



African Girls Coding Camp Initiative (AGCCI)



2018 Report

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Abbreviations

AGCCI	African Girls Can Code Initiative
AU	African Union
CS	Computer Science
ICT	Information and Telecommunication Technology
ITU	International Telecommunication Union
IOT	Internet of Things
SDG	Sustainable Development Goals
ToT	Training of Trainers

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Background

African Girls Can Code Initiative (AGCCI), is an initiative implemented by ITU, UN Women and the African Union Commission, and is designed to **expose and equip young girls with digital**



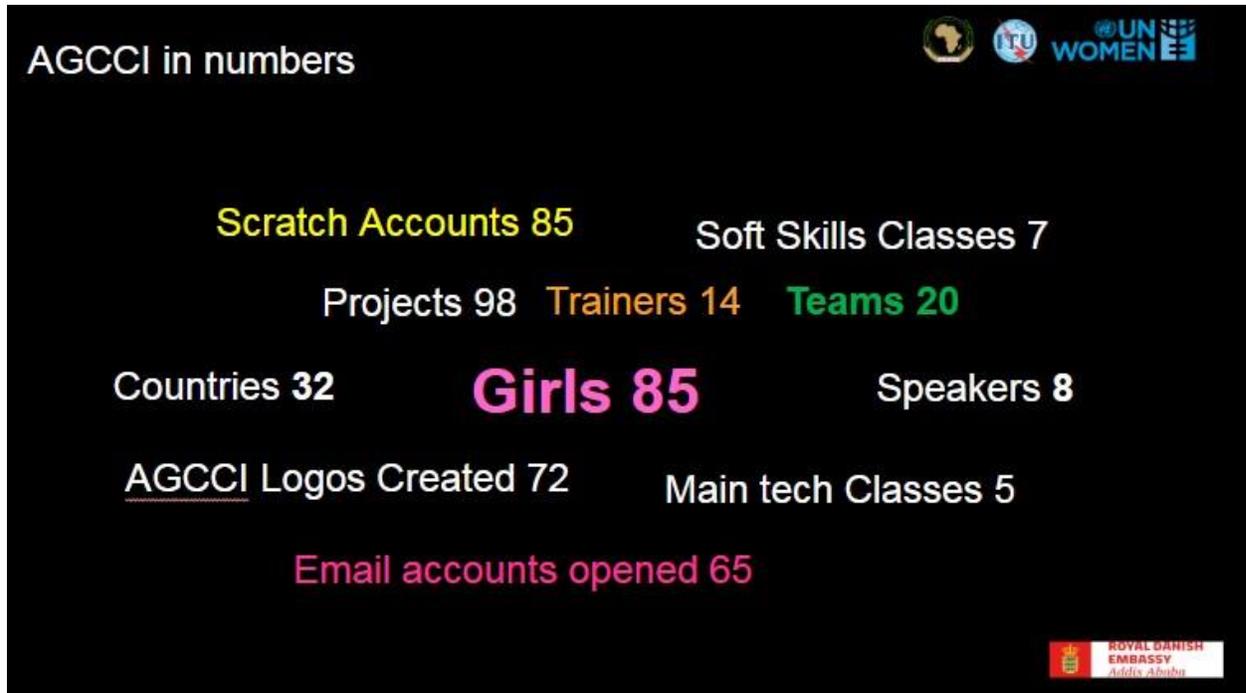
literacy, coding, making and personal development skills. The four-year programme trains young girls to become programmers, creators and designers, placing them on track to take up educations and careers in ICT and Coding through the following three main components:

1. **Coding Camps in countries across Africa targeting young girls aged between 17 – 20 years from all African countries.** The first Coding Camp in Addis Ababa in summer 2018 with young girls aged 17-20 years from all AU member countries. ITU and UN Women aim to scale up the Coding Camps over the coming years, making them annual events, which will take place in different countries reaching over 1,000 girls directly and many more indirectly through the online platform within the four-year period.
2. **Mainstream ICT, coding and gender into the national curricula** – work closely with Ministries of Education and Ministries of ICT in countries across Africa. This part of the Initiative allows millions of both urban and rural girls to learn IT skills from the early stages of their primary, middle and high school education. In this way ICT will be ingrained in young girls and they will reap the benefit of the global digital boom.
3. **National media campaigns involving role models (e.g. women in ICT, female teachers in schools)** – inspiring young girls and women to choose educations and careers within coding and ICT.

The first regional camp took place in Addis Ababa, Ethiopia from 20th August to 1st of September. The AGCCI 2018 trained 85 young girls across Africa on coding using SCRATCH programming language for two weeks through the five learning tracks; Animation, Gaming, Robotics/IOT, Coded Embroidery (if this is the new we have to stick to it. We cannot change to Tuttle Stitch later on in the report) and Fashion and Art.



AGCCI Overview



Summary

Week I

The first week commenced with Training of Trainers sessions (ToT) that took place on the 18th and 19th August, 2018. The aim of ToT sessions was for the trainers to develop and plan the curricula tool for the program and for team building. The two days' ToT had team building activities, sessions on understanding and reviewing of the program agenda, and finally, the trainers got to present their plans on technical and non – technical sessions. The general technical sessions were Introduction to Computer Science, Introduction to Scratch, Scratch Deep Diving and Graphics Designing. The main technical sessions and five learning tracks of the AGCCI camp were the Scratch for Animation, Robotics and Internet of Things, Gaming, Coded Embroidery and Fashion and Art. The non – technical learning tracks and classes were the Gender Mainstreaming that had four components, which entailed Girls and Leadership, Sustainable Development Goals with a focus on goal number five, Financial literacy, Youth and Human Rights and Design Thinking.

On the 20th to 25th August, the students were taken through a series of sessions on both the nontechnical and technical modules. The morning sessions began with non-technical sessions and general technical learning tracks such as Computer Science, Introduction to Scratch, Scratch



Deep Diving and Graphics

Designs. The afternoon sessions on the other hand, had technical learning tracks with the three days also focusing on the students and trainers to get to bond and understand basic concepts of computing. During the Thursday and Friday of the first week, the students were also introduced to the four learning tracks; animation, robotics/IOT, coded embroidery, fashion and arts, and gaming, whereby, every students attended all the learning tracks with the aim of selecting a track that they would want to deep dive into and develop projects for showcasing on the last day of the camp during the innovation fair.

On the 24th August, Friday evening after the sessions, the initiative was launched with key remarks from ITU, AU, and UN Women. During the opening, Mr. Andrew Rugege, ITU Regional Director for Africa commended the partners for their contribution to AGCCI. Mr. Rugege was delighted and proud to see a group of AGCCI African youths especially the females who are excited to be the leaders in innovation and entrepreneurship through ICT, the sector that is highly dominated by males. Mr. Rugege also briefed on the AGCCI by pointing out that it was born during the Girls in ICT Day commemoration that takes place every year in April. In his remarks, he hinted that they saw the need to do more and with partnership, AGCCI was made possible. He also urged the students to develop solutions that will cater to the community demands, and that he was looking forward for great projects that are solution oriented.

Giving the remarks from the UN Women, her Excellency Phumzile Mlambo, the UN Women Executive Director through a video message highlighted that it is important to increase the number of girls who are participating on the fourth industrial revolution, that more girls should participate in technology thereby understanding how technology and coding can solve the problems of the 21st century. In her remarks, she also emphasized on the need to develop applications that advocate for different solutions such as clean water, reduction of HIV/AIDS, and others that will cater for the women's and girls' needs.

From the African Union, her Excellency Amira Elfadil Mohammed Elfadil, Commissioner for Social Affairs highlighted that AU targets to have AGCCI module integrated and adopted as part of the school curriculum in all African countries, so that it empowers more women and young girls in Africa. In her remarks, her Excellency Amira also noted that the young generation holds the key to a stable and peaceful Africa, and the realization of agenda 2063, It was therefore important, according to her, for all key stakeholders to join hands and contribute to the girl child education. She expressed her passion for AGCCI indicating that this was one initiative that shows Africa in a positive light and had the potential of great impact on socio-economic development on the Continent.

The policy statements ended with a keynote from the Honorable Minister from Ethiopia Hon. Minister of Science and Technology who said.....

The Commissioner of..... of the AUC ended this segment by reading out a passionate and inspiring poem she wrote on AGCCI.



Thereafter, a panel of students followed whereby they were asked questions on their experiences at the camp. The questions explored the possible opportunities that the girls came across and how they envision to contribute their ideas and plans during and after the camp. The session was then followed with entertainment from the students, and dinner was served.

In the closing remarks, one of the representative from the AU (who) called upon the high officials who attended the session to support the initiative so that all the 55-member states of the African Union can all benefit from the program.

The first week ended with the students' industrial visit at the Ministry of Science and Technology, where they got to learn and were inspired through discussions on the initiatives carried out by the Ministry.

Week II

The second week was focused on introducing the students to the intermediary and advanced levels of the four learning tracks. The week also focused on the development of students' projects on their respective selected learning tracks. The students were also taken through the four general and non-technical sessions which focused on Youth for Human Rights, Financial Literacy and a [Motivational Talk](#) covered by UN Women Representative Tanaka, and finally [Understanding African Union](#) presentation from AUC Representative, Ms. Sophia Adam. (you are also missing the first motivational speaker during Week I, please include.)

On the last day of the week, i.e. Friday 31st August, the innovation fair and closing event was held. It commenced with opening remarks from the young girls whereby they gave an overview of their experiences of the two weeks camp. Thereafter ITU, represented by Mr. Andrew Rugege congratulated the students, the trainers and partners involved in AGCCI, he also urged the girls to continue with the concept of competition and the confidence that they have gotten and they should practice frequently on the skills that they obtained. He also assured the students that an online platform will be developed whereby they can find resources, networks on which to communicate with others like minded individuals within the Gender empowerment, ICT and Coding industries. His welcome remarks was followed by Madam Letty, representative from UN Women, who made remarks in which she thanked everyone who was involved in the program and urged the girls that since they are going back home with more skills and knowledge they would therefore be the pioneers of AGCCI and lead Africa by taking the world by storm and that she will follow up on their progress.

The AUC Director of Communication representing the AUC Commissioner followed after and she highlighted that the young girls should share their skills and teach other young women and men and that AUC are counting on them the commission will remain at their service. The Danish embassy representative (name) also gave his remarks and highlighted that the Danish Embassy have a strong belief on the project and it there the hope that the initiative contributes to the



economic growth in Africa, he also urged the girls that they might have a long journey ahead but they should always note that they have their support. Abella Bateyunga, the Lead Trainer gave a report on the last two weeks of the training where she highlighted the various aspects of the program.

The girls also had various presentations such as the Ethiopian dance and recitation of a poem written by the girls. The Girls then got into pitching sessions where they presented their projects before the audience as a demonstration of what they had learnt over the last two weeks. The girls presented on Gaming, Robotics, Animation, Coded Embroidery? and Fashion and Art. There was also a fashion show themed “We wear what we code fashion show” where outfits designed and made by the Girls during the two weeks under the direction of a Fashion Designer and a Seamstress were modelled on the runway. The AGCCI Logo award was handled where Maphonga Sizolwethu winner of the logo design challenge among 72 entries that were submitted was awarded with a Smartphone. After the issuing of the awards the girls had an innovation fair whereby they showcased their projects to the audiences who visited their tables and explained the entire coding process. The day ended with the girls visiting the Ethiopian airlines where they had an opportunity to see a plane from close quarters, visited the Aviation Academy school and had a lecture from the Digital Director of Ethiopian Airlines on Digitalization.

Session and Classes

Non -Technical and Technical Sessions Learning

The Non – Technical skills which comprised Motivational Talk from UN Women Representatives and Understanding African Union presentation from AU Representatives and Mainstreaming Gender which had four elements; Youth for Human Rights, Financial Literacy, Girls and Leadership, Design Thinking and Sustainable Development Goals equipped and introduced young girls to different concepts. The motivational talks and understanding of AU enlighten the girls with how determination, hard work and persistence can results to success and on the element of understanding AU they were enlightened with the history of African Union, its agenda, vision and objectives, meaning of the logo, medium-term plan (2018-2023) and the AU Youth Volunteer Corps that was launched on December 2010.

Mainstreaming Gender through the four learning session on SDG’s presentation the participants were taken through the 17 SDG’s and were also introduced on the three subgroups of SDG’s goals; biosphere, society and economy that entailed other SDG’s that falls into the three categories. The students also learnt and focused on the SDG goal 5 – Gender Equality and its importance to the society of which the discussed highlights were basing on the need of women empowerment and addressing of the realistic issue and challenges faced by women such as harmful traditional practices, child trafficking, teenage pregnancies, early marriages, community perceptions and stereotyping that results to gender inequality.



[Girls as Leaders](#) introduced the students to some of the famous women leaders in Africa and grouped the participants to research on their qualities, contributions, achievements and similarities then the students presented on their research. The Africa leaders researched and presented were; Merneith Hatshepsut the ruler of Egypt- North Africa, Winnie Mandela the mother of nation –South Africa, Dr. Wangari Maathai the environmental political activist –East Africa and Ellen Johnson Sirleaf the first female president- West Africa. The young girls also got informed with some of the statistics and findings regarding women’s leadership and the need for more women to be involved at the leadership role in different ranges in the community. Statistics shows that only 21 percent of females are executives compared to 79 percent of males and that according to McKinsey and Co’s Women Matter Africa, 2016 research showed that 62 percent of women are at non- management levels, 29 percent are at mid- management level, 33 percent at senior management and 16 percent at the board and when women were interviewed on the reasons of women not undertaking senior levels and of which most responded that it was because of fear of being judged. A discussion was also conducted on the need of women empowerment and students contributed to it, of which through the discussion it was clear that there is a need for initiatives like AGCCI which empower more women and young girls and create role models for the present and future generation.

[Youths and Human Rights](#) familiarized students to various elements such as on the definition of human rights, the misconceptions of human rights and the involvement of girls on exercising their human rights and types of human rights. A discussion also took place after watching a video advocating on human rights and after the students researched on the various types of human rights. They shared their contributions on what were some of the human rights that they came across and which ones stood out to them. And on Financial Literacy which had four components: earn, save, spend and donate. On the earn component the discussion and presentation revolved around the reason of why people earn money and among the reasons discussed is to have financial freedom, give back and be financially stable were the discussed key points and also the various ways of earning were discussed. The save component was discussed and its importance of saving especially for the future need arise and as a retirement plan. The spend component had four elements: what, why, when and how do people spend money and the reasons as some have been because of emotional attachment. And for the donation had for element also the what, why, to whom and how and the importance of donating money to various associations and the community for the people in need and as a result can improve the life conditions of the society and also led to development.

[Design Thinking](#) explored the process and steps to be used while solving a problem. The steps not only inform an individual but also provide insights and alternative solutions or options to the problem or situation. The aim of design thinking was to equip students with tools of problem solving but also prepare them for project pitching and presentation. The steps and process highlighted were the four basic steps of design thinking; feel which is equivalent to understand, imagine is similar to ideate, do or prototype and share is equivalent to test. Each process is significant and leads to an innovative solution that is appropriate and effective for the problem.



been solved. The feel concept is

when one is understanding the problem and identifying the challenge basing on user requirement and the imagine which is similar to ideate one gathers all the possible information and also brainstorms on the solutions and idea to either improve, enrich or change the user experience. Do is all about creative agency and the ability to take timely actions which involves critical thinking, planning and documentation as the idea is been kept into action. And sharing is about testing your idea and solution with others as your users comment or enjoy your product. The entire four steps are a repetitive cycle when it comes to design thinking and it can be employed while solving minor or major challenges as well as when developing or improving innovative solutions.

Technical learning tracks

The technical Learning tracks were divided into general and the four main options that students were to select general ones were; Introduction to Scratch, Scratch Deep Diving, Introduction to Computer Science and Graphics Design. The general component aimed at equipping the students with basic knowledge that is crucial for beginners in computer literacy and programming but it also aimed to equip them with basic skills for the camp challenges such as the AGCCI Logo challenge that every student was to participate and create a logo that would be adopted for the camp.

In [Computer Science](#) the objectives for the session was to identify what computer science is and discuss why it matters and teach students on how to write programming using algorithms to complete a coding challenge and also introduced them to encoding and decoding. The participants had a series of activities of which one was to code with lightbot 1 and performed a coding activity without a computer by using of plastic cups. The activities introduced to the participants were aimed at introducing them to coding and logical thinking.

[Introduction to Scratch and Scratch Deep Diving](#) objective were to introduce participants to scratch platform and its interface such as events, controls, motions, conditions, pens, looks, sounds and loops. It was also aimed to prepare students to create projects in Scratch and understand the online community of the Scratch platform. The activities carried out were interacting with the platform, opening accounts on Scratch and working on mini- projects while learning the Scratch interface. And [Graphic Design](#) session aimed at highlighting the importance of graphic designed and at introducing the students to design and artistic thinking. The participants also integrated with Canva and were taken through the various elements such as the gallery, fonts and colors then the AGCCI logo competition was announced and the selection criteria and its requirements.

The five main learning tracks, in [animation](#) as intermediary and advanced level the students were taken through the objectives of animation is a series of frames, recognizing the flow of controls, drawing backdrops, sprites and timing of animation and focus on project idea actualizations. The students were also introduced to concepts such as word animation, sequence, loops and events all with the aim of introducing the studentsto the components that will eventually be used to create animation projects.



The [Animation class had four](#) projects that were eventually developed, the Five Warriors groups created the barriers to girl's education project; the project aimed at creating awareness on the limitation that young girls to education and it advocated for the rights to young girls education. The second animation was created by the Girls Can Code group; the animation was based on gender equality, hence focusing on SDG goal number five. The Scratcher's group animation story focused on ending child marriage and it advocated for girls not to be treated as brides., The fourth group and project, Winners Leaders, focused on climate change conversation and particularly based on air pollution.

The [Fashion and Art](#) objectives were to explain the basics of Fashion Design and the process from concept to garment, understanding what is involved in fashion designing, knowledge of fabrics and colors and their relation to body type and skin tone and knowledge of drawing with correct proportions. The other objectives were to create a style and learn cutting and stitching concepts, use Scratch to develop an animated fashion show, and sewing form-fitting dresses with turtle stitch designs by collaborating with the Coded Embroidery class. The [fashion and art class developed 5 projects](#) using different fabrics including a Khanga that was designed by a Tanzanian designer during a competition done by Tanzania Bora Initiative of which the messaging of the Khanga entails that in every two women in Tanzania one faces gender based violence, be it physical, psychological, sexual or emotional abuse. The Fashion and Art class also created outfits that were used by the Coded Embroidery class which stitched and did hand embroidery of their coded patterns and embroideries on outfits made by the Fashion and Art Class. The groups in Fashion and Art class that developed the five projects were Ethio- Sahara, Les Glam Filles, Fashion Passion, Ethio – Malawi and African Para Sembre.

The objectives of the [Gaming learning track](#) were to introduce students to the world of games and game development, to show the opportunities in gaming, how to make games through the Scratch platform and on how to tell stories using games. The components were such as reason as why gaming, careers in the gaming industry and pseudocode for an African game. The Gaming class [created three games](#) of which the Fantastic Five group created a cattle jumping game drawn from the traditions of Ethiopia where when one wants to marry the man has to jump over cattle so that the man can be given permission. The aim of this game is showing the traditional practices carried out in some African Communities. The Gaming Girls developed the fighter game that aimed at advocating and creating awareness of the young girls that are out of school due to different reasons. The game story is about a girl who tries to go to school and all the monsters in the game represent all the enemies and challenges that exist and hinder girls' access to education. The player who is a girl tries to control and kill the enemies and accomplish various obstacles in order to get to school. The Game Crusaders developed a game called zaniya aimed at empowering a girl and eradicating the perception that girls are not capable. The maze game is set up where the 2 players control either the girl or the boy and the target is to reach the apple (which is the forbidden action) before the other.



The [Robotics and Internet of](#)

[Things](#) class objectives is understanding the basic of programming boards, Introduction to sensors and actuators, skills on programming of Arduino boards and the intermediate and advanced level objectives are experiencing IOT concepts, discover basic networking concepts (IP address, client-server communication, REST communication, programming ESP8266, exploring web services and experiencing IOT platform to store data and control objects remotely. All the objectives and concepts introduced were to assist students to be able to have the knowledge of developing projects. The class [developed three projects](#) of which the African Girls Programmers group developed a project of IOT that provided a solution of floods through the water sensors programming. The Fantastic Six developed a project that controlled irrigation through internet and a SMS based platform and the Tech Code Girls provided a solution for medical access via an SMS based platform.

For the [Turtle Stitch class](#) (Please let us have only one name to avoid confusion) objectives for the basic, intermediate and advanced levels are familiarizing with Turtle Stitch, deep diving Turtle Stitch, exploring and Innovating the platform, conceptualizing and project ideation and project development with a collaboration with the Fashion and Art team by doing hand embroidery of the coded patterns and designs. The students were also introduced to basic and intermediate concepts of drawing and creating shapes and patterns using the Turtle Stitch platform and eventually all the learnings was integrated to develop meaningful patterns that advocate and educate about various issues in the community. The turtle stitch participants coded individual patterns which ranged from a face sculpture, square, smiley face, education symbol, php symbol, flowers to words. They also coded meaningful patterns in groups that were later hand embroidered on the attires made by the Fashion and Art class. [The five coded embroidery](#) made were a racism symbol that was developed by African Girls for Development group; the symbol advocate for the fight against racism in our society. The Wisdom group created an infinity and peace sign pattern with the aim of advocating for infinity peace and unity in the society and the Girl Power group created a pattern that symbolizes gender equality in technology with the aim of advocating for the girl child education in technology in our society. The African Heart group coded a pattern that symbolizes freedom of expression, the pattern advocates for women to have the freedom of expression and to speak up about the challenges and issues that they face such as gender based violence. The Smart and Merry Sisters group coded a pattern that advocates for inclusivity of the people with mental health in the society, the reason behind the symbol being society's marked discrimination against people with mental health issues by associating it with sorcery rather than an illness that needs to be treated like any other illness.

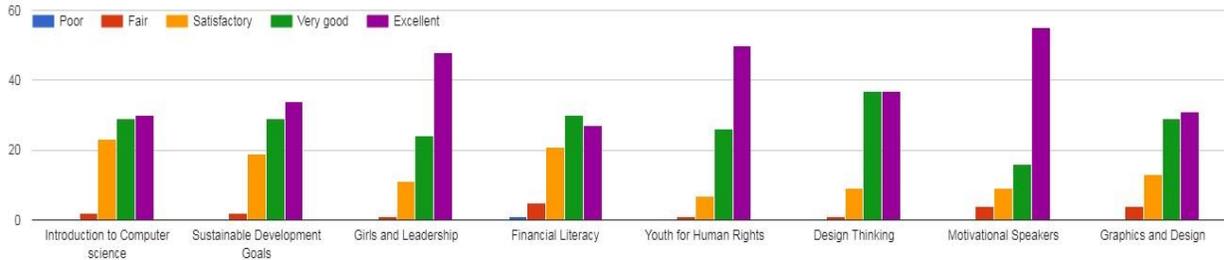
AGCCI Survey Findings

The purpose of the survey was to capture the students demographic database and also to evaluate the entire camp ranging from the technical, non- technical skills to logistics and to collect their feedbacks.



Illustration 1: Analysis of Soft Skills and Life Skills Sessions

Soft Skills and Life Skills Sessions

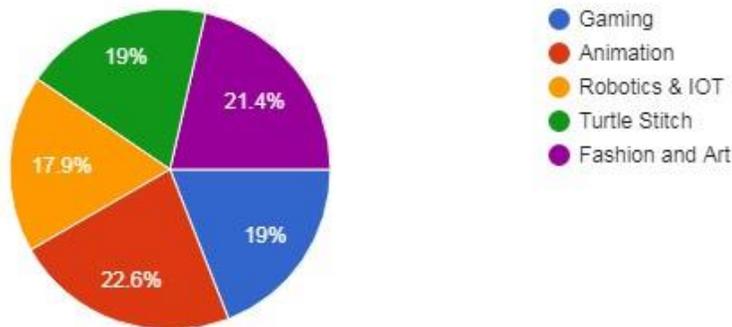


On soft skills and the general non –technical skills the top three sessions ranged as excellent were Motivational talks ranged highest with 55 people marking it as excellent, followed by Youth for Human Rights with 50 people and Girls and Leadership with 48. Design Thinking came up as fourth with 37 respondents ranging the session as excellent, followed by 34 on SDG’s goals, Graphics and Design 31 and Introduction to Computer Science with 30 and Financial Literacy with 27 respondents.

Illustration 2: Classes Attended

Class Attended

84 responses



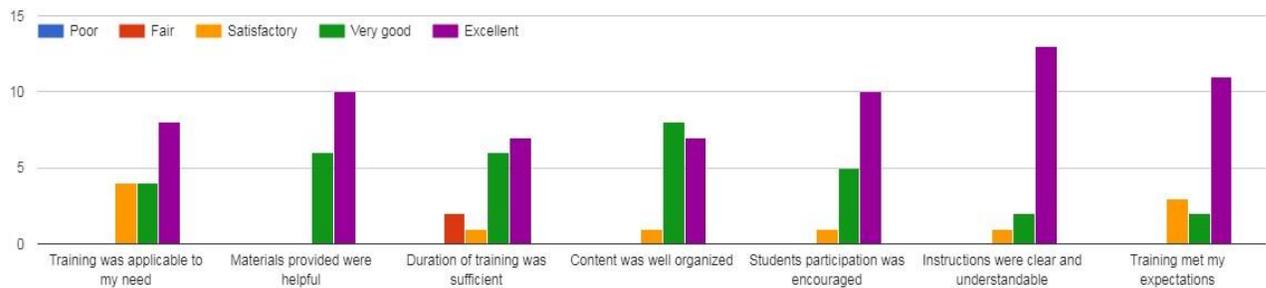
On the main classes attended; the Animation class was attended by 22.6 percent of the girls which is out of 84 respondents. Followed with 21.4 percent of attendees in Fashion and Art class,



Gaming and Turtle Stitch tied with 19 percent respectively and Robotics followed with 17.9 percent of attendees.

Illustration 3: Analysis of the Game Learning Track Sessions

Gaming

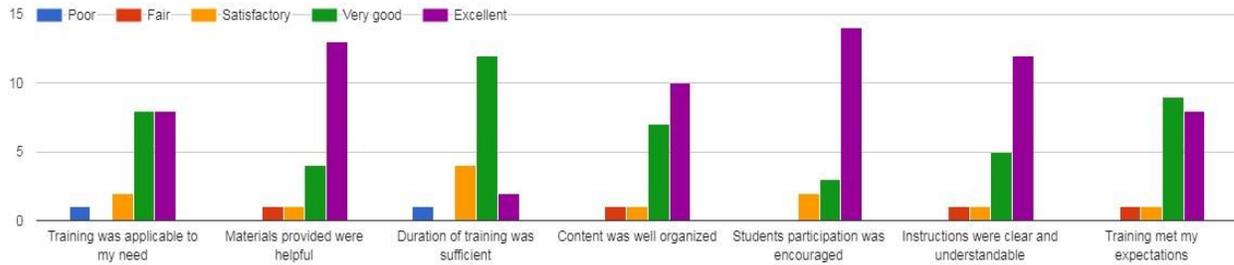


The top three classified elements in Gaming were that instructions were clear and understandable, followed by training met the student’s expectations and then student participants was encouraged which respectively tied with the materials provided during the training were helpful. And with the lowest ranged as fair according to the respondents been the training duration period hence this portrays that the timing was not sufficient.

Illustration 4: Analysis of Animation Learning Track Sessions



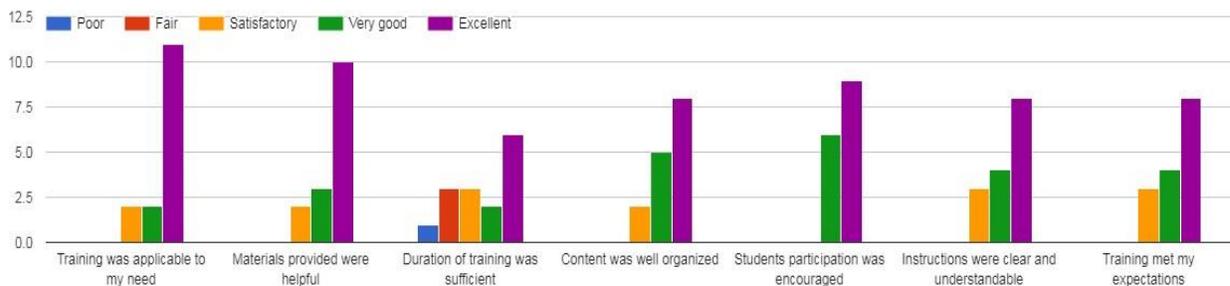
Animation



In Animation the top three components that were ranged high were student participation was encouraged, followed by materials provided were helpful then instruction were clear and understandable. And two components that is ranged by one respondent respectively as poor is training applicable to my needs and the duration of training.

Illustration 5: Analysis of Robotics/IOT Learning Track Session

Robotics & IOT

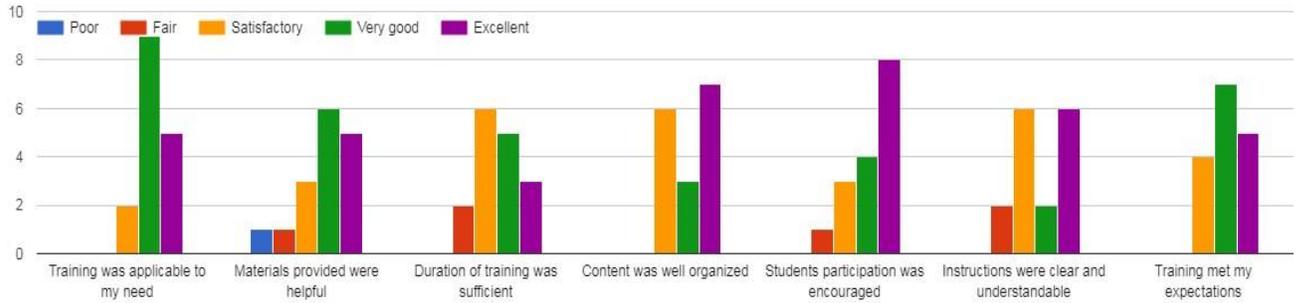


In Robotics and IOT the top three highest ranged components is training was applicable to my needs followed by materials provided were helpful then student participation was encouraged. And the lowest ranged according to the respondents is duration of the training that one respondent ranges as poor.

Illustration 6: Analysis of Turtle Stitch Learning Track Session



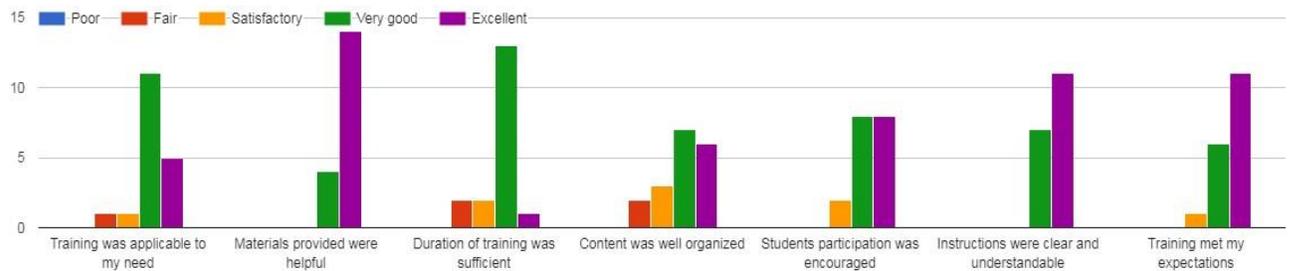
Turtle Stitch



As for Turtle Stitch, the highest ranged as excellent was students participation followed by content was well organized then instruction were clear and understandable. And one respondent ranged poor on the material provided as been helpful.

Illustration 7: Analysis of Fashion and Art Learning Track

Fashion and Art



And on Fashion and Art the highest excellent ranged question was material provided were helpful followed by instruction were clear and understandable and training meet my expectations respectively then student’s participation was encouraged. And the least ranged with fair was content was well organized and duration of training was sufficient each having two respondents ranging as fair then followed with one respondent ranging poor on training was applicable to my needs.

Illustration 8: Analysis of Logistics and Overall



Logistics



On logistics the highest top three ranged as excellent was transport followed by training venue then medical care and the lowest ranged with four respondent ranging it as poor was food. And the general overall feedback of the entire camp is that 66.7 percent responded by ranging it as excellent and 33.3 percent of the respondents ranged the overall camp as good.

Class Overall Feedback

84 responses

