Academic Year: 2023 – 2024

Shifting Gears to Transform Education

# STEAM EDUCATION REPORT

## THE PROGRESS OF STEAM IMPLEMENTATION

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# Overview of Report

With both students and teachers being thrust back into the physical environment, some unexpected challenges hindered the complete success of the Jamaica College STEAM program in the academic year 2022 – 2023. However, the academic year 2023 – 2024 has proven to be more successful as outlined in this report.

This report will summarize the wins and losses encountered over the 2023 – 2024 academic year. Where success was identified, strategies will be implemented to maintain and to increase these wins for the upcoming school year and where gaps were identified, proposed strategies will be outlined to facilitate improvement in the academic year 2024 – 2025.

This report will depict the overall progress of the STEAM implementation that was made from academic year 2023 to year 2024, The analysis of feedback received from teachers of grades 7 to 9 will also be presented in this report along with proposed strategies to move forward successfully with the STEAM infusion program.

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# Year In Review (2023-2024)

**Successes of the Year**

The academic year 2023 – 2024 has proven to be more successful with the progress of the STEAM infusion program in comparison to the 2022 – 2023 academic year. In 2022 – 2023, there were only **30%** of the overall departments that utilized the STEAM methodology. In the 2023 – 2024 academic year, 100% of the departments utilized the STEAM methodology although some departments made use of the STEAM methodology to a greater extent in comparison to others. Among the departments using the STEAM methodology are Science, Humanities, Modern Languages and TVET who accounted for **68%** of the teachers who are actively using the STEAM methodology to deliver their lessons. It is refreshing to see a few departments from the "Arts" category taking the lead to drive the STEAM education initiative.

**Description:** Students created a 3D model of the eye.
**Teacher:** *Ms. S. Smith – Biology Class.*

**Description:** Students learning about Anaerobic Respiration by extracting bacteria from goat milk. Click here to see the videos.
**Teachers:** *Mrs. Cooper-Stewart & Ms. Harvey – Biology Class.*

**Description:** Students creating a working model of a breathing mechanism. Click here to see the videos.
**Teacher:** Mrs. Cooper-Stewart – *Biology Class.*

**Description:** Students created working weather instruments
**Teacher:** Ms. L. Burke – *Geography Class.*

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|  **Description:** Sample of student's original music about tourism. Click here to listen to the song.<br>**Teacher:** Ms. L. Burke – Geography *Class.* | | |
| Hhhh<br>See more: **CLICK HERE** | | |
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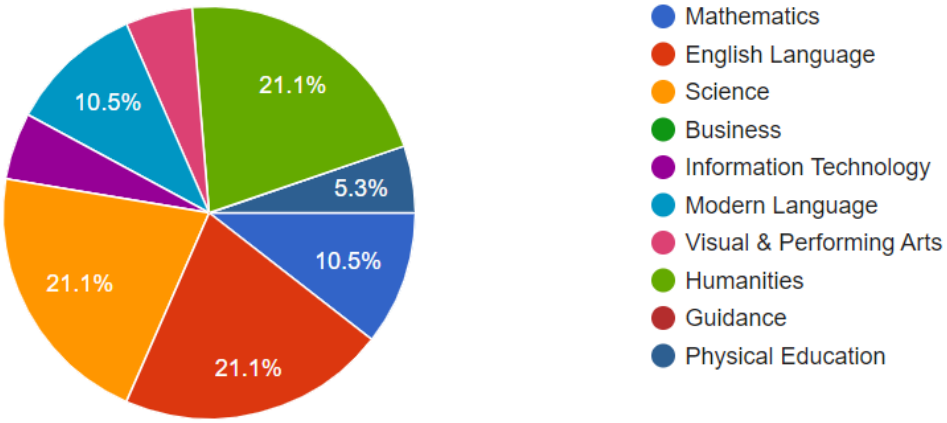
| | | |
| **Videos of other STEAM Classes:**<br>Auto Mechanics Class – **Teacher:** *Mr. Martin*<br>Biology Class – **Teacher:** Mrs. Cooper-Stewart<br>Chemistry Class – Teacher: Mr. McIntyre<br>Chemistry Class – Teacher: Mr. Christian | | |

**Areas Identified for Improvement**

**Analysis of Feedback form Teachers**

A survey requesting feedback on the STEAM education program at Jamaica College was distributed to 45 teachers who teach grades 7 to 9. Nineteen (19) teachers **(42%)** of the 45 teachers responded to the survey. Among the 19 respondents **73.7%** of these teachers also teach upper school classes which indicates that their focus on infusing the STEAM methodology in their lessons is divided.

The responses from this survey captured a complete sample of all departments within the school; see *figure 1* below.



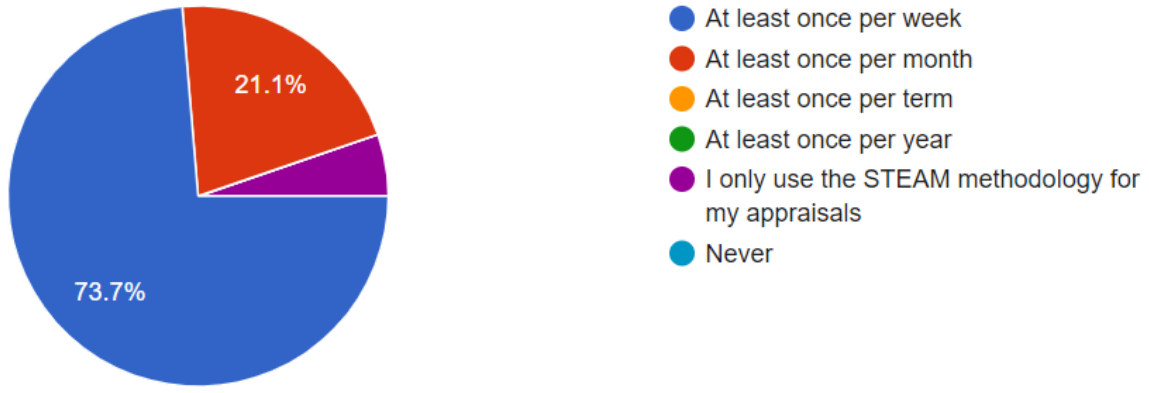

An average of **89.5%** of the teachers demonstrated an understanding of the STEAM methodology while the remaining **9.5%** showed a lack of understanding of the STEAM methodology. Teachers who demonstrated limited understanding of the STEAM method selected the following options to describe their understanding of the STEAM approach.

- Students conducting online research and producing a printed project.
- Students receiving notes in class from a PowerPoint presentation.
- Students watching a video on the smart TV in the STEAM room.
- Students listening to an original song, poem, or story created by the teacher using technology.
- Students completing a worksheet in groups.

Most of the respondents **(89.5%)** demonstrated a keen understanding of the STEAM methodology through their selection of the following options to describe the STEAM approach.

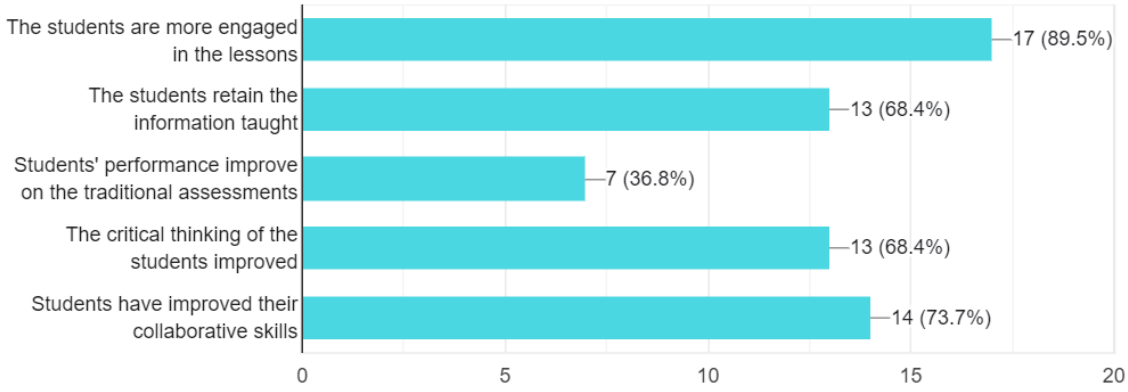
- Students identifying and solving problems that exists in their environment.
- Students applying principles from various subject areas to solve a problem or reinforce a concept.
- Students expressing their understanding through hands-on activities

With the selections outlined above, it can be concluded that majority of the teachers have a keen understanding of the STEAM methodology. However, while **89.5%** of the teachers indicated that they understand the STEAM methodology, only **73.3%** use the STEAM approach in their lessons at least once per week while **21.1%** use the STEAM approach in their lessons at least once per month and the remaining **5.3%** only use the STEAM approach when being formally appraised; see *figure 2* below.




Among the many challenges encountered with the implementation of the STEAM methodology, **57.9%** of the teachers selected that the disruptive behaviour of students is one of the main issues that they encounter when trying to infuse the STEAM method in their lessons. Other challenges that were noted when implementing the STEAM methods are the lack of resources to facilitate the lessons as indicated by **47.4%** of the teachers; **26.3%** mentioned that there is a lack of motivation to use the STEAM method because of the absence of a performance incentive; **21.1%** stated that there is limited time to prepare the STEAM lessons; **15.8%** stated that it is too time consuming to facilitate the STEAM lessons and they do not believe that this approach aids in the preparation of the school's traditional testing methods; **10.5%** indicated that their lack of knowledge prevents them from successfully implementing the STEAM approach and the remaining **10.5%** stated that they encountered no issues when implementing the STEAM approach.

Although challenges with the implementation of the STEAM approach were encountered, 89.5% of the teachers admitted that when the STEAM methodology is used students are more engaged in the lesson; 73.7% stated that they saw evidence of improvement in their collaborative skills; 68.4% stated that when the STEAM method is used, the students retain the information taught for a longer period and their critical thinking has also improved. 36.8% saw an improvement in the students' assessment scores; see *figure 3* below.




To successfully implement the STEAM approach, 52.6% of the teachers require school leaders to support with continuous face to face and self-paced training, implementation of an incentive program and education of the students about this approach. 47.4% of teachers also believe that the school's administrative team should educate the parents about the STEAM methodology. Other teachers require support through coaching and feedback based on class visits, access to sample STEAM lessons for varied subject areas, and controlling the discipline of the students in class.

Additional responses in the survey also indicated teachers' concern about the time required to plan; they lamented that planning in department meetings after school is not feasible and designated planning time needs to be designated for STEAM. However, a few teachers added that they see where the STEAM approach can be successfully implemented and contribute the students being more engaged and owning their learning outcomes.

Overall, it can be concluded that most teachers understand the concept of the STEAM methodology even though they may encounter some issues that hindered their success with using this approach. It is determined that most teachers are willing to learn more about the STEAM approach and use this method in their lessons.

**Moving Forward (Year 2024 – 2025)**

Upon reflection of the 2023 – 2024 academic year, the STEAM methodology has become a way of teaching for some teachers but for some, there is still room for growth and development. For the academic year 2024 – 2025, the following strategies outlined below will be implemented with the aim to fuel the success of the STEAM Infusion program.

**Increase monitoring of STEAM Infusion Lessons**

- A formal schedule will be developed for all lower school classes to monitor the quality of STEAM lessons; where gaps are identified, coaching sessions will be scheduled and

where strengths are identified, the teacher will be used as a resource person for other teachers who need assistance regarding the infusion of STEAM.

- □ Informal class visits will be done more frequently (at least once per week), and the findings thoroughly documented to gather data on the teaching habits outside of formal class visits.
- □ A central repository will be created for teachers to share their students' work that was done through STEAM activities and videos of their STEAM infusion strategies.
- □ Distribute online surveys to parents and students to gather feedback on the use of STEAM methodology in lessons.

**Increase Awareness of the STEAM methodology among Students and Parents**

- □ Create a one pager for circulation (*Email & WhatsApp groups*) among students and parents educating them about STEAM education and the role of each stakeholder *(Student, Parent, Teacher and School Leaders)*.
- □ Use the PTA body as a medium to educate the parents about the STEAM methodology; what to expect and their role.
- □ Use year group devotions to educate students about the STEAM methodology; what is expect and their role.

**Increase STEAM training & Professional Development Opportunities for Staff**

- □ In addition to training at the beginning of each term, self-paced courses and pre-recorded videos will be created to train teachers on the STEM methodology at their own pace.
- □ Teachers in need of assistance will be able to book consultation sessions with one of the STEAM lead teachers.
- □ External STEAM expositions will be sourced and shared among staff to increase their exposure and participation in the wider STEAM fraternity.

**Develop a STEAM Project Bank**

- □ Collate a list of issues identified within the students' immediate environment such as problems at school, home, and wider society.
- □ Gather sample STEAM lesson plans for various subject areas.
- □ Gather sample STEAM projects that can be used by various departments.

**Implement Motivational Strategies for Students and Teachers**

- □ Promote STEAM Challenges for students by having students solve real-world problems and showcase their solutions in a healthy competitive manner.
- □ Showcase students work at general devotions and internal and external expositions.
- □ Create a performance incentive model for teachers of STEAM Lessons. This might include "Top STEAM Teacher for the Month" and "Top STEAM Teacher for the Year".