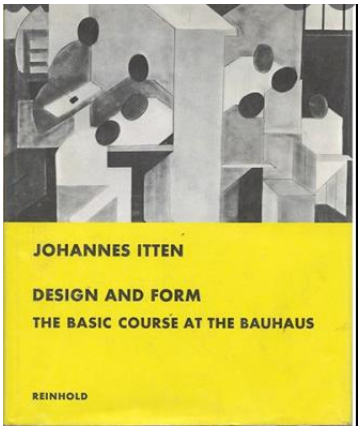
- the best way to be creative, and a great way to loosen up and start the day creatively.
- It allows one to be in touch with their creative self.

Some of the benefits of the book are:

- Behavioral changes, increase in confidence, have direction, self-discovery and making informed decisions.
- It encourages individuals to take care of themselves, value themselves, whisper the universe into action, unwrap mental block and use everyday messages to cement affirmation.

Design and Form by Johannes Itten:

The Johannes Itten "Design and Form" book incorporates all disciplines, and all levels. The book can be used as a practical guideline, to create a holistic course that is hands-on for learners while encouraging creativity. Learners are fully engaged and take the initiative for their development in the programme. Learners get involved in activities like yoga that stimulate their body and mind. This activity allows their body and mind in sync.



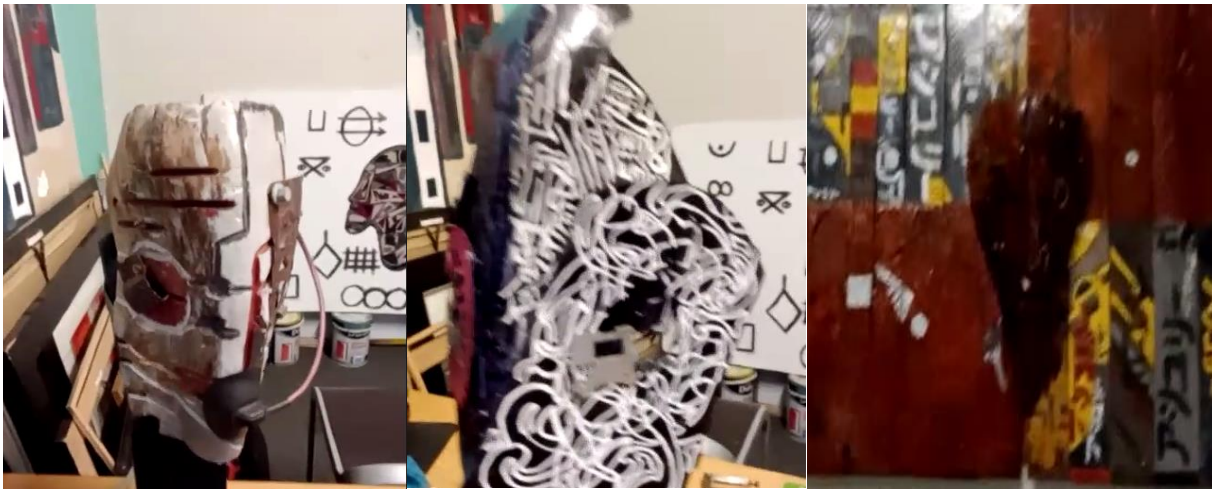
Johannes Itten: Design and Form Book

"My teaching was intuitive finding my own emotion gave me the power which produce the students 'readiness to learn"

"To teach out of inner enthusiasm is the opposite of a mere preplanned method of instruction, my best students were those who have, inspired by their own intuition, chosen other new paths. Superficial imitation of my example lacks this spark of inspiration" …almost instinctively I recognized that any criticism and corrections have an offensive and destructive effect on self-confidence. No field of human activity in

Ashy shared that emphasising human values is key in teaching STEAM, because it allows individuals to accept, embrace, respect and encourage differences in a constructive way. In education, this can result in a healthy and conducive learning environment. This can be merged with creativity, communication and encouragement which are key. Ashby has started a vegetable garden and has extracted ideas from this session on how he will incorporate the arts in starting the garden.

A tour of the current Studio



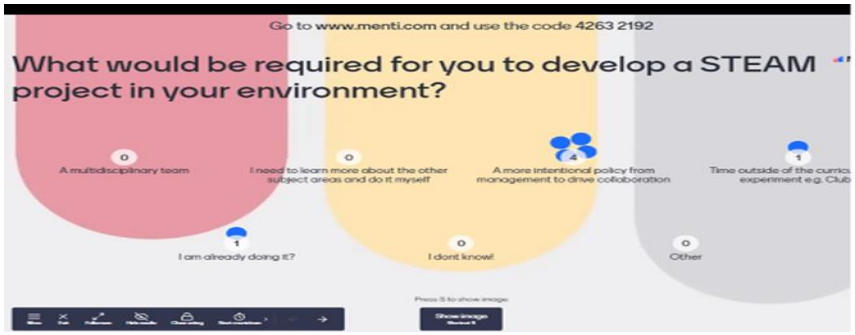
The studio creates artwork, which is later shared with science hubs, technology spaces, companies and education places that incorporate art designs in sciences. The artwork uses old objects from the past to design products in a way that makes it look as though it is from a different time. For instance, discarded material is used to create the below art forms.

The Westbury Renaissance group

The aim of the group is to create an environment that stimulates visual creativity by creating spaces and material on the exterior of the community. The arts are the best way to enliven and improve various aspects of the community life. This group does not only benefit the community, but also hopes to change the outlook of the Westbury community and schools.

Close Out

To close the CoP, Susanna thanked all presenters and participants for the stimulating engagement. Information and dates regarding the next CoP will be announced in due course.



The CoP is reminded of BRIDGE's knowledge management role. All meetings, presentations and discussions are captured and shared on BRIDGE's Knowledge Hub. To view, follow this link.