ASTI LEAP CHALLENGE REPORT 2017

CRITICAL THINKING

CREATIVE THINKING

DESIGN & INNOVATVE THINKING

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ASTI LEAP CHALLENGE NORTHERN REGION

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ASTI Leap Challenge 2017 Report

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A foundation of Khazanah National

Our Partners

Silterra Malaysia Sdn. Bhd. (Kulim, Kedah)
DISTED College (Penang)
Asia Metropolitan University (Johor)

Special Thanks to University Tun Hussein Onn Malaysia
for providing judges for ASTI Leap Challenge 2017 in Johor
&
To all Mentors, Judges, Volunteers and
ASTI Leap Challenge Committee 2017

EXECUTIVE SUMMARY

This pilot project was initiated after discussions with Yayasan Hasanah focussing on Band 4 and Band 5 schools. It was to be done in 2 regions, northern and southern region. Penang and Kedah participated in the ASTI Leap Challenge northern region and Johor participated in the southern region. The main aim was to increase the awareness and interest in STEM and innovation subjects. This pilot project was divided into 2 phases over 2 year period. Phase 1 involves 3 trainings for students followed by a regional competition. Phase 2 of the project was to be done at the school level by the schools themselves. Phase 1 was conducted in the Northern region followed by the Southern region.

The target group for the project was Form 3 students in 2016 for northern region. After some lesson learnt from northern region, we decided to focus on Form 4 students in 2017 for the southern region. Among the lesson learnt was a lot of students tend to change schools after form 3.

Schools that were interested to participate should form a team of 5 students and 2 teachers. The project comprised of 3 trainings and a competition. For the northern region, 17 schools participated in the 3 trainings provided by ASTI. The first training was on “Creative Thinking”, second training was on “Critical Thinking” and the third training was on “Innovative & Design Thinking”. All the 3 trainings took place in DISTED College, Penang.

After the third training was completed, a guideline on proposal and report writing was sent to the teachers to help the students with proposal and report writing. The final competition was held on the 8 April 2017 at Universiti Kuala Lumpur Malaysian Spanish Institute, Kulim. A total of 12 schools participated in the final event.

Meanwhile the Judges Training was held on 31st March 2017 at Silterra Malaysia Sdn Bhd, Kulim.

Staff from Silterra volunteered to be judges for ASTI Leap Challenge final. The team of judges was led by Mr. Saravanan Manian, as the chief judge. Both DISTED College and Silterra are ALC’s partner in the northern region.

A total of 25 schools participated in all the 3 trainings in southern region. Just like in the northern region, the first training was on “Creative Thinking”, second training was on “Critical Thinking” and the third training was on “Innovative & Design Thinking”. The modules used in the southern region for the trainings were the improved version from the northern region modules. The trainings in Johor was held in Asia Metropolitan University, our partner in southern region for ASTI Leap Challenge. A guideline to write proposal and report writing was sent to the teachers to help them with proposal and report writing before the final event. A special “One-on-One” sessions were also held to coach the respective teams on their projects. The main aim of the coaching session was to help build their confidence.

The final competition was held in Universiti Kuala Lumpur Malaysian Institute of Industrial Technology (MITEC), Pasir Gudang on 10th September 2017. A total of 25 schools participated in the final event. Southern region had 100% participation for all trainings and competition.

Upon participating in ASTI Leap Challenge, the schools should be able to conduct the competition in their schools as an annual event which will involve more students. It is hoped the schools should be able to participate in various national and international invention competitions. With the successful completion of the pilot phase 1 project in the regional level, for the following year, we will encourage and provide support for the schools to conduct their own competition at the school level. This way more students will benefit from the project.

1.0 INTRODUCTION

The Association of Science, Technology and Innovation (ASTI) is an association of educators, scientists, industry representatives and individuals who are committed to advancing the role of the scientific community in inspiring the youth of the nation to join and excel in the world of science. The Association of Science, Technology and Innovation (ASTI) is a non-governmental organization (NGO) working towards empowering young children through various projects such as Science Fair for Young Children (SFYC), Young Inventors Challenge (YIC), Creative and Critical Thinking Camp (CCTC) and the "Wings of Fire" series.

Science Fair for Young Children (SFYC) is a project designed for primary school students, and about 200,000 participants have taken part in this initiative at the school, regional and national level. Following SFYC success, a competition at a more advanced level for the Alumni was proposed in the form of the Young Inventors Challenge (YIC). Creative and Critical Thinking (CCT) Camp brings together a community of young people to allow them to explore the world's most interesting questions through creative and critical thinking.

Besides that, ASTI is running a pilot project, ASTI Leap Challenge (ALC) for special band 4-5 schools, by invitation, which is fully funded by Yayasan Hasanah. ASTI Leap Challenge (ALC) hopes to prepare these students to participate in higher level competitions including in ASTI's Young Inventors Challenge (YIC).

The target group for the project in northern region is Form 3 students in 2016. Meanwhile, the target group for the project in southern region is Form 4 students in 2017. The project comprises of 3 trainings and a competition in the initial year. This pilot project is to be done in 2 regions, northern and southern region. Penang and Kedah participated in the northern region and Johor participated in ASTI Leap Challenge in the southern region. We started with the trainings in the northern region and successfully completed 3 trainings and a competition in the northern region. A total of 17 schools participated in the trainings in the northern region. Whereas, in the southern region we started with the 1st Training in Johor on 13th July 2017 and successfully completed 3 trainings and held the final competition in Johor. A total of 25 schools participated in the trainings and took part in the final competition in the southern region.

1.1 AIMS & OBJECTIVES

The main objective of ASTI Leap Challenge is to give young people an introduction and to experience the world of invention and innovation. By participating in this event the students will enhance their creative and critical thinking skills and be able to solve a complex problem which is expressed by 'doing'.

Project objectives:

- enhance Problem Solving skills among participants
- develop communication skills among participants
- encourage team work among participants
- develop "out of the box thinking" among participants
- develop 'hands-on' learning methods for the young people

The programme also prepares and encourages the students to participate in various National and International competitions with various inventive ideas with self-confidence.

Upon participating in ASTI Leap Challenge, the schools should be able to conduct the competition in their schools as an annual event which will involve more students. The school should also continue to be able to participate in various national and international invention competitions. After the completion of the project at the regional level, for the following phase, we aim to encourage and provide seed funding for the schools to conduct their own ASTI Leap Challenge at the school level (if funded by Yayasan Hasanah). This way more students will benefit from the project.

After participating in ASTI Leap Challenge, the participants were also be able to :

- produce an original invention or solution and receive recognition for participating in the event.
- meet and network with other young people who share similar passion.
- develop creative and innovative thinking skills.
- develop teamwork dynamics to solve problems.
- use resources such as the internet, library and experts to hone their research skills.
- learn to document their invention project.
- enhance self-esteem and confidence.
- acquire public presentation and writing skills.

ASTI LEAP CHALLENGE
NORTHERN REGION

2.1 TARGET GROUP

- 20 band 4 and band 5 schools in northern region.
- Schools from Kedah and Penang states were selected for Northern Region.
- Each team is made up of 5 Form 3 Students (in 2016) and 2 Teachers.

2.2 PROJECT ACTIVITIES

- Training Module development
- Sending out letters to schools
- Follow-up with Schools
- Training Arrangements and partnership formation with DISTED College
- Training of Trainers
- Training 1 – Creative Thinking
- Training 2 – Critical Thinking
- Training 3 – Design Thinking
- Formation of partnership with SILTERRA and training of judges
- Competition
- Evaluation and Monitoring
- Reporting and Accounting

2.3 PARTNERS IN CONSORTIUM (NORTHERN REGION)

- DISTED College (Penang)
- Silterra Malaysia Sdn. Bhd. (Kulim, Kedah)

Approval from Kementerian Pendidikan Malaysia and Jabatan Pendidikan Negeri

- Requested for approval from Kementerian Pendidikan Malaysia.
- As per Kementerian Pendidikan Malaysia's advice, requested for approval from Jabatan Pendidikan Negeri Pulau Pinang and Kedah.

3.0 MODE OF IMPLEMENTATION

3.1 TRAINING MODULE DEVELOPMENT

- The brainstorming session was held at ASTI Office on 6th August 2016.
- The second brainstorming session was held in Johor Bahru on 10th September 2016. This brainstorming session also served as the Train the Trainers Session.

3.2 SENDING OUT LETTERS TO SCHOOLS

- Invitation letters were sent to Yayasan Hasanah Education Partner schools and also to schools based on JPN Penang list.
- In addition, JPN Kedah selected 12 schools in Kedah and sent invitation letters to these schools to participate in ALC.

3.3 FOLLOW-UP WITH SCHOOLS

- Follow-up through telephone calls was made with all the schools that were sent the invitation letter.

Training Arrangements
- Upon receiving reply forms from schools, arrangement was made for the training of the schools.
- Sought venue for training.
- DISTED College (Penang) as our partner in the northern region for ALC offered their venue to be used for the training.

3.4 TRAINING OF TRAINERS (TOT)

- TOT was held at Swiss-Inn Hotel, Johor Bahru on 10th September 2016.
- It was held together with the second brainstorming session.
- The trainers for ALC who were invited to attend the training are professionals comprising of consultants, lectures, teachers and etc.

3.5 TRAINING 1

- The training was held in DISTED College, Penang on 22nd October 2016.
- Total number of schools that attended the first training was 13.
- Module used for the 1st Training was centred on “Creative Thinking”.
- Another training was held on 18th November 2016 for the schools which could not attend the first training on the 22nd October 2016.
- Four schools attended this training on 18th November 2016.

3.6 TRAINING 2

- The second training was conducted on 19th November 2016 at DISTED College, Penang.
- A total of 14 schools participated in the second training for ALC.
- The second training was centred on “Critical Thinking”.

3.7 TRAINING 3

- The last and final training for ALC was conducted on 18th January 2017 at DISTED College, Penang.
- Thirteen schools participated in this training.
- The third training was on “Innovative & Design Thinking”.
- In total, 17 schools participated in the 3 trainings for ALC.
- All the schools that participated in the ALC training were given transportation allowance for every training ranging from RM30.00 to RM120.00 depending on their distance.

SCHOOL PARTICIPATION IN ALC – NORTHERN REGION

No.	School Name	Training 1 (22/10/16)	Training 1 (18/11/16)	Training 2 (19/11/16)	Training 3 (18/01/17)	ALC Final (08/04/17)
01	SMK KOTA KUALA MUDA (KEDAH)		●	●	●	●
02	SMK RAJA TUN UDA (PENANG)		●	●		
03	SMK TELUK KUMBAR 2 (PENANG)		●	●	●	
04	SMK CONVENT PULAU TIKUS (PENANG)		●	●	●	●
05	SMK VALDOR (PENANG)	●		●	●	●
06	SMK KELADI (KEDAH)	●				
07	SMK MERBOK (KEDAH)	●		●	●	●
08	SMK TAMAN KENARI (KEDAH)	●		●	●	●
09	SMK TELUK BAYU (KEDAH)	●		●	●	●
10	SMK SERI BADONG (KEDAH)	●		●	●	●
11	SMK PERMATANG TOK JAYA (PENANG)	●		●		
12	SMK TUNKU PANGLIMA BESAR (KEDAH)	●			●	●
13	SMK TAMAN HI-TECH (KEDAH)	●		●	●	●
14	SMK SUNGAI KOB (KEDAH)	●		●	●	●
15	SMK DATO' LELA PAHLAWAN (KEDAH)	●		●	●	●
16	SMK YAN (KEDAH)	●		●	●	●
17	SMK SIONG (KEDAH)	●				

3.8 PROPOSAL / REPORT WRITING

- Upon completion of all the 3 trainings, a guideline was emailed to all participating schools to help them with proposal writing and report writing.
- It is not compulsory for the schools to submit their proposal. No marks were given for the proposal. Upon receiving the proposal, the trainers gave their feedback to the schools to further improve their invention. The feedback was sent back to the schools via email.
- The date line for report submission was 30 March 2017 (Thursday).
- It was compulsory for all the participating schools to submit their report.
- The schools were told to come to the final competition with their invention and a poster for their invention.
- The theme for the final competition was 'Invention/Process to help your School be more Efficient'.

ASTI Leap Challenge (Northern Region) 2017 Participants

No.	School Name	State	Team Name	Students Name
01	SMK Convent Pulau Tikus	Penang	Chemical Knowledge	1) Sharifah Nur Adela Idid Binti Syed Alwi 2) Nursyafiqah Binti Kamaruzzaman 3) Khoo Jia Jia 4) Shevon Foo Xuet Er 5) Siti Nurbalqis Binti Sheikh Ahmad
02	SMK Teluk Bayu	Kedah	SMK Teluk Bayu	1) Nur Aneessa Hidayah Bt. Wazir 2) Zulaika Bt. Zainol 3) Muhammad Izzairi B. Nor Airi 4) Muhammad Izam B. Ahamad
03	SMK Merbok	Kedah	Merbok Inventor's Crew	1) Muhammad Irfan Izz B. Khairul Rosdi 2) Nur Insyirah Bt. Mohd Fuad 3) Nuraisyah Bt. Mohd Yussof 4) Intan Faizani Bt. Ridwan 5) Muhamad Hafiq Eqmal Bin Mohd Halmy
04	SMK Valdor	Penang	V Thinker	1) Lim Chian Wei 2) Kee Rou Jun 3) Yew En Qi 4) Saw Kah Hong 5) Chong Chao Yee
05	SMK Taman Kenari	Kedah	Krypton 01	1) Iman Nur Anaqi B Ishak 2) Aizad Fazarie B Zaharani 3) Mohd Hafiz B Saidin 4) Nur Ainun Nabilah Bt Norazman 5) Nur Iwara Afiqah Bt Mohd Nazimi 6) Nur Aina Nadiah Bt. Mior Azizi
06	SMK Taman Hi-Tech	Kedah	Hi Tech Team	1) Siti Norsyahirah Bt Yazid 2) Yasmin Bt Salehudin 3) Muhammad Najmuddin B Abd Rahman 4) Iqbal Syakeer B Hamzah 5) Muhammad Imran B Mohd Zamri
07	SMK Dato' Lela Pahlawan	Kedah	D'Lela Inventors	1) Adawiyah Bt Loftpi Amim 2) Muhammad Hazwan Hilmi B Rosmaine Shah 3) Muhammad Farid Irfan Ali B Rhamat Ali 4) Nur Nabilah Bt Md Razak 5) Irdina Izzati Bt Ibrahim
08	SMK Kota Kuala Muda	Kedah	Kota Inno	1) Mohammad Syamsuri B Mohd Daud 2) Muhammad Umar Adani B Johari 3) Muhammad Syahmi Bin Abdellah 4) Fatin Nabilla Bt Mohammad 5) Noor Azwin Bt Mohd Idham
09	SMK Tunku Panglima Besar	Kedah	Budak Panglima	1) Krisyen Murali Tharan 2) Sathiya Varma Parmeswaran
10	SMK Sungai KOB	Kedah	Dynamic Proactive	1) Nur Izzati Binti Mohd Zamberi 2) Nurul Afiqah Binti Mat Rusli 3) Sarah Mardiana Binti Azlal 4) Muhammad Irfan Iqbal Bin Rosidi 5) Muhammad Muhaimin Bin Che Sa

ASTI Leap Challenge (Northern Region) 2017 Participants

No.	School Name	State	Team Name	Students Name
11	SMK Yan	Kedah	SMK Yan	1) Nurul Hani Zakiyyah Bt Mahamad Naser 2) Nur Syafinaz Bt Muhamad Nasir 3) Nursyasya Bt Jamaludin 4) Wan Anis Hannani Bt Wan Fuzi 5) Anis Atirah Bt Suhami
12	SMK Seri Badong	Kedah	Slugterra	1) Muhammad Adib Bin Mohd Saad 2) Muhammad Afizam Bin Abdullah 3) Siti Aishah Bt Fadzil 4) Nur Athirah Izzati Bt Masdi 5) Nurul Iman Athirah Bt Shahrom

4.0 COMPETITION

4.1 ASTI LEAP CHALLENGE (ALC) FINAL COMPETITION

- ASTI Leap Challenge 2017 was held on 8th April 2017 at Universiti Kuala Lumpur Malaysian Spanish Institute, Kulim (Kedah).
- Altogether 12 schools came prepared for the final event with their inventions after 5 schools withdrew from the competition.
- The theme for the final competition was 'Invention/Process To help your School be more Efficient'.
- The agenda of the event is as below:

Time	
07.30 am – 08.00 am	Arrival & Registration and Breakfast
08.00 am – 09.00 am	Booth Setup & Model Setup
09.00 am – 09.15 am	Opening Ceremony
09.30 am – 12.30 pm	Judging & Cross Judging
10.00 am – 01.00 pm	Mentor Seminar Session
01.00 pm – 02.00 pm	Lunch
02.00 pm – 02.30 pm	VVIP & VIP Arrival
03.00 pm – 04.00 pm	Closing & Prize Giving Ceremony
04.00 pm – 05.30 pm	Dismantle of Booths, Tea & Event Concludes

- The event started at 7.30 a.m. with the arrival and registration of the participants. This was followed by breakfast.
- A total of 12 teams registered themselves for the competition. After registration and breakfast, the participants were allowed to setup their booths and models.
- Once the booths and models were setup, a simple Opening Ceremony was held at 9.00 a.m. ASTI's President, Dr. Mohamed Yunus bin Mohamed Yasin gave his speech during the opening ceremony.

- One chief judge and 14 judges were present to judge the inventions. The judges were from Silterra Malaysia Sdn. Bhd.
- While the judging and cross judging process was on going, Mentor Seminar Session took place at Lecture Theatre from 9.30 a.m. till 12.00 noon. The teachers-in-charge attended this seminar and sharing session.
- Games and quizzes were also held during the mentor session for the teachers.
- The guests for the event were Hj. Mohd Hafiz Bin Mohd Salleh (Penolong Pengarah Koakademik, Jabatan Pendidikan Negeri Kedah), Mr. Michael Raja A/L G. Rajagopal (Senior Manager, Northern Corridor Implementation Authority) and Dr. Nur Anuar Abdul Muthalib (Senior Vice President Education, Yayasan Hasanah).
- The closing ceremony began at 2.45pm upon the arrival of the guests.
- The welcoming speech for the closing and prize giving ceremony was given by Dr. Nur Anuar Abdul Muthalib from Yayasan Hasanah.
- After the welcoming speech, medals & certificates were given to the participants.
- Next was the Judges Feedback which was given by Chief Judge Mr. Saravanan Manian.
- Mr. Anthony Fernandez who was one of trainers for ASTI Leap Challenge gave the thanking speech on behalf of ASTI.
- The winners of ASTI Leap Challenge 2017 were announced and the event was officially closed.

Winning Teams of ASTI Leap Challenge 2017

Champion – SMK Sungai KOB
- Received Trophy, Cash Prize of RM1,500.00 and Certificate

1st Runner Up – SMK Dato' Lela Pahlawan
- Received Trophy, Cash Prize of RM1,000.00 and Certificate

2nd Runner Up – SMK Seri Badong
- Received Trophy, Cash Prize of RM700.00 and Certificate

4th Place Winner – SMK Teluk Bayu
- Received Trophy, Cash Prize of RM500.00 and Certificate

5th Place Winner – SMK Valdor
- Received Trophy, Cash Prize of RM250.00 and Certificate

- Silterra Malaysia Sdn. Bhd. as ALC's partner in the northern region, agreed to provide 15 volunteer judges for ALC.
- A total of 15 judges agreed to get involve and contribute as a judge for ASTI Leap Challenge 2017 final competition.
- This team of judges was led by the Chief Judge Mr. Saravanan Manian, ASTI coordinator for northern region.

5.0 JUDGING

5.1 JUDGES TRAINING

A Judges Training was conducted on 31st March 2017 at Silterra Malaysia Sdn. Bhd's Training Room. A total of 14 judges attended this training session a week before the final competition. The judges were given a video introduction about ASTI and ALC by Mr. Saravanan Manian. He then presented the Judging Methodology and had a discussion with all who attended. The purpose of this session is to develop a common understanding amongst all the judges as to what constitutes the judging score sheet, so that judging would be carried out uniformly.

5.2 EVENT DAY JUDGING

The agenda for the Event Day Judging was as per below:

- 7.30 - 8.00am: Breakfast
- 8.00 - 9.00am: Judges Briefing
- 9.00 - 11.00am: Review reports
- 9.15 - 9.30am: General viewing all the booths
- 9.30 - 11.30pm: Judging end
- 11.00 - 12.30pm: Calculate marks. Discussion within judges.
  Submit result to Chief Judge & Complete Judges Comments Form
- 12.30pm: Token and Certificate Presentation for Judges

Each team were given 15 minutes to do their presentation and 5 minutes for Question & Answer session during the judging session.

5.3 JUDGES COMMENT

Total judges involved: 15 judges (inclusive of Chief Judge for ALC)

5.3.1. Report of the inventions

- presentation of the reports can be improved further; briefing on the contents of a report writing was already given to all the school during the training session held for all schools.
- 5 out of 12 (42%) participating schools managed to get more than 10 marks for their reports
- Overall, reports still lack in the following aspects:
  1. although certain level of originality in the invention was stated clearly, the students failed to outline the comparison of the innovative features of their invention versus existing solution in the market
  2. standard requirement involved in the report writings was not clearly established.
  3. steps for future works were not clearly explained.

5.3.2. Demo and Presentation

- A lot of improvements is needed; some schools came very well prepared but most schools came with just enough preparation for a simple presentation; a lot of motivation and energy required from the teams for a better presentation.
- Overall presenting skills and demonstration of the invention by students were average; students were able to grasp the invention title well and could explain the concept of the invention but not in the details.
- No schools managed to score full marks for any of the aspects (Invention, Presentation & communication, Quality & Appeal, Safety)
- Overall,
    1. Students were all very confident and pumped up when it came to presenting and demonstrating their invention. However, more team work is required during presentation.
    2. Display was well organized and arranged
    3. The invention idea was original, and most of the schools manage to prepare workable prototypes. Some schools manage to demonstrate creative use of recyclable material in their prototypes. However, few of the ideas are existing and available ideas in the commercial market.
    4. Lack in the understanding of the concept behind their invention among some of the students; this made them not able to answer the judges questions.
    5. Presentation skills can be improved.

5.4. JUDGES DURING THE EVENT

1. Talented experienced judges from Silterra Malaysia Sdn. Bhd., 50% of the judges had previous exposure in external science fairs as judges
2. Experts in their field, all judges were with science background
3. Focused on the facts, concepts and the scientific principles involved in the invention
4. Overall the judges did a good job in finalizing the winner for the event. Some of them went beyond to inspire the students to participate in the demo and presentation.

5.5. SUGGESTIONS

- Only 12 schools participated on the inaugural program. Nevertheless the schools did a great job. Although there are some challenges in getting schools to participate, greater effort is required to bring in more schools into this program next year.

6.0 VOLUNTEERS MANAGEMENT

- We had volunteers to help us on the event day to make sure that the event takes place smoothly.
- We managed to get some volunteers from Silterra Malaysia Sdn. Bhd. and students from Kolej Komuniti Kulim to help on the event day.
- A total of 22 volunteers were present on the day, 10 volunteers from Silterra Malaysia Sdn. Bhd. and 12 volunteers from Kolej Komuniti Kulim.
- All the facilitators were very helpful in making the event a success.

7.0 SWOT ANALYSIS

Strength:

- Good training module – very "hands-on".
- Good feedback from various stakeholders regarding the project.
- Good and supportive funding partner.
- Support from Jabatan Pendidikan Negeri Kedah towards ASTI Leap Challenge was good.
- Dedicated volunteers which helped to execute the event efficiently.
- Good partners in the north, both DISTED College and Silterra Malaysia Sdn Bhd.

Weakness

- Not enough public presence.
- Withdrawal of participants from training and competition.
- Less promotion on the event (promoted in ASTI Website and Facebook).
- Few media/press attended the event.
- Not enough volunteers to help during the trainings.
- Programme ran over 2 academic years (started in 2016 and ended in 2017).
- Some students changed schools after Form 3 to better band schools. As a result some teams lost some key members.

Opportunity

- Opportunity to work long term with the partners.
- Partners are willing to work again together for next phase.
- Strengthening involvement of partners in the north.
- Further improve training modules.

Threat

- Participation of schools in the next phase for ASTI Leap Challenge
- Insufficient funding.
- Schools loose interest.

7.1 CONCLUSION

- ALC Northern is a great success considering it is a pilot focusing on under resourced and less performing schools.
- The biggest issue faced by the implementation team was that the beginning and the end of programme was conducted over 2 academic year.
- The drop-out rate of schools particularly of schools from Penang is high and has to be tackled in the next phase.
- The promotion of ALC needs to be increased in the next phase of the pilot in order for it to be a bigger success.

7.2 RECOMMENDATIONS

- ASTI to work more closely with its partners to help promote the programme in the region.
- To find innovative methods to increase promotions for the programme nationwide
- To get the assistance and support of Jabatan Pendidikan Negeri, particularly Penang to get more schools to participate in the programme for next phase.


REMARKABLERASER


MERBOK INVENTORS
CREW


USE ME !


PENYARKABLERASER


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MALAYSIAN SPANISH INSTITUTE
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RM 700.00
RM 1,500.00
RM 500.00
RM 250.00


UNIVERSITI KUALA LUMPUR
MALAYSIAN SPANISH INSTITUTE
RM 1,500.00

ASTI LEAP CHALLENGE
SOUTHERN REGION

8.1 TARGET GROUP

- 23 band 4 and band 5 schools in southern region.
- Schools from Johor state were selected for Southern Region.
- Each team is made up of 5 Form 4 Students (in 2017) and 2 Teachers.

8.2 PROJECT ACTIVITIES

- Training Module development
- Sending out letters to schools
- Follow-up with Schools
- Training Arrangements and partnership formation with Asia Metropolitan University.
- Training of Trainers
- Training 1 – Creative Thinking
- Training 2 – Critical Thinking and One-on-One Couching
- Training 3 – Design Thinking
- Training of judges.
- Competition
- Evaluation and Monitoring
- Reporting and Accounting

8.3 PARTNERS IN CONSORTIUM (SOUTHERN REGION)

- Asia Metropolitan University (Johor)

Approval from Kementerian Pendidikan Malaysia and Jabatan Pendidikan Negeri

- Requested for approval from Kementerian Pendidikan Malaysia.
- As per Kementerian Pendidikan Malaysia's advice, requested for approval from Jabatan Pendidikan Negeri Johor.

9.0 MODE OF IMPLEMENTATION

9.1 TRAINING MODULE DEVELOPMENT

- The brainstorming session was held at ASTI Office on 6th August 2016.
- The second brainstorming session was held in Johor Bahru on 10th September 2016. This brainstorming session also served as the Train the Trainers Session.

9.2 SENDING OUT LETTERS TO SCHOOLS

- JPN Johor sent Invitation letters to selected 30 schools in Johor to participate in ALC.

9.3 FOLLOW-UP WITH SCHOOLS

- Follow-up through telephone calls was made with the schools that did not send the reply form to participate in ALC by the dateline set by ASTI.

Training Arrangements

- Upon receiving reply forms from schools, arrangement was made for the training of the schools.
- Sought venue for training.
- Asia Metropolitan University (AMU), Johor as our partner in the southern region for ALC offered their venue to be used for all the trainings.

9.4 TRAINING OF TRAINERS (TOT)

- TOT was held at Swiss-Inn Hotel, Johor Bahru on 10th September 2016.
- It was held together with the second brainstorming session.
- The trainers for ALC who were invited to attend the training are professionals comprising of consultants, lectures, teachers and etc.

9.5 TRAINING 1

- The training was held in Asia Metropolitan University, Johor on 13th July 2017.
- Total number of schools that attended the first training was 25.
- Module used for the 1st Training was centred on “Creative Thinking”.

9.6 TRAINING 2

- The second training was conducted on 27th July 2017 at Asia Metropolitan University, Johor.
- A total of 25 schools participated in the second training for ALC.
- The second training was centred on “Critical Thinking”.
- The teams were also given One-on-One coaching on their proposal for the competition. During the training, the respective team were “pulled out” for a 15minute session with the coach.

9.7 TRAINING 3

- The last and final training for ALC was conducted on 10th August 2017 at Asia Metropolitan University, Johor.
- Twenty five schools participated in this training.
- The third training was on “Innovative & Design Thinking”.
- In total, 25 schools participated in the 3 trainings for ALC.
- All the schools that participated in the ALC training were given transportation allowance for every training ranging from RM30.00 to RM50.00 depending on their distance.

SCHOOL PARTICIPATION IN ALC – SOUTHERN REGION

No.	School Name	Training 1 (13/07/17)	Training 2 (27/07/17)	Training 3 (10/08/17)	ALC Final (10/09/17)
01	SMK TAMAN UNIVERSITI 2	●	●	●	●
02	SMK TAMAN SCIENTEX	●	●	●	●
03	SMK SERI KOTA PUTERI	●	●	●	●
04	SMK BANDAR SERI ALAM	●	●	●	●
05	SMK TAMAN RINTING 2	●	●	●	●
06	SMK TAMAN PELANGI INDAH	●	●	●	●
07	SMK TANJUNG ADANG	●	●	●	●
08	SMK TAMAN MOUNT AUSTIN	●	●	●	●
09	SMK TAMAN JOHOR JAYA 1	●	●	●	●
10	SMK SUNGAI TIRAM	●	●	●	●
11	SMK SERI KOTA PUTERI 2	●	●	●	●
12	SMK KOTA MASAI 2	●	●	●	●
13	SMK TAMAN DAYA 2	●	●	●	●
14	SMK PASIR GUDANG	●	●	●	●
15	SMK GELANG PATAH	●	●	●	●
16	SMK PASIR GUDANG 2	●	●	●	●
17	SMK KOMPLEKS SULTAN ABU BAKAR	●	●	●	●
18	SMK ULU TIRAM	●	●	●	●
19	SMK TAMAN MOLEK	●	●	●	●
20	SMK TAMAN DESA TEBRAU	●	●	●	●
21	SMK TAMAN NUSA JAYA	●	●	●	●
22	SMK TAMAN JOHOR JAYA 2	●	●	●	●
23	SMK PUTERI WANGSA	●	●	●	●
24	SMK PASIR GUDANG 3	●	●	●	●
25	SMK PERMAS JAYA	●	●	●	●

9.8 PROPOSAL/REPORT WRITING

- Upon completion of all the 3 trainings, a guideline was emailed to all participating schools to help them with proposal writing and report writing.
- It is not compulsory for the schools to submit their proposal. No marks were given for the proposal. Upon receiving the proposal, the trainer gave his feedback to the schools to further improve their invention during the 2nd ALC Training.
- The date line for report submission was 31 August 2017 (Thursday).
- It was compulsory for all the participating schools to submit their report.
- The schools were told to come to the final competition with their invention and a poster for their invention.
- The theme for the final competition was 'Invention/Process to help your School be more Efficient'.

9.9 IMPROVEMENT FROM LESSON LEARNT FROM NORTHERN REGION

Southern region was a resounding improvement and success compared to Northern region. This was due to some changes made based on lesson learnt from Northern Region which were:

- Working more closely with JPN Johor especially when sending out letters to participating schools
- The training sessions were modified to include more activities – there were zero dropout rate in the training and competition.
- A One-on-One coaching session was included for all teams in order to help with their ideas, and more importantly, to give them confidence in inventing something new.
- The interval between trainings was shorter, only 2 weeks compared to 4 weeks or more for Northern.
- The training started for form 4 students instead of starting with post PT3 students going on to secondary schools.

ASTI Leap Challenge (Southern Region) 2017 Participants

No.	School Name	Team Name	Students Name
01	SMK Taman Universiti 2	Power smktu 2	1) Muhammad Fauzy Bin Haizal 2) Muhammad Shazani Bin Arbain 3) Low Ze Wee 4) Siti Mawaddah Bt Shapie 5) Aqil Muzzamil B. Mohd Yusof Ng
02	SMK Taman Scientex	S' Tex Excellent	1) Amirul Haikal Bin Azmi 2) Muhammad Hazim Bin Halim 3) Nur Erza Misha bt. Shahrul Erwan 4) Mohd Hafiz Hafiz Faris Bin Nor Andry Zone 5) Nurain Shahirah Bt Mohd Sakri
03	SMK Seri Kota Puteri	SKOPIAN	1) Jivan A/L Gunasegaran 2) Anesha A/P Rajendran 3) Wong Pei San 4) Loo Cheng Ying 5) Ewe Ken Gy
04	SMK Bandar Seri Alam	The Veins	1) Ng Jing Mei 2) Norshahira Binti Nuar 3) Muhammad Eizmal Fitri Bin Yusani 4) Muhammad Irfan Bin Nizam 5) Vinitha Nair A/P Raghunathan Nair
05	SMK Taman Rinting 2	SMK Taman Rinting 2	1) Heng Wei Lun 2) Sharony a/p Thomas 3) Yavinash A/L Muralee Tharan 4) Emir Mussaddiq Bin Kamal Musaddad 5) Tan Yu Jie
06	SMK Taman Pelangi Indah	TPI The Great	1) Hong Zhao Cheng 2) Kok Fang Juin 3) Shahin Mashitah Binti Muhammad Anwar 4) Lim Li 5) Tsai Jing Enr
07	SMK Tanjung Adang	-	1) Nur Hidayah Bt Haron 2) Siti Hasrina 3) Muhammad Redza Bin Sugimin 4) Muhammad Asyraf Bin Jasma 5) Nur Izha Bt Abd Samad
08	SMK Taman Mount Austin	Team Massive	1) Ashley Yow Shu Ping 2) Nornabihah Munirah Binti Adnan 3) Deandraa A/L Yogendran 4) Thahvinya A/P Manirajan 5) Uzma Bahiyyah Binti Jamal Abdol Nasir
09	SMK Taman Johor Jaya 1	Jj1 Warrior	1) Ng Ming Zhe 2) Tea Jun Hong 3) Tham Wing Fei 4) Long Yan Yee 5) Wong Yen Yuin

ASTI Leap Challenge (Southern Region) 2017 Participants

No.	School Name	Team Name	Students Name
10	SMK Seri Kota Puteri 2	The vortex of SMK Seri Kota Puteri 2	1) Boy Khuang Long 2) Syamim Asraff B. Abd Razak 3) Muhammad Khairul Azhar Bin Samsuri 4) Soh Kai Xin 5) Garry Unang AK Henery
11	SMK Kota Masai 2	Wanna One	1) Siti Noor Sabrina Binti Mohd Kharim 2) Nurul Hafinaz Binti Asmadi 3) Haziq Haikal Bin Subalizam 4) Ihsanuddin Bin Nor' Azim 5) Nurdini dania Bt .Hishammuddin
12	SMK Taman Daya 2	SMK Taman Daya 2	1) Yek Xinwei 2) Tee Jie Ling 3) Amirul Haziq Bin Rohaizat 4) Lau Cia Hoi 5) Nurulaikha Afza Binti Zolkifly
13	SMK Pasir Gudang	Mann.Co	1) Ali Imran b. Md Safian 2) Efa Nazira Binti Awi Hari Alamin 3) Mohamed Danial Fitri Bin Johari 4) Muna Zulaikha Binti Mohd Zamri 5) Qurratu Ain Binti Ahmad
14	SMK Gelang Patah	SMKGP	1) Muhammad Hafiz Fitri B. Aisham 2) Ifran Mustaqim B.Abd Manap 3) Ahmad Anas B.Mohd Hairul 4) Nurul shamira Bt.Izam Shamshir 5) Muhammad Irsyad b. Hassan
15	SMK Pasir Gudang 2	2NSAM	1) Muhammad Naqiuddin B.Umar 2) Nurin Najihah Binti Zulkiply 3) Masyitah Binti Hiaham 4) Ahmad Ammar Bin Mohd Roslan 5) Mohamad Shazwan Bin Abdullah
16	SMK Kompleks Sultan Abu Bakar	CIQ's SQUAD	1) Haziq Zulhairi Bin Norhisham 2) Mohamad Azri Bin Abdullah 3) Nurul Huda binti Mohd Zaini 4) Siti Rashidah binti Abdul Razid 5) Suhaida Binti Rashidi
17	SMK Ulu Tiram	SMKUT SCIENCE LEGENDS	1) Gayathry A/P Muthumani 2) Sineha Durgha A/P Niandey 3) Thevaatharani Jegathesan 4) Sretheran A/L Ramesh 5) Thanesh A/L Vgneswaran
18	SMK Taman Molek	Women Of Wisdon (WOW)	1) Nur Faizan Binti Ruspandi 2) Nur Aneysa Binti Mohd Zaid 3) Kavipriya A/L Krishan 4) Syarah Syahaziqah Binti Abdullah 5) Siti Nur Shamira Binti Azuraini

No.	School Name	Team Name	Students Name
19	SMK Taman Desa Tebrau	Genius Student	1) Yoganraja A/L Jayaseelan 2) Dinesh A/L Uma Mahesh 3) Nur Zaki Farhanah Binti Mansor 4) Puteri Nuraqilah Binti Abdullah 5) Nur Ainin Sofiya Binti Mohamed Wisam
20	SMK Taman Nusa Jaya	ESTI (Engineer Science in Technology)	1) Mohamed Syukri Bin Mohd Said 2) Fatin Najwa Bt Bohari 3) Mohamad Rafiq Aiman B.Md Rohaizad 4) Shasazwani Adreena Binti Roznain 5) Nurul Fazlinda Bt Johan
21	SMK Taman Johor Jaya 2	The Blossom Teen (Inventors & Innovators)	1) Yua Jia Xing 2) Chong Yen Kee 3) Tan Ya Le 4) Nor Hikmah Binti Rudi 5) Hirriwin A/L Sivakumar
22	SMK Puteri Wangsa	SMK Puteri Wangsa	1) See Zi Wei 2) Khor Jun Xiang 3) Ting Da Jie 4) Intan Baizura Bt Mohd Hata 5) Nurul Ain Nazura Bt.Sulaiman
23	SMK Pasir Gudang 3	SMK Pasir Gudang 3	1) Muhammad Syahid Bin Sanusi 2) Muhammad Hilmi Bin Khalik 3) Mohammad Aiman Hakim Bin Aziz 4) Mohamad Haziq Bin Mohamad Aidil 5) Amirul Hafsham b. Mohd Tohami
24	SMK Permas Jaya	SMK Permas Jaya	1) Muhammad Izuan Bin Nasib 2) Risshi A/L Padmanathan 3) Grace Lim Jia Yu 4) Noor Nabielah Naelis Binti Shahir 5) Low Jing Wen
25	SMK Sungai Tiram	Titan	1) Hamizah Binti Moosa 2) Hani Nasyuha Binti Ismail 3) Atika Binti Irfan Masdon 4) Fata Bayyanu Bin Muhammad Suki 5) Muhammad Faris Bin Abd Baki

10.1 EVENT DAY SUMMARY

ASTI Leap Challenge 2017 was held on 10th September 2017 at Universiti Kuala Lumpur Malaysian Institute of Industrial Technology (MITEC), Pasir Gudang (Johor).

- Altogether 25 schools came prepared for the final event with their inventions.
- The theme for the final competition was 'Invention/Process To help your School be more Efficient'.
- The agenda of the event is as below:

10.0_COMPETITION

Time	
07.30 am – 08.00 am	Arrival & Registration and Breakfast
08.00 am – 09.00 am	Booth Setup & Model Setup
09.00 am – 09.15 am	Opening Ceremony
09.30 am – 12.30 pm	Judging & Cross Judging
10.00 am – 01.00 pm	Mentor Seminar Session
01.00 pm – 02.00 pm	Lunch
02.00 pm – 02.30 pm	VVIP & VIP Arrival
03.00 pm – 04.00 pm	Closing & Prize Giving Ceremony
04.00 pm – 05.30 pm	Dismantle of Booths, Tea & Event Concludes

- The event started at 7.30 a.m. with the arrival and registration of the participants. This was followed by breakfast.
- A total of 25 teams registered themselves for the competition. After registration and breakfast, the participants were allowed to setup their booths and models.
- Once the booths and models were setup, a simple Opening Ceremony was held at 9.00 a.m. ASTI's President, Dr. Mohamed Yunus bin Mohamed Yasin gave his speech during the opening ceremony. The judges for ALC were introduced to the participants during the opening ceremony.
- One chief judge and 13 judges were present to judge the inventions. Most of the judges in the judging team were from University Tun Hussein Onn Malaysia, Johor.
- While the judging and cross judging process was on going, Mentor Seminar Session took place at Bilik Tutor from 10.00 a.m. till 12.00 noon. The teachers-in-charge attended this seminar and sharing session.
- Mr. Charles J. Thomas, The CEO of Hangout Malaysia was invited for the ALC Mentor Seminar Session to conduct training for the teachers.
- The teachers were given certificates for their contribution and guidance in preparing the students for ALC in the Mentor Seminar Session.
- The guests for the event were En. Maslizam bin Mohamed (Ketua Sektor Pengurusan Psikologi dan Kaunseling, Jabatan Pendidikan Negeri Johor) and Dr. Nur Anuar Abdul Muthalib (Senior Vice President Education, Yayasan Hasanah).
- The closing ceremony began at 3.00pm upon the arrival of the guests.
- The welcoming speech for the closing and prize giving ceremony was given by Dr. Mohamed Yunus Mohamed Yasin.
- After the welcoming speech, the Guest of Honour En. Mazlizam bin Mohamed, Ketua Sektor Pengurusan Psikologi dan Kaunseling from Jabatan Pendidikan Negeri Johor was invited to give the honorary speech
- Appreciation for the ALC participants were done by giving out medals and certificates for the students. Dr. Nur Anuar Abdul Muthalib from Yayasan Hasanah and Mr. Saravanan Vimalanathan from ASTI Committee were called on stage to do appreciation for 12 schools. After that, Dr. Sasitharan Nagapan, the Chief Judge for ALC and Dr. Subramaniam Gurusamy, Vice President of ASTI was invited to give out medals and certificates to the other 13 schools that participated in ALC.
- Next was the Judges Feedback which was given by Chief Judge Dr. Sasitharan Nagapan.
- Dr. Subramaniam Gurusamy, ASTI Vice President gave the thanking speech.
- The winners of ASTI Leap Challenge 2017 were announced and the event was officially closed.

Winning Teams of ASTI Leap Challenge 2017

Champion – SMK Seri Kota Puteri 2
- Received Trophy, Cash Prize of RM1,500.00 and Certificate

1st Runner Up – SMK Taman Daya 2
- Received Trophy, Cash Prize of RM1,000.00 and Certificate

2nd Runner Up – SMK Taman Mount Austin
- Received Trophy, Cash Prize of RM700.00 and Certificate

4th Place Winner – SMK Puteri Wangsa
- Received Trophy, Cash Prize of RM500.00 and Certificate

5th Place Winner – SMK Johor Jaya 1
- Received Trophy, Cash Prize of RM250.00 and Certificate

11.0 JUDGING

- A total of 14 judges agreed to contribute as a judge for ASTI Leap Challenge, ALC, 2017 final competition.
- This team of judges was led by the Chief Judge Dr. Sasitharan Nagapan.

11.1 JUDGES TRAINING

Judges Training was conducted on 10th September 2017 at Universiti Kuala Lumpur Malaysian Institute of Industrial Technology (MITEC), Pasir Gudang. A total of 14 judges attended this training session including the chief judge. The judges were given introduction about ALC by Dr. Subramaniam Gurusamy who then presented the Judging Methodology and had a discussion with all the judges. The purpose of the session was to develop a common understanding amongst the judges as to what constitutes the judging score sheet, so that judging would be carried out uniformly.

11.2 EVENT DAY JUDGING

The agenda for the Event Day Judging was as per below:

- 8.00am - 9.00am : Breakfast & Judges Briefing
- 9.00am - 10.00am : Review reports
- 10.00am - 12.00pm : Judging
- 12.00pm - 1.00pm : Lunch
- 1.00pm- 2.00pm : 2nd Round of Judging for top 2 teams from each group
- 2.00pm – 3.00pm : Calculate marks. Discussion within judges. Submit result to Chief Judge & Complete Judges Comments Form. Handed over final results.

Each participating team was given 10 minutes to do their presentation and 5 minutes for Question & Answer session during the judging session.

11.3 JUDGES COMMENT

Total judges involved: 14 judges (inclusive of Chief Judge for ALC)

1. Schools were well prepared.
2. Some of the schools have the potential to go to international level.
3. Students were able to communicate/explain/describe their invention.
4. Students managed to answer judges' questions.
5. The schools followed the theme of the competition which was 'Invention/Process to help your School be more Efficient'.

11.4. JUDGES DURING THE EVENT

5. Talented experienced judges who had previous exposure in external science fairs as judges.
6. Experts in their field; all judges were with science background.
7. Focused on the facts, concepts and the scientific principles involved in the invention.
8. Overall the judges did a good job in finalizing the winner for the event. Some of them went beyond to inspire the students to participate in the demo and presentation.

12.0 VOLUNTEERS MANAGEMENT

- We had volunteers to help us on the event day to make sure that the event takes place smoothly.
- A total of 6 volunteers were present on the event day.
- All the facilitators were very helpful in making the event a success.

13.0 ALC SOUTHERN REGION ACHIEVEMENT

The ASTI Leap Challenge winner had automatically qualified for Young Inventors Challenge 2017. Meanwhile the 1st Runner Up, 2nd Runner Up, 4th Place Winner and 5th Place Winner at ASTI Leap Challenge were invited to submit their proposal to participate in Young Inventors Challenge 2017 organised by ASTI. SMK Seri Kota Puteri 2 which won ASTI Leap Challenge 2017 in southern region also emerged as winner of Young Inventors Challenge 2017. A total of 102 teams participated in the competition including teams from other countries such as Thailand, Singapore, Indonesia and the Philippines. Meanwhile SMK Taman Mount Austin which was the 2nd runner up at ASTI Leap Challenge 2017 in Johor won Bronze Award at Young Inventors Challenge 2017 and also participated in Pertandingan Inovasi Kreatif J-BIOTECH 2017 state level at Expo Johor Berkemajuan 2017 and came out 8th placed at the competition with their invention XO-SWITCH.

14.0 SWOT ANALYSIS

Strength:

- Improve training modules for southern.
- Good feedback from stakeholders.
- Good and supportive funding partners.
- Very good support and encouragement from Jabatan Pendidikan Negeri Johor.
- 100% attendance of schools for both the trainings and competition.
- Good partner in southern (Asia Metropolitan University).
- Get to pay attention on each student when the students were divided into groups.
- Partner in southern was helpful.
- Activities were quite practical & enjoyed by the students.

Weakness

- Could not get enough volunteers to help execute the event.
- Not enough public presence during the event.
- Less promotion on the event (promoted in ASTI Website and Facebook).
- No media/press attended the event.
- Not enough volunteers to help during the trainings.

Opportunity

- Opportunity to work with more partners.
- Further improve relation with Jabatan Pendidikan Negeri Johor.
- Gave opportunity to students to shine which led them to win at Young Inventors Challenge 2017.

Threat

- Funding/sponsorship for next phase in Johor.
- Difficult to implement in school level for Critical Thinking module.

14.1 CONCLUSION

- ALC Southern has been a great success since it has had a 100 percent success rate, i.e. all 25 schools came for training 1, 2 and 3 and finally to the competition.
- The team had implemented the lesson learnt from the programme in the northern region whilst implementing southern region.

14.2 RECOMMENDATIONS

- Maintain good relationship with Jabatan Pendidikan Negeri to see continues success of the programme.
- Find more partners in southern region for more support for the programme in the region.

15.0 ASTI LEAP CHALLENGE EXPENSES

INCOME	AMOUNT (RM)
Yayasan Hasanah	250,000.00
DISTED College (Venue In kind)	3,000.00
Asia Metropolitan University (Venue In kind)	3,000.00
Wawasan Supply (Medals In kind)	225.00
Total Income	**256,225.00**
Less: Expenditure	
Module Development (IP Generation and Internal Licences)	22,100.00
Training of Trainer	5,574.87
Venue for Training (In kind)	6,000.00
Accommodation for Trainers and Volunteers	6,903.60
Transport Allowances for Trainings and Competition	5,340.00
Transport Allowances for Trainers and Volunteers	8,215.62
Food for Participants	21,080.00
Food Allowances for Trainers and Volunteers	1,181.80
Modules, Stationaries, Activity Kits	743.85
Evaluation, Monitoring	3,000.00
* Insurance for Training & R&D	8,445.80
Competition	
Venue	26,143.13
Prizes, Souvenirs, Certificates, Trophy	19,495.00
Insurance (Students, Teachers, Volunteers)	2,345.50
Income Accommodation for Trainers and Volunteers	3,312.00
Meals (Students, Teachers, Volunteers)	7,679.90
Audio / Visual Rental	3,500.00
Designing, Printing & Promotion	4,786.60
Event Committee	3,167.75
Contingency	0.00
* Appreciation	9,976.00
Medals (In kind)	225.00
CostProject Manager (Wages, EPF, SOCSO, Insurance)	48,000.00
Project Director Honorarium	12,000.00
Operational Cost	24,000.00
Miscellaneous	3,000.00
Total Expenditure	**256,216.42**
Excess of (Expenditure) / Income	8.58

* These items were not budgeted for in our proposal.

16.0 SWOT ANALYSIS

Strength (General) :

- ASTI Leap Challenge team is clear about its goals and objectives and know how to achieve them.
- Very strong support from the various teams, all working together to achieve goals and results.
- Mentoring and coaching individual teams, helping them with the planning, and converting the plans to action, getting each of the school team to innovate to bring the best out of the challenge proposals.
- The CSR support of venue owners.
- Information and research - The continuous learning and the evolvement of the program by the ASTI team to meet the various challenges that is seen from the earlier pilot projects.

Weakness

- Communicating with the ministry and the school needs improvement to prevent clashed, eg. In Penang our event clashed with state run Gotong Royong program.
- Teachers taking part in the program have to see the benefit the programs brings about to their students, instead of identifying this as something that will add on to their working burden.
- Need to get the buy-in of the headmasters and all the teachers to come and support the programs, especially on the day of the challenge.
- To involve the universities where we are hosting, and get the VC, TNC and deans of relevant faculties involved to get them help create the festival spirit for the Challenges event.
- To get support of the press such as The Star to become partners to create public awareness of the change this program is bringing to the Malaysian Public.
- No IT and Dashboards internally and shared with the schools to manage this project to get the schools involvement with the project.

Opportunity

- NGOs to get their support for the project.
- The public, such as Siltera etc to come out and support the program.
- Parents and other school teachers.
- Public universities and colleges such as Disted, UniKL, AMU etc.
- Alumni university.
- State and Federal government, HR and Education ministries.

Threat

- Financial and credit pressures- Financial capability to maintain this.
- Competitor intentions - Others who want to capitalise the success of the project for themselves for commercial purpose.
- The ability of the team to come together and support the project without tiring themselves.
- Political effects.

16.1 CONCLUSION

- The team's tireless effort and the support from all parties made this programme a success.

16.2 RECOMMENDATIONS

- Strengthen relationship with the partners and find more partners especially for the southern region.
- Continue on to Phase 2 pilot with lots of engagement with the respective schools.

17.0 SURVEY ANALYSIS SUMMARY

A daily survey was conducted to gather feedback from the ASTI Leap Challenge participants of all the training sessions and the event, for both the northern and southern regions.

NORTHERN REGION

The survey of ASTI Leap Challenge Program from northern region has shown that the majority of the students were happy with the training content and delivery. The respondents felt that the ALC project, they were able to apply the knowledge learnt especially when they do hands-on activity right after the theory. Majority of the teachers understood the first training on what creative thinking were after they attend to this program. In the second training on critical thinking, most students were happy with it although some students mentioned that they needed more time to practice what they have learnt. From the 3rd training, students learnt about "Design And Innovation Thinking". They enjoyed the training very much.

ALC 2nd Training Teachers survey shows that all the teachers who took part in the training have the confidence to organize similar programmes at school although they were concerned with its work load. Some teachers also mentioned that they have improved their leadership skills through the trainings. From the result and our observation, we can conclude that ALC Trainings increased the teachers' confident level.

From the survey of ALC Final Competition, students were satisfied with all the aspects about comfortability of venue and environment. In terms of participants opinion on the competition and resources provided for the students were helpful and most of the students rated that the materials as good. ALC has helped students to gain certain qualities like self-confidence, leadership skills, team work, project management skills, public speaking & presentation skills, report writing skills, to think creatively & out of the box and also to become a problem solver.

Overall, most students rated good and very good for how useful ALC was in making students think innovatively and how ALC has helped the students to improve their Invention Report Writing skills. Based on the ethnicity, Malay participants were the majority at the event. They comprised of 86% of the total students followed by the Chinese, Indian and Other ethnicity participants who were 9%, 3 % and 2 % of the total participants at ALC 2017 respectively. The largest number of students who take part in this training were female.

17.0 SURVEY ANALYSIS SUMMARY

A daily survey was conducted to gather feedback from the ASTI Leap Challenge participants of all the training sessions and the event, for both the northern and southern regions.

SOUTHERN REGION

The survey of ASTI Leap Challenge for the southern region shows that about 86% of the students have said that they are happy with the training whilst 83% of the students have agreed that they are able to apply the knowledge they have learnt from participating in the training. A vast majority of the students at the 1st training on creative thinking agree that the ALC trainers are knowledgeable. Majority of the teachers also were happy and benefitted by attending with the trainings. The second ALC training on critical thinking for the southern region was conducted on at Asia Metropolitan University, Pasir Gudang. A total of 123 students and 42 teachers took part in the survey that was conducted by ASTI in the final event. All the schools that participated in the first training attended the second training.

All 25 schools attended the 3 trainings as well as the event. The students were happy with the volunteers who were helpful & courteous, the space provided at the booth for them and the team, the location signages were helpful and satisfactory and the coordination of overall event.

There were more female participants in the final event of ASTI Leap Challenge. The Malay ethnic students were the most at the event followed by Chinese ethic and Indian ethnic students. Students from other ethnicity were the Iban ethnic students.

The students were satisfied with the material provided and the ALC trainings was helpful for them to produce their invention. The participants were also asked if they would recommend their friends to participate in ALC, would they like to facilitate ALC at school level, would they like to have a training session for ALC 2017 – 2018 and would they support for ALC to be organized at school level next year. Most of the students have said yes to these questions.

18.0 CONCLUSION

Overall, ALC Pilot Phase 1 has been a success based on the feedback we have received. From the interactions and feedback from the schools, we found that many “lower band” school did not get much opportunity such as this. From the success of the ALC teams in other competitions post-ALC, we have found that, with enough encouragement, these schools can truly excel to greater height. We believe that this program can be a platform for young creative and innovative people to showcase their talent.

Upon participating in ASTI Leap Challenge, the schools should be able to conduct the competition in their schools as an annual event which will involve more students. The schools should then be able to participate in various national and international invention competitions. After the success of the project in the regional level, for the following year, we will encourage and provide seed funding for the schools to conduct their own competition at the school level. This way more students will benefit from the project.

We had also made some changes for phase 1 of the pilot for Johor after discussion with Yayasan Hasanah.

19.0 MEDIA COVERAGE

An article that was published in Metro Harian on ASTI Leap Challenge final for northern region held in Kulim.

MUHAMAD Muhaimin (duduk kanan) dan pasukan SMK Sungai Kob bergambar bersama trofi serta alat rakaan selepas majlis penyampaian hadiah ASTI Leap Challenge 2017

Lima pelajar harum sekolah

Kulim: Lima pelajar serta dua guru pembimbing mengharumkan nama Sekolah Menengah (SMK) Sungai Kob apabila hasil ciptaan mereka diumumkan sebagai johan Persatuan Sains, Teknologi dan Inovasi (ASTI) Leap Challenge 2017 yang diadakan di Dewan Universiti Kuala Lumpur Malaysia Spanish Institute (UniKL-MSI) di sini, baru-baru ini.

Kemenangan itu membolehkan pasukan SMK Sungai Kob membawa pulang hadiah wang tunai RM1,500 bersama trofi dan sijil penyertaan.

FAKTA
SMK Sungai Kob johan ASTI Leap Challenge 2017

Ketua kumpulan, Muhammad Muhaimin Che Sa, 16, berkata, mereka tidak menyangka akan diumumkan sebagai johan apabila hasil ciptaan mereka iaitu 'Eco Filter' menjadi pilihan pihak juri.

Katanya, kumpulannya terdiri lima pelajar tingkatan empat aliran sains iaitu Sarah Mardiana Azlal, Irfan Iqbal Roslidi, Nur Izzah Mohd Zamberi dan Nurul Afiqah Mat Ilmdi.

"Kumpulan kami mendapat bimbingan daripada guru Hasnah Mansor dan Yusmee Anila Mohd Nawi yang banyak memberi idea serta sokongan.

"Idea mencipta 'Eco Filter' ini iaitu alat penapis minyak daripada sisa makanan yang dipercaya daripada serat barang plastik dan hampas barang rebus bermula apabila kami sering terbidu bau busuk di longkang berhampiran kawasan kantin sekolah," katanya.


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APPENDIX A:
NORTHERN REGION

- Training 1 - Creative Thinking

1ST TRAINING

ALC 1st Training Student Survey Analysis

Asti Leap Challenge, ALC, 1st training was held on 22nd October 2016. Seventeen secondary schools from Kedah and Penang were involved in this training. Around ninety students took part in this ALC training.

Figure 1 : Students satisfaction level with the training

Figure 1 shows students' satisfaction level with the training. Among the 90 students who took part in this training, 43 and 45 students rated that they were happy with the training. Three respondents rated the statement as "neutral". Majority of the students were happy with this training.

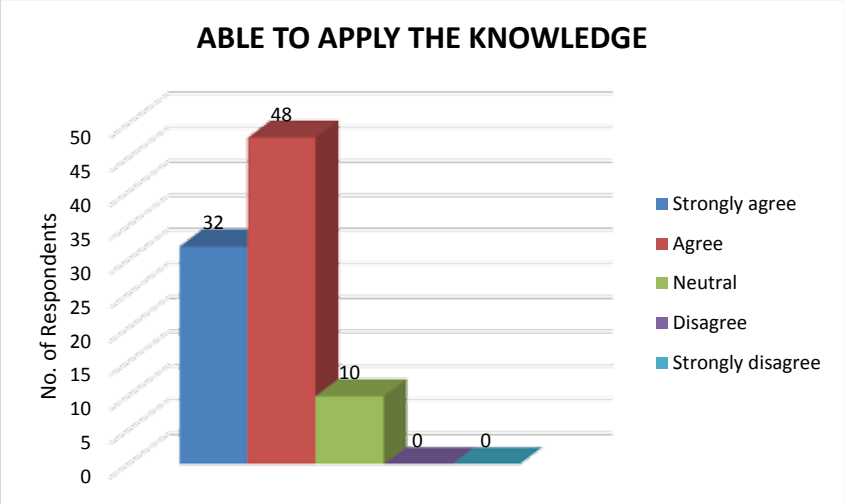


Figure 2 : Students able to apply the knowledge

According to the graph above, 32 respondents "strongly agree" that they are able to apply the knowledge learnt from the training. 10 students rated it as "neutral". Majority of the students agreed with the statement. In the ALC project, students gain knowledge when they do hands-on activity. Students like to do hands-on activity rather than reading and listening.

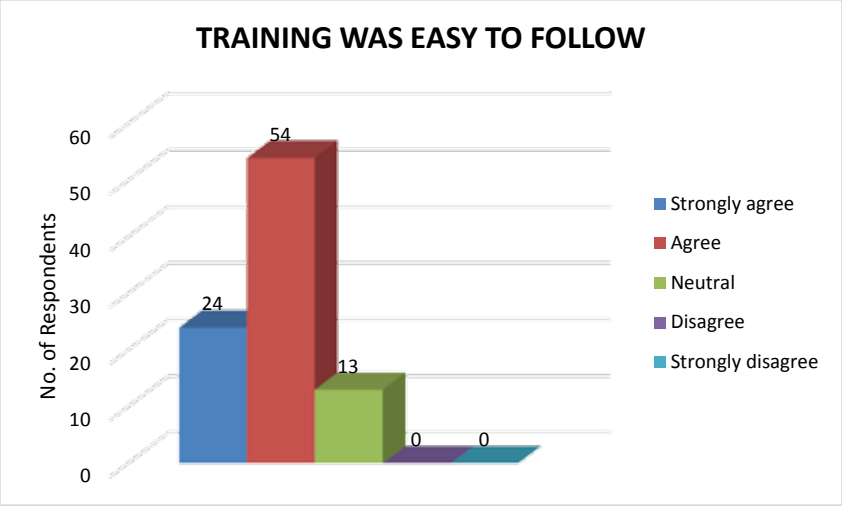


Figure 3 : The training was easy to follow

Based on the figure above, majority of the student "strongly agree" that the training was easy to follow. Twenty four and 54 rated "strongly agree" and "agree" for this statement. They mentioned that the training was easy to follow. None of the respondents rated "disagree" and below.

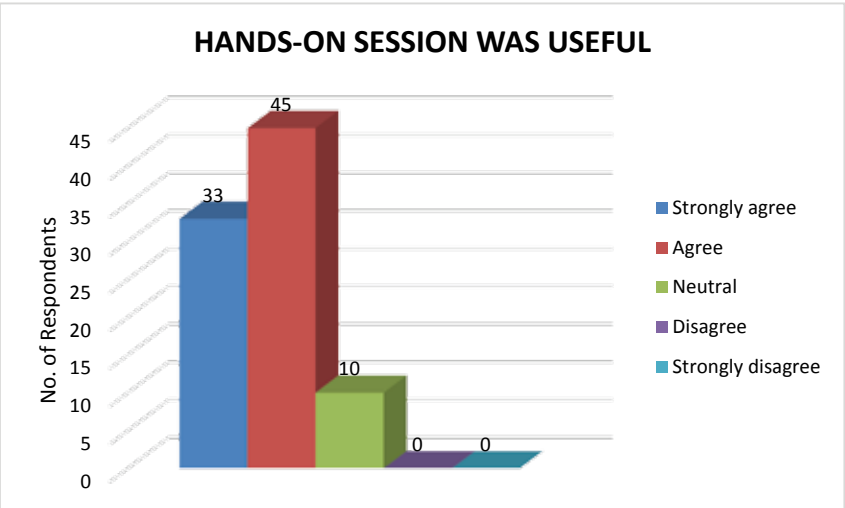


Figure 4 : Hands-on session was useful

ASTI Leap Challenge is to expose secondary school students to the world of science and thinking as well as the area of invention and innovation. According to Figure 4, 78 respondents agree that the hands-on session which was held was useful. Students gained knowledge from the hands-on activity and mentioned that the activity was useful for their studies.

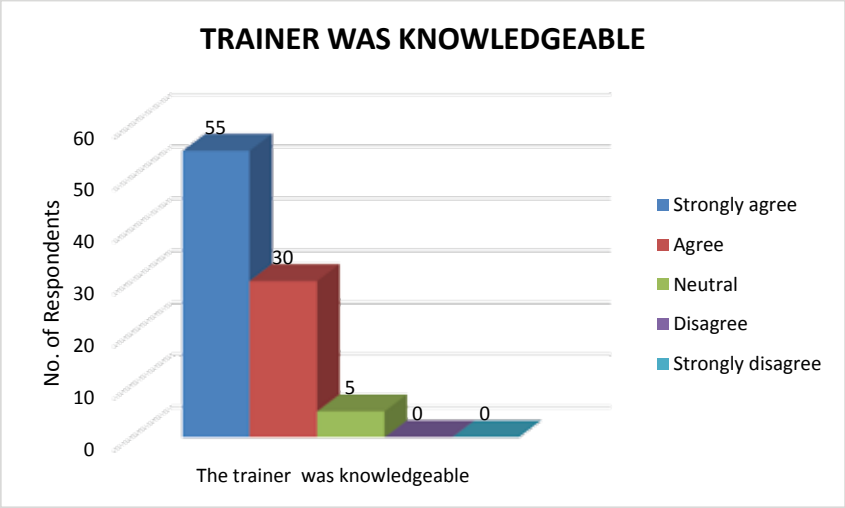


Figure 5 : Trainer was knowledgeable

Based on the graph above, the trainer who conducted the training was knowledgeable. Among 90 respondents, 85 of them "strongly agree" and "agree" with the statement. Five students rated it as "neutral". Students suggested to improve the hands-on activities. The trainer has to plan more interesting activities for the students. According to the survey, some of the students felt bored with the activities.

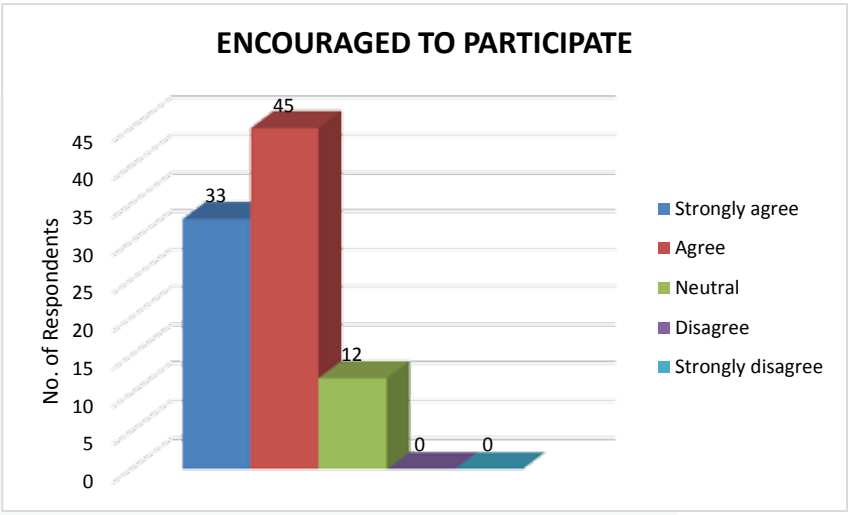


Figure 6 : Students were encouraged to participate

Figure 6 shows the number of students who were encouraged to participate in ALC. Majority of the students were encouraged to take part in ASTI Leap Challenge Program. ALC is a beneficial program held for students who have sat for their PT3 exam. This program improves the students' knowledge in science. Due to that, most of the students were encouraged to take part in this event.

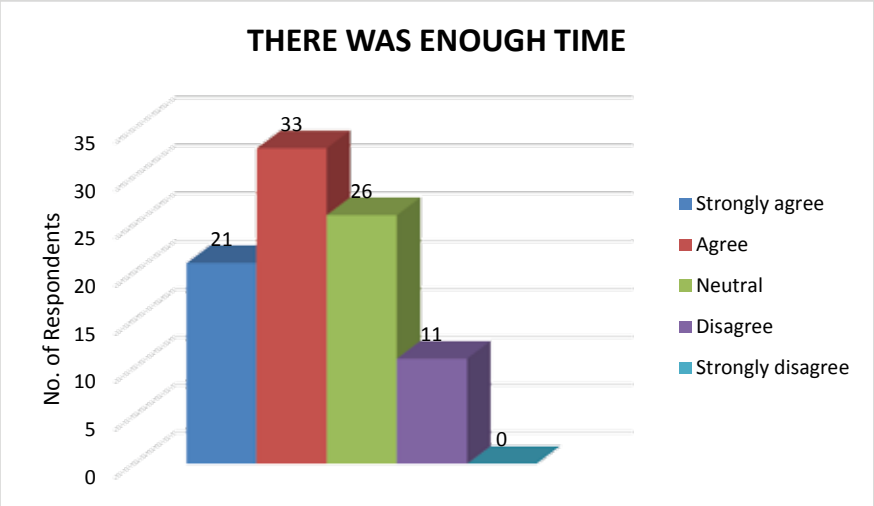


Figure 7 : Sufficient time

ASTI Leap Challenge 1st training was a 1 day program. Twenty one students strongly agreed that they had enough time. However, 11 students "disagree" the statement. Students suggested that they need more time to do the hands-on activities. They suggested longer time is allocated for the activities. Hence, they can think creatively to invent an invention.

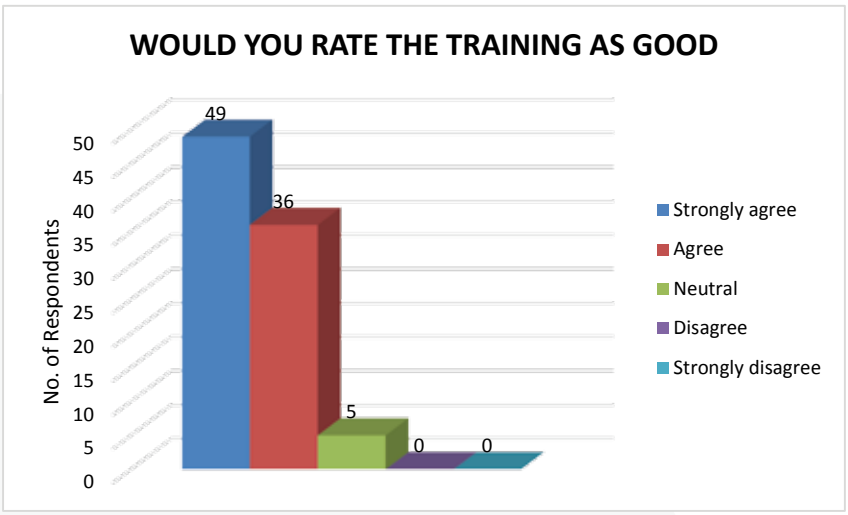


Figure 8 : Rate the training as good

According to the graph, majority of students rated the 1st training of ALC as good. Forty nine students out of 90 "strongly agree" that the training was good. However, 5 of them rated "neutral". The trainer who conducted the program was knowledgeable. The hands-on activity was also very interesting. Students suggested to allocate extra time for the activities. Other than that, the ALC 1st training was good and students enjoyed the training.

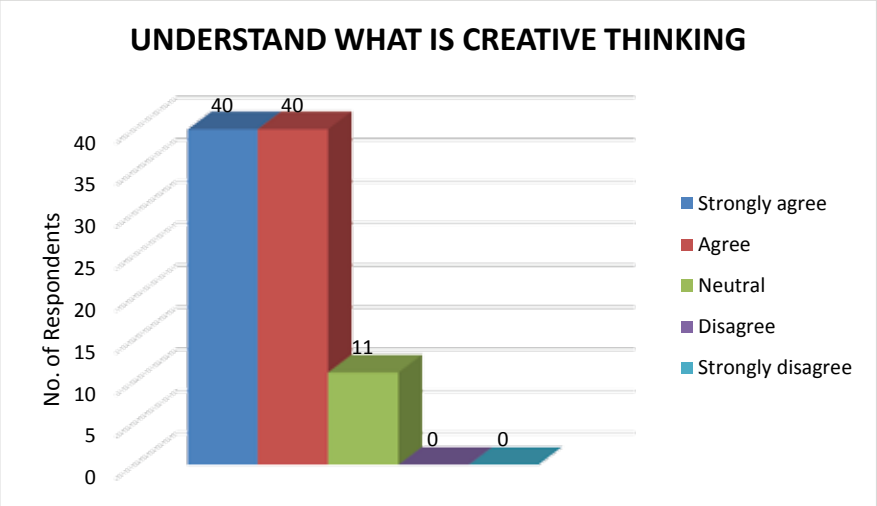


Figure 9 : Understand creative thinking

Based on the figure above, 80 students understood about creative thinking. However, 11 students only rated "neutral" for this statement. After participating in this training, students understood better on creative thinking. It can help them in their studies and future.

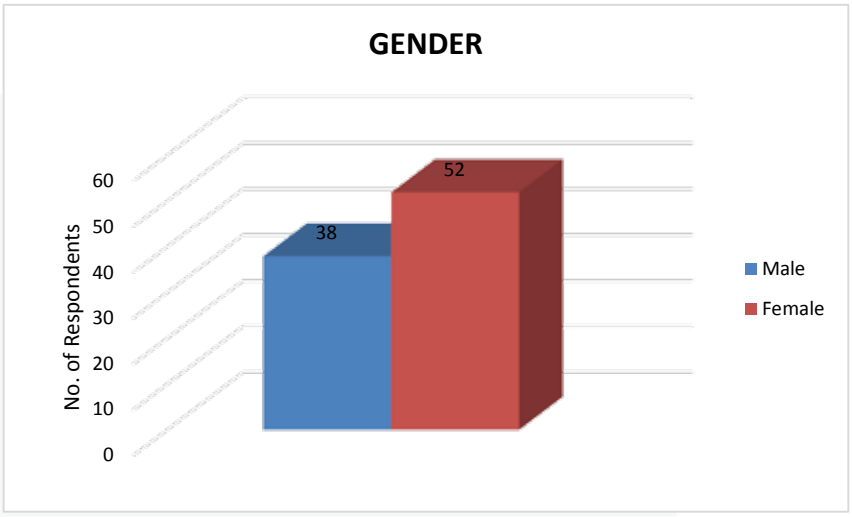


Figure 10 : Number of male and female students

Figure 10 shows the number of male and female students who took part in ASTI Leap Challenge's 1st Training. The largest number of students who take part in this training were female. Fifty two female students took part in ALC. Only 38 male students participated in this training.

1ST TRAINING

ALC 1st Training Teacher survey Analysis
Teachers also participated in ASTI Leap Challenge training. Twenty teachers took part in ALC's 1st training.

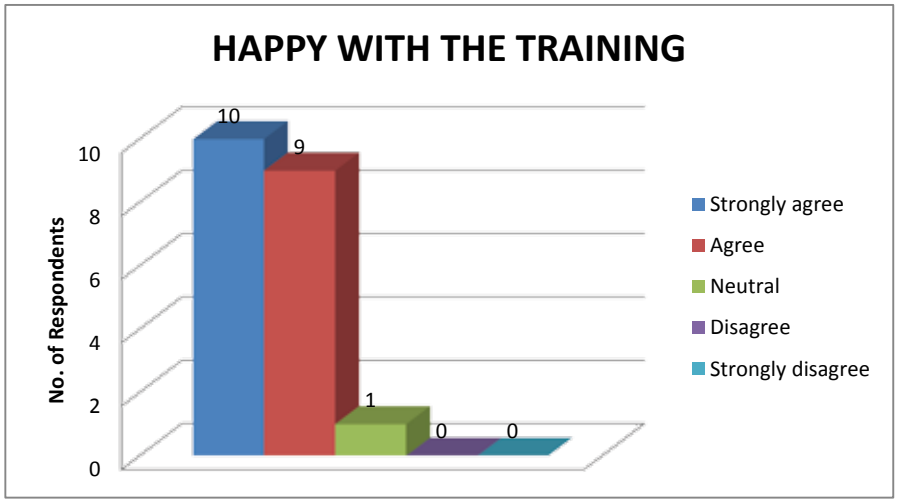


Figure 11 : Satisfaction level of teachers with the training

Figure 11 shows that the satisfaction level of teachers with the training. Ten and 9 teachers "strongly agree" and "agree" with the statement respectively. One teacher rated "neutral". Majority of the teachers were happy with the training. They enjoyed participating in the training. About 95% of teachers were found to be satisfied with the training.

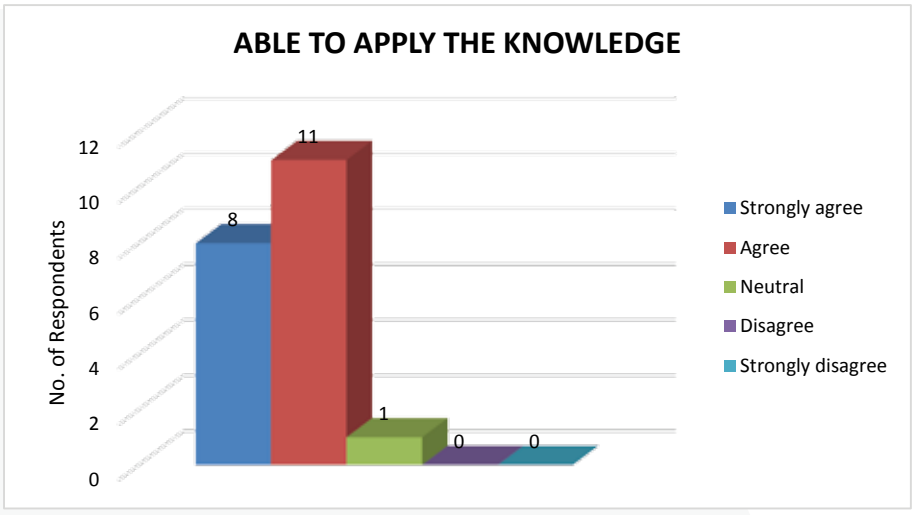


Figure 12 : Able to apply the knowledge

According to the figure above, most of the teachers "agree" that they can apply the knowledge gained from the training in their career. The training was very helpful for their teaching. 1 teacher rated the statement as "neutral". Teachers suggested to do training regarding electricity.

Figure 13 : Training was easy to follow

Based on the figure above, teachers felt the training was easy to follow. Eight and 12 teachers respectively rated "strongly agree" and "agree" to the statement. From the result, we can conclude that the trainer conducted the training well. The trainer planned well and conducted the training with interesting hands-on activities.

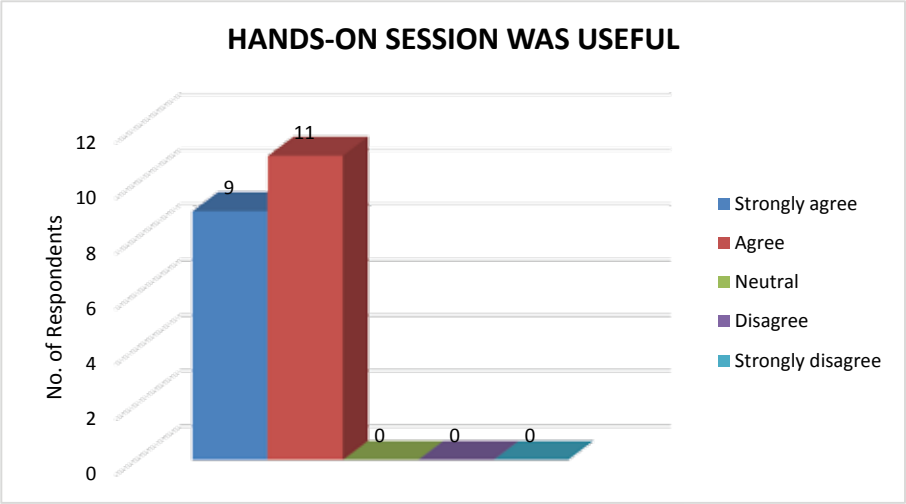


Figure 14 : Hands-on session was useful

From the result, majority of the teachers said that the hands-on session was very useful. Teachers mentioned that the hands-on activities can improve their creative thinking. They suggested that the trainer need to increase more activities to improve students' creative thinking.

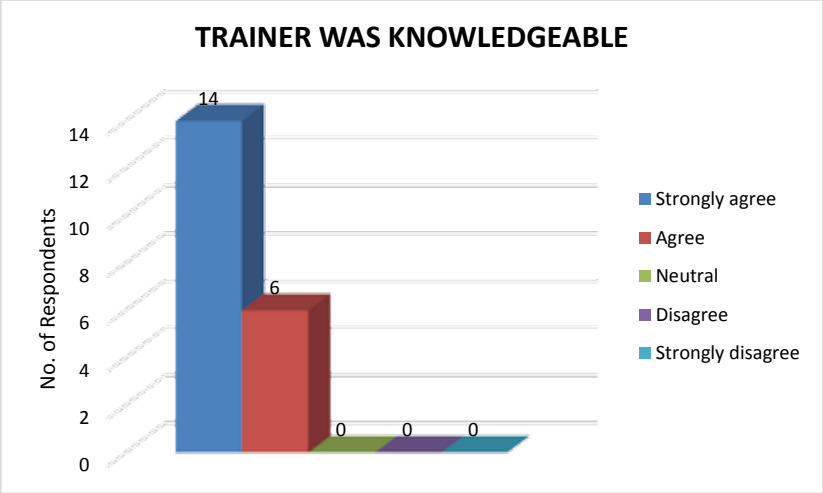


Figure 15 : Trainer was knowledgeable

According to the above figure, majority of the teachers agreed that the trainer was knowledgeable. The trainer conducted the program with interesting activities. Due to that, teachers felt that science was easy. From the result, we can conclude that we have achieved the objective of 1st training.

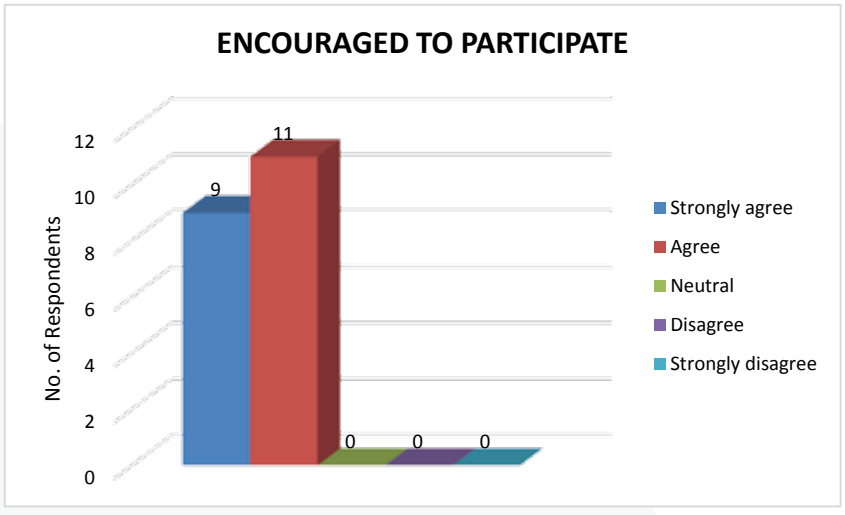


Figure 16 : Encouraged to participate

Figure 16 shows the number of students who were encouraged to participate in ALC 1st training. Majority of the teachers rated “strongly agree” and “agree” to this statement. None of the teachers rated “below agree”.

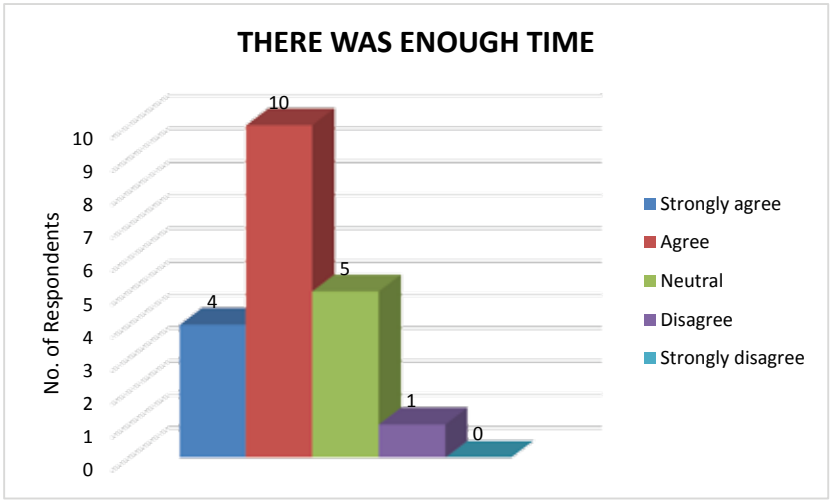


Figure 17 : Sufficient time

Based on the figure above, teachers rated the statement as "strongly agree", "agree", "neutral" and "disagree". One teacher rated "disagree". Majority of the teachers said that they had enough time. However, many teachers suggested to give extra time for hands-on session.

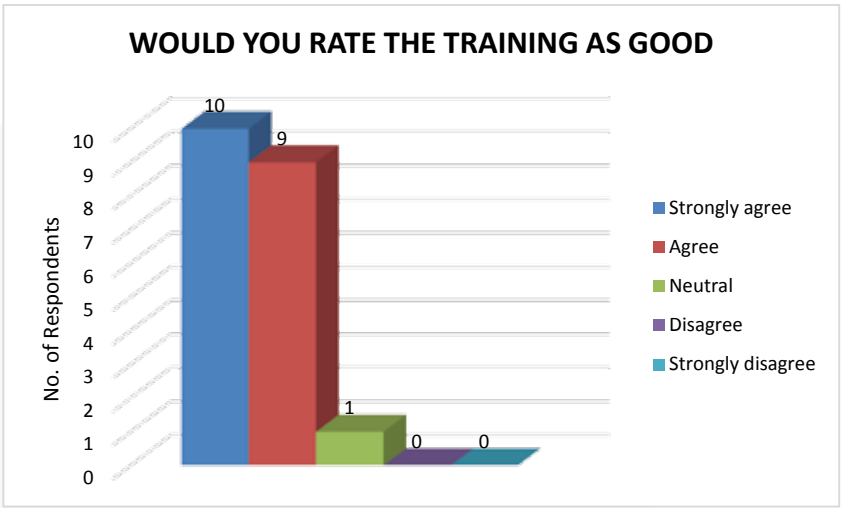


Figure 18 : Rate the training as good

According to the above figure, majority of the teachers "agree" that the training was good. One teacher rated "neutral" for this statement. Teachers enjoyed participating in ASTI Leap Challenge Training. Teachers gained knowledge and learnt to teach science in more interesting methods.

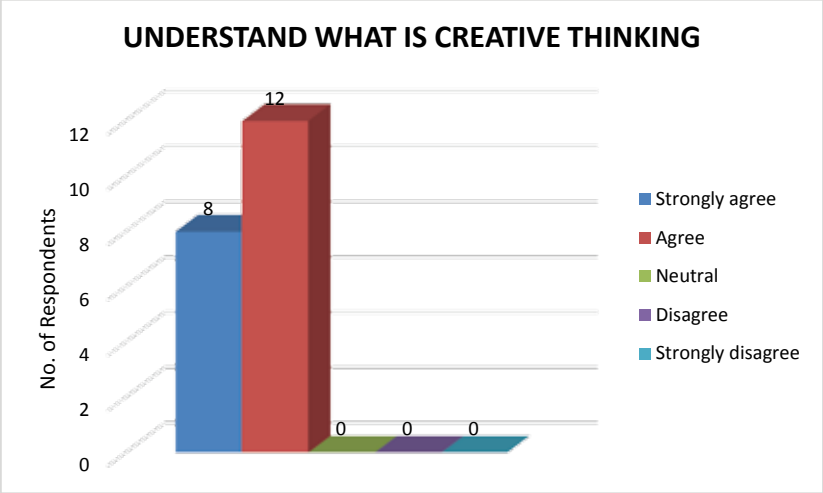


Figure 19 : Understand creative thinking

According to the graph above, majority of the teachers understood what is creative thinking after they took part in ALC's 1st training. After this, teachers can conduct the activities to their students at school. Only some students' got the chance to take part in this training. Due to that, teachers who came can conduct the activities at school to ensure students who are not involved in the training can get to experience ALC.

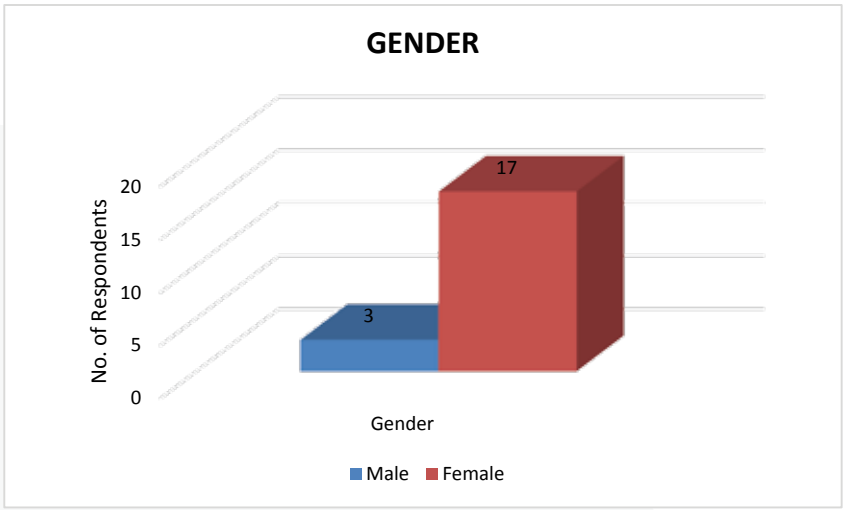


Figure 20 : Number of male and female teachers

Based on the figure, we can conclude that majority of the teachers who took part in this training were female. Three male teachers attended the training. Others were all female teachers.

APPENDIX B:
NORTHERN REGION

- Training 2 - Critical Thinking

2ND TRAINING

ALC 2nd Training Students Survey Analysis

ASTI Leap Challenge 2nd training was held on 19th November 2016. Around sixty students were involved in this training. In ALC's 2nd training, students understood about critical thinking.

Figure 21 : Satisfaction level of the 2nd training

According to the figure above, 31 and 27 students respectively "strongly agree" and "agree" that they feel happy with the 2nd training. 3 students rated it as "neutral". Overall the event satisfaction was good.

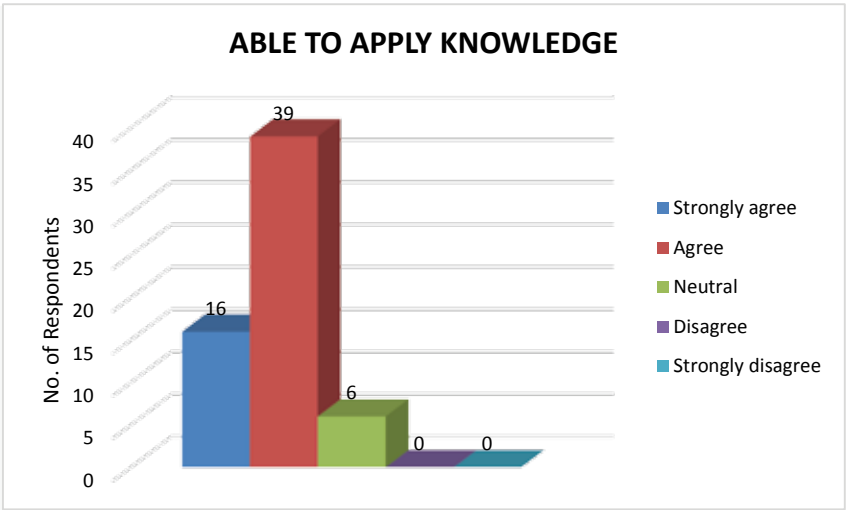


Figure 22 : Able to apply the knowledge

Figure 22 shows the number of students who are able to apply the knowledge gained in 1st and 2nd training in their studies. 54 students "strongly agree" and "agree" that they can apply the knowledge gained. However, only 6 students rated it as "neutral".

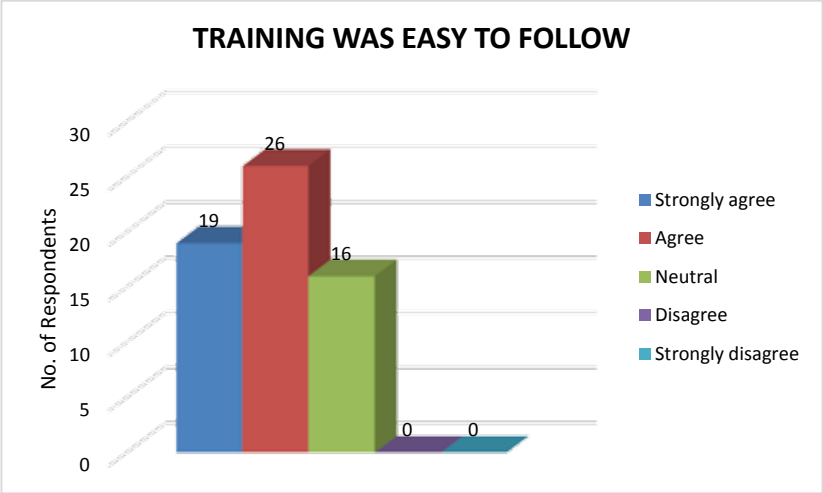


Figure 23 : Training was easy to follow

Figure 23 shows the number of students who felt the training was easy to follow. Nineteen and 26 students rated it as "strongly agree" and "agree". However, 16 students rated it as "neutral". According to the survey, students mentioned that they need more time to practice. Due to the lack of time, students feel it is difficult.

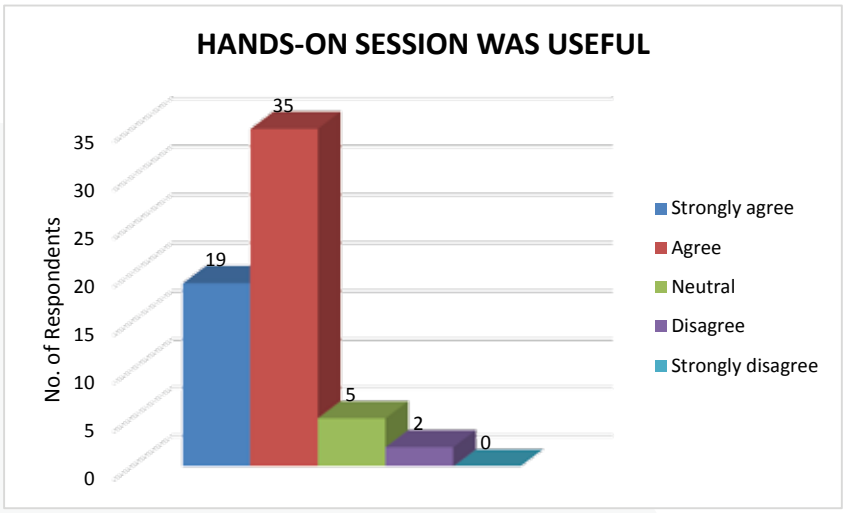


Figure 24 : Hands-on session was useful

Based on the figure, 54 students agree that the hands-on session was useful for them. Two students disagreed with the statement.

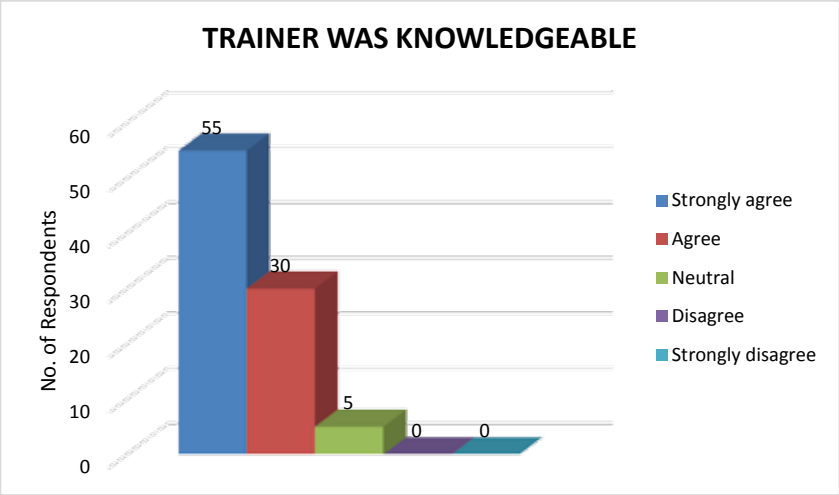


Figure 25 : Trainer was knowledgeable

The above graph shows the number of students who agree that the trainer was knowledgeable. Majority of the students agree that the trainer was knowledgeable. Five students rated it as “neutral”.

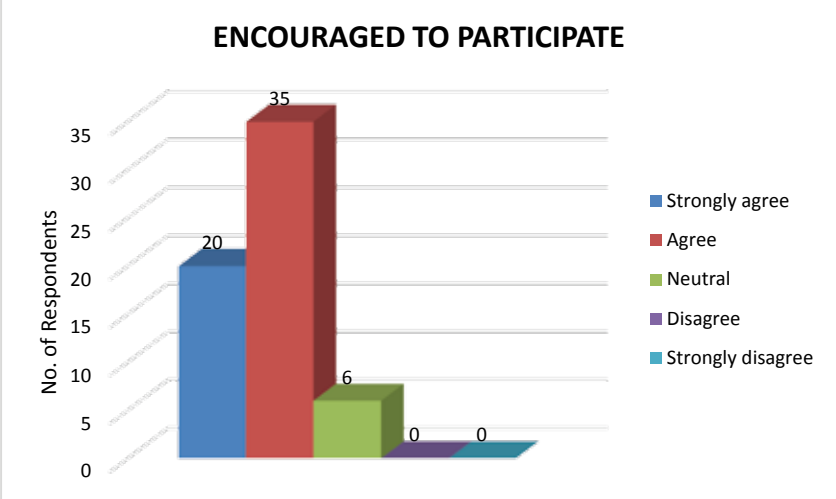


Figure 26 : Encouraged to participate

Figure 26 is about the numbers of the students who were encouraged to participate in ALC 2nd training. Six students rated “neutral” for this statement. Students were happy to take part in the training.

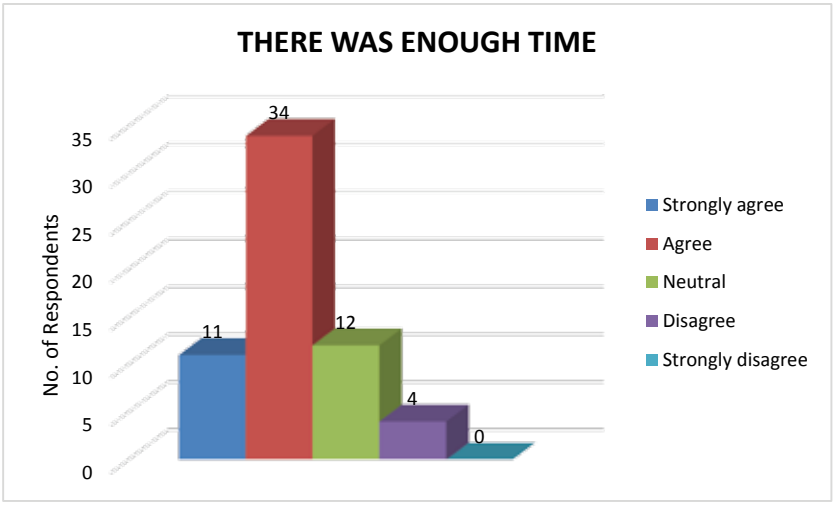


Figure 27: There was enough time

According to the above figure, majority of the students "strongly agree" and "agree" to the statement. Twelve and four students respectively rated "neutral" and "disagree". Students stated that they need more time to do the hands-on activity. They suggested to allocate enough time for them to do the activity.

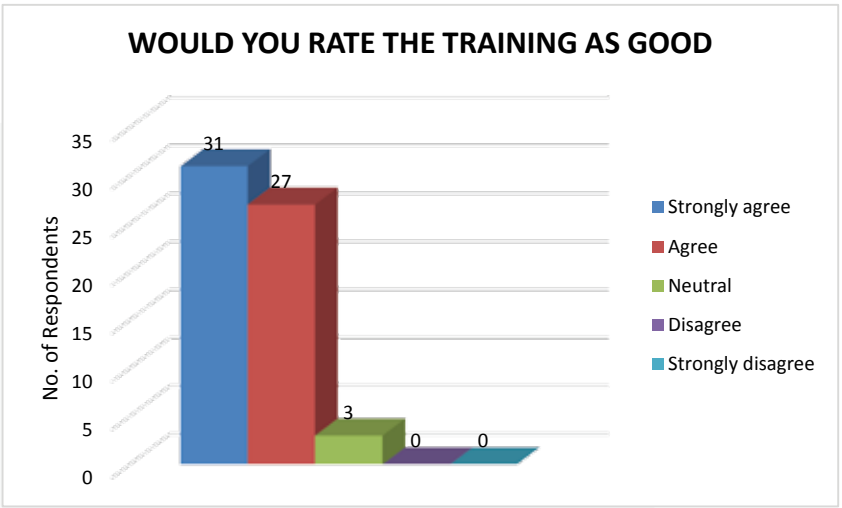


Figure 28 : Would you rate the training as good

Based on the figure above, 31 and 27 students rated the statement as "strongly agree" and "agree". They agreed that the ALC 2nd training was good and well conducted by the trainer. 3 students only rated neutral.

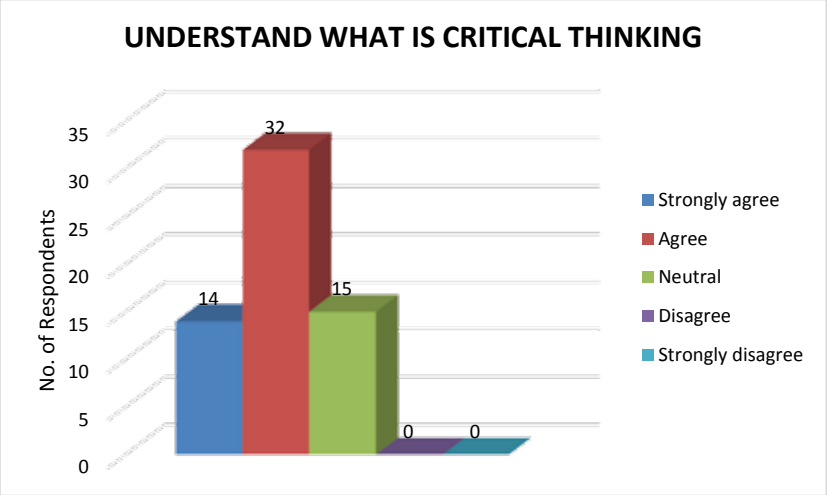


Figure 29 : Understand about critical thinking

According to the graph above, majority of the students understood about critical thinking. Fifteen students rated neutral. Students need more time to practice. Some of the students felt it is not easy to follow. They need more time to improve themselves.

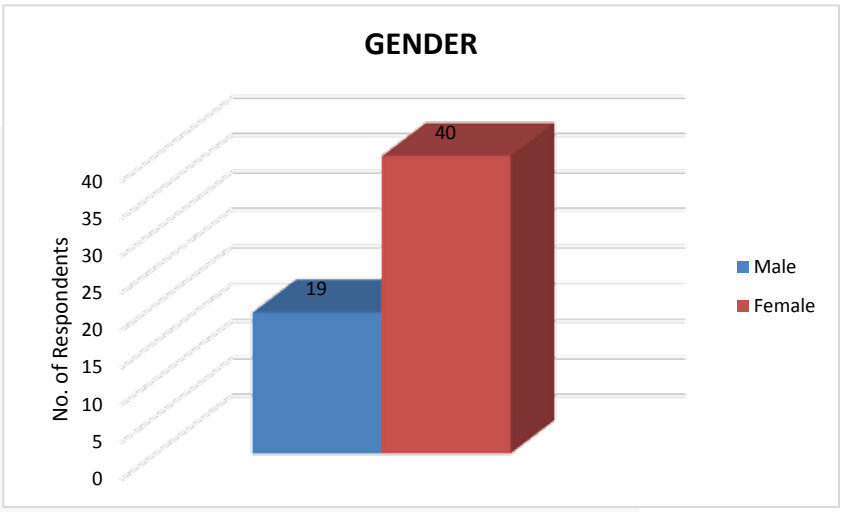


Figure 30: Number of male and female students

Figure 30 shows the number of male and female students who attended ALC 2nd training. Majority of the students who attended the training were female students. 19 male students participated in this training.

2ND TRAINING

ALC 2nd Training Teachers Survey Analysis

Figure 31 : Satisfaction level of the training

According to the graph above, all the teachers who attended ALC 2nd training was happy with the training. None of the teachers rated below than "agree". All the teachers were satisfied with the program. 100% teachers were satisfied with the training.

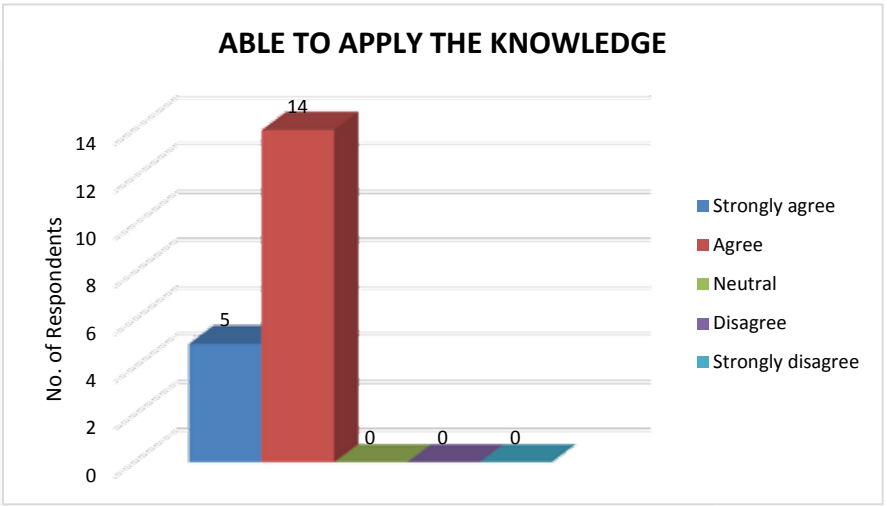


Figure 32 : Teachers able to apply the knowledge

Figure 32 shows the number of teachers who are able to apply the knowledge which they gained from ALC 2nd training. All the teachers were able to apply the knowledge. Teachers learnt new things about science and critical thinking. They are able to apply the knowledge in teaching. From the training, the teachers learnt to be a good leader and are able to manage any school project.

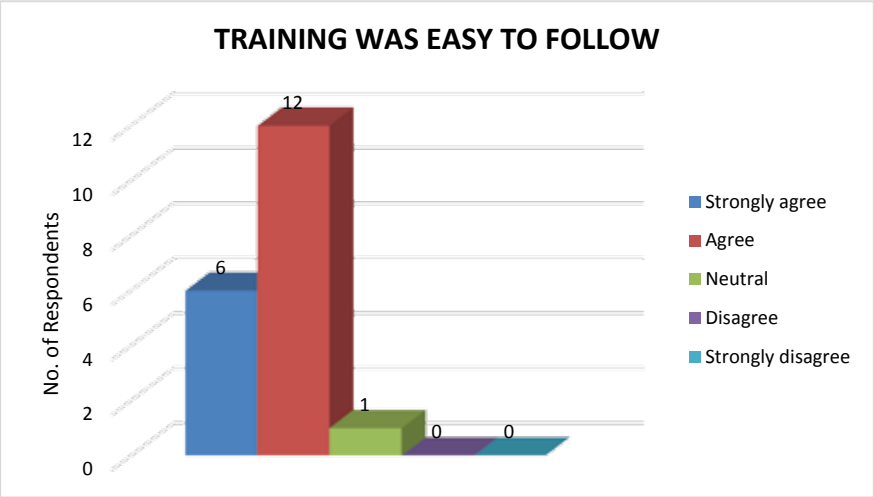


Figure 33 : Training was easy to follow

Figure above shows the number of teachers who felt the training was easy to follow. Majority of the teacher felt the training was easy. However, 1 teacher rated neutral. Majority of the teachers feel that they are able to teach science with hands-on activity.

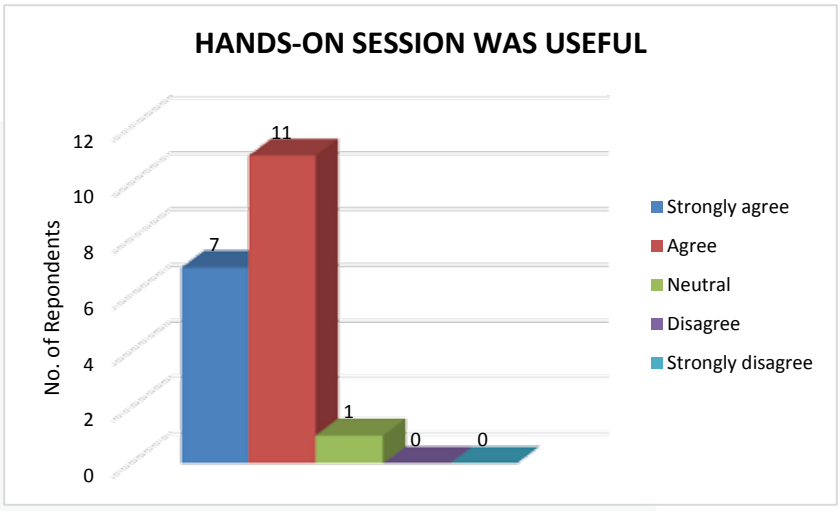


Figure 34 : Hands-on session was useful

Based on the graph above, majority of the teachers agreed that the hands-on session was useful. The hands-on session which was held by the trainer was useful for the teachers to improve their teaching. They can teach science with hands-on activity. The activities were good and beneficial to the teachers. Teachers also suggested to the organizer to provide modules and reference for them to teach the students.

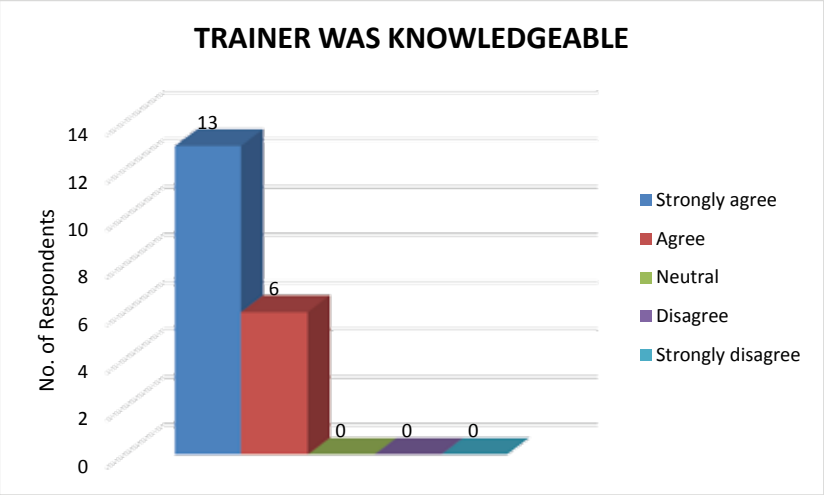


Figure 35 : Trainer was knowledgeable

Majority of the teachers agreed that the trainer was knowledgeable. The trainer conducted different hands-on activity in ALC's 2nd training. Most of the activities were interesting. However, teachers suggested to do more fun and interesting activities for them.

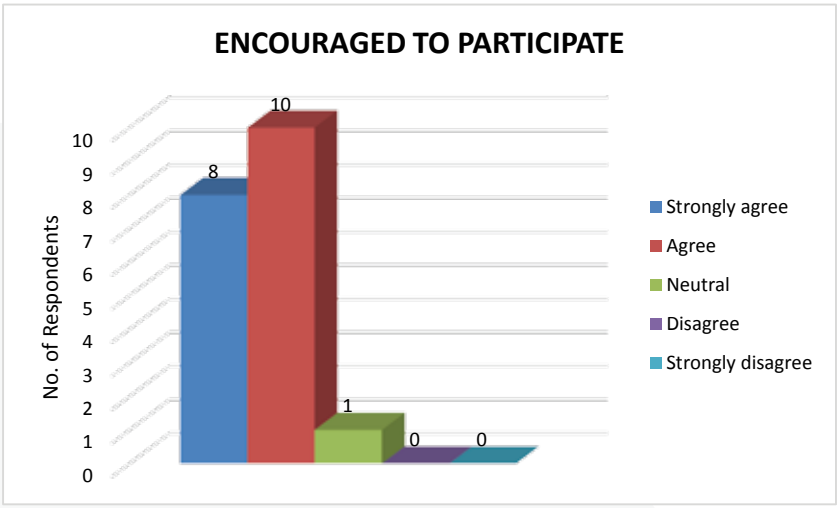


Figure 36 : Encouraged to participate

Figure 36 shows the number of teachers who were encouraged to participate in ALC 2nd training. Eighteen teachers agreed to the statement. One teacher rated "neutral". Teachers were encouraged to take part in this training to gain extra knowledge for their career.

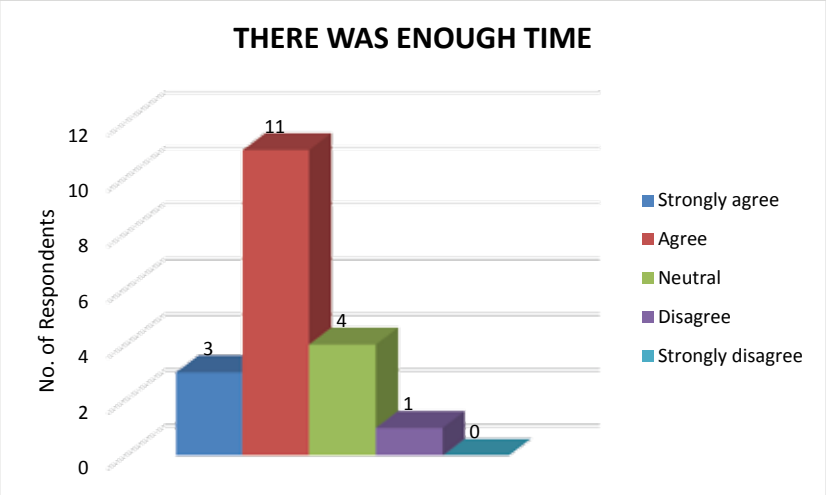


Figure 37 : There was enough time

According to figure 37, 3 and 11 teachers respectively rated the statement as “strongly agree” and “agree”. One teacher rated “disagree”. Teachers also need more time to do activities. Trainer also must increase the activities to the teachers’ level. Hence, they can improve them self.

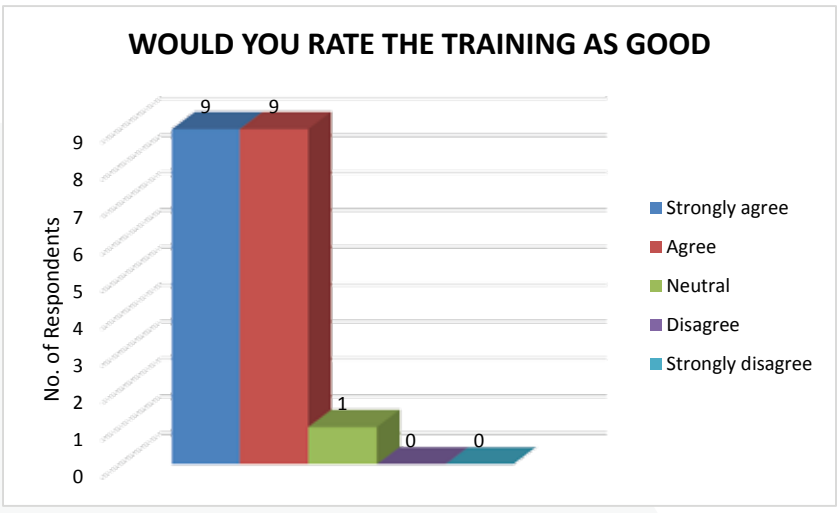


Figure 38 : Would you rate the training as good

According to the graph above, majority of the teachers agreed that the training was good. One teacher rated it as “neutral”. Teachers stated that they learnt about critical thinking through the ALC 2nd training. Trainer also have to arrange more interesting and beneficial activities for the teacher.

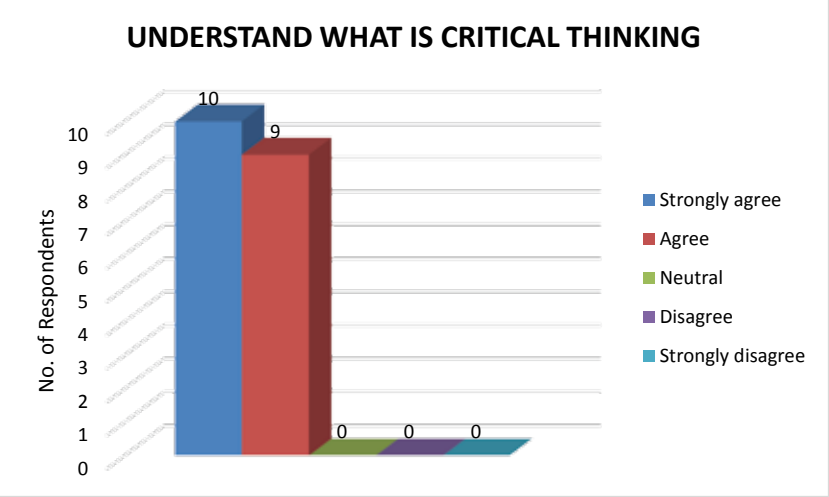


Figure 39 : Understand about critical thinking

Figure 39 shows the number of teachers who understand about critical thinking after the training. Ten and 9 teachers rated strongly agree and agree respectively. None of the teachers disagree the statement. According to the result, we can conclude that ASTI Leap Challenge 2nd training achieved the objective.

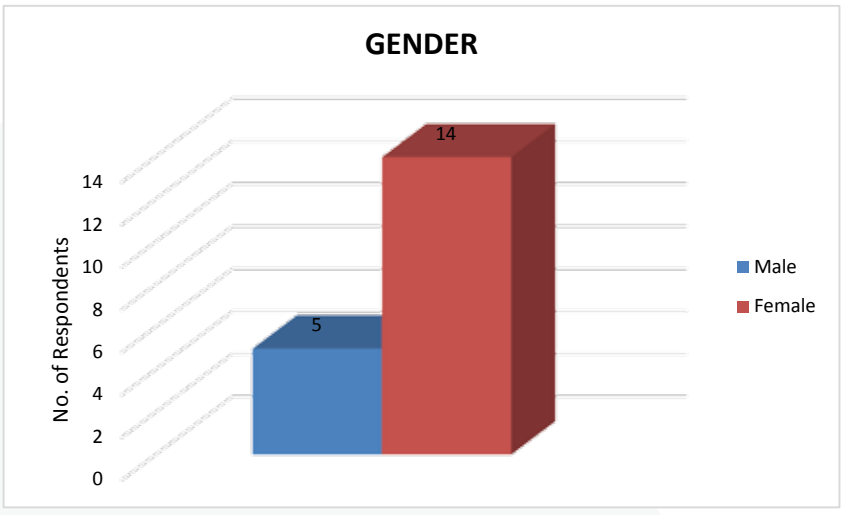


Figure 40 : Number of male and female teachers

According to the graph above, 14 female teachers participated in ALC 2nd training. Five male teachers took part in the training. From the result, we can conclude that female teachers were more interested to take part in the training.

APPENDIX C:
NORTHERN REGION

- Training 3 - Design & Innovative Thinking

3RD TRAINING

ASTI Leap Challenge 3rd Training Students' Survey Analysis

ASTI Leap Challenge 3rd Training was held on 18 January 2017 at Disted College, Penang. Fifty six students participated in this training. The 3rd training was based on "Design And Innovation Thinking".

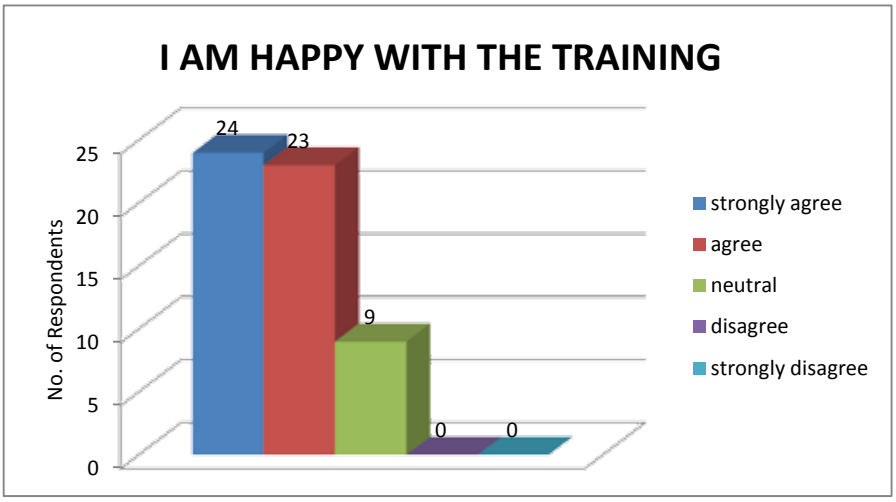


Figure 41 : Satisfaction level of the training

Figure 41 shows the number of students were who satisfied with the 3rd training. Majority of the students were happy with the 3rd training. Twenty four and 23 students rated "strongly agree" and "agree" to the statement. From the 3rd training, students learnt about "Design And Innovation Thinking". They enjoyed the training.

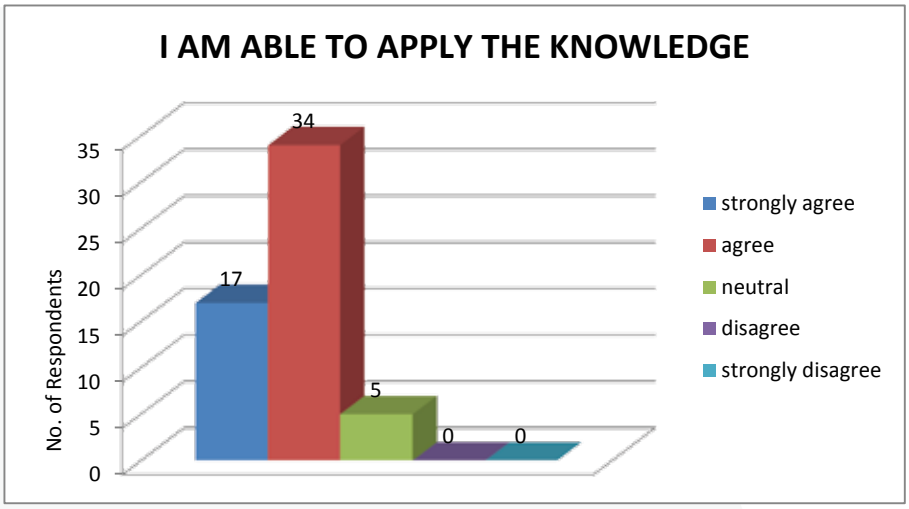


Figure 42 : Able to apply the knowledge

According to the above figure, majority of the students "agree" that they are able to apply their knowledge which they gained from the 3rd training. They learnt to solve a problem from this training. Thirty four students "agree" that they can apply their knowledge from this training. The training is helpful for the students to design an invention.

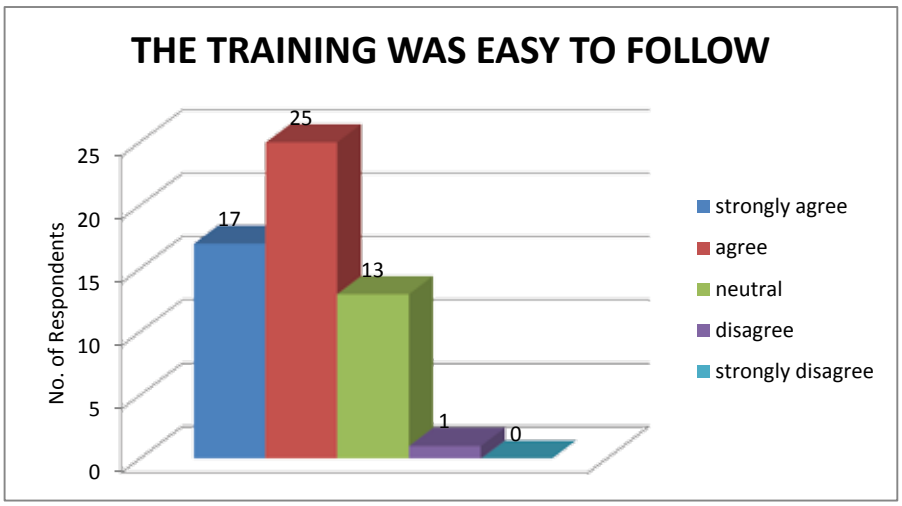


Figure 43 : The training was easy to follow

From the result that it shows that majority of the students felt it was easy to follow the instructions given by the trainer. However, 13 and 1 student respectively rated it as “neutral” and “disagree”.

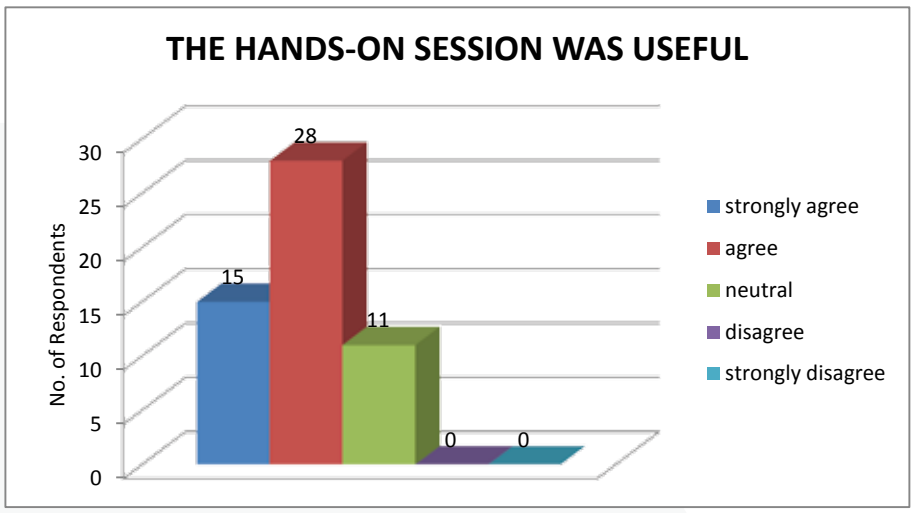


Figure 44 : Hands-on session was useful

Figure 44 shows the number of students who rated the hands-on session was useful to them. Among 58 students, 28 students agreed that the hands-on session was useful for them. However 11 students rated it as “neutral”. Hands-on session which was conducted by the trainer in the 3rd training was good. Majority students agreed that it was useful to them.

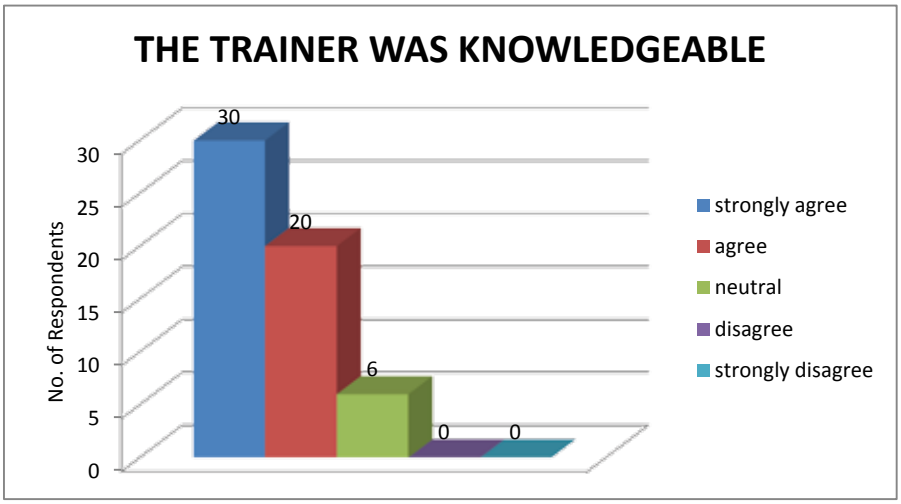


Figure 45 : Trainer Was Knowledgeable

According to the above result, 50 students agreed that the trainer was knowledgeable. In this 3rd training, students learnt about "Design And Innovation Thinking". The trainer conducted interesting activity for the students. Students managed to solve the problems in most of the activities. Six students rated it as "neutral".

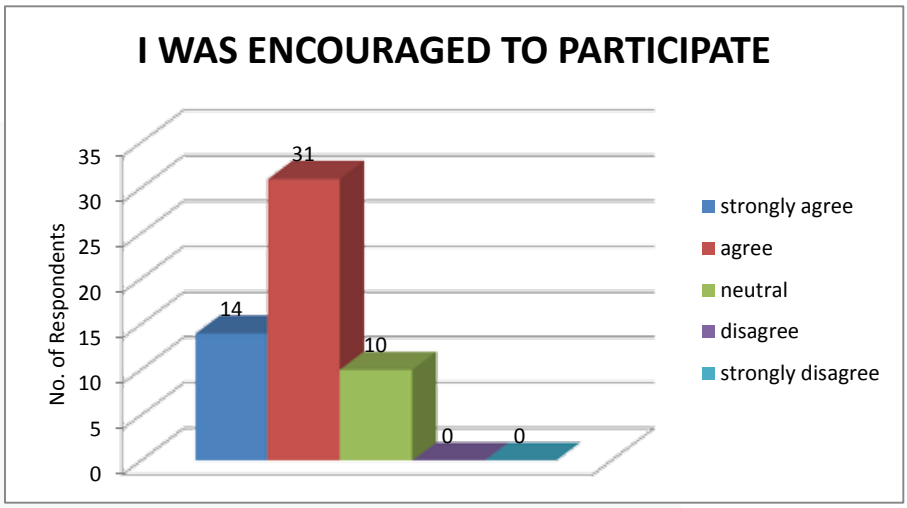


Figure 46 : Encouraged To Participate

According to the result above, majority of the students were encouraged to take part in the 3rd training. However, 10 students rated it as "neutral". ASTI Leap Challenge was a project for Secondary school students. Students were encouraged to take part in this training. They learnt some skills from the training.

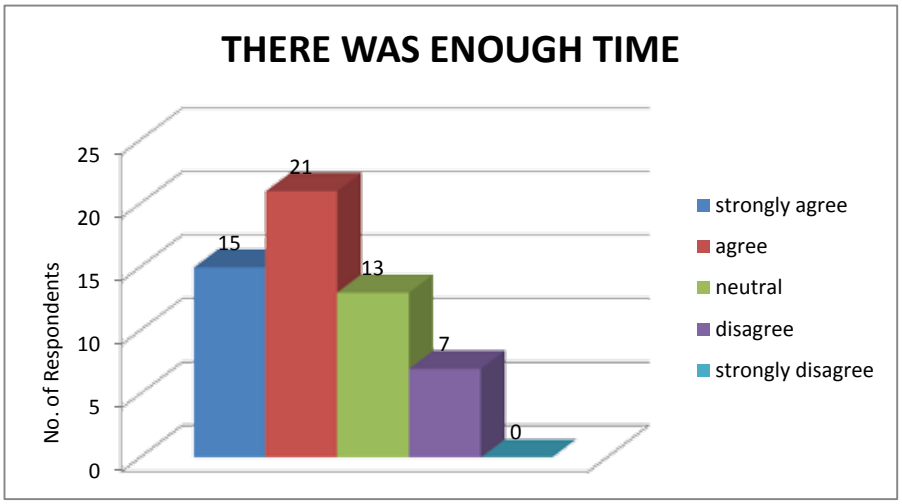


Figure 47 : Enough time given

According to the graph above, majority of the students agreed that they had enough time. However, some students needed extra time. The 3rd training was based on "Design And Innovation Thinking". Hence, students needed more time to discuss with their team member. Students got more ideas when they discuss with their friends. It can improve their innovation thinking.

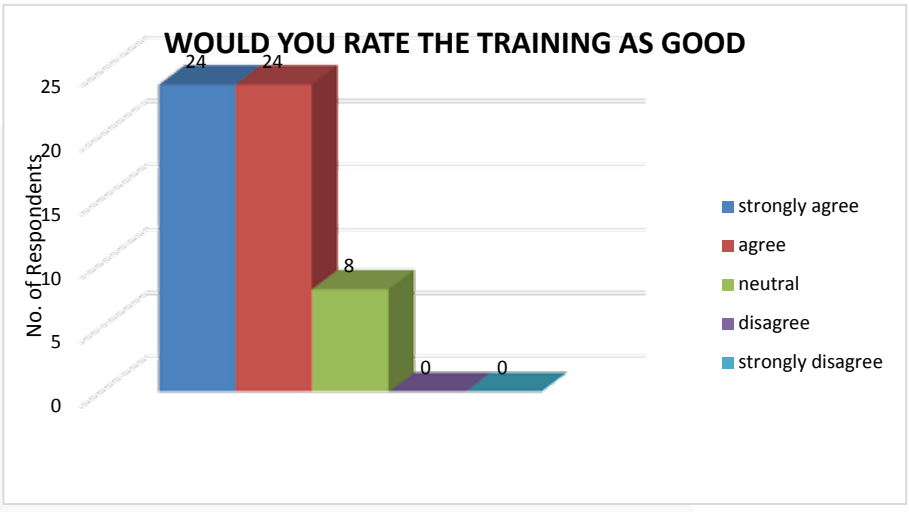


Figure 48 : Would you rate the training as good

Figure 48 shows the number of students who rated the training. Among 56 students, 48 rated the training as good. The trainer conducted the training well. Students took part in all hands-on activities. They enjoyed their self in ALC Training. They learnt skills through the trainings. Eight students rated neutral.

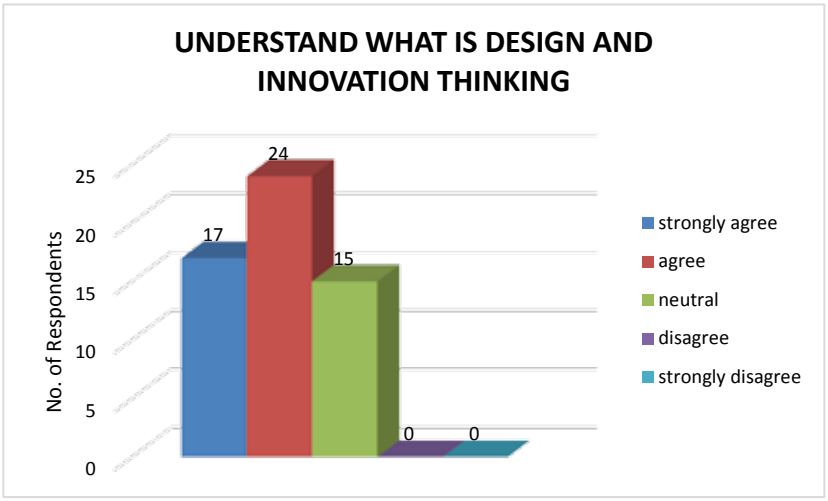


Figure 49 : Understand what is design and innovation thinking

Figure 49 shows the number of students who understood about "Design And Innovation Thinking". Students learnt "Design And Innovation Thinking" through the activities. A small amount of students rated it as "neutral".

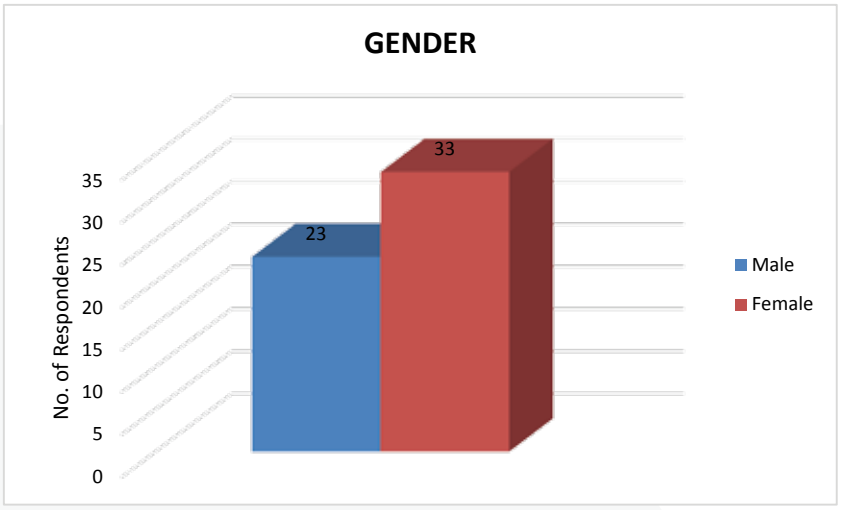


Figure 50 : Number of male and female students

Figure 50 shows the number of male and female students. As usual, most of the students who participated in ALC training were female students. Thirty three students who take part in ASTI Leap Challenge were female. 23 students were male. Female students were interested to take part in trainings.

3RD TRAINING

ASTI Leap Challenge Teachers' Assessment

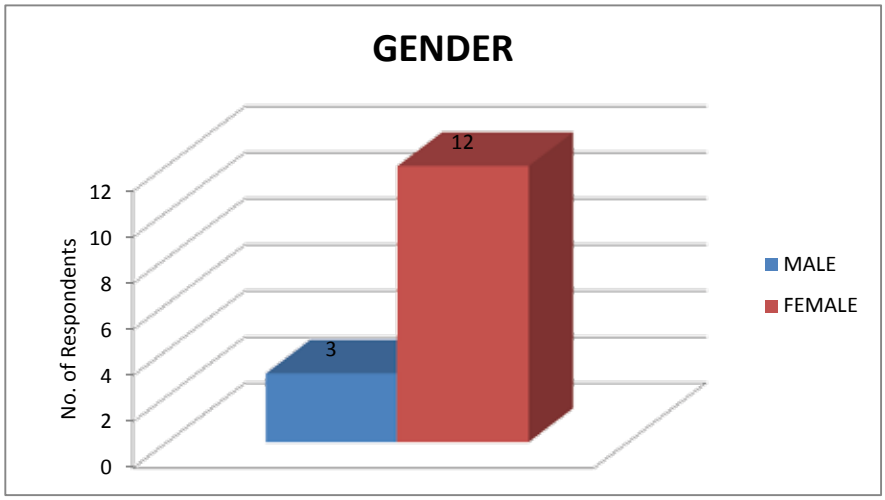


Figure 51 : The number of male and female teachers

Figure 51 shows the number of male and female teachers who took part in ASTI Leap Challenge's 3rd training. In total 15 teachers participated in ASTI Leap Challenge training. Among them, 12 were female teachers. Only 3 male teachers took part in ALC 3rd training.

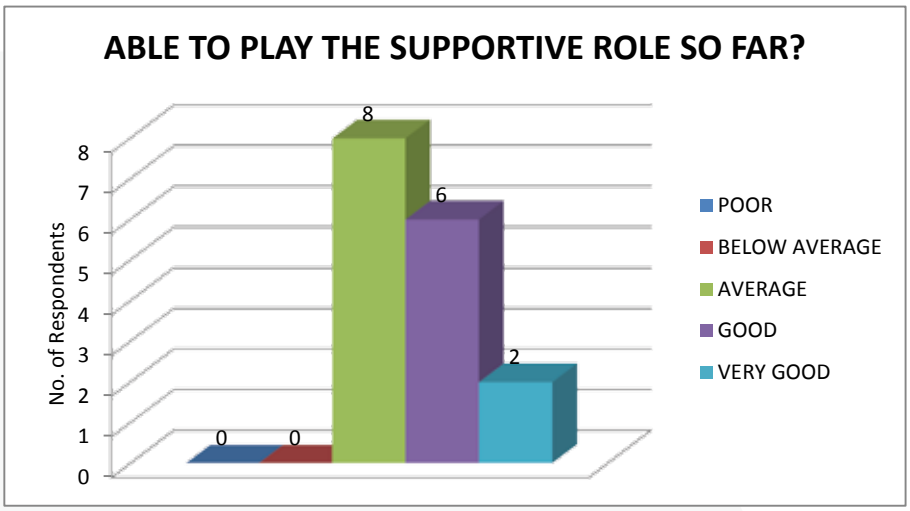


Figure 52 : Able to play the supportive role

Based on the figure above, majority of the teachers were able to play the supportive role for the students' achievement. Eight teachers rated it as "average", 6 teachers "good" and 2 teachers rated "very good". None of the teachers rated it as "below average". From the result, we can conclude that all the teachers learnt skills from the trainings.

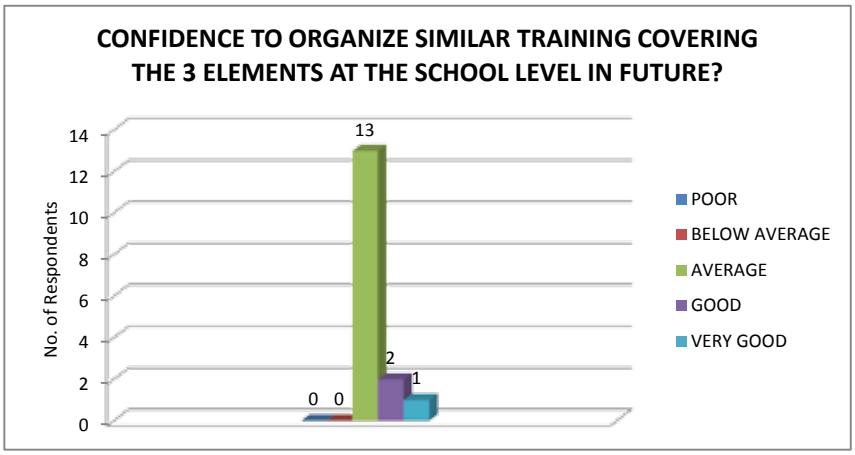


Figure 53 : Confidence to organize training at school

Figure 53 shows the number of teachers who have confidence to organize similar training on creative, critical, design and innovation thinking at school. Among the 15 teachers, 13 teachers rated "average". 3 teachers rated it as "good" and "very good". All the teachers who took part in the training have the confidence to organize similar programmes at school although they were concerned with its work load. Some teachers mentioned that they have improved their leadership skills through the trainings. From the result, we can conclude that ALC Trainings increased the teachers' confident level.

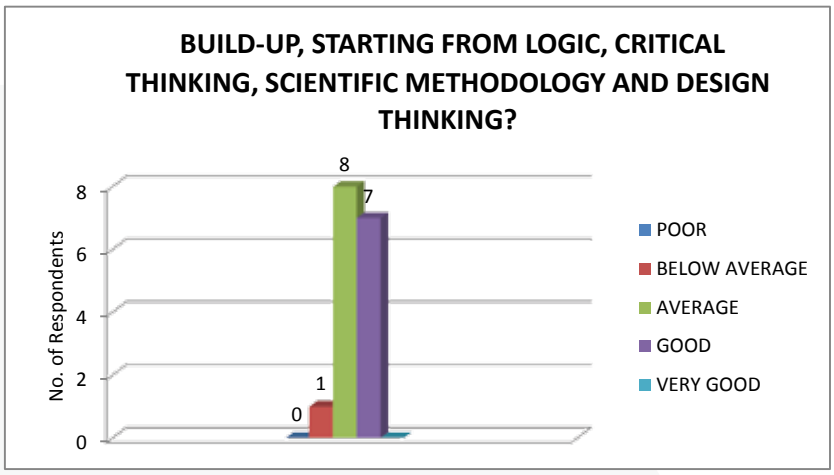


Figure 54 : Understand the build up, starting from logic, critical thinking, scientific methodology and design thinking

According to Figure 54, 8 and 7 teachers have respectively rated it as "average" and "good". From the result, we know that majority of the teachers understand about the build up, starting from logic, critical thinking, scientific methodology and design thinking.

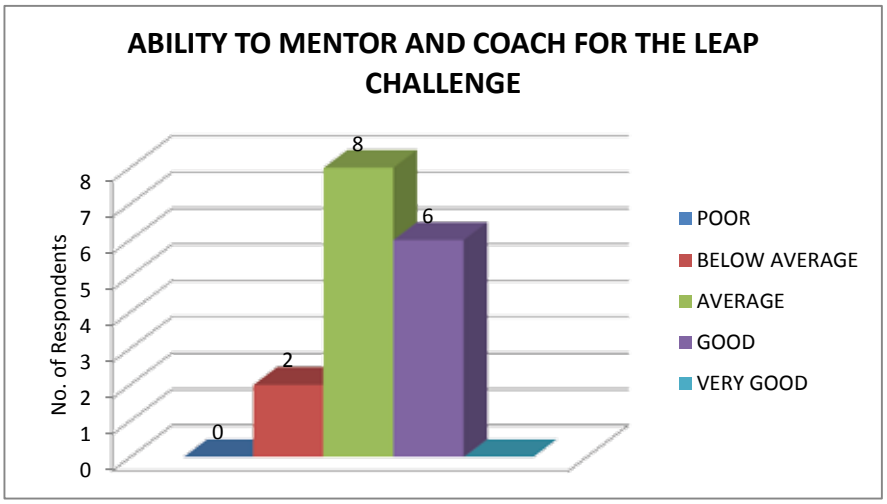


Figure 55 : Ability to mentor and coach for the Leap Challenge

Figure above shows the number of teachers who are able to be mentor and coach for Leap Challenge for teachers, students and exhibition help. Majority of the teachers have the ability to mentor and coach for ALC.

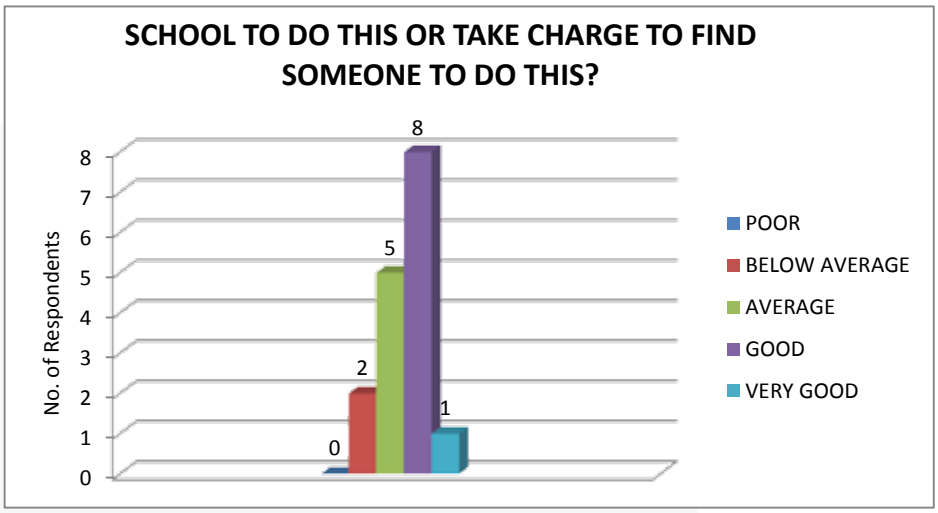


Figure 56 : Number of teachers who agree to represent the school

According to the above graph, 9 teachers strongly agree that schools should carry out and take charge to find someone to do this. However, 5 and 2 teachers rated average and below average. Teachers suggested school to carry out an exhibition to select the best entry for ALC.

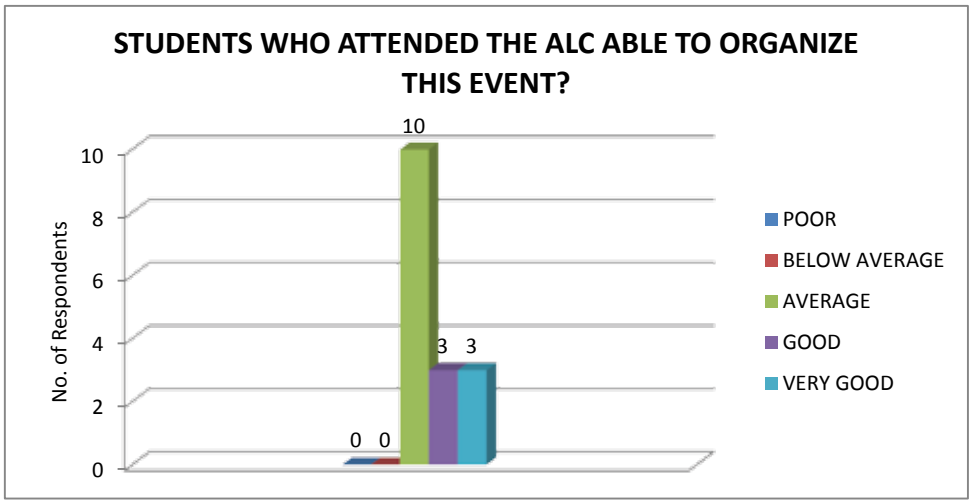


Figure 57 : Students who participate in ALC able to organize this event at school

Figure 57 shows the number of teachers who agree that students who participate in ALC are able to organize this event at school. None of the teachers rated it as "below average". Ten teachers rated "average". Six teachers rated good and very good for this statement.

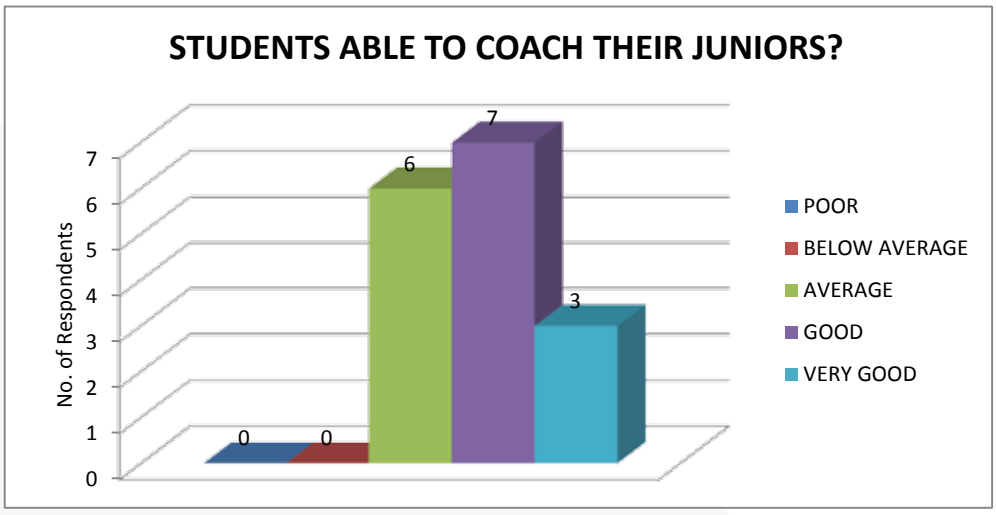


Figure 58 : Students able to coach their juniors for next year

According to the graph above, none of the teachers rated it as "below average" and "poor". Sixteen teachers rated it as "average", "good" and "very good". From the result, we can conclude that teachers believe their students can assist their juniors for next year's ALC at school level.

Based on the data, most teachers were satisfied with the training.

APPENDIX D:
NORTHERN REGION

- ALC Final Competition

ALC FINAL COMPETITION SURVEY ANALYSIS

Student's Assessment Evaluation

A survey was conducted during the event. The survey forms were distributed to the participants of ALC 2017. A total of 57 students answered the survey forms. An analysis of the feedback that we received through the survey is shown below:

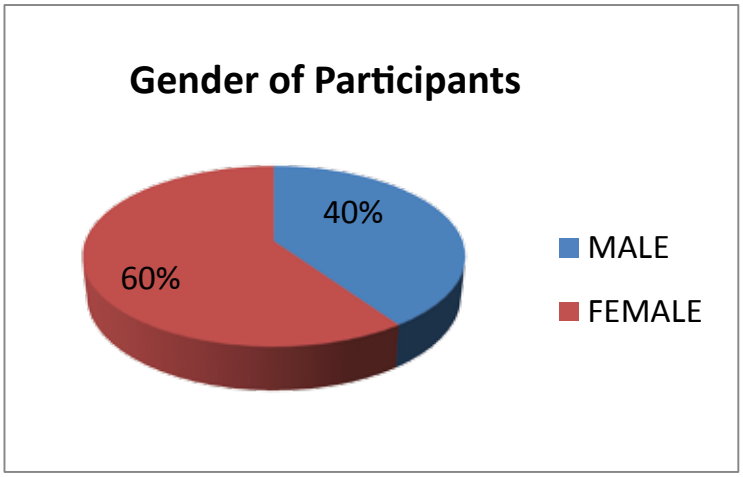


Figure 59: Gender of the Participants

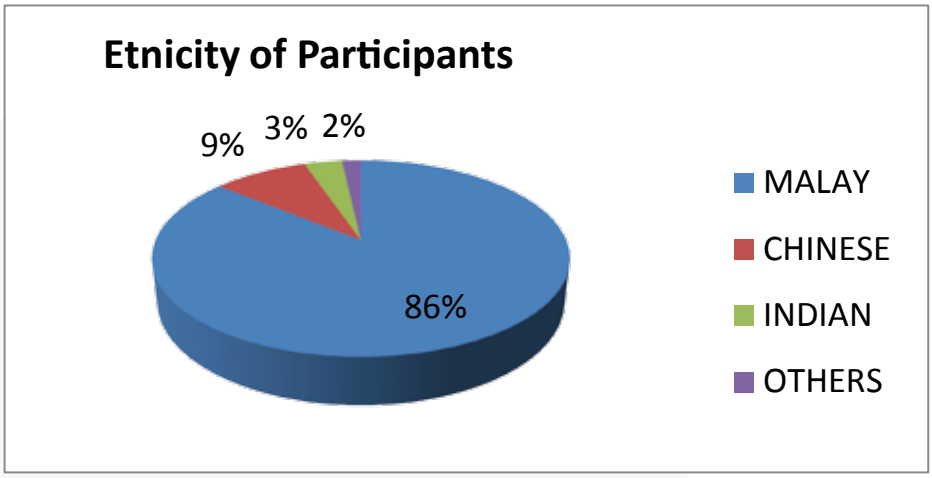


Figure 60: Ethnicity of the Participants

Figure 59 shows the participants' gender and Figure 60 shows the ethnicity of the participants. Based on Figure 59, female students were more than male students where 60% of the participants were female students while, male students were 40% of the total participants. Figure 60 shows that Malay participants were the majority at the event. They comprised of 86% of the total students followed by the Chinese, Indian and Other ethnicity participants who were 9%, 3 % and 2 % of the total participants at ALC 2017 respectively.

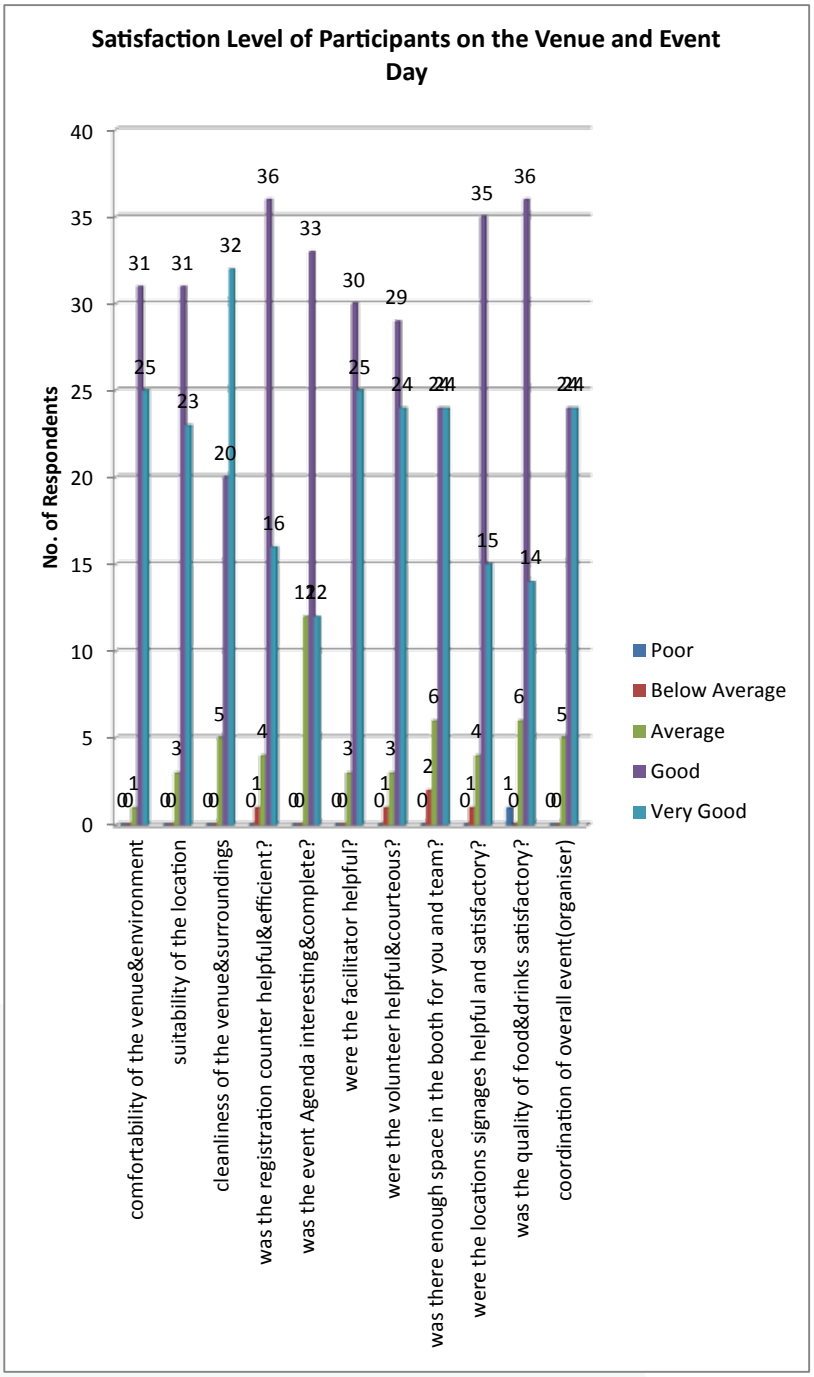


Figure 61: Satisfaction level of participants on the venue and event day(s)

Figure 61 shows the satisfaction level of participants on the venue and event day. The topics covered to assess the satisfaction level of participants were comfortability of venue & environment, suitability of location, cleanliness of the venue and surroundings, registration counter helpfulness & efficiency, how interesting and complete was the event's agenda, facilitators' helpfulness, volunteers helpfulness & courteousness, booth space, location signages satisfactory & helpfulness, food & drinks satisfactory and coordination of the overall event. Students were satisfied with all the aspects mentioned above. For cleanliness of the venue and surroundings most students rated it as very good.

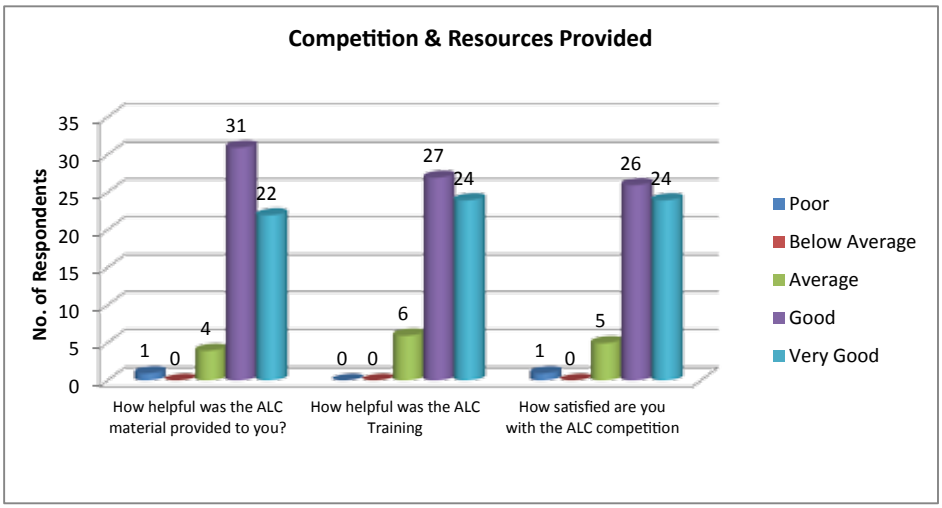


Figure 62: Participants opinion on competition and resources provided

Participants' opinion on material provided, ALC training helpfulness and overall ALC competition is shown in Figure 62. Most of the students rated the above mentioned aspects as good.

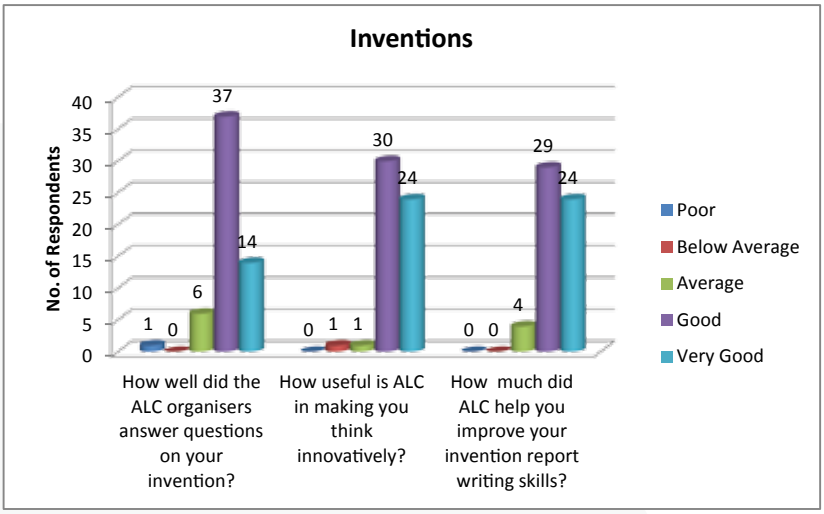


Figure 63: Students' opinion on inventions

Figure 63 shows how well the ALC organisers answered questions on students' invention, how useful ALC was in making students think innovatively and how ALC has helped the students to improve their Invention Report Writing skills. Overall, most students rated good and very good for how useful ALC was in making students think innovatively and how ALC has helped the students to improve their Invention Report Writing skills. A majority of the students have said that ALC organisers were good in answering questions on their inventions.

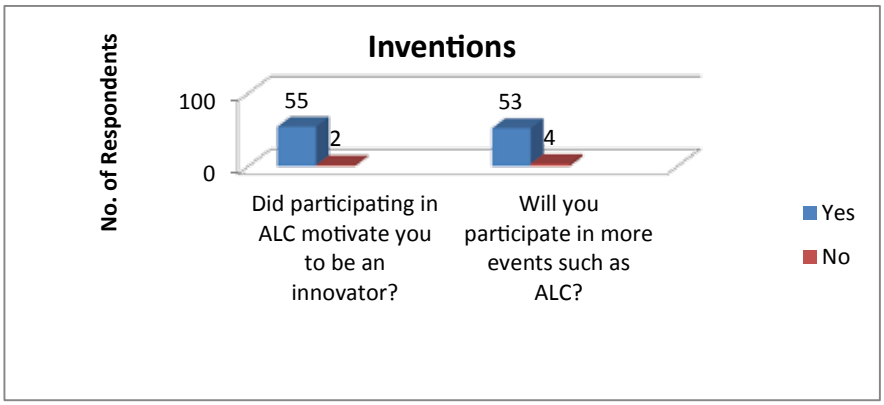


Figure 64: Students' opinion on inventions

Figure 64 is also on students' opinion on inventions. Students were asked if they were motivated to be an innovator by participating in ALC and if they would participate in more events such as ALC. A vast majority of the students have said Yes to both the questions that were asked.

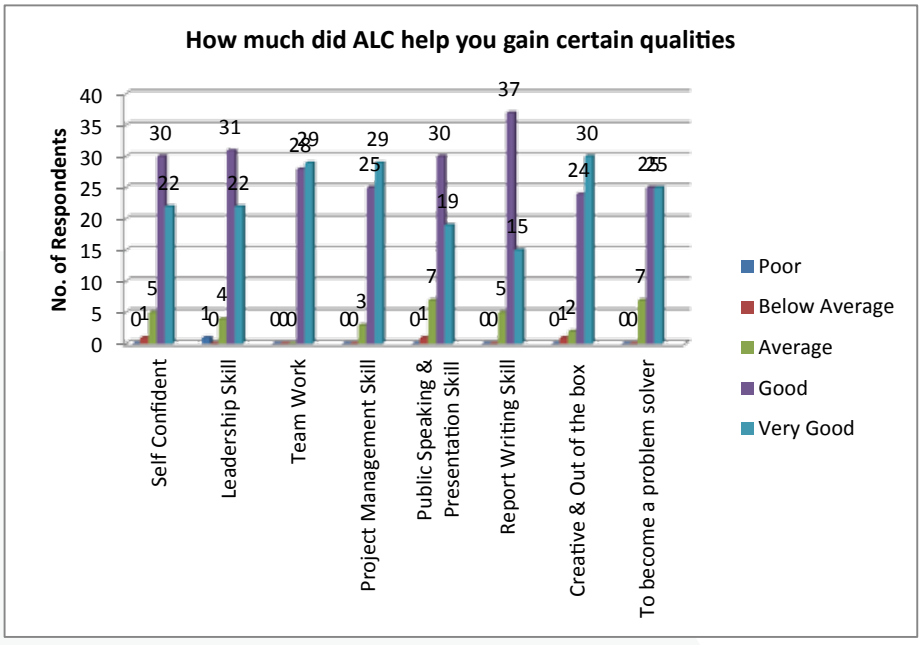


Figure 65: How much did ALC help students to gain certain qualities

Figure 65 shows how much ALC has helped students to gain certain qualities. Qualities that we wanted the students to gain were self-confidence, leadership skills, team work, project management skills, public speaking & presentation skills, report writing skills, to think creatively & out of the box and also to become a problem solver. For each of the qualities mentioned above, most students rated them as good and very good.

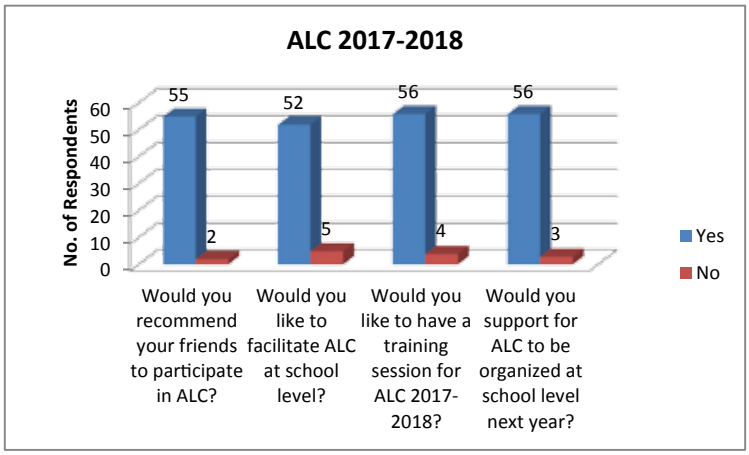


Figure 66: Students' opinion on ALC 2017

Figure 66 shows the students' opinion on ACL 2017. Students were questioned if they would recommend their friends to participate in ALC, facilitate ALC at school level, to have training session for ALC 2017-2018 and if they would support for ALC to be organised at school level next year. Based on the above chart, a majority of the students said Yes to all the questions above.

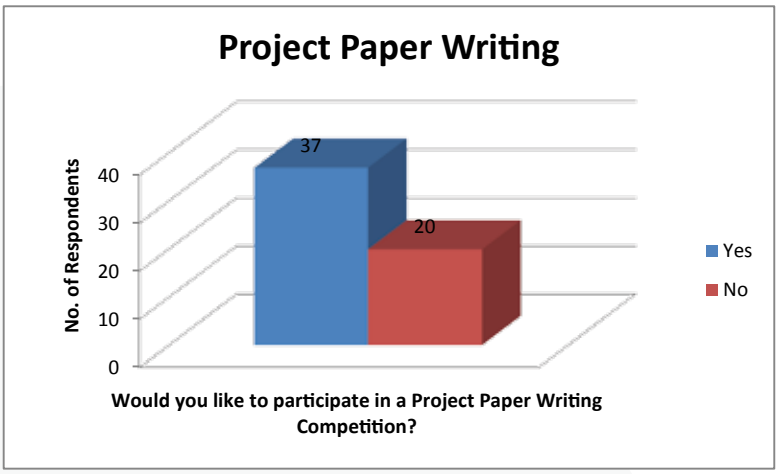


Figure 67: Students' opinion on project paper writing

Figure 67 shows students' opinion on Project Paper Writing. Students were asked if they would like to participate in project paper writing. More than half of the students that participated in ALC which is 65% of the students, have said Yes. Only 35% of the students have said they would not like to participate in Project Paper Writing Competition.

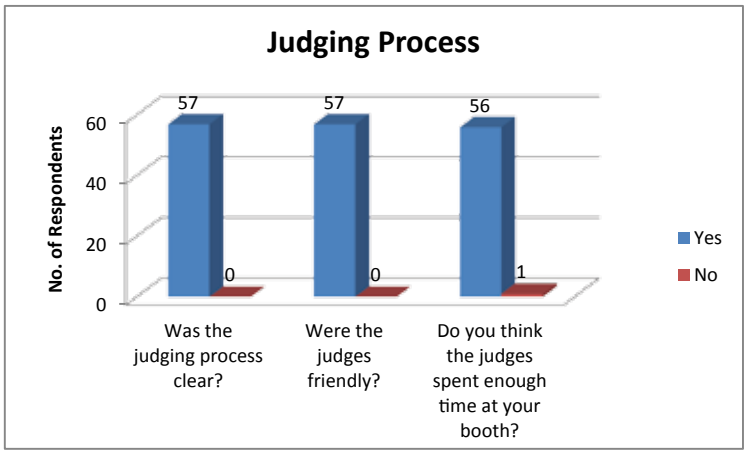


Figure 68: Students' opinion on the judging process

Figure 68 is on students' opinion on the judging process. All the students have said that the judging process was clear and the judges were friendly. Almost all the students except for one student have agreed that the judges spent enough time at their booth.

ALC FINAL COMPETITION SURVEY ANALYSIS

Mentor's Assessment Evaluation

A survey was conducted during the event targeting all the mentors. A total of 20 mentors answered the survey forms that were distributed. An analysis of the survey is shown below:

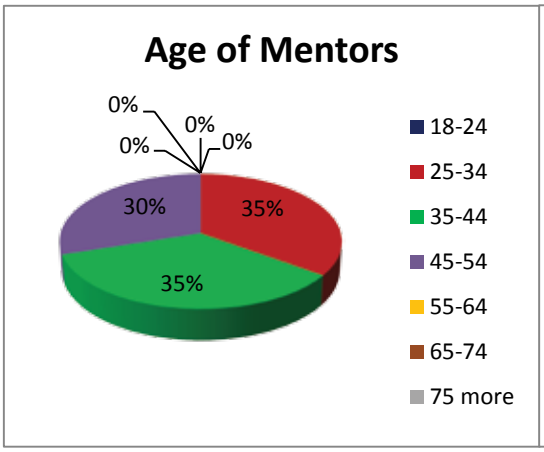


Figure 69: Age of mentors

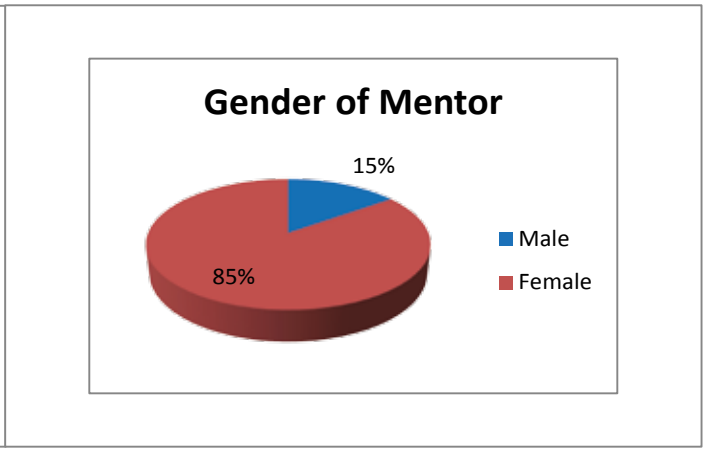


Figure 70: Gender of mentors

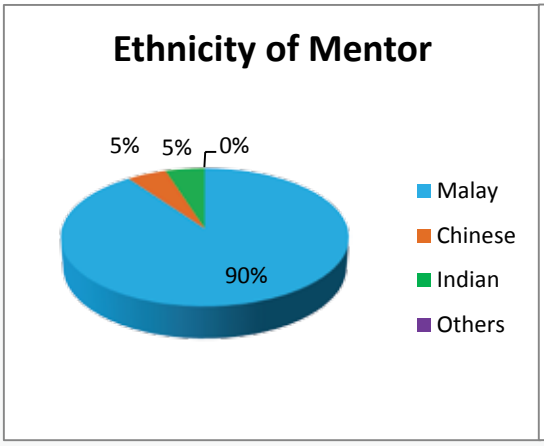


Figure 71: Ethnicity of mentors

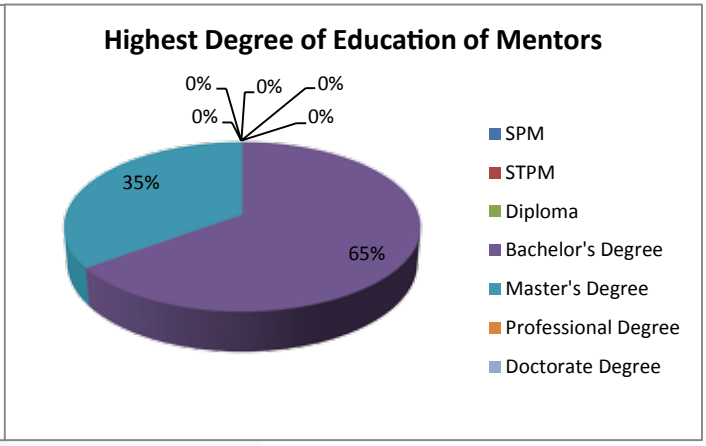


Figure 72: Highest degree of education of mentors

Figure 69, 70, 71 and 72 show the age of the mentors, mentors' gender, ethnicity of the mentors and education level of the mentors. Teachers who participated in ALC were between 25 and 54 years old. Teachers from 25 – 34 years and 35-44 years old age group were 35% respectively. Teachers from 45-54 years old age group were 30%. There wasn't a huge difference between age group among the teachers. Majority of the teachers were female teachers. They were 85% of the total teachers for ALC. Mentors for ALC 2017 comprised of Malay, Chinese and Indian but 95% of the teachers were Malay teachers. Meanwhile, 65% of the mentors hold a Bachelor's Degree.

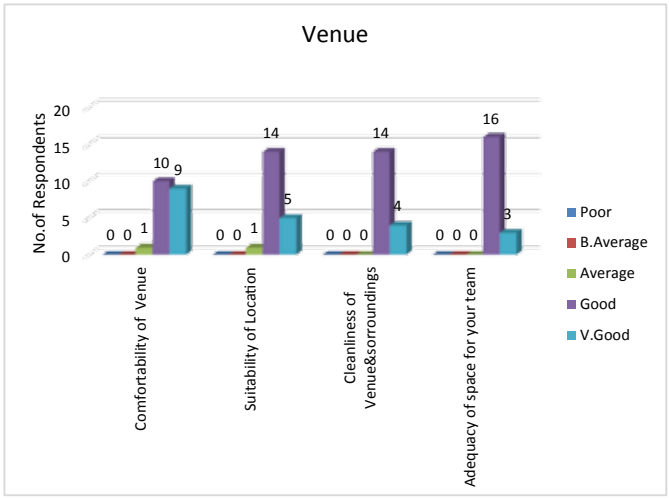


Figure 73: Satisfaction level of mentors on the venue

Satisfaction level of the mentors on the venue can be seen in Figure 73. This subject includes comfortability of the venue, suitability of the location, cleanliness of the venue & surroundings, and adequacy of space for the team. Most mentors rated the venue as good.

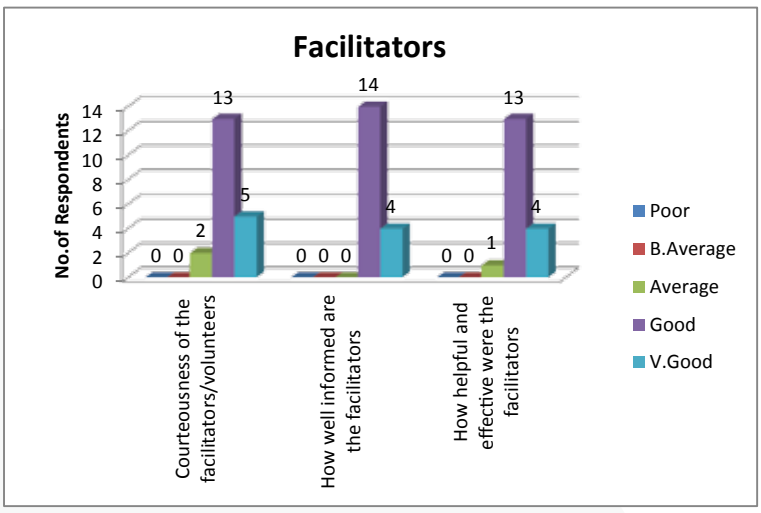


Figure 74: Satisfaction level of mentors on the facilitators

To know the satisfaction of the mentors about the facilitators, mentors were asked on courteousness of the facilitators/volunteers, how well informed were the facilitators and how helpful were the facilitators. The facilitators were rated to be good by the mentors.

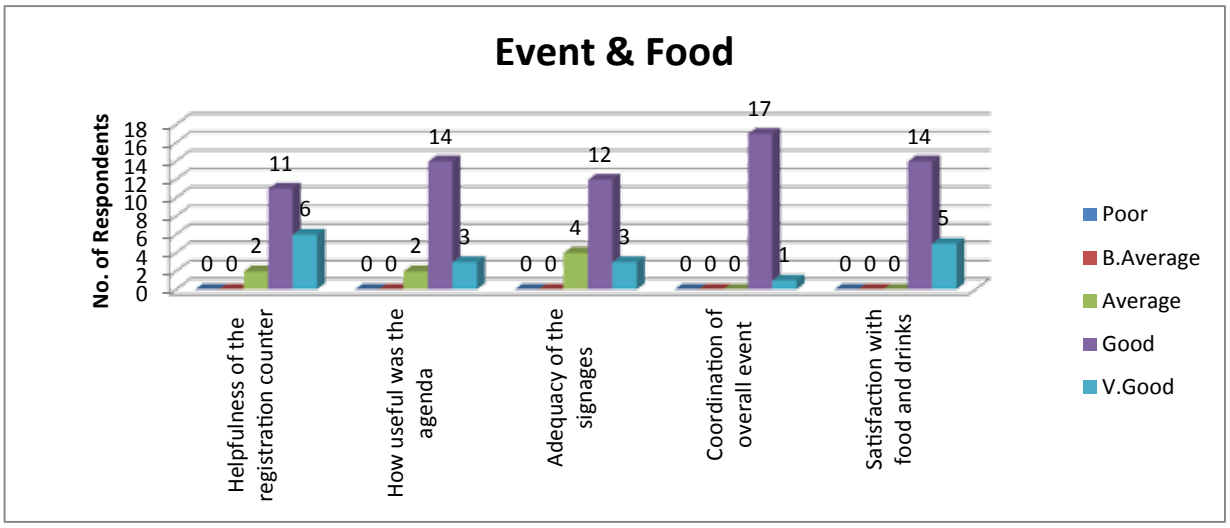


Figure 75: Satisfaction level of mentors on the event and food

Figure 75 shows the satisfaction level of the mentors on the event and food. Mentors have said that helpfulness of the registration counter, how useful was the agenda, adequacy of the signages and coordination of overall event to be good. Food and drinks provided at the event was rated good too by the teachers.

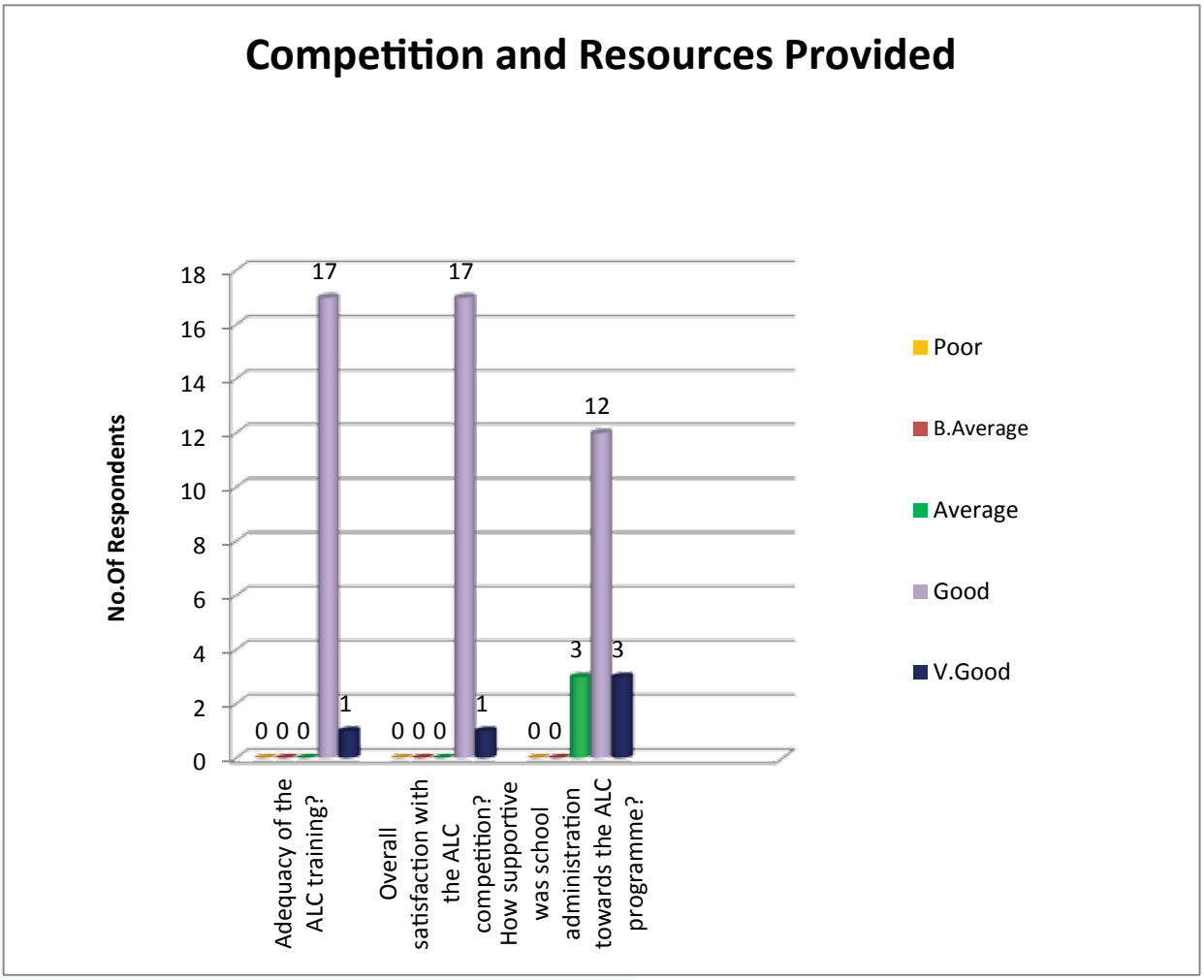


Figure 76: Satisfaction level of mentors on the competition and resources provided

Figure 76 shows the satisfaction level of mentors on the competition and the resources provided to them. The mentors were questioned on adequacy of ALC training, overall satisfaction with ALC competition and the support they received from their school administration towards ALC programme. As a whole, the mentors were happy and satisfied with the above mentioned matters. Only 5 mentors rated it as average and below.

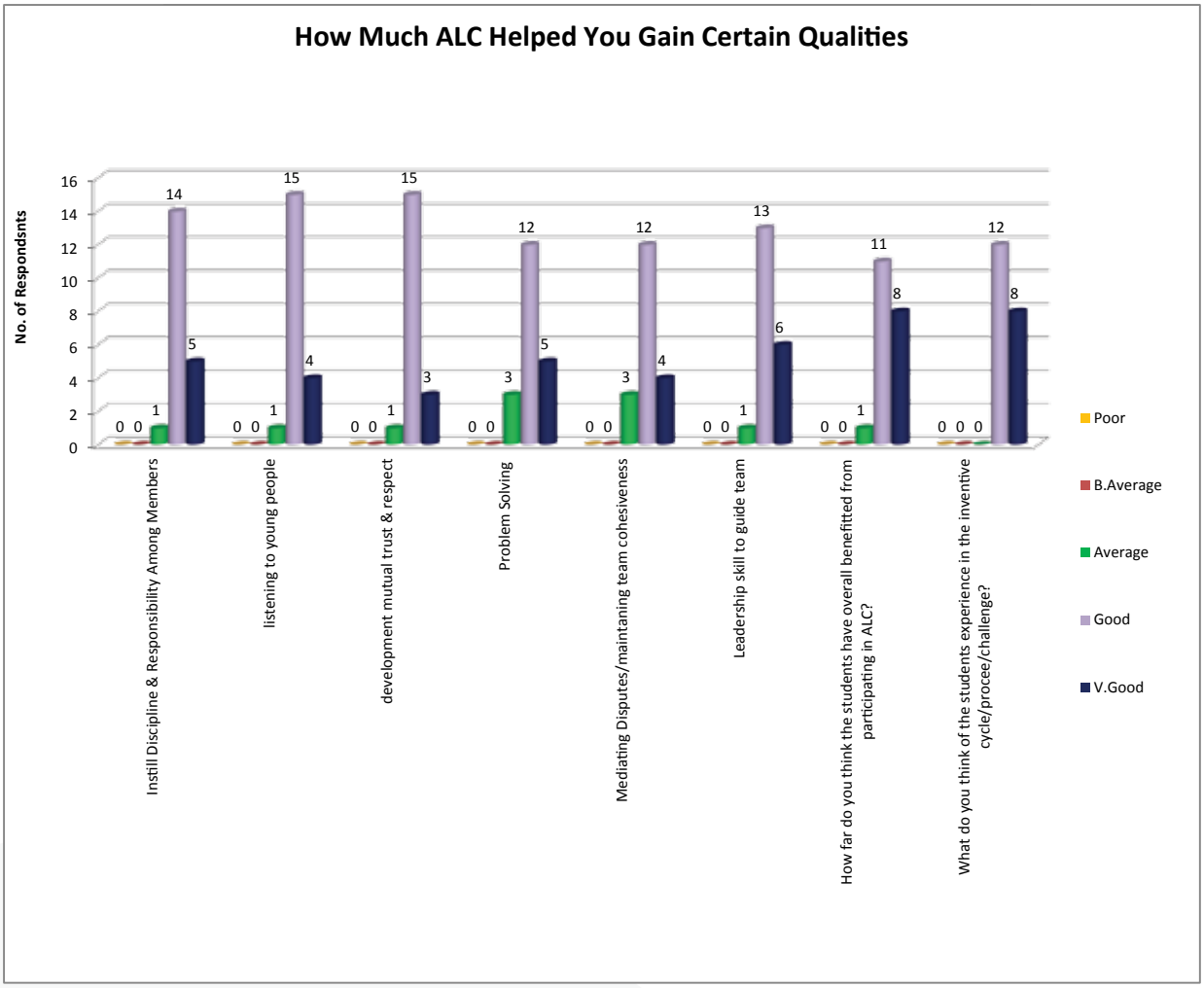


Figure 77: Mentors' opinion on how much ALC helped them gain certain qualities

Mentors' opinion on how much ALC 2017 has helped them gain certain qualities is shown in Figure 77. Qualities that we wanted the mentors to obtain through ALC were instilling discipline & responsibility among team members, ability to listen to young people, help to develop mutual trust & respect, problem solving, mediating disputes/maintaining team cohesiveness and leadership skill to guide the team. From the above graph, it is clear that most mentors gained these qualities by participating in ALC. Most mentors have rated each quality that we wanted to instil and develop in the mentors as good and very good. When the mentors were asked how much the students gain from the inventive cycle/process/challenge, all the mentors have said good and very good.

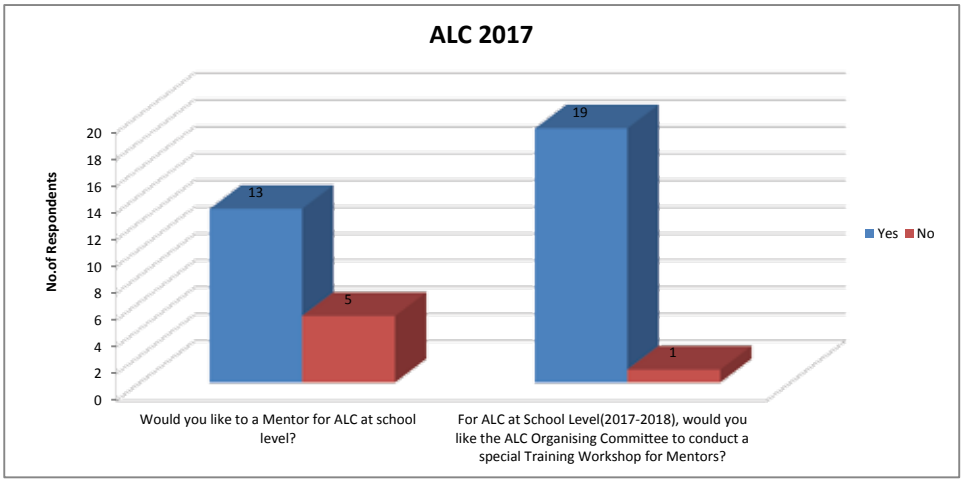


Figure 78: ALC 2017-2018

Figure 78 is about mentors' opinion on ALC 2017. Most mentors have said they would like to be a mentor for ALC at school level and they also would like the ALC Organising Committee to conduct a special Training Workshop for Mentors for ALC at School Level (2017-2018).

Besides that, we also asked the mentors for suggestion of theme for ALC 2017 and their responses are as below:

Suggestion of Theme for ALC 2017 by Mentors
- 3R (reduce, reuse, recycle)
- Any invention that unserved energy, example solar, water and plants
- Renewable energy

We asked the Mentors the following questions and their responses were as below:

1. How many hours did you spend with your team for ALC 2017?
- 60 Hours
- 1 Month
- 2 to 3 hours every week
- 120 hours

2. What impacts did you have with your students/mentees?
- Creative and they became more confident
- Cooperation
- Skill, discipline , leadership, teamwork
- Improved their knowledge, leadership skills and creativity
- Thinking out of box
- Students are more creative and innovative
- Interested and motivated
- Students get to improve their idea and make it a reality

3. What knowledge/skills do you think they have gained?
- Team work, scientific skills
- Thinking skills and communications skills
- Come out with new ideas
- Innovation/thinking skills
- Problem solving, leadership
- Skills of recycling used materials. They apply scientific knowledge in their innovation
- Creative
- Thinking skills on how to solve problems
- Observation
- Knowledge in writing a report

4. How significant was ALC's role in creating opportunity for young innovators/inventors?
- Very significant

5. Do you think ALC has cultivated the idea of using inventions to make a positive change in society/your school?
- Yes
- Yes of course. Students are more aware of the importance of protecting environment by recycling
- Yes. A lot

6. What are your creative suggestion to improve the ALC?
- Get the facilitators (ASTI) to come to schools and motivate the schools

7. Suggest ways to create awareness/participation from schools/students.
- Provide mentor from ASTI to every district (PPD)
- Come to the schools and give the students and teacher explanation or expose them to ALC
- KPM, JPN and PPD should be briefed earlier about this competition.
- Do workshop/camp
- Free demonstration from ALC at school level
- Open for all students in schools
- Give briefing at schools

8. Any other support or assistance would enable you to be even more effective in ALC School Level?
- Involve the PPDs
- School mentor for each school
- Teacher's training
- Campaigns
- Provide mentors and facilitators
- Training for teachers, give guidelines
- Parents involved in competition

9. What were the biggest challenges you faced as a Mentor?
- Time management, a lot of work
- Time constraint
- To control and discipline the students when doing the project
- Lack of time meeting with the students, could not give ideas/feedback via sms, whatsapp, email
- Not enough fund to do our project/invention
- To get creative ideas from students
- Time constraint as teachers have to struggle between PdPC and training sessions
- Time management for students and teachers.
- Students also have their teaching and learning activities

10. How can ASTI assist in overcoming these challenges?
Come to school and give talk to teachers and students, show a video, pictures of the competition
- ASTI should go to school to see the progress of the projects
- The venue for students training must not be far from the school area
- ALC training should be done for students only. Teachers come to accompany the students only
- To have some funding from ALC (ASTI), some seed money
- Students/participants in range of 13-14 years old would be more appropriate
- Carry out the workshop/final training somewhere before the real competition
- Conduct a workshop for a few days at a suitable venue and organise trainings and final presentation all during the workshops
- Give money before the start of the challenge
- More time

ALC FINAL COMPETITION SURVEY ANALYSIS

Visitor's Evaluation

A survey was also conducted among visitors to know their feedback at ALC 2017. We managed to get feedback from 6 visitors.

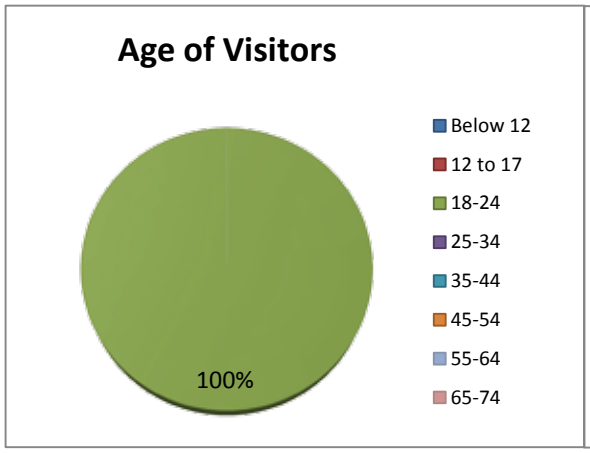


Figure 79: Age of visitors

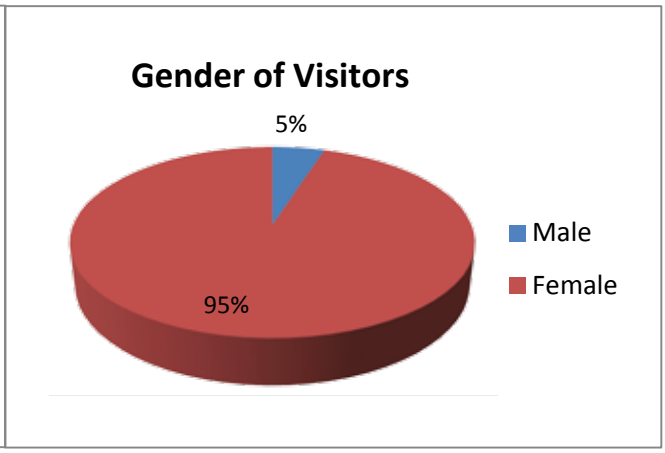


Figure 80: Gender of visitors

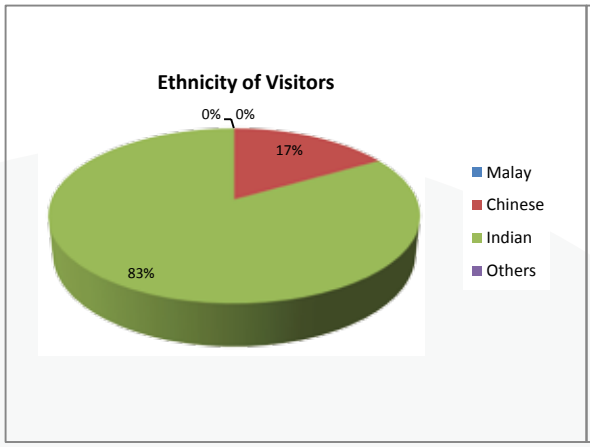


Figure 81: Ethnicity of visitors

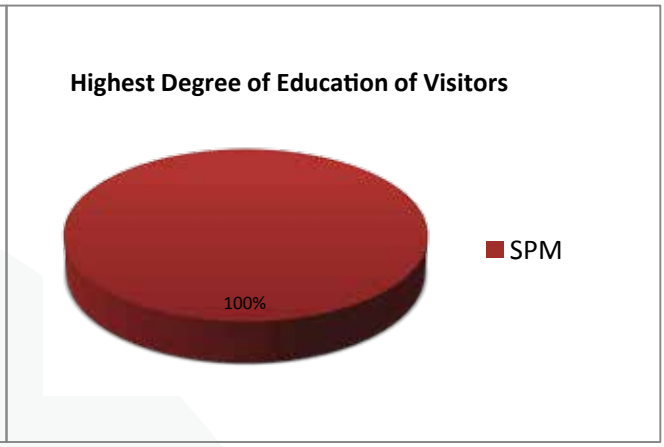


Figure 82: Highest degree of education of visitors

Figure 79, 80, 81 and 82 above shows the demography appropriation of visitors. Based from the pie chart, all the visitors were in the age of 18 to 24 years old. While for gender of visitors, there were 5% male and 95% female. Eighty three percentage of the visitors were from the Indian ethnicity. Besides that, all the visitors were SPM holders.

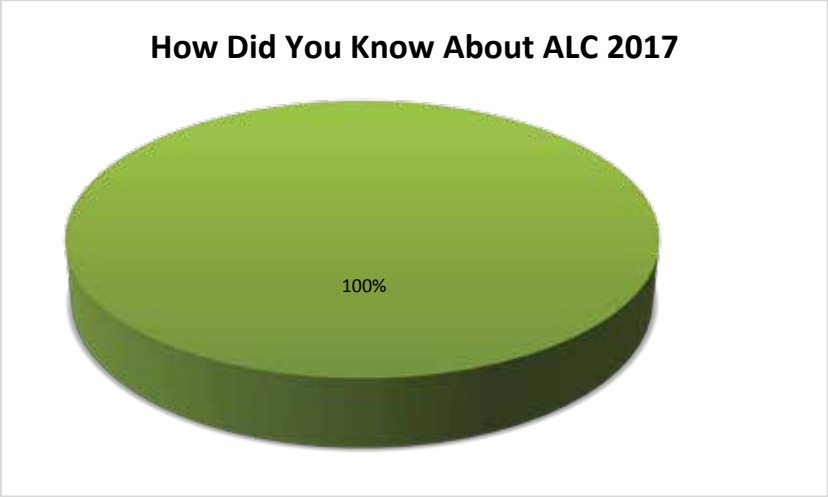


Figure 83: How did you know about ALC 2017

Figure 83 indicates respond of the visitors on how they know about ALC 2017. All the visitors who answered our survey forms came to know about ALC 2017 from other sources and not from website or school.

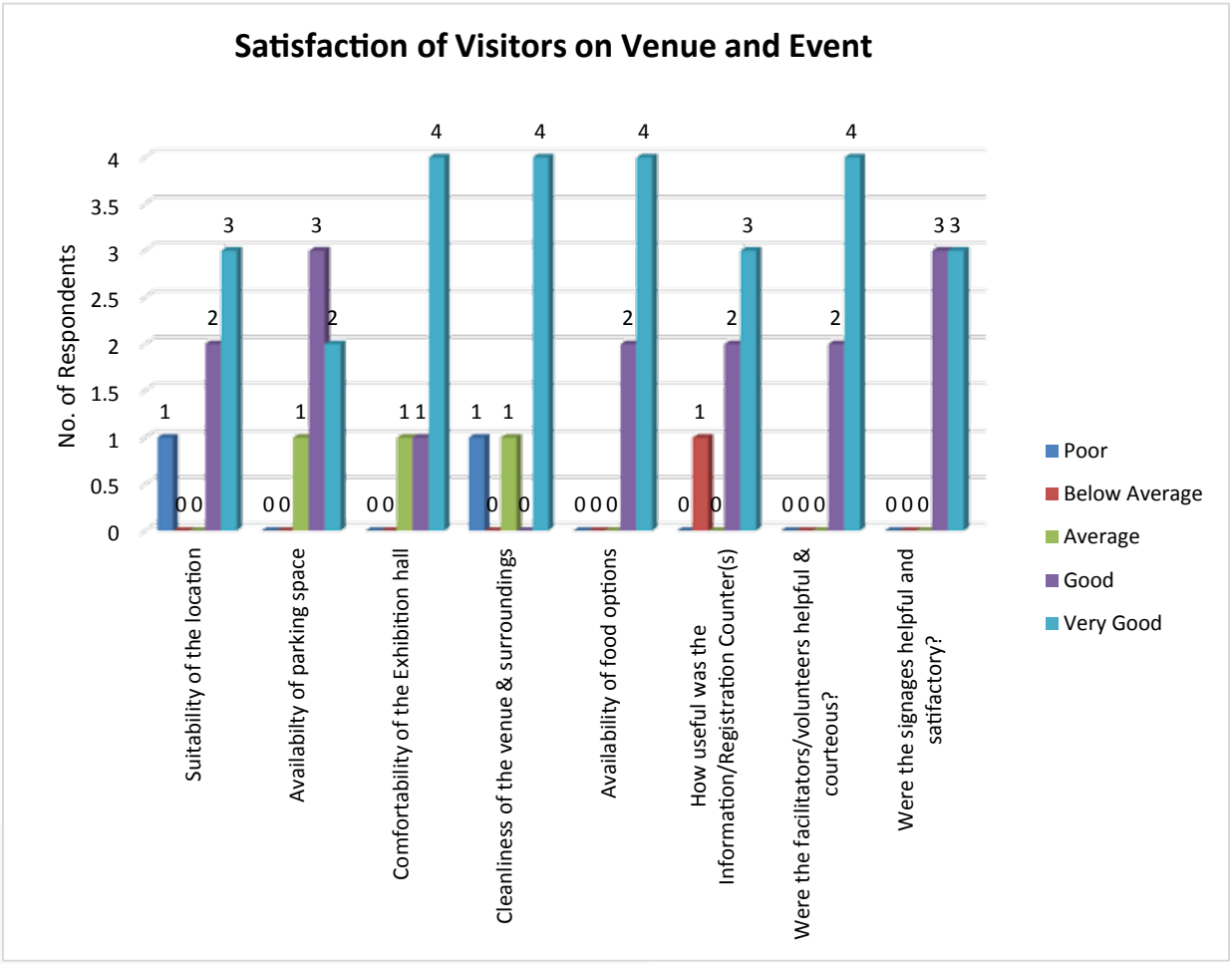


Figure 84: Satisfaction of visitors on venue and event

Figure 84 shows the visitors response when they were surveyed about their satisfaction level on the Venue and Event. Most visitors rated suitability of location, availability of parking space, comfortability of the exhibition hall, cleanliness of venue & surroundings, availability of food options, usefulness of information/registration counter(s), helpfulness of facilitators/volunteers and lastly satisfaction & helpfulness of location signages as good and very good.

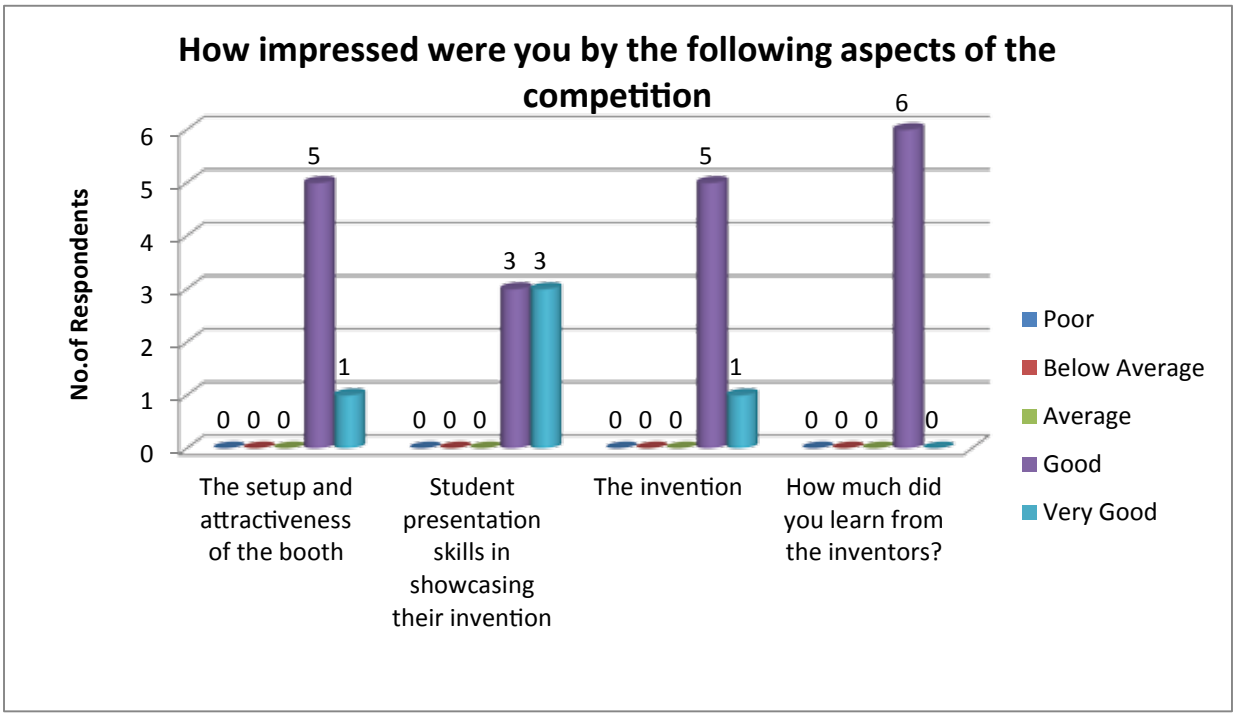


Figure 85: How impressed were you by the following aspects of competition

Figure 85 above shows the visitors impression on setup & attractiveness of booths, presentation skills of students in showcasing their invention, the inventions and how much visitors have learnt from the inventors. Most visitors have rated these aspects as good.

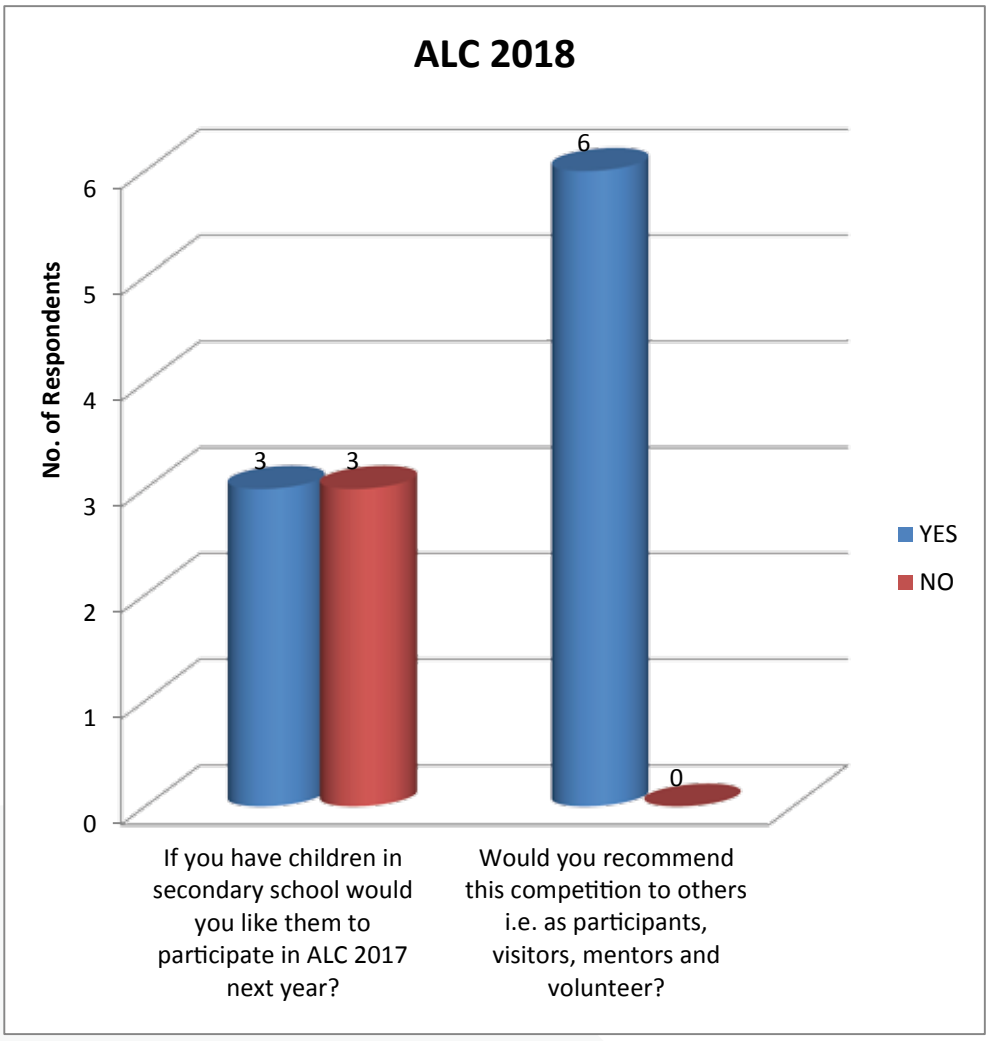


Figure 86: Suggestion for next year's ALC 2017

Figure 86 above refers to suggestion for Next Year's ALC 2017 when visitors were surveyed. Based from the analysis above, all the visitors would recommend this competition to others to be part of ALC as participants, visitors, mentors and volunteer.

APPENDIX E:
SOUTHERN REGION

- Training 1 - Creative Thinking

1ST TRAINING

ALC 1st Training Student Survey Analysis

The 1st Training for ALC in Johor was held on 13th July 2017 at Asia Metropolitan University, Pasir Gudang. A total of 25 schools participated in the 1st training. About 90 students and 8 teachers answered the survey form.

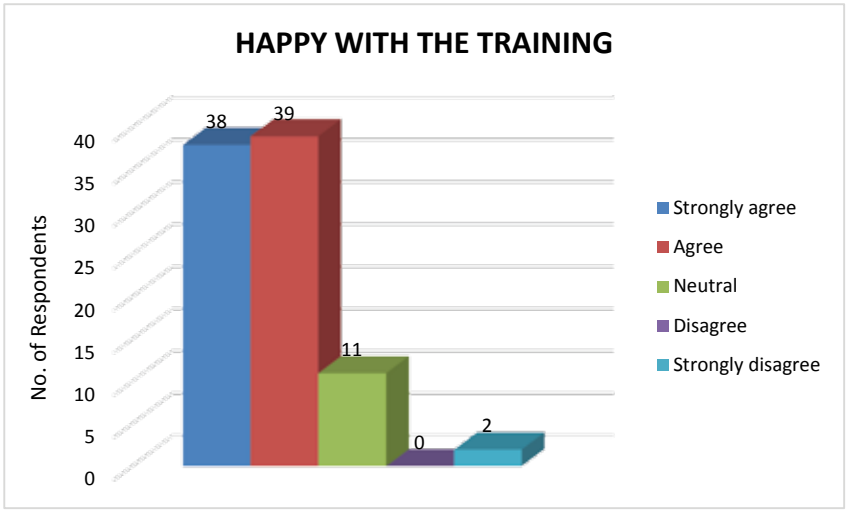


Figure 1: Happy with the training

Figure 1 shows if the students were happy with the training. From the survey done, we have come to know that about 86% of the students have said that they are happy with the training.

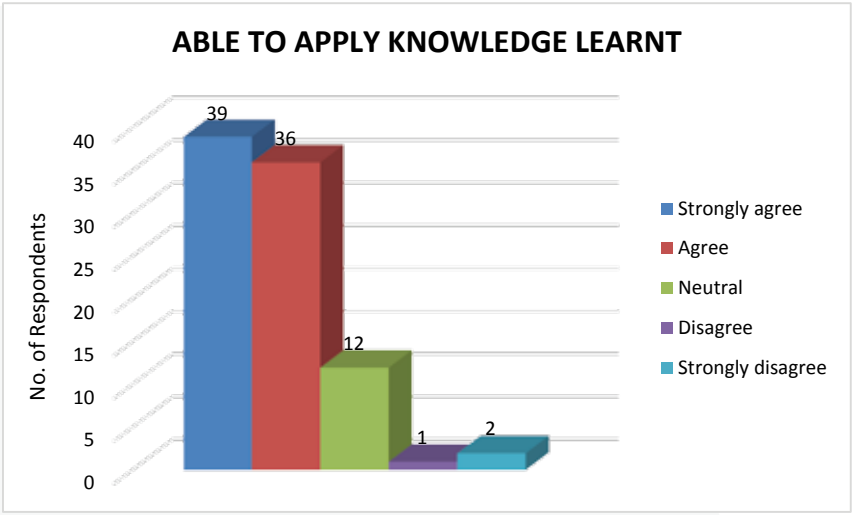


Figure 2: Able to apply knowledge learnt

Figure 2 shows that from the total number of students who have participated in the survey, 83% of the students have agreed that they are able to apply the knowledge they have learnt from participating in the training.

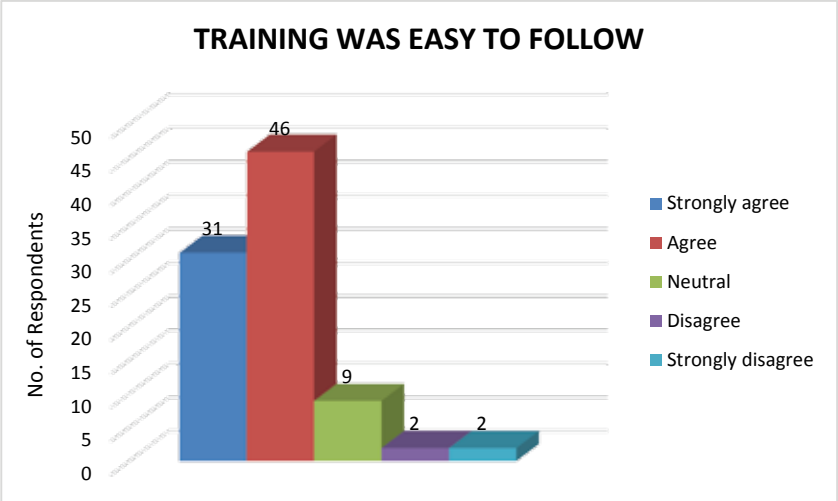


Figure 3: Training was easy to follow

Figure 3 shows if the training provided was easy to follow. Most of the students found the training was easy to follow and only a small number of students do not agree that the training was not easy to follow which is just 14% of the students.

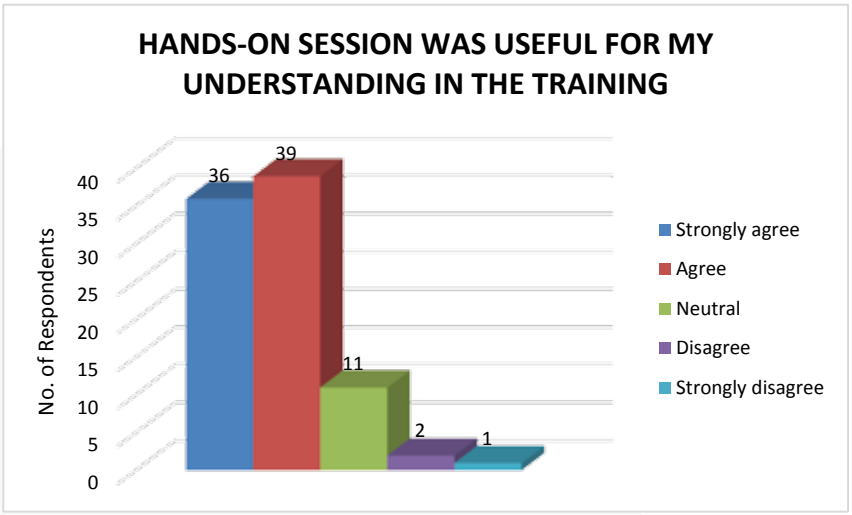


Figure 4: Hands-on session was useful for the understanding in the training

Figure 4 shows if the hands-on session was useful for the understanding of the students in the training. The graph above shows that most of the students at the training agree that the hands-on session was useful for their understanding in the training.

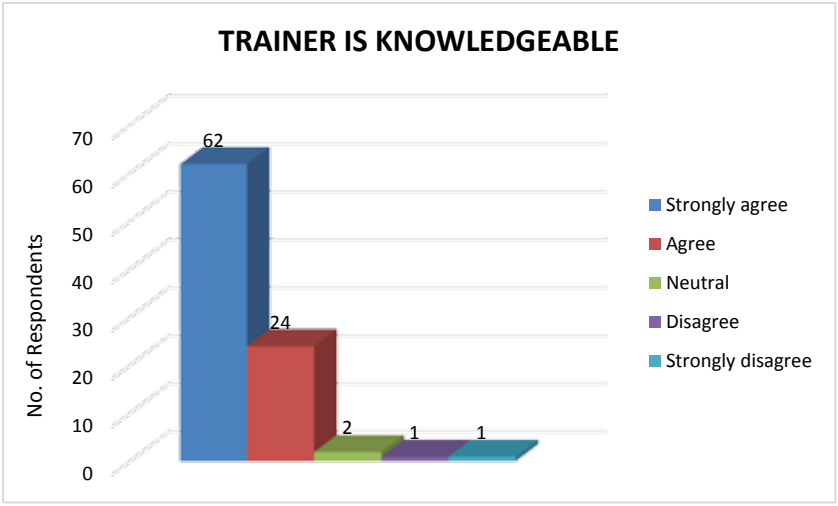


Figure 5: Trainer is knowledgeable

A vast majority of the students at the 1st training agree that the ALC trainers are knowledgeable which can be seen from Figure 5. About 96% students have said that the trainers are knowledgeable.

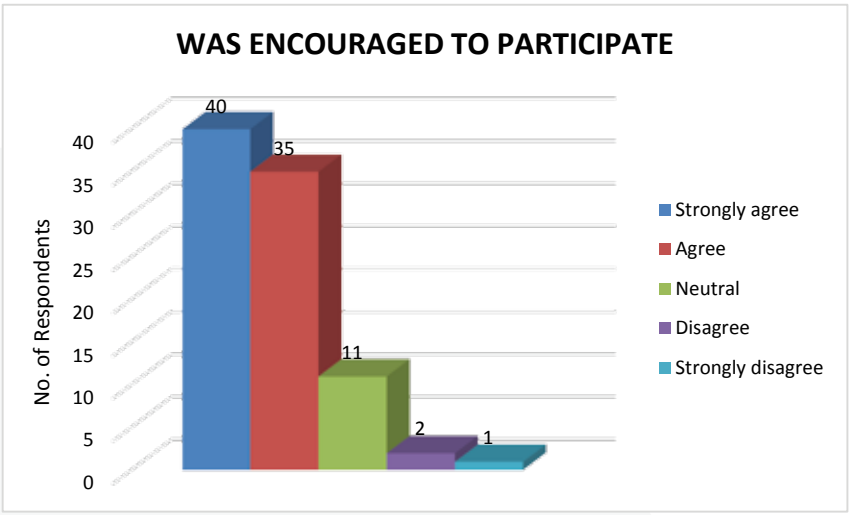


Figure 6: Encouraged to participate

The students were asked if they were encouraged to participate in the training and the result of the survey is shown in Figure 6. A total of 40 students and 35 students strongly agree and agree that they were encouraged to participate in the 1st training.

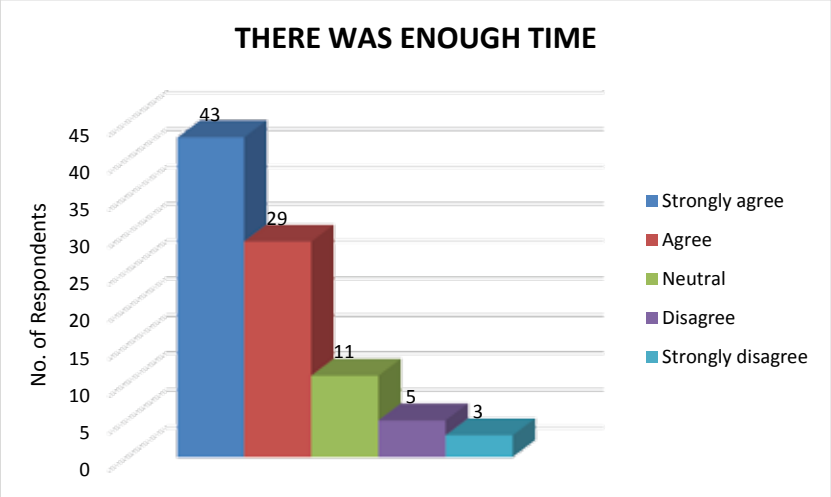


Figure 7: There was enough time

Figure 7 shows whether the participants had enough time during the training session. Almost half of the students who took part in the survey strongly agreed that they had enough time during the training.

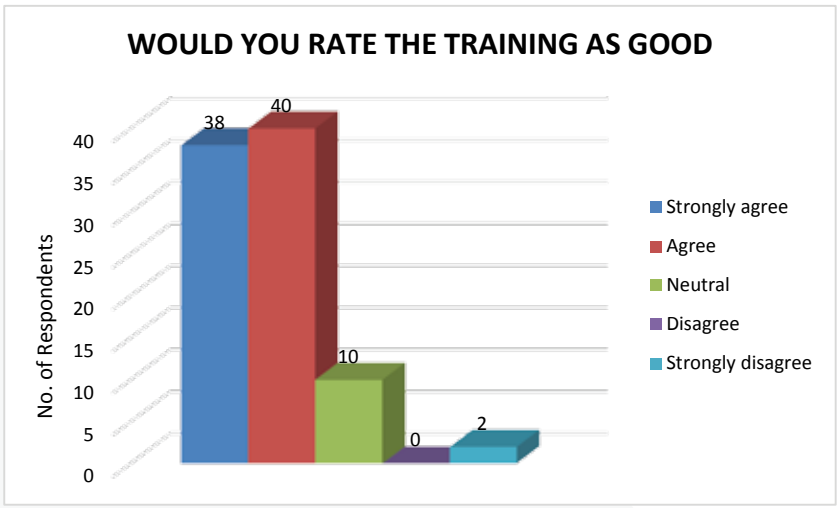


Figure 8: Would you rate the training as good

The students were required to rate the training and the result of the survey is shown in Figure 8. Only 2 students have strongly disagreed that the training was good whereas a majority of the students have said the training was good. These 2 students were just 2% of the students that participated in the training.

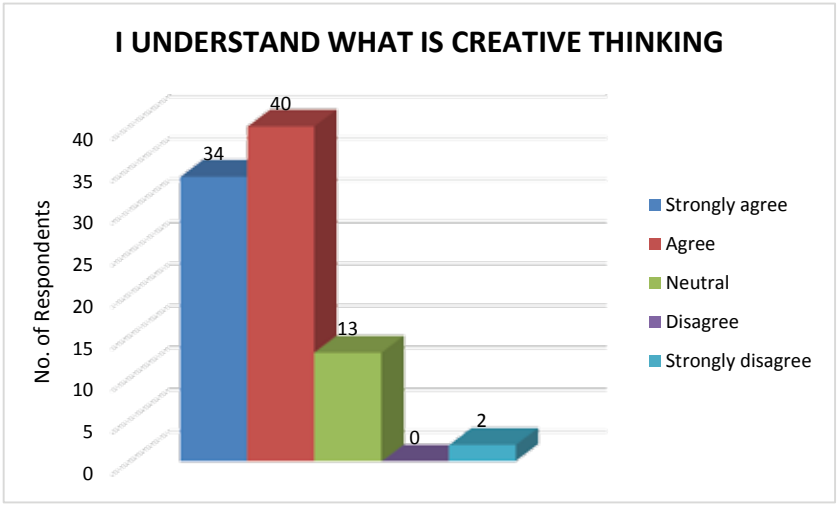


Figure 9: Understand what is creative thinking

Figure 9 shows if the students understand what is creative thinking. Thirty four students strongly agreed and 40 students agreed they understood what is creative thinking after going through the first training with our trainers.

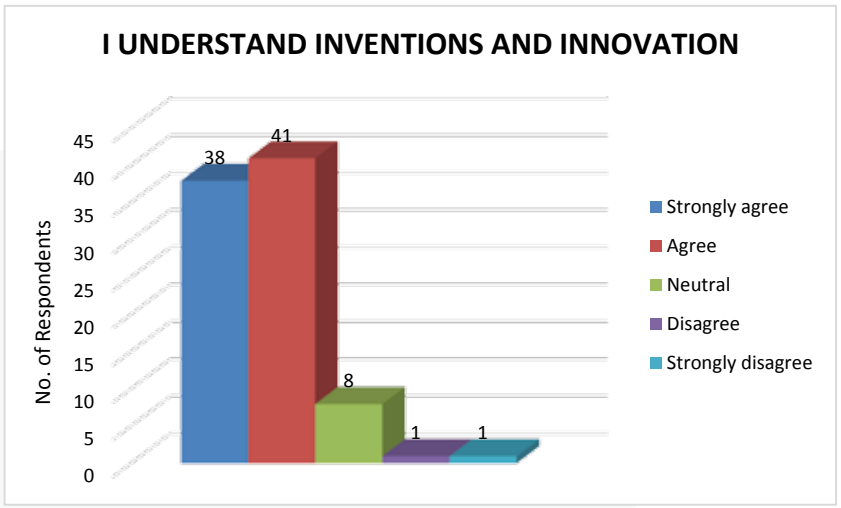


Figure 10: Understand inventions and innovation

Besides that, the students were also asked if they understand inventions and innovation and it is reflected in Figure 10. About 88% of the students who attended the training understood inventions and innovation.

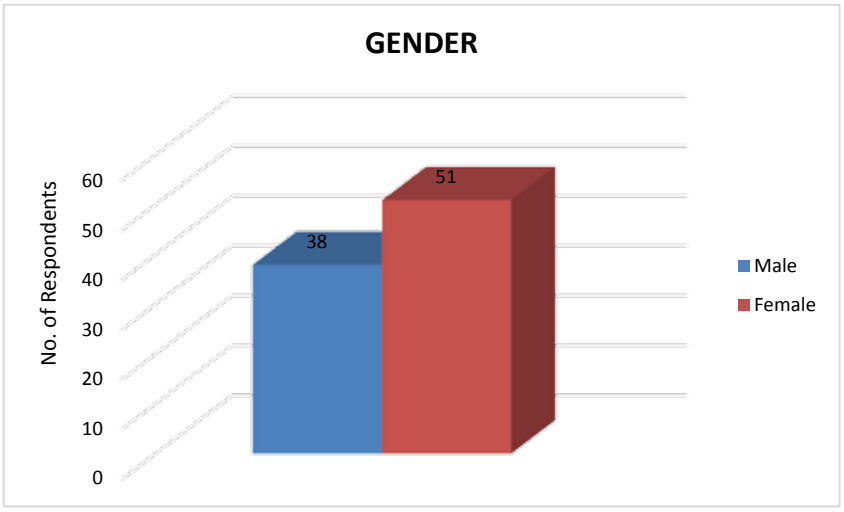


Figure 11: Gender

Figure 11 shows the gender of the participants. The female participants were more than the male participants. The female students were 15% more than the male participants at the training.

1ST TRAINING

ALC 1st Training Teacher survey Analysis

Figure 12: Happy with the training

From Figure 12, 62.5% of the teachers were happy with the training. Only 8 teachers spent their time to answer the survey form for us.

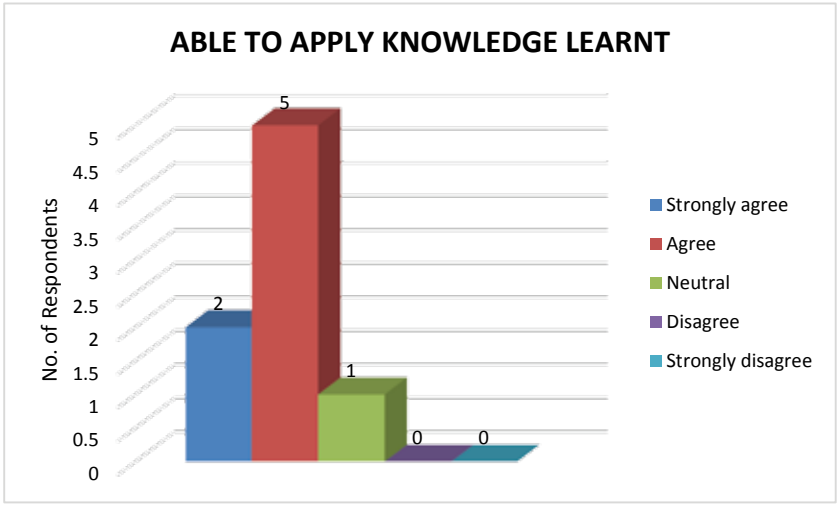


Figure 13: Able to apply knowledge learnt

Even the teachers who attended the training have benefitted by attending the training. The teachers who have said they are able to apply the knowledge learnt from the training were 62.5%.

Figure 14: Training was easy to follow

Figure 14 shows if the training was easy to follow for the teachers. All the 8 teachers have said they strongly agree and agree because they find the training was easy to follow for them.

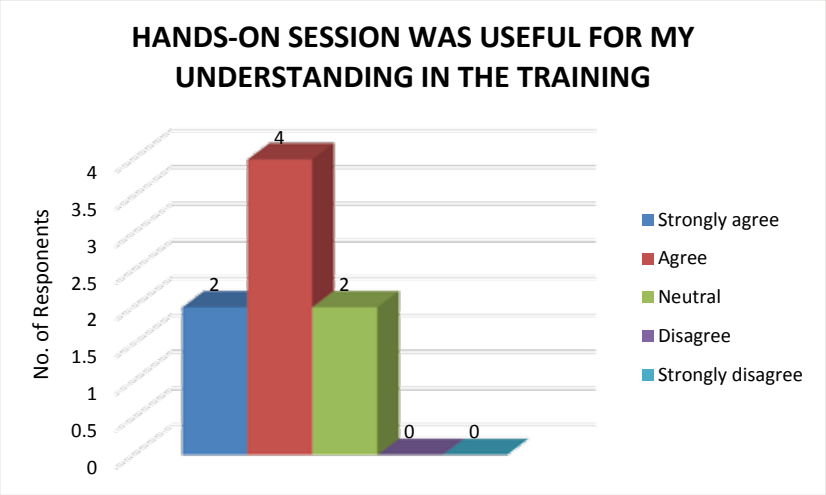


Figure 15: Hands-on session was useful for my understanding in the training

Figure 15 shows if the hands-on session was useful for their understanding in the training. To this none of the teachers disagreed. They find the hands-on session was useful for them in the training.

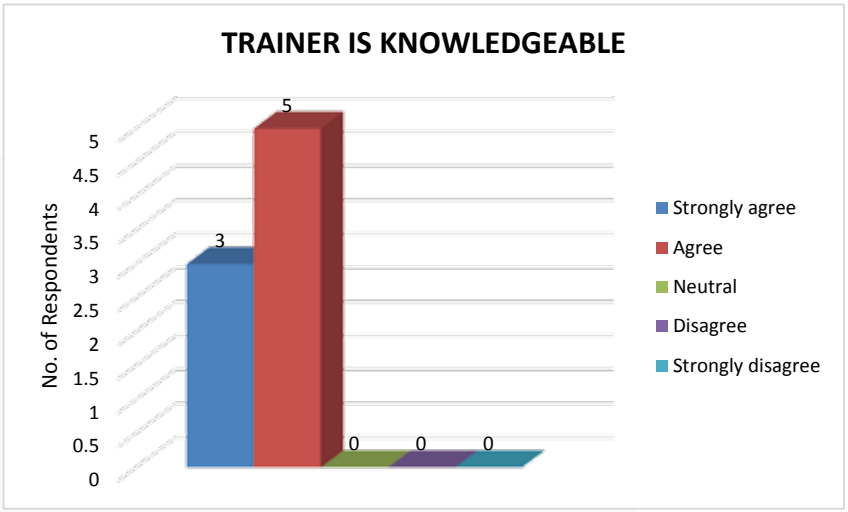
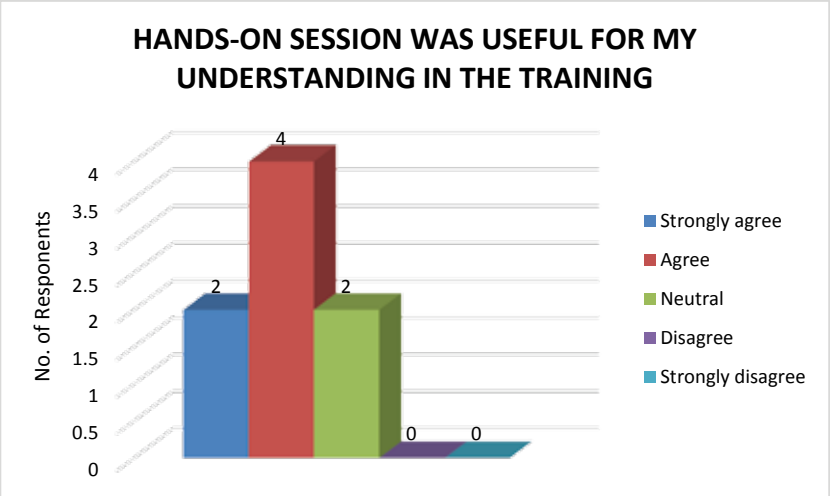


Figure 16: Trainer is knowledgeable

The teachers do agree that the trainers are knowledgeable because they have rated it as strongly agree and agree. No teachers have disagreed that the trainers are knowledgeable.



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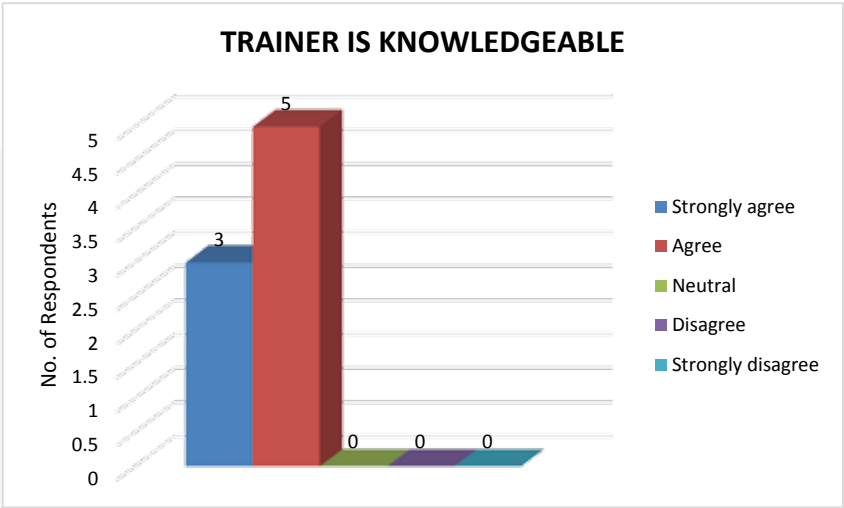


Figure 16: Trainer is knowledgeable

The teachers do agree that the trainers are knowledgeable because they have rated it as strongly agree and agree. No teachers have disagreed that the trainers are knowledgeable.

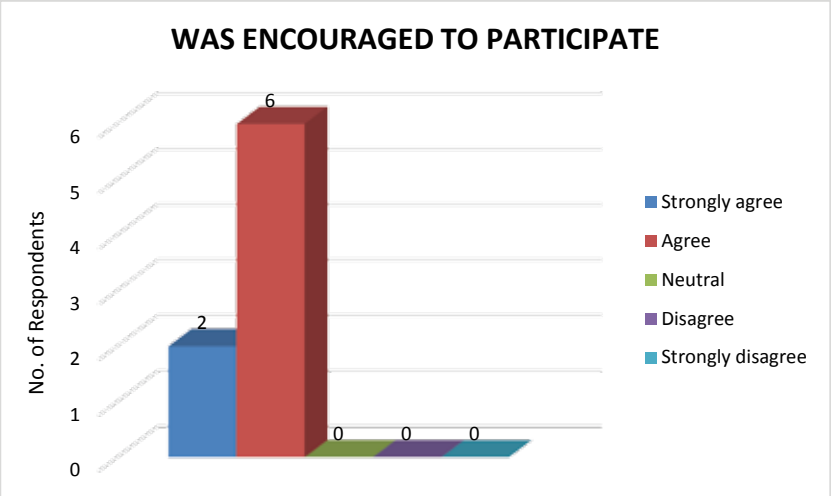


Figure 17: Was encouraged to participate

The teachers were also asked if they were encouraged to participate which is shown in Figure 17. All teachers who answered the survey form agreed that they were encouraged to participate in the training.

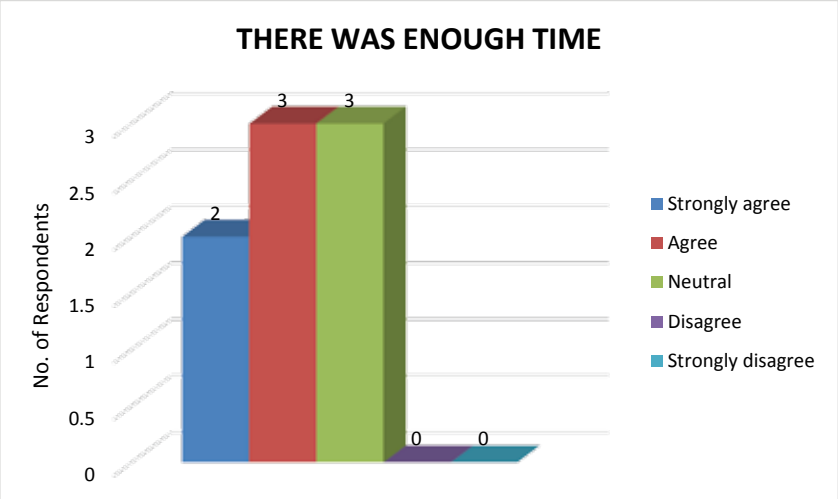


Figure 18: There was enough time

Teachers' opinion if they had enough time during the training is shown in Figure 18. None of the teachers have said that they did not have enough time even though there were 3 teachers who answered neutral.

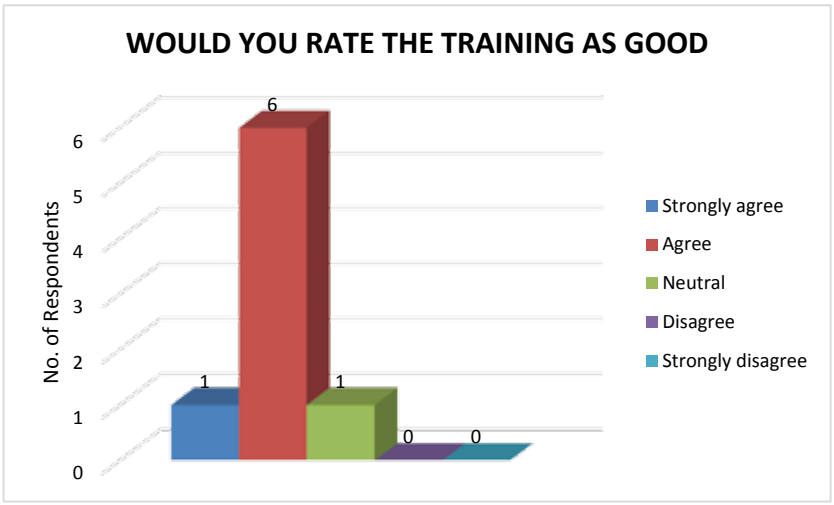


Figure 19: Would you rate the training as good

Teachers rating of the training is shown in Figure 19. Seventy five percentage of the teachers have agreed that the training was good.

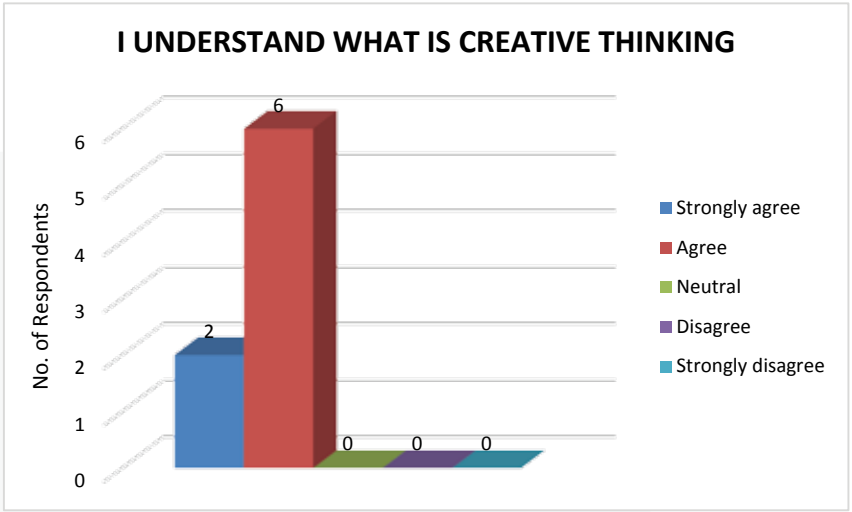


Figure 20: I understand what is creative thinking

Figure 20 shows if the teachers understand what is creative thinking. Seventy five percentage of the teachers agree they understand what is creative thinking. Meanwhile 25% of the teachers strongly agree they understand what is creative thinking.

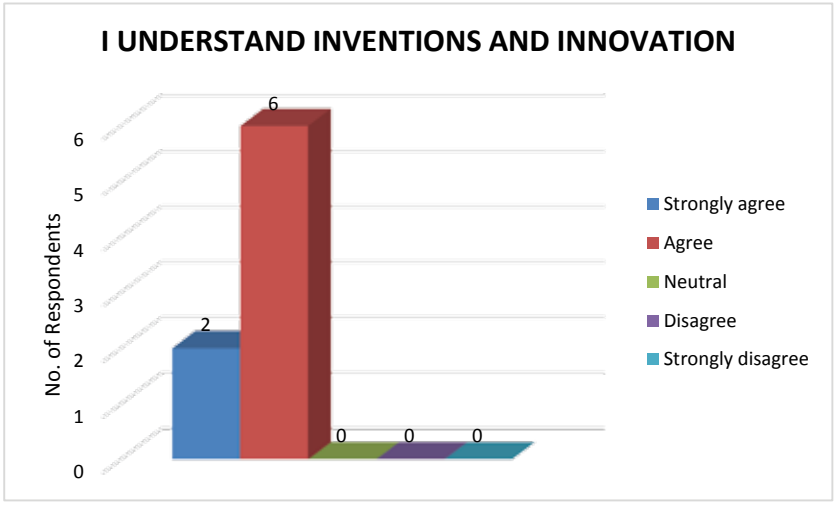


Figure 21: I understand inventions and innovation

Figure 21 shows if the teachers understand inventions and innovation. After going through the training, 75% of the teachers and 25% of the teachers strongly agree and agree that they understand inventions and innovation respectively.

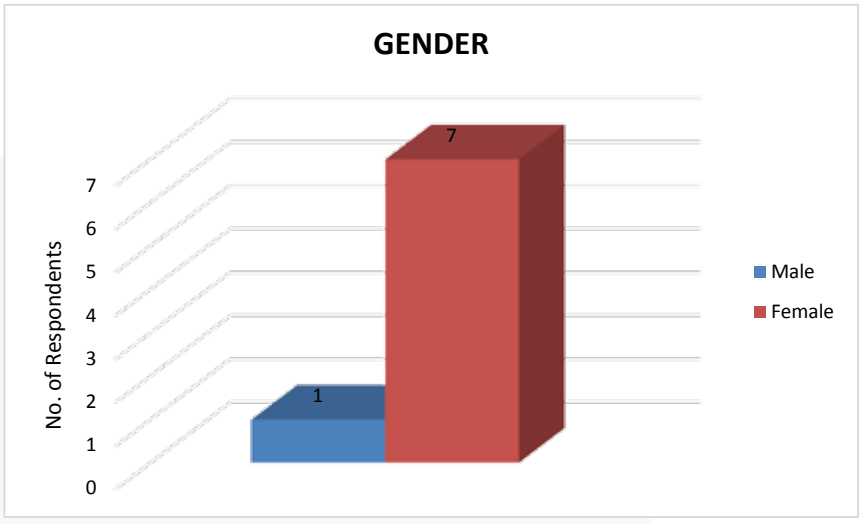


Figure 22: Gender

The gender of the participating teachers is shown in Figure 22. About 87.5% of the teachers were female teachers at the training. The female teachers were more than the male teachers at the ALC 1st training.

APPENDIX F:
SOUTHERN REGION

- Training 2 - Critical Thinking

2ND TRAINING

ALC 2nd Training Students Survey Analysis

The second ALC training for southern region was conducted on 27th July 2017 at Asia Metropolitan University, Pasir Gudang. All the schools that participated in the first training attended the second training. About 102 students and 6 teachers spent their time answering the survey forms that was distributed at the training.

Figure 23: Happy with the training

Figure 23 shows how happy were the students with the 2nd training. Most of the students were found to be happy with the training. About 41% and 40% have said that they strongly agree and agree that they were happy with the training respectively.

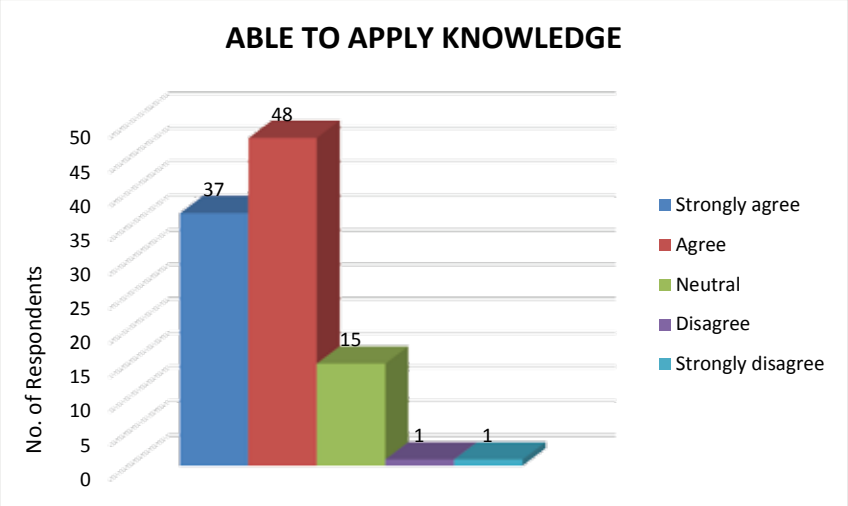


Figure 24: Able to apply knowledge

When the students were asked if they were able to apply the knowledge they have learnt from the training, most of the students that is 83% of the students have said that they are able to apply the knowledge they haved learnt from the training. This is shown in Figure 24.

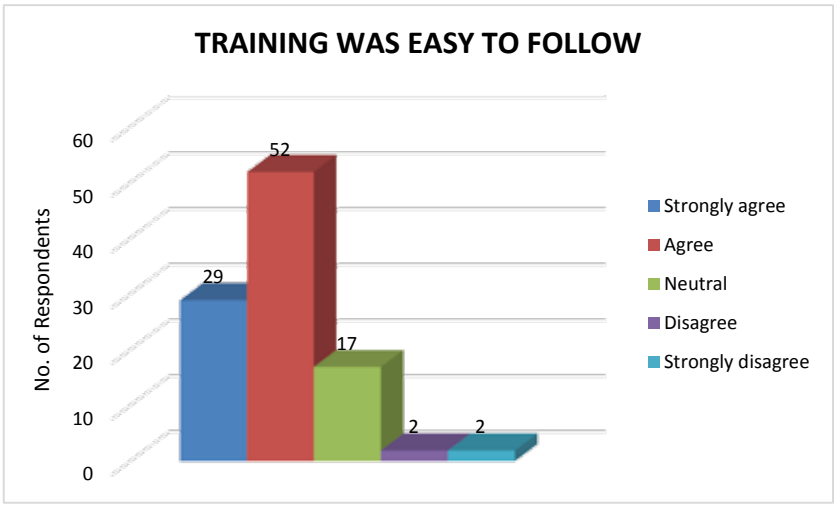


Figure 25: Training was easy to follow

Figure 25 is about if the training was easy to follow. About 51% of the students that is 52 of them agreed that the training was easy to follow and they do not find the training to be difficult.

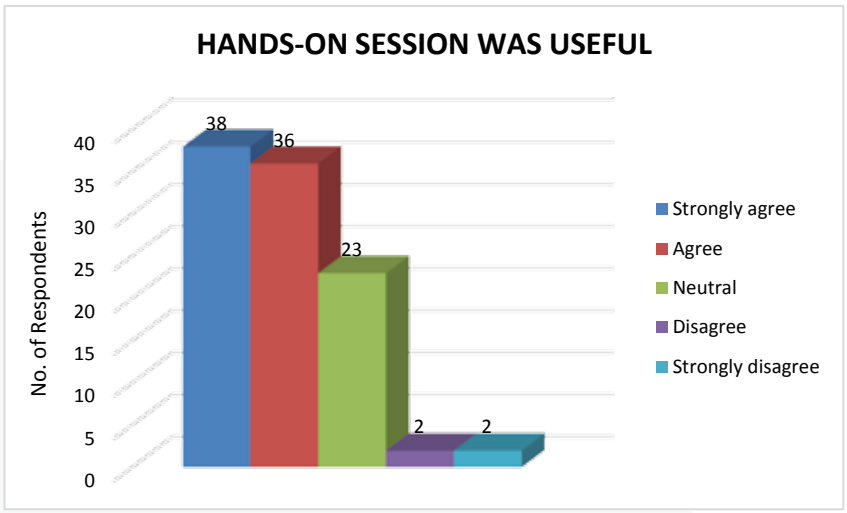


Figure 26: Hands-on session was useful

Figure 26 shows if the hands-on session was useful. From the graph, 73% of the students have said that the hands-on session was useful for them. Only 4% of the participants have disagreed that the hands-on session was useful.

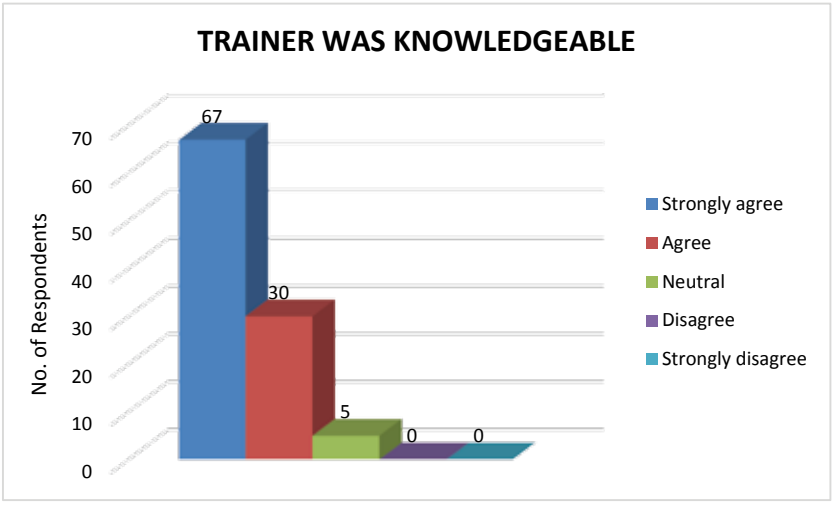


Figure 27: Trainer was knowledgeable

From Figure 27, we know that many of the students found the trainer to be knowledgeable and none of the students have disagreed with it.

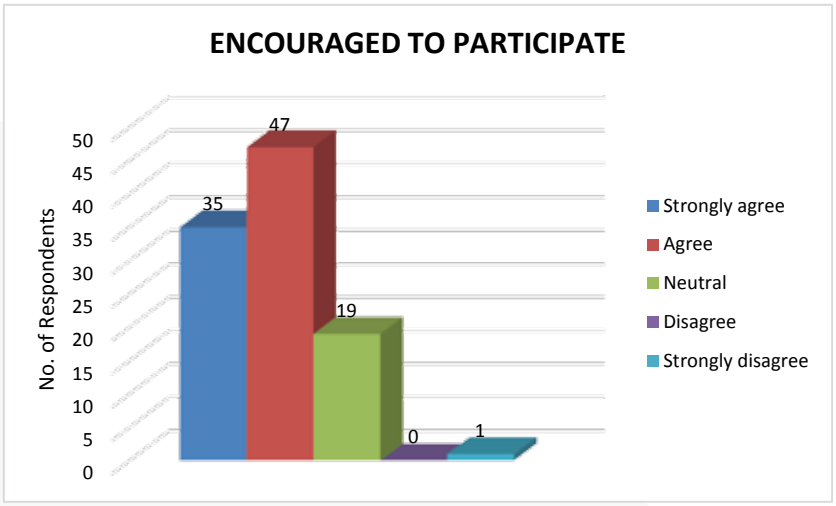


Figure 28: Encouraged to participate

A total of 82 students were encouraged to participate in the training. Meanwhile only 1 student was found to be not encouraged to participate in the training. This is shown in Figure 28.

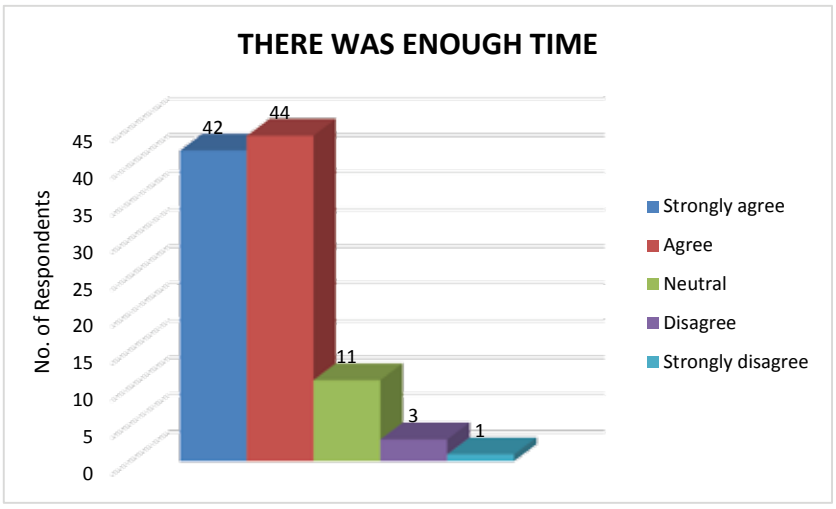


Figure 29: There was enough time

Figure 29 shows if the students had enough time during the training. A total of 42 and 44 students strongly agree and agree that there was enough time during the training respectively.

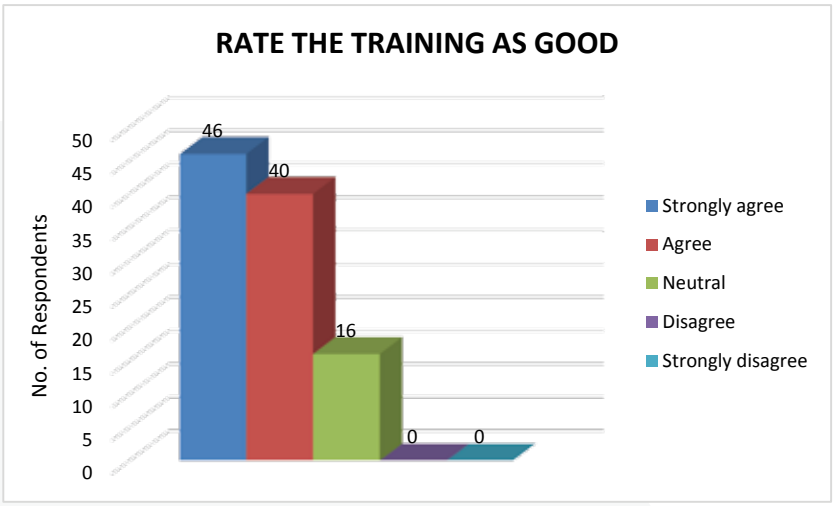


Figure 30: Rate the training as good

Figure 30 shows how the students have rated it as the training. About 84% of the students rated the training as good and none of the students have said that the training was not good.

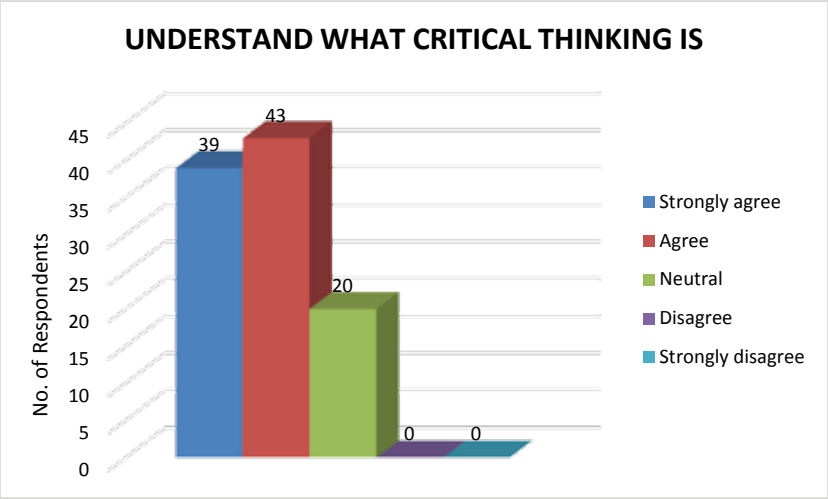


Figure 31: Understand what critical thinking is

When the students were asked if they understand what critical thinking is, 82 of the students agreed that they understand what critical thinking is and it is shown in Figure 31.

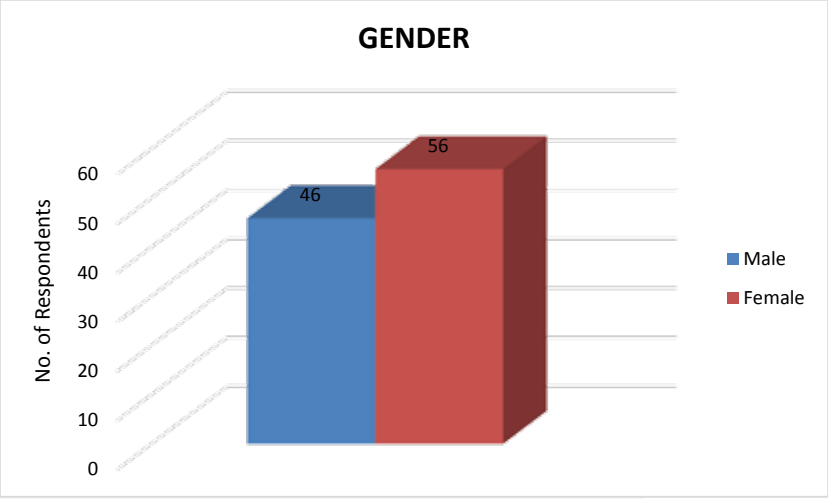


Figure 32: Gender

The gender of the students that participated in the training is shown in Figure 32. From the graph, it is known that there were more female students at the training but the difference is not so much. The female students were just 10 people more than the male students.

2ND TRAINING

ALC 2nd Training Teachers Survey Analysis

Figure 33: Happy with the training

Figure 33 shows if the teachers were happy with the training provided. From the teachers who have answered the survey form, there was no teacher who has stated that they are not happy with the training.

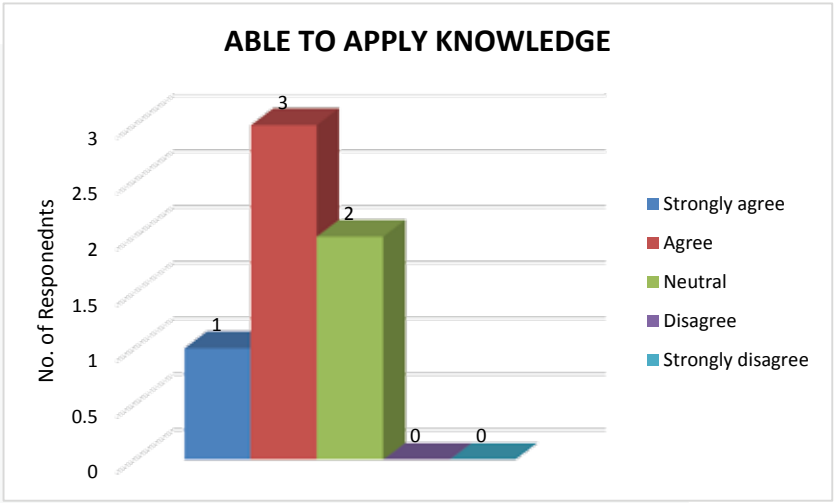


Figure 34: Able to apply knowledge

Figure 34 shows if the teachers were able to apply the knowledge learnt at the training. The teachers do agree that they were able to apply the knowledge from the training.

Figure 35: Training was easy to follow

Three teachers have stated neutral even though there was no teacher who has disagreed that the training was easy to follow. This can be seen in figure 35.

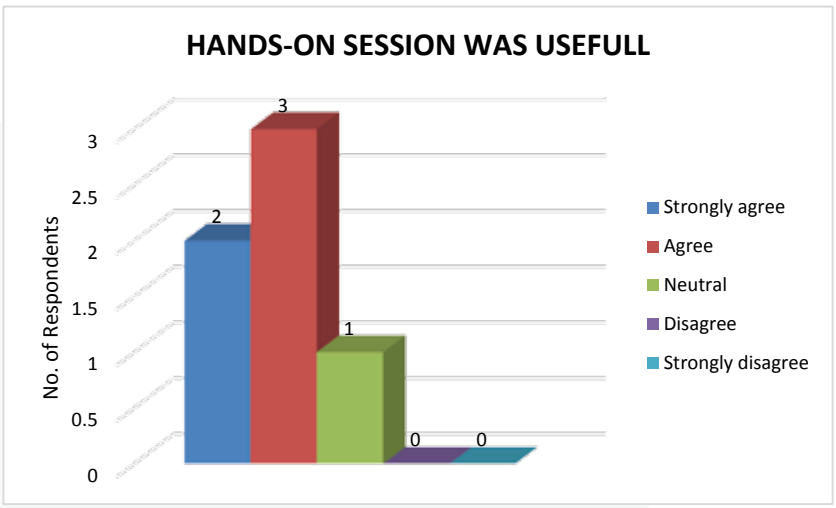


Figure 36: Hands-on session was useful

Figure 36 shows if the hands-on session was useful. From the graph, it is understood that about 83% of the teachers agree that the hands-on session was useful.

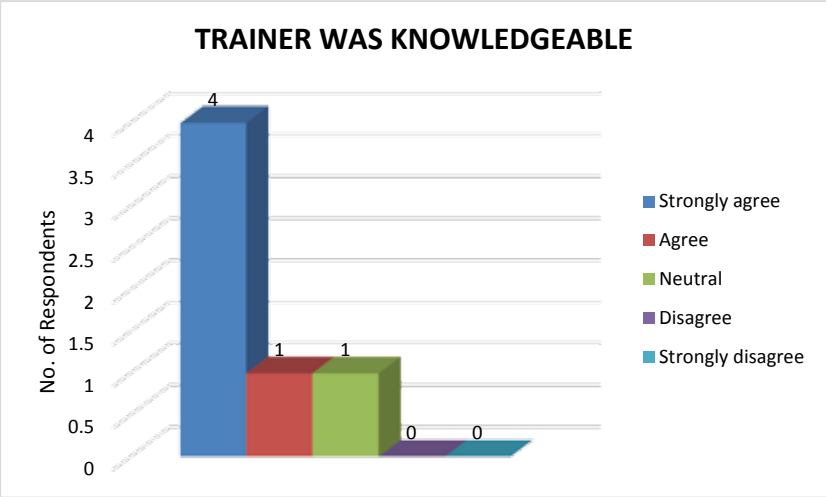


Figure 37: Trainer was knowledgeable

From Figure 37, it is known that about 67% of the teachers have said that the trainers at the 2nd training were knowledgeable.

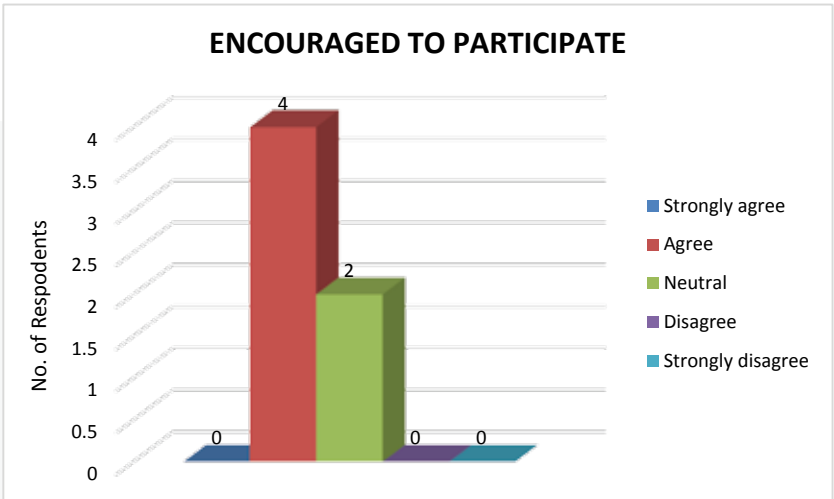


Figure 38: Encouraged to participate

When asked if the teachers were encouraged to participate in the training, about 67% of the teachers agreed that they were encouraged to participate in the training and it is shown in Figure 38.

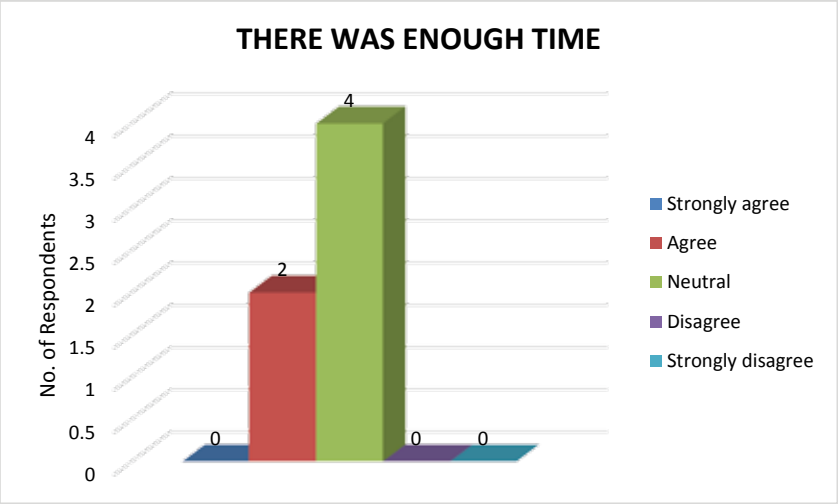


Figure 39: There was enough time

Figure 39 shows if the teachers had enough time during the training. About 67% of the teachers who answered the survey form have said neutral. They either do not agree or agree that there was enough time during the training.

Figure 40: Rate the training as good

Figure 40 is on whether the training was good. About 50% of the teachers strongly agree that the training was good.

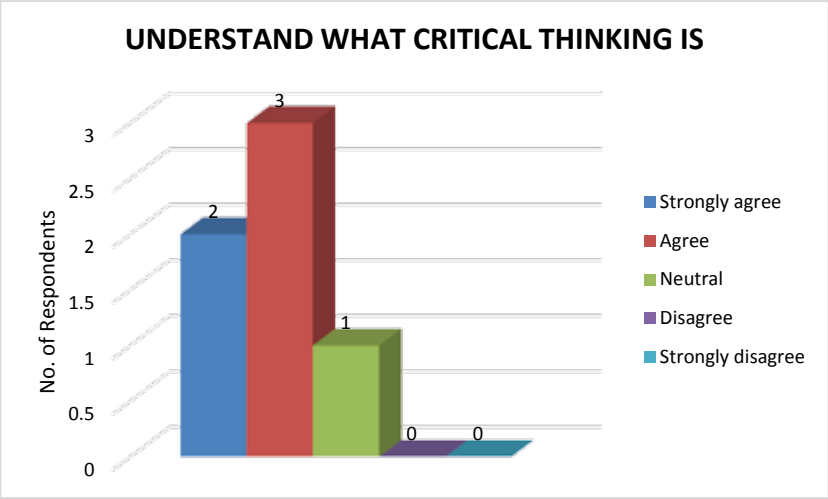


Figure 41: Understand what critical thinking is

Figure 41 shows if the teachers understand what critical thinking is. About 33% and 50% of the teachers strongly agree and agree respectively when they were asked if they understand what critical thinking is.

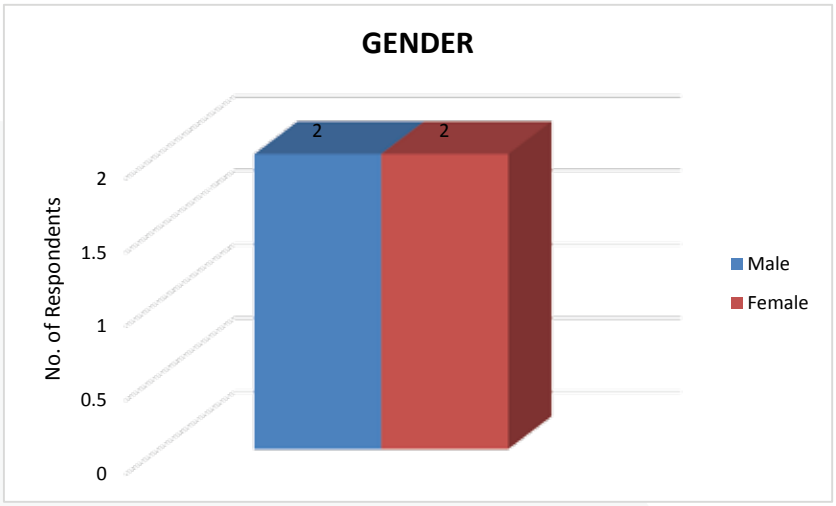


Figure 42: Gender

Figure 42 shows the gender of the teachers who participated in the 2nd training. The number of male and female teachers who attended the second training was equal.

APPENDIX G:
SOUTHERN REGION

- Training 3 - Design & Innovative Thinking

3RD TRAINING

ALC 3rd Training Students' Survey Analysis

The 3rd and final training for ALC in Johor was held on 10th August 2017 at Asia Metropolitan University, Pasir Gudang. All the 25 schools attended the training. A total of 60 students and 29 teachers have helped to answer the survey form.

Figure 43: Happy with the training

Figure 43 shows if the students were happy with training. The survey shows that about 97% of the students were found to be happy with the 3rd training.

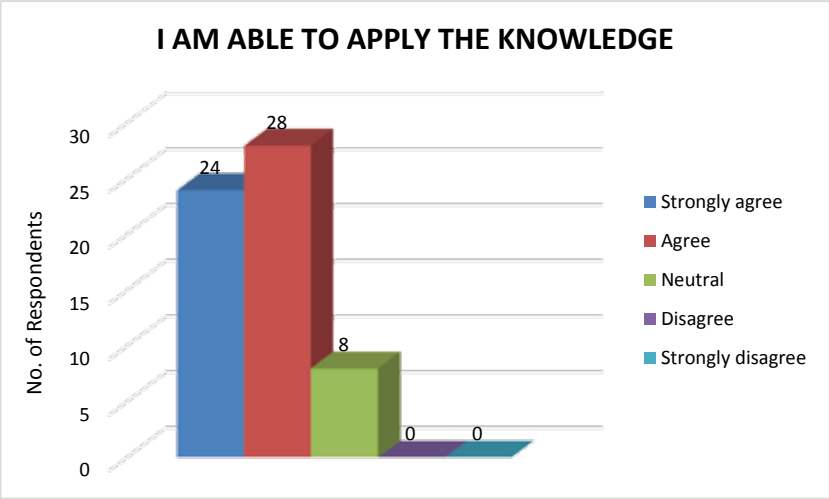


Figure 44: Able to apply knowledge

When asked if the students were able to apply the knowledge learnt from the training, 40% of the students strongly agree and 47% of the students agree that they were able to apply the knowledge learnt from the training. This is shown in Figure 44.

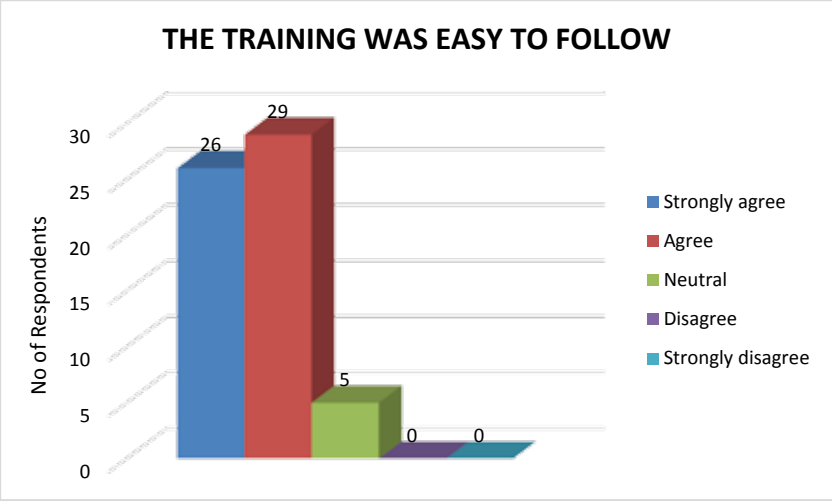


Figure 45: Training was easy to follow

The students were asked if the training was easy to follow and it is shown in Figure 45. Most of the students at the training have said agree and strongly agree which means the training was easy to follow for them.

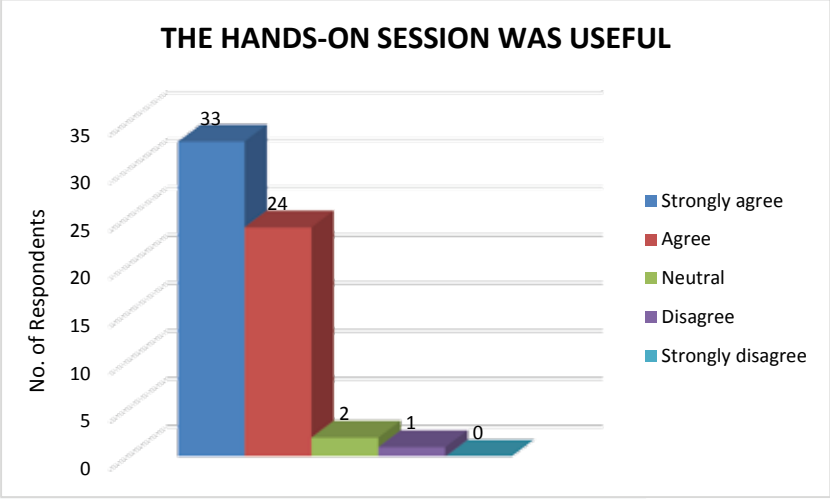


Figure 46: Hands-on session was useful

Figure 46 shows if the hands-on session was useful. About 95% of the students have agreed that the hands-on session was useful even though there was 1 student who has disagreed that the hands-on session was useful.

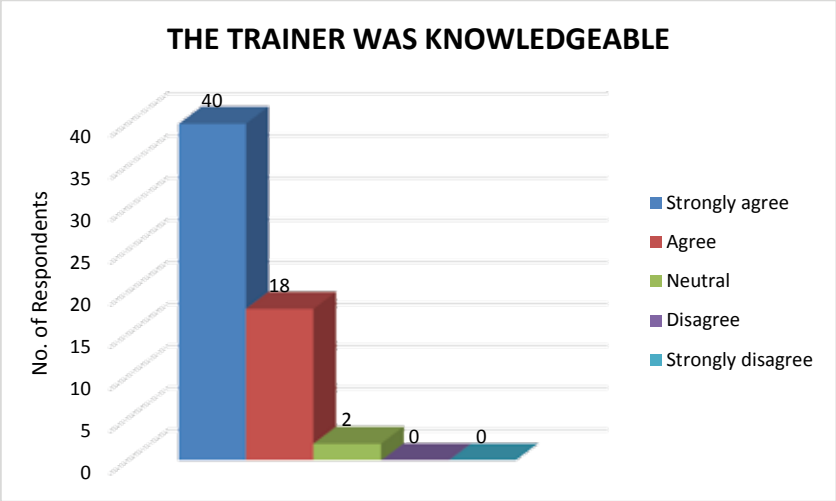


Figure 47: Trainer was knowledgeable

Figure 47 is on whether the trainer was knowledgeable. About 67% of the students that is 40 out of the 60 students strongly agree that the trainers were knowledgeable. Meanwhile another 30% of the students agreed that the trainers were knowledgeable.

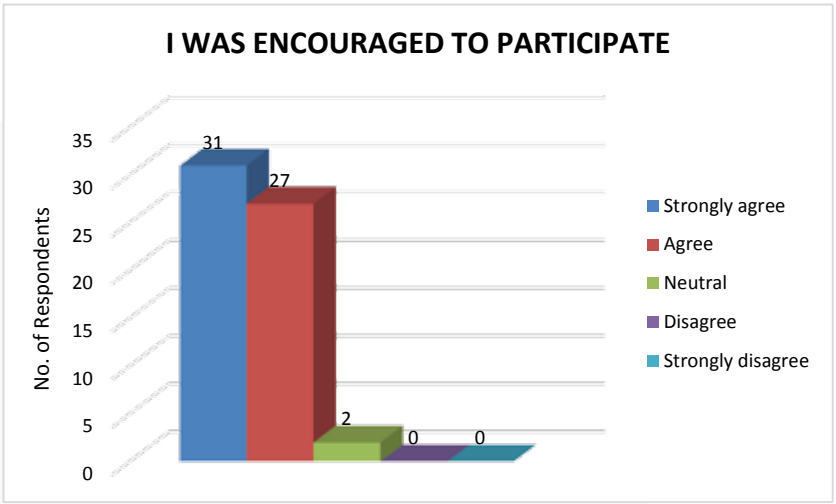


Figure 48: Was encouraged to participate

Figure 48 shows if the students were encouraged to participate in the training. Most of the students which is 97% of the students have said that they were encouraged to participate in the ALC training.

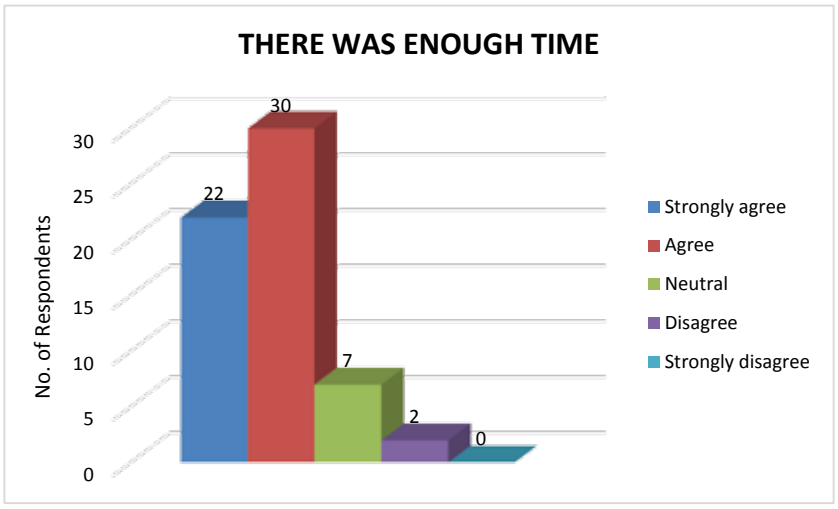


Figure 49: There was enough time

Figure 49 is on whether the students had enough time during the training. More than half the students have said there was enough time during the training but there were only 2 students who disagreed that they had enough time during the 3rd training.

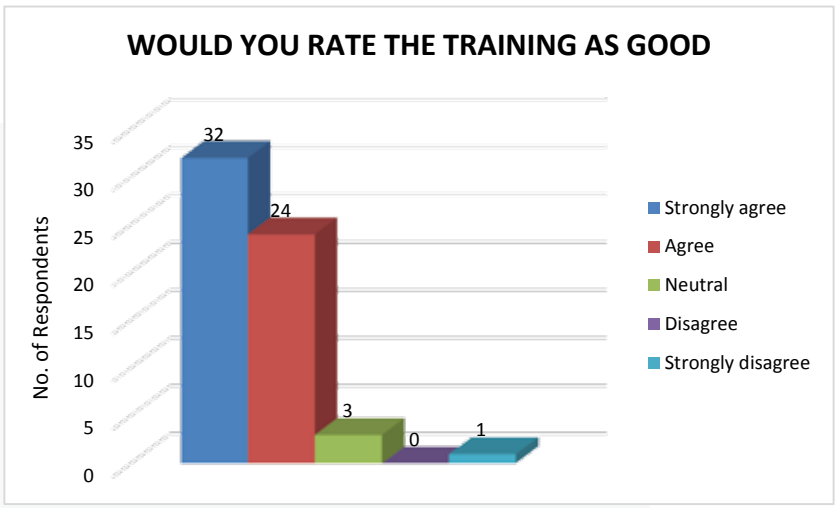


Figure 50: Would you rate the training as good

The students were asked to rate the training and it is shown in Figure 50. From the graph, it is known that about 93% of the students rated the training as good and there is only 1 student who strongly disagree that the training was good.

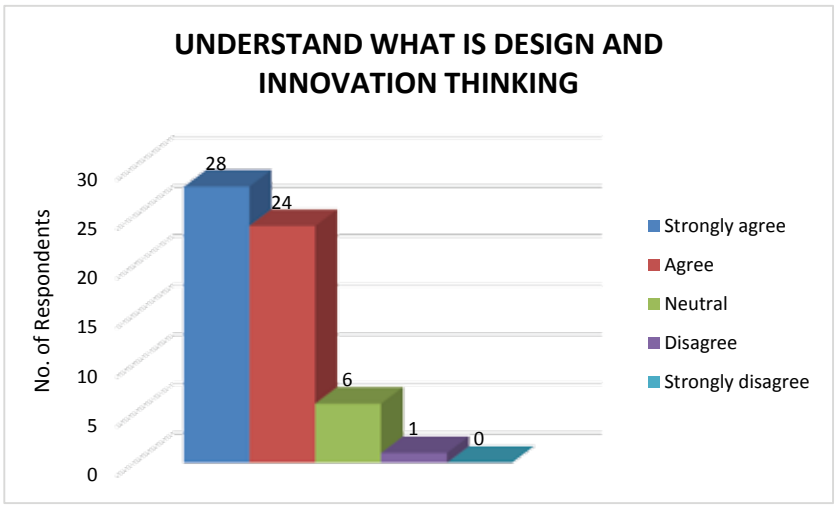


Figure 51: Understand what is design and innovation thinking

Figure 51 shows if the students understand what is design and innovation thinking. Even though there was 1 student who has disagreed that the student understands what is design and innovation thinking, but most of the students understand what is design and innovation thinking.

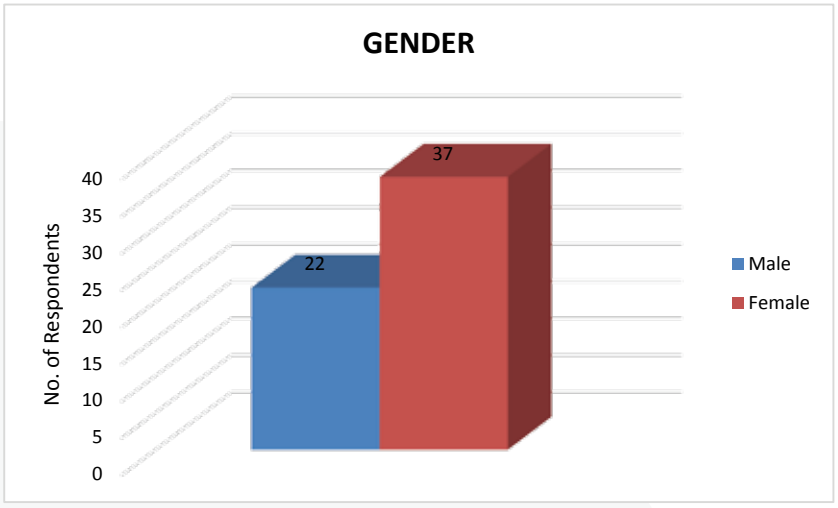


Figure 52: Gender

Figure 52 shows the gender of the participating students. More female students have participated in the training compared to the male students.

3RD TRAINING

ALC 3rd Training Teachers' Assessment

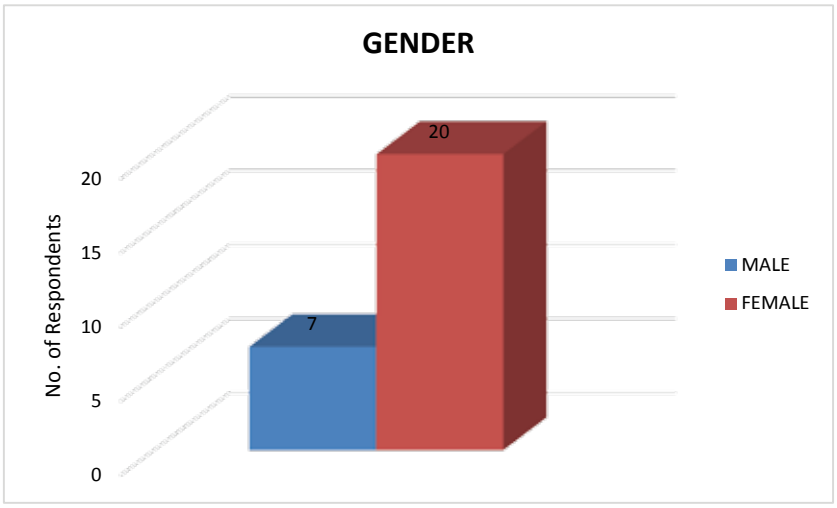


Figure 53: Gender

Figure 53 shows the gender of teachers who attended the training. The graph shows that more female teachers attended the training compared to the male teachers. The female teachers were almost 3 times more than the male teachers.

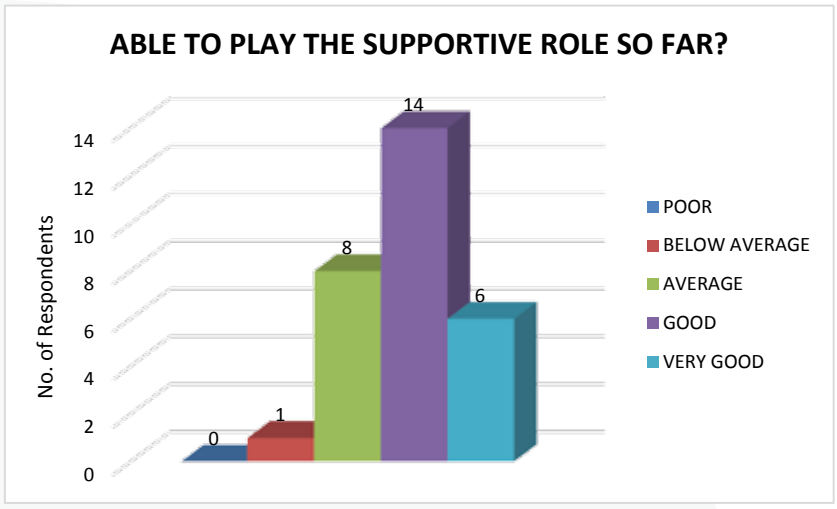


Figure 54: Able to play the supportive role so far

Only 1 teacher has rated it as below average and the rest of the teachers have rated it as average and above when they were asked if they are able to play supportive role. This is shown in Figure 54.

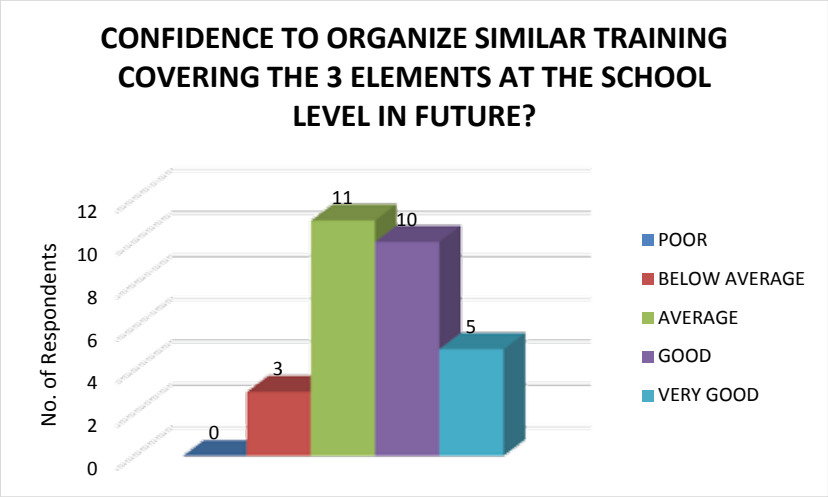


Figure 55: Confidence to organize similar training covering the 3 elements at the school level in future

Figure 55 shows if the teachers are confidence to organize similar training covering the 3 elements at the school level. The teachers are confidence to organize similar training at the school level in future because most of the teachers have rated it as average, good and very good.

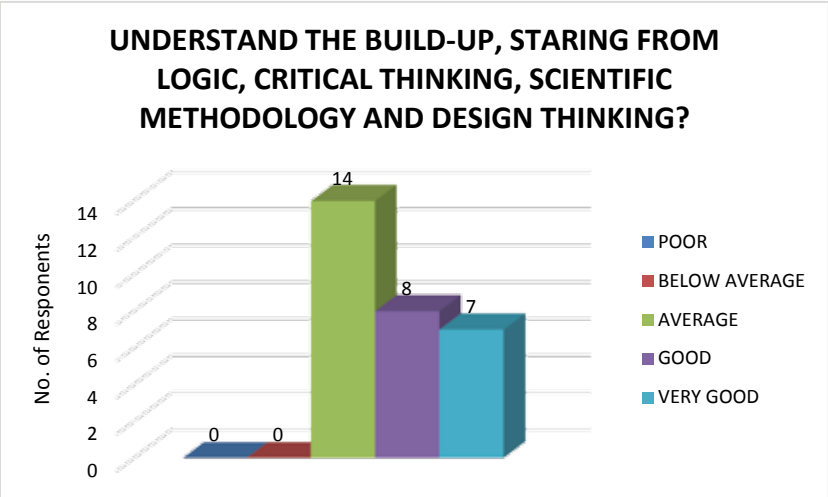


Figure 56: Understand the build-up, starting from logic, critical thinking, scientific methodology and design thinking

Figure 56 shows if the teachers understand the build-up, starting from logic, critical thinking, scientific methodology and design thinking. A majority of the teachers have rated it as only average which is about 48%.

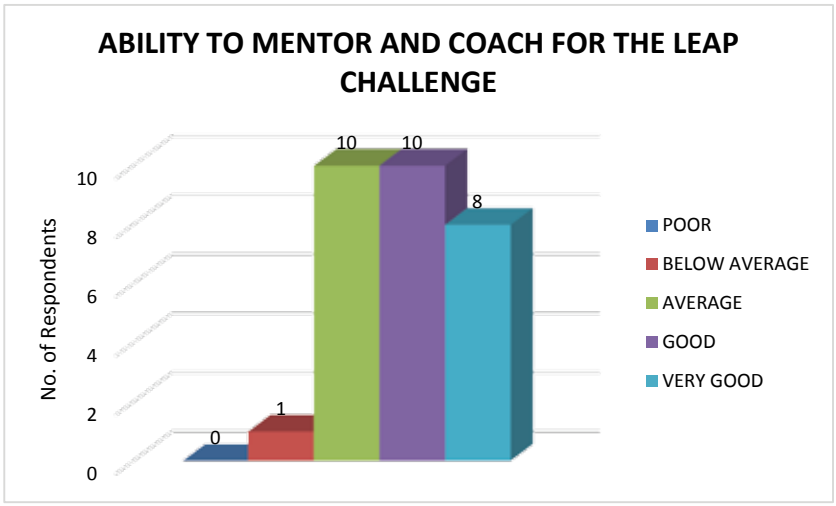


Figure 57: Ability to mentor and coach for the leap challenge

The ability to mentor and coach for the leap challenge is shown in Figure 57. Only 1 teacher have rated it as below average whereas the rest of the teachers have said that they are able to mentor and coach for the leap challenge by rating average, good and very good.

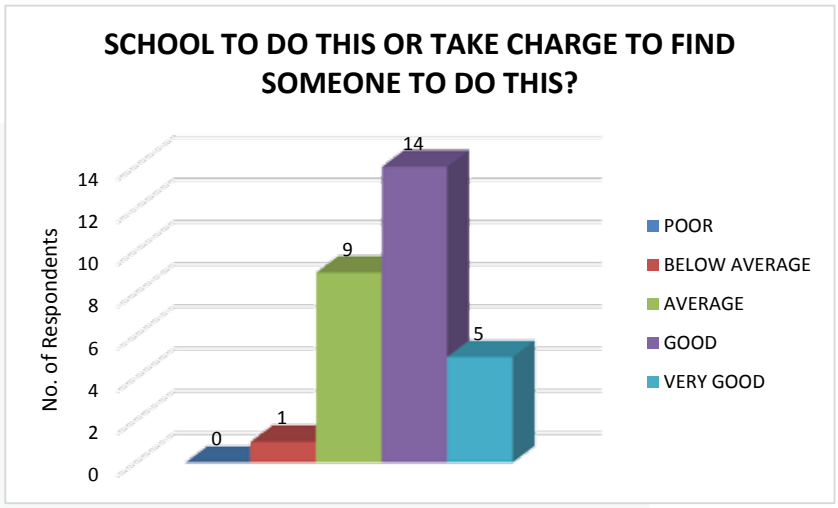


Figure 58: School to do this or take charge to find someone to do this.

Teachers' response to the question if the school is to do this or take charge to find someone to do this is shown in Figure 58. The teachers want the schools to do leap challenge because about 66% of the teachers have rated it as good and very good.

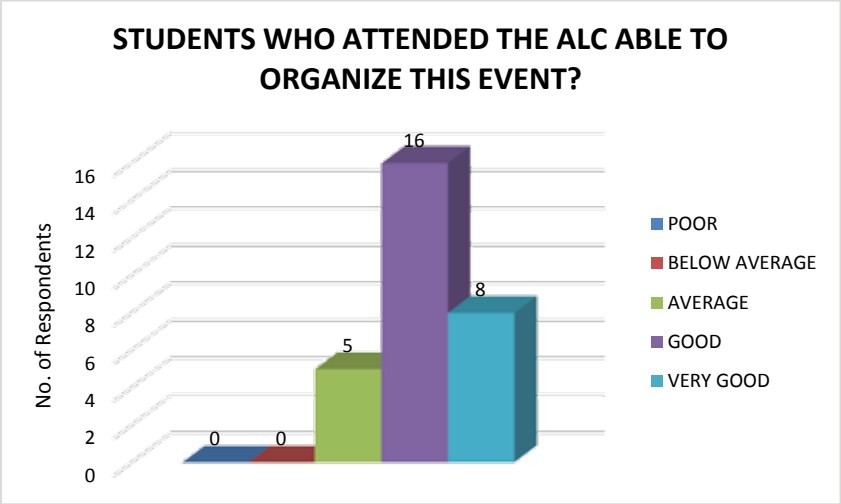


Figure 59: Students who attended the ALC able to organize this event

Teachers' opinion if the students who attended the ALC are able to organize the event is shown in Figure 59. About 55% of the teachers rated it as good. Meanwhile 28% of the teachers rated it as very good. The teachers think the students are able to organize ALC in the future at their schools.

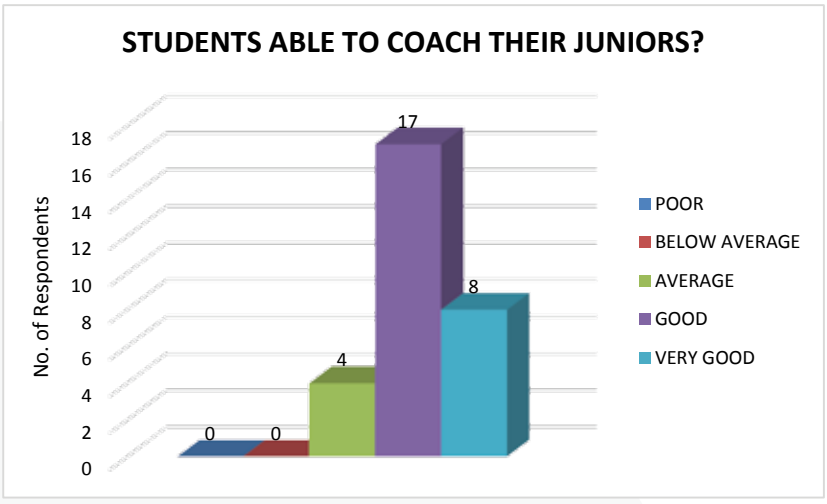


Figure 60: Students able to coach their juniors

Teachers' opinion if the students are able to coach their juniors is shown in Figure 60. None of the teachers have rated it as poor and below average which means they think the students are able to coach their juniors in their schools.

APPENDIX H:
SOUTHERN REGION

- ALC Final Competition

ALC FINAL:

Student's Assessment Evaluation

A total of 123 students and 42 teachers took part in the survey that was conducted by ASTI in the final event. The survey forms for the students were distributed at the booths while for the teachers the survey forms were distributed at the mentor session held for the teachers.

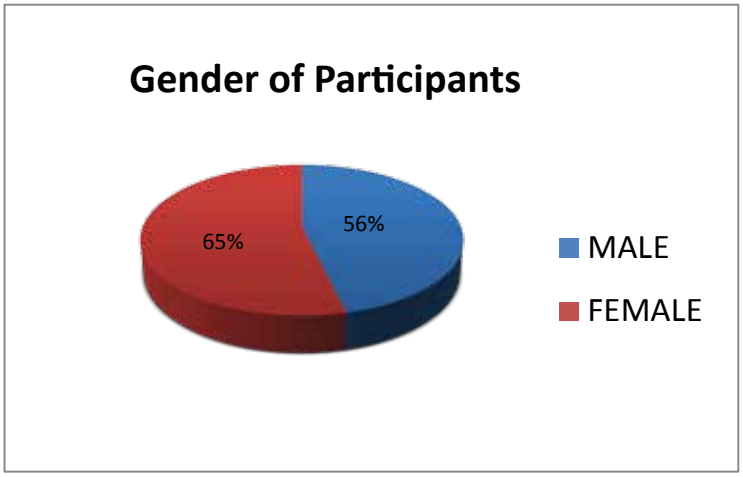


Figure 61: Gender

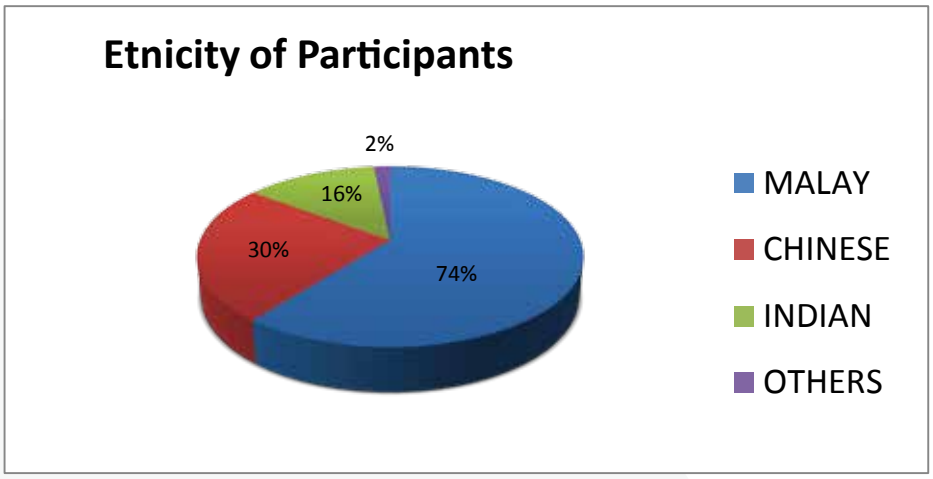


Figure 62: Ethnicity of Participants

Figure 61 is on gender of participants and Figure 62 is on ethnicity of participants. The female participants were more in the final event of ASTI Leap Challenge. The Malay ethnic students were the most at the event followed by Chinese ethic and Indian ethnic students. Students from other ethnicity were the Iban ethnic students.

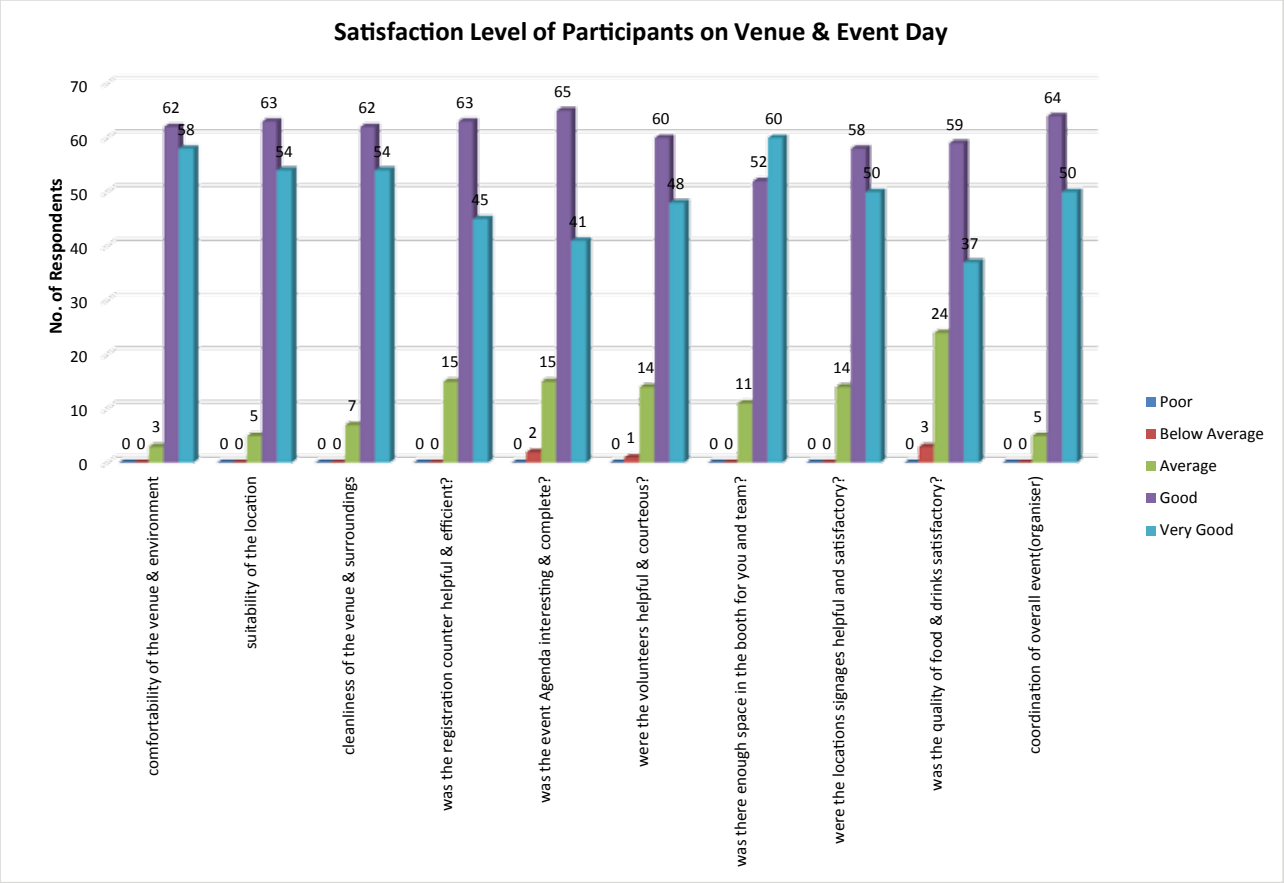


Figure 63: Satisfaction level of participants on venue & event day

Figure 63 is on satisfaction level of the participants on venue and event day. The students were questioned about their satisfaction on comfortability of the venue & environment, suitability of the location, cleanliness of the venue & surroundings, was the registration counter helpful & efficient, was the event agenda interesting and complete, were the volunteers helpful & courteous, was there enough space in the booth for them and the team, were the location signages helpful and satisfactory and the coordination of overall event. The students were happy with all the aspects mentioned above and have rated them as good and very good for those aspects.

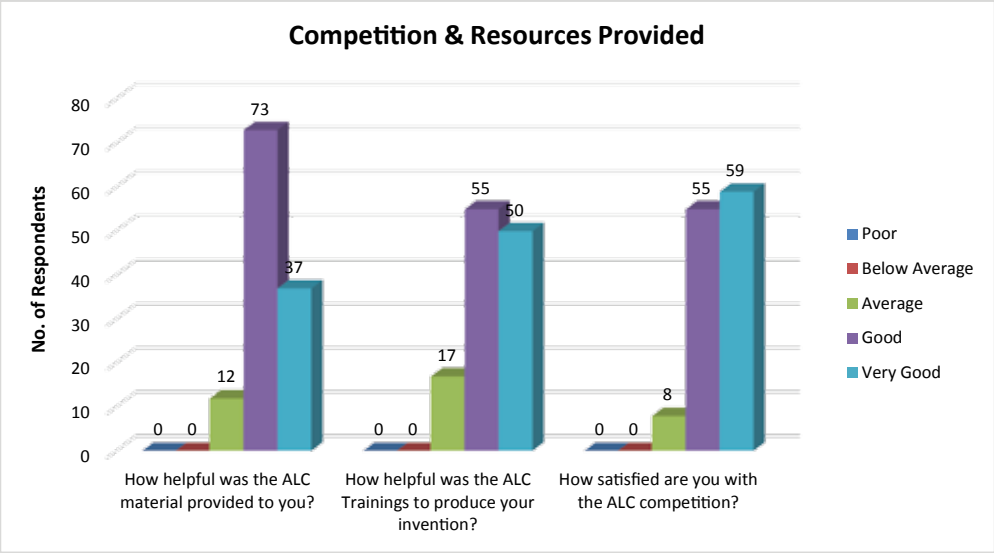


Figure 64: Competition & resources provided

The students' opinion on the competition and resources provided is shown in Figure 64. They were asked how helpful was the ALC material provided to them, how helpful was the ALC trainings to produce their invention and how satisfied were they with the ALC competition. Students rated them as good for those aspects mentioned earlier.

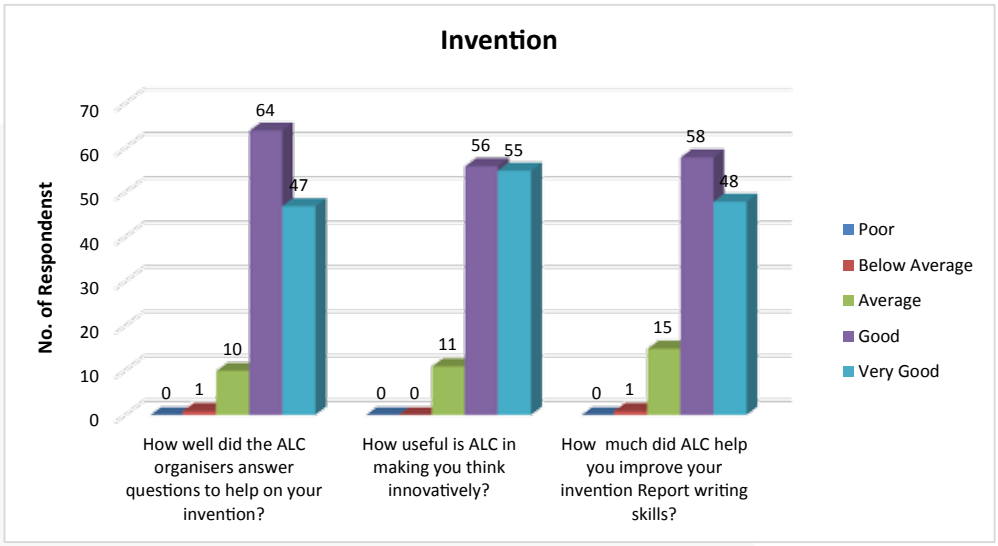


Figure 65: Invention

Figure 65 shows students' feedback on invention. To know their feedback on invention, they were asked how well ALC organiser answered questions to help on their invention, how useful was ALC in making them think innovatively and how much did ALC help them improve their invention report writing skills. Most students rated them as good and very good for these questioned that were asked.

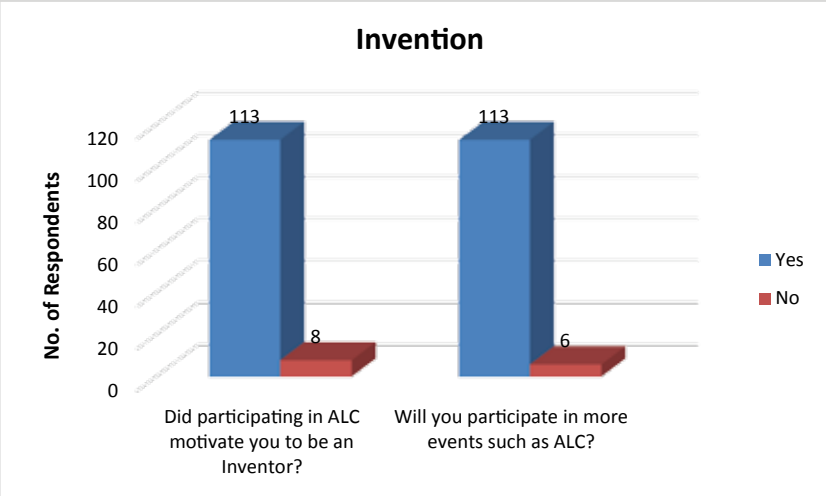


Figure 66: Invention

Figure 66 also shows about invention. The students were also asked if participating in ALC motivated them to be an inventor and if they will participate in more events such as ALC. To both these questions most students have said yes.

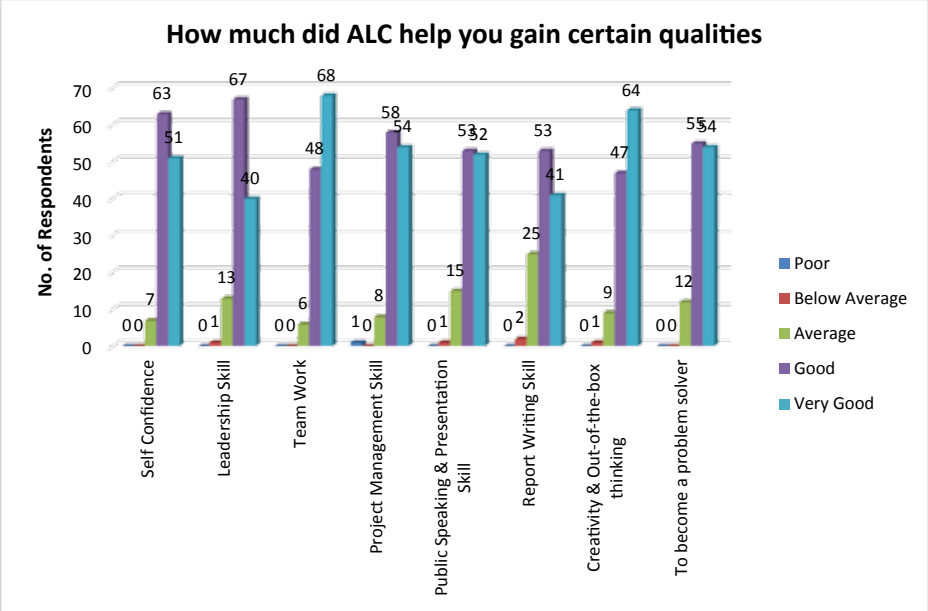


Figure 67: How much did ALC help you gain certain qualities

ALC helped the participants gain certain qualities which is shown in Figure 67. The qualities that were tried to instil in the students were self confidence, leadership skill, teamwork, project management skill, public speaking skill & presentation skill, report writing skill, creativity & out-of-the-box thinking and to become a problem solver. The number of students who rated them as average, below average and poor were very few compared to the number of students that participated in the event.

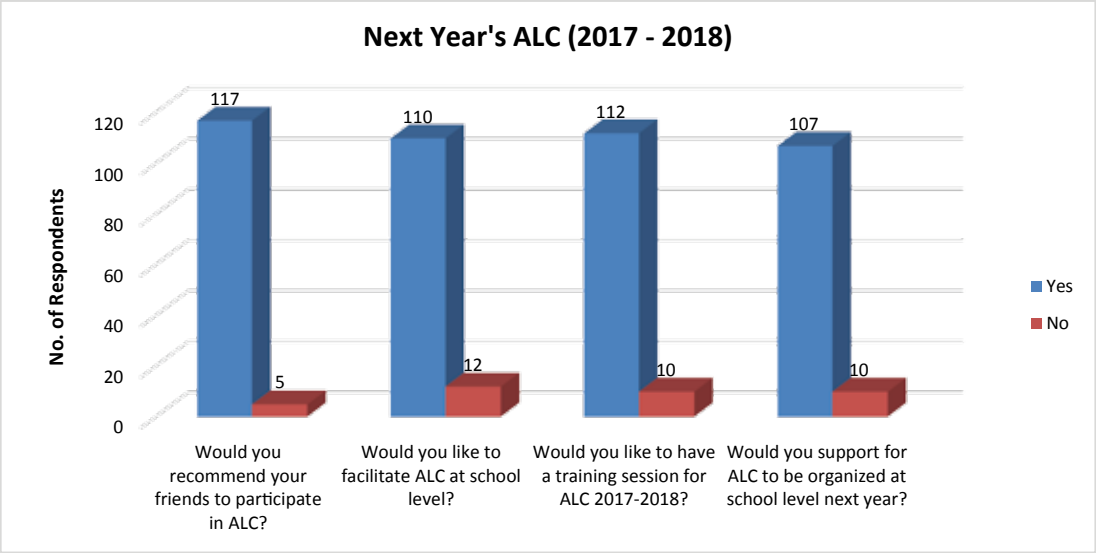


Figure 68: Next year's ALC (2017 – 2018)

Figure 68 shows students' opinion for next year's ALC (2017 – 2018). The participants were asked if they would recommend their friends to participate in ALC, would they like to facilitate ALC at school level, would they like to have a training session for ALC 2017 – 2018 and would they support for ALC to be organized at school level next year. Most of the students have said yes to these questions.

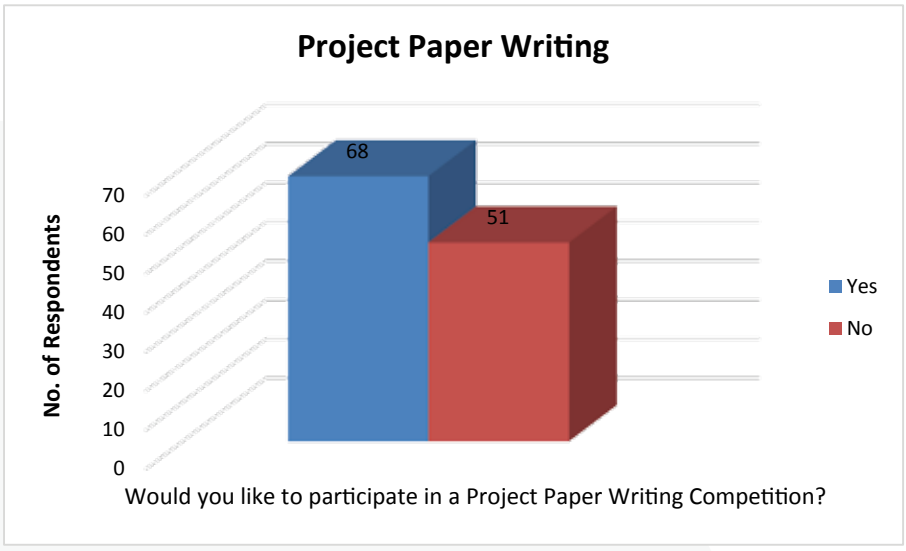


Figure 69: Project paper writing

The students were asked if they would like to participate in a project paper writing competition and it is showed in Figure 69. About 57% of the students said they would like to participate in a project paper writing competition. Meanwhile about 43% of the students have said otherwise.

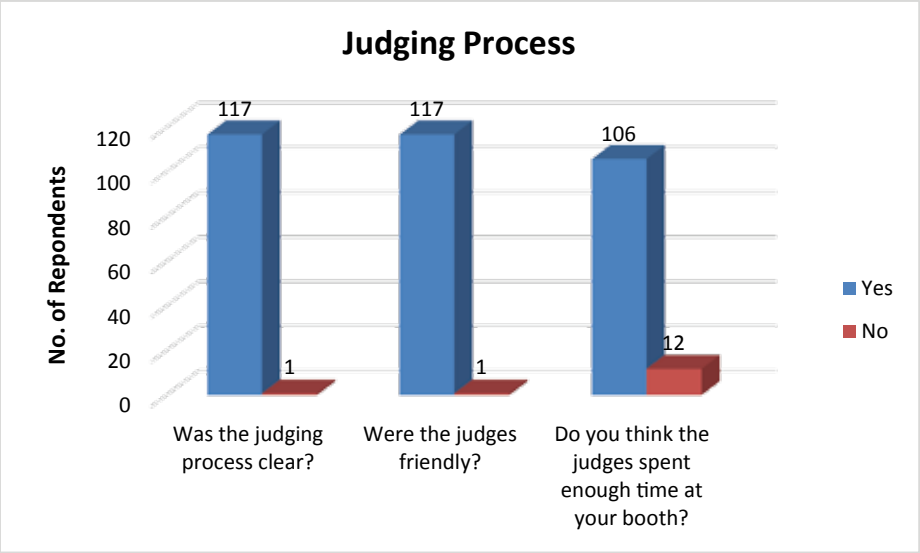


Figure 70: Judging process

Students' feedback on judging process is shown in Figure 70. They were asked if the judging process was clear, judges were friendly and do they think the judges spent enough time at their booth. The students were found to be satisfied and happy with judging process because a vast majority of them have said yes to these questions.

ALC FINAL COMPETITION SURVEY ANALYSIS

Mentor's Assessment Evaluation

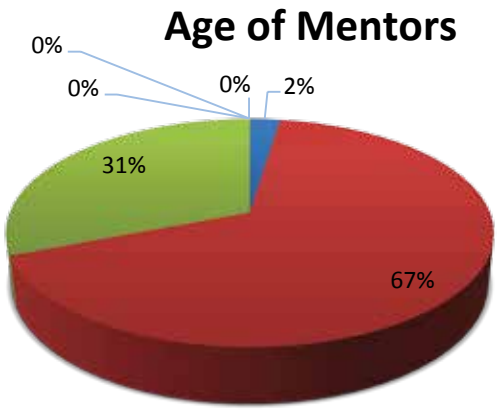
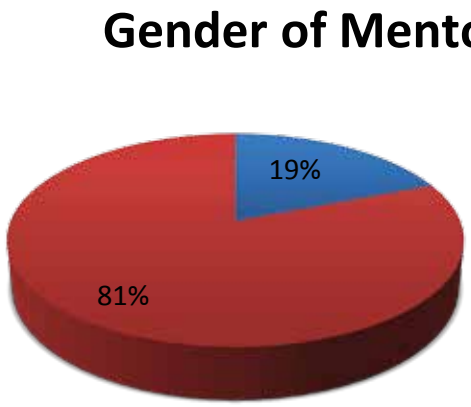


Figure 71: Age of mentors

Figure 71 is on mentors' age. Teachers aged between 25 and 34 years old were the most at the competition. They were about 67% of the total teachers that have participated in ASTI Leap Challenge in Johor. This is followed by teachers aged between 35 to 44 years old.



Gender of mentors

Meanwhile Figure 72 is on mentors' gender. From the graph, we learnt that more female teachers participated in ALC in Johor compared to the male teachers.

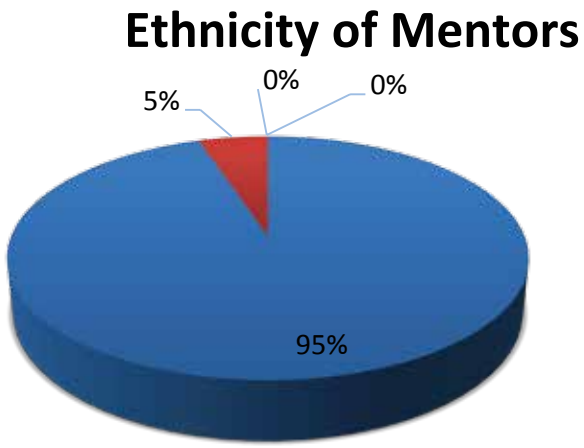


Figure 73: Ethnicity of Mentors

Figure 73 is on ethnicity of mentors. The teachers who participated in ALC were from Malay and Chinese ethnicity. Majority of the teachers were Malay ethnic teachers who were 95% and the rest were Chinese ethnic teachers for the event.

Figure 74: Highest qualification level of mentors

The highest qualification level of mentors is shown in Figure 74. Most teachers have Bachelor's Degree with them except for 5% of the teachers who hold Master's Degree.

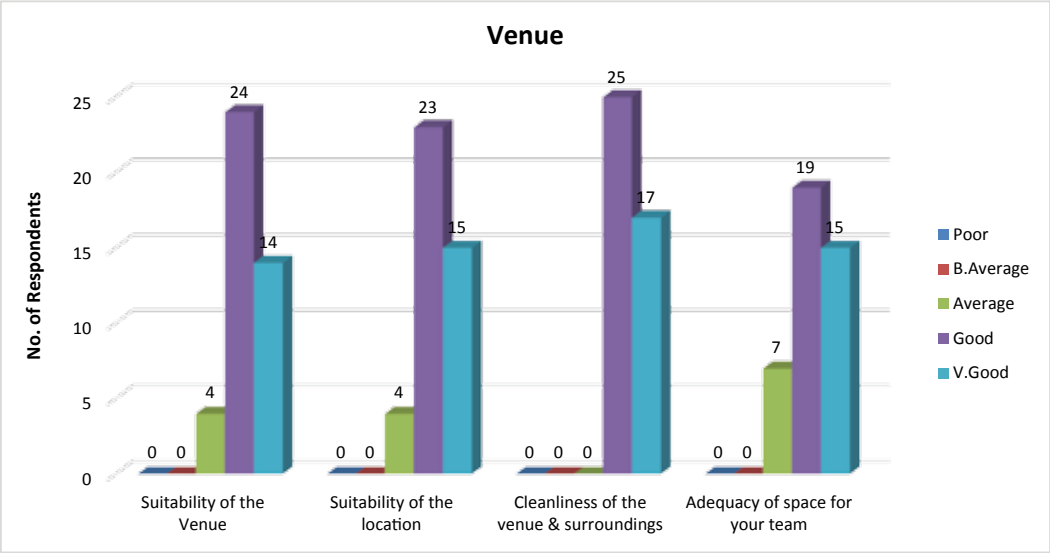


Figure 75: Venue

Teachers' opinion on the venue of the event is shown in Figure 75. Their opinion on suitability of the venue, suitability of the location, cleanliness of the venue & surroundings and adequacy of space for their team is shown in the above graph. The teachers rated it as good and very good for all the aspects mentioned above.

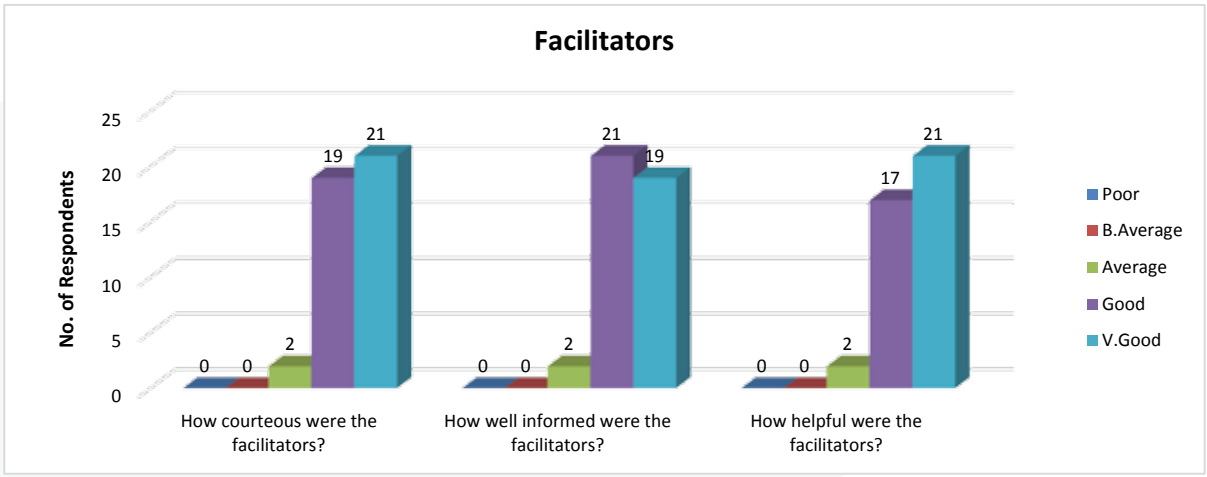


Figure 76: Facilitators

Feedback of the teachers about the facilitators is shown in Figure 76. Teachers were asked how courteous were the facilitators, how well informed were the facilitators and how helpful were the facilitators. The teachers seemed to be happy and satisfied with the facilitators because they have rated it as very good and good for the questions about facilitators.

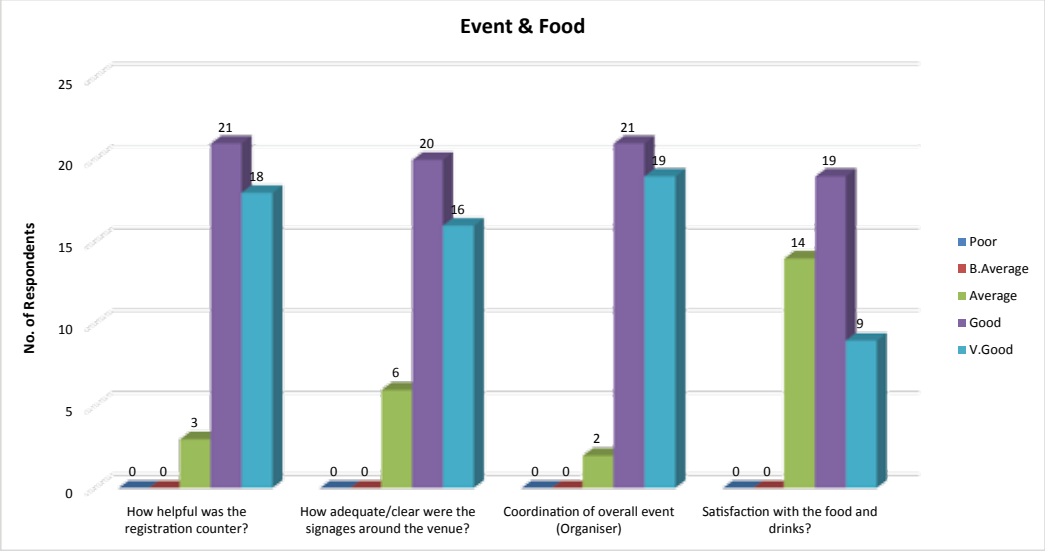


Figure 77: Event & food

Figure 77 shows the satisfaction of the teachers on the event and food. To know the satisfaction of the event & food, the teachers were asked how helpful was the registration counter, how adequate/clear were the signages around the venue, coordination of overall event (organizer) and satisfaction with the food and drinks. Most teachers were happy with the above matter except for satisfaction with the food and drinks where 33% of the teachers have said the food and drinks were average.

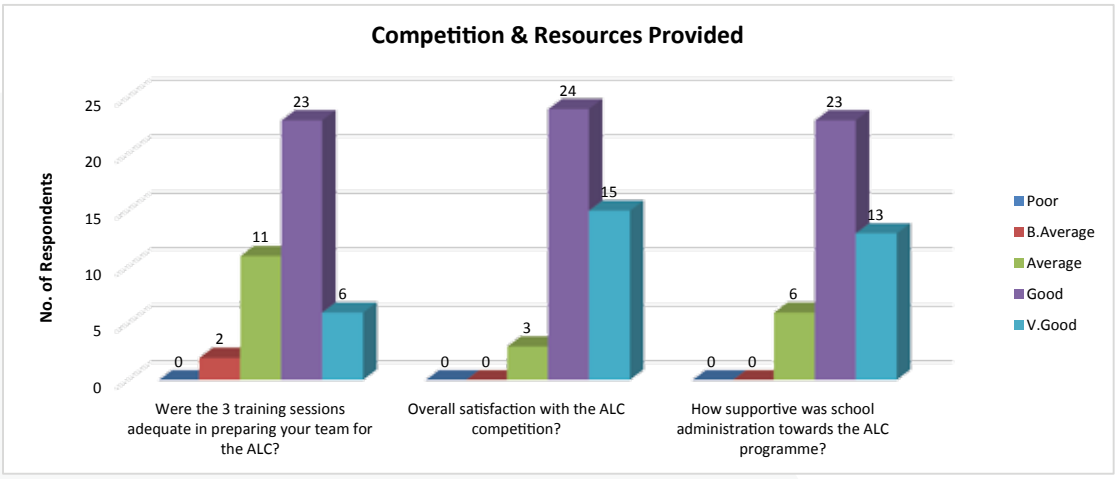


Figure 78: Competition & resources provided

The teachers were asked if the 3 training sessions were adequate in preparing their team for the ALC, overall satisfaction with the ALC competition and how supportive was the school administration towards the ALC programme to know their satisfaction of the competition & resources provided which is shown in Figure 78. Most teachers were happy with the above aspect. About 26% of the teachers have said average for the adequacy of the 3 training sessions in preparing their team for the ALC.

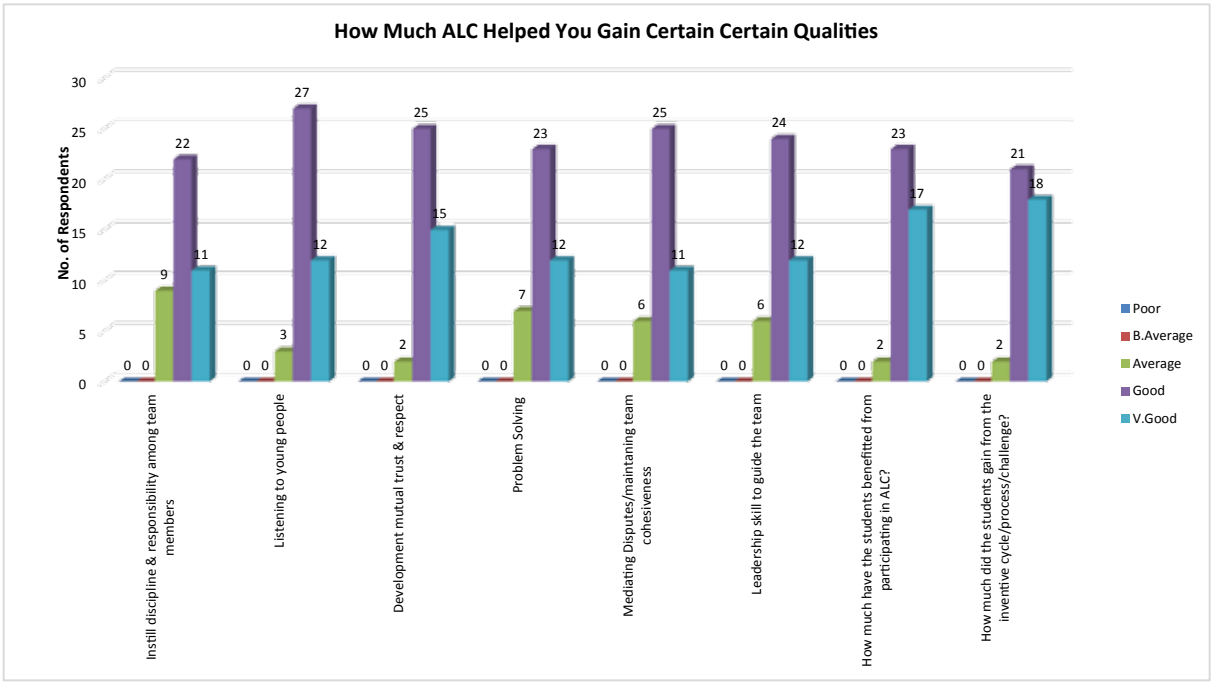


Figure 79: How much ALC helped you gain certain qualities

Teachers were asked how much ALC helped them instill discipline & responsibility among team members, listening to young people, development of mutual trust & respect, problem solving, mediating disputes/maintaining team cohesiveness, leadership skill to guide the team, how much have the students benefitted from participating in ALC and how much did the students gain from the inventive cycle/process/challenge. From Figure 79 we know that teachers were happy with the above mentioned aspects except for a few aspects where the teachers rated it as average. Those aspects were instilling discipline & responsibility among team members, problem solving, mediating disputes/maintaining team cohesiveness and leadership skill to guide the team.

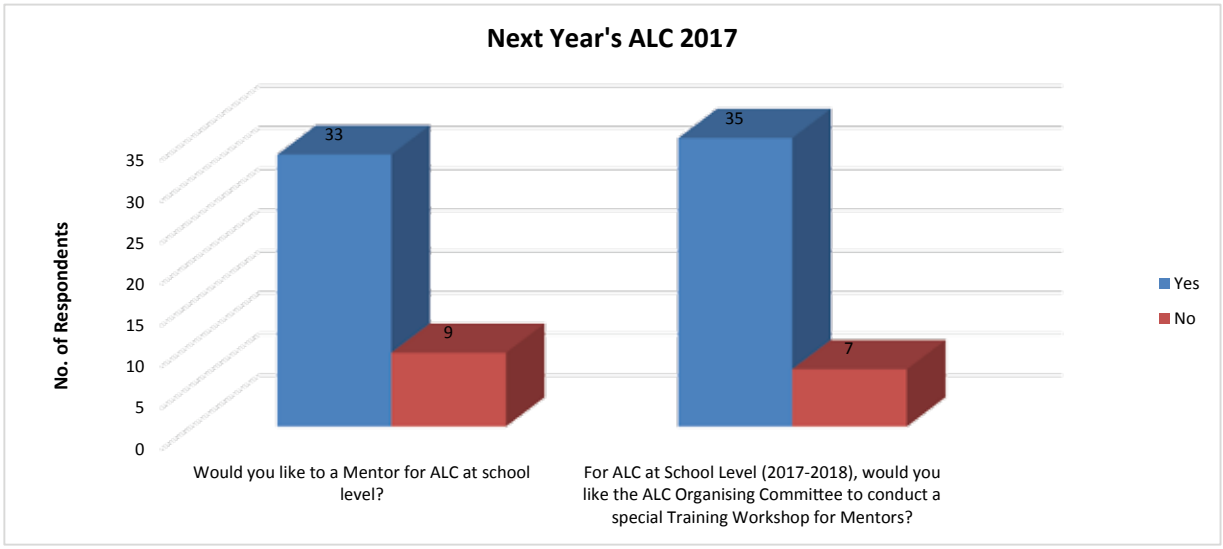


Figure 80: Next year's ALC 2017

Figure 80 shows teachers opinion about next year's ALC 2017. Teachers were asked if they would like to mentor for ALC at school level and for ALC school level (2017-2018), would they like the ALC organizing committee to conduct a special training workshop for mentors. About 79% of teachers would like to mentor for ALC at school level. Meanwhile 83% of teachers would like the ALC organizing committee to conduct a special training workshop for mentors for ALC school level (2017-2018).

Suggestion of Theme for ALC 2017 by Mentors

- Playable school
- Future technologies
- Energy Saver
- Low carbon society at my school
- Problem solving around living area by using " green invention"
- Toward Green Environment Around school
- Teaching aid for 21st education
- Greentech & environment

We asked the Mentors the following questions and their responses were as below:

12 How many hours did you spend with your team for ALC 2017?

- 30 hours
- 40 hours including the workshop with ALC
- 40 hours
- 10 days
- 2 weeks
- 1 week
- On average 5-6 hours
- 2 times per week. Almost every day after school holiday
- 24 hours
- 12 hours
- Few weeks
- 1 hour per week
- 3 days (9 hours)
- 2 weeks (about 20 hours)
- 10 hours
- 1/2 hour a day or less. Final days, more than 4 hours
- 20 hours
- 2 hours
- Three times a week

13 What impacts did you have with your students/mentees?

- Their problem solving technique improved
- Focus
- Focus on problem solving
- Trust & idea sharing
- Students give very good commitment
- Students were more open in presenting ideas
- Effective teachers & students cooperation
- Identify the capabilities
- Increase in knowledge
- Problem solving and critical thinking improved
- More matured
- Confidence
- They became more serious and focus on the project
- They are more creative thinking and more cooperative with their team
- Gain Design thinking
- Brainstorming to resolve arising problems
- Train students to speak to the public so that our students can speak and present the content of invention
- Connect with industrial people to solve their problem
- How to do and write an innovation project report
- Build mutual trust

14 What knowledge/skills do you think they have gained?

- Cooperative learning
- Problem solving, preparing reports improve, English. Some are able to work in stress
- Creative thinking, Critical thinking
- Independence
- Creative/problem solving skills
- How to use tools such as hammer, saw with correct ways
- Critical thinking/creative thinking, able to improve their innovation
- Thinking out of the box
- Be punctual and self-discipline
- English/public speaking skills/creative thinking skills
- Communication & thinking
- Science skills, mathematics, problem solving skills
- Communication skills
- Critical thinking & design thinking
- Critical/creative thinking, self-confidence
- Skills to create something new
- Team work
- Be confident and think out of the box
- Soft skill-communication

15 How significant was ALC's role in creating opportunity for young innovators/inventors?

- Improve thinking skills
- Impressive
- ALC gives chance to students to develop ideas
- As an opportunity for the students to gain experience as young innovators
- Good
- Encourages students to think out of the box
- How to solve the problems
- Very significant
- More young innovators can be produced
- Solve problems
- Very significant in helping them develop their thinking skills
- They can think and create something useful in future life
- ALC has given us the opportunity and a great experience for us and other top schools
- Quite significant
- Giving students an idea how to invent the device
- Open opportunity for students to tell their ideas
- Very significant. The students are really lucky
- Wide chance to come out with a new idea
- Students do the research
- They are able to create an idea by their own
- More responsible
- They build confidence in students to come up with the invention

16 Do you think ALC has cultivated the idea of using inventions to make a positive change in society/your school?

- Yes
- Yes, but difficult to find problem statement
- Limited
- Yes, at least to the students involved directly in this program
- Yes, the invention is very useful in school
- Yes, students & teachers as team members together seek & try to solve problems

17 What are your creative suggestions to improve the ALC?

- More Q&A session of product during training
- Show the students/expose them to the existing technology in industry
- Improve the module of the training before the challenge day
- Give some budget to the team
- Select students that are willing to think
- It should be done at the early school year
- More examples of innovations
- Give us more time to do preparation for ALC
- Give more time for trainings
- Guidance about inventions
- More training
- Make the training sessions more fun and interesting
- More focus on design training
- Support school in financial problem
- More hands-on session for students
- More bengkel "hands-on" activity
- Do more innovation challenge
- Fund
- Maybe the ALC should be open to lower form students
- Participation of family members
- Do more activities
- Make the winner of innovations go further
- More communicative activities that requires student to do in groups
- Hands-on training
- Give budget for innovation
- Give one theme, let us create something from the theme

18 Suggest ways to create awareness/participation from schools/students.

- Clear briefing about the final competition on how to gain more marks
- Send us bulletin about the school's achievement in invention/innovation competition
- Give more exposure to other students about creative thinking
- Social media, advertisement/broadcasting
- Make it compulsory to student but in team
- More exposure to cool inventions by doing trips/gallery
- Campaign at school level
- Put up banners in each school
- Early planning
- Involvement of school administration plus co curricular activities not just Science
- Public support
- Good prizes, proper guidance
- By doing more innovation competition in school
- Give more prizes
- Do tour to competition
- Make a road tour and give talk about ALC at schools
- Pamphlets, “ceramah”, “bengkel”, competition
- More training workshop for students
- More innovation camp
- ALC organizers can reach to school to promote
- Lectures, training, campaigns
- Conduct a workshop at school first

19 Any other support or assistance would enable you to be even more effective in ALC School Level?

- Bigger hall for training workshops
- Hands-on activity during training session
- Longer period
- Mentor training
- Coaching session
- Coaching session for teachers, create support group for mentors to discuss problems/ideas etc
- Not to limit to a certain form only. Let teachers decide
- Carry out 3 days trainings continuously at a venue
- Involve curricular activities not just Science and Math department, Involve all departments
- We need trainers
- Hold on exhibitions where students can see what others have invented prior to their own competition
- Individual assistance for each school to lead teachers & mentors
- It would be better if we have someone with great mechanical engineering knowledge
- Money support. Skills support to do campaign in school
- More exposure on training of invention
- Other teachers in school
- ALC should be held early not on second half of school calendar
- Facilitators, trainers
- PPD/JPN level

20 What were the biggest challenges you faced as a Mentor?

- Too much ideas but less effort and time.
- Time constrain. Less commitment from students since they are busy with other school activities
- Not enough budget from school, students did not focus at first, but when teachers sat down with the team, they start doing the project
- Responses from students. Their responsibility towards their work
- Students attitudes & responsibility
- Lack of experience
- Lack of time (10 days school holidays of Eid)
- Time to discuss and guide them is limited because of different school session.
- Students are busy with activities after school hours
- Lack of communication
- The time constraint to gather all members to finish the project and we need to think of ways to solve problems that we faced
- To trained students to do researches & find suitable ideas. After that the mentor have to help, create & study together with mentee beside the duties as a teacher in school
- To actually choose one idea out of others that they have thought of and try to make it work/try to convince the students that they can do it
- Money to invent the object/project
- To train student to speak confidently for presentation
- Need to remind them to be creative & increase confident level
- Cooperation from students to make the project successful
- To explore students' idea/make them think something new
- How to make them to be confident with their inventions
- Time management-have to leave school for the training on weekday

21 How can ASTI assist in overcoming these challenges?

- Provide more guidance
- Competition guidance
- Getting me to be more involved, mentor –training
- Let teacher decide which student can involve , not from Form 4 only
- Carry out trainings during school hours
- Give more time
- Train the students(leaders)
- Help us to gain knowledge to trained them in a good way
- A coach
- Do more workshop on confident level
- More workshop
- Open up the students mind about innovation to make them more interested in innovation
- Complete the training in 3 days sessions in a specific location-maybe hotel/resort
- Come to the schools to brief the teachers about the importance of inventions/innovation to young people
- Lead students to come out with their own idea instead of teacher

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