

ALC SMK SRI PANTAI REPORT 2017



CRITICAL
THINKING

CREATIVE
THINKING

DESIGN &
INNOVATIVE
THINKING



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The preparation for ALC SMK Sri Pantai was started as a pre-pilot programme before it is implemented as a pilot for more schools. The purpose of this programme was to test some basic assumptions. The target for this programme was Form 3 students who had just completed their PT3 examinations. These students had no classes and were waiting for their holidays. The event was open to all PT3 students who were interested.

A total of 114 students participated in the 1st Training on 25th October 2017. The second training was held on the next day with 84 students attending the training. The third and final training was held the following week on 31st October 2017 and a total of 52 students attended the training. The first training was centred on Creative thinking (i.e. coming up with many ideas for a solution). The second training was centred on Critical Thinking (i.e. choosing the best idea from many choices). The third training was on Design Thinking (i.e. looking at the big picture – how the chosen idea would fit in the larger context).

The final competition was held on 17th November 2017 after giving the interested students sufficient time to come up with an invention whilst the modules thought to them was still fresh in their minds. Four teams came with their inventions for the competition. The inventions by the students were impressive. All the trainings and the final competition was held at the school.

Pilot ASTI Leap Challenge school level held at SMK Sri Pantai was completed with success. A lot of lessons were learnt which can be used when ASTI Leap Challenge school level is implemented at more schools as a pilot so that more students can benefit from this programme.

SMK Sri Pantai is located in an urban poor area where most students are from PPR flats nearby. They have many problems, both personal and academic. It is believed that the hands-on approach to learning would benefit the students more.

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 successfully completed 3 trainings and a competition both in the northern region and 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:

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

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.

1.2 TARGET GROUP

We chose students from SMK Sri Pantai from a predominantly urban poor area. The target were Form 3 students who have completed PT3 examination. Each team is made up of 6 to 11 Form 3 Students.

1.3 PROJECT ACTIVITIES

- Training Module development
- Training Arrangements
- Training of Trainers
- Training 1 – Creative Thinking
- Training 2 – Critical Thinking
- Training 3 – Design & Innovation Thinking
- Training of judges
- Competition
- Evaluation and Monitoring
- Reporting

2.0_MODE OF IMPLEMENTATION

2.1 TRAINING MODULE DEVELOPMENT

The brainstorming session was held at ASTI Office with the trainers. This was to discuss the module and how the training will be conducted.

Training Arrangements - Arrangement was made for the training at the school. Upon completion of module development, the materials needed for the trainings were bought.

2.2 TRAINING OF TRAINERS (TOT)

TOT was held at ASTI Office together with the brainstorming session. The trainers for ALC are professionals comprising of consultants, lectures, etc.

2.3 TRAINING 1

The 1st training was held on 25th October 2017. Total number of students that attended the first training was 114. Module used for the 1st Training was centred on “Creative Thinking”. In total, 16 Teams registered for the training.

2.4 TRAINING 2

The second training was conducted on 26th October 2017. A total of 84 students participated in the second training. The second training was centred on “Critical Thinking”.

2.5 TRAINING 3

The last and final training was conducted on 31st October 2017. Fifty two students participated in this training. The third training was on “Innovative & Design Thinking”.

2.6 PROPOSAL/REPORT WRITING

Upon completion of all the 3 trainings, a guideline was given to the participants to help them with proposal writing and report writing. It is not compulsory for the participants to submit their proposal. No marks were given for the proposal. Upon receiving the proposal, the trainers gave their feedback to the participants to further improve their invention in the one-to-one coaching session held on 3rd November 2017. The date line for report submission was 10th November 2017 (Friday). It was compulsory for the participants to submit their report. The students 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/Community be more Efficient’.

ASTI Leap Challenge SMK Sri Pantai 2017 Participants

No.	Team Name	Invention Title	Students Name
01	Nebula	Bumbung Penebat Haba	1) Muhammad Syahid Akmal Bin Azman 2) Harith Farhan Salikin Bin Abdullah 3) Muhammad Nur Rahman Bin Nordin 4) Raja Omar Ariff Bin Raja Ahmad Nizzam
02	The Fifth	Aircond Machine	1) Nur Diyana Bt Jeffri 2) Nor Khadijah Bt Kasim 3) Siti Maisarah Bt Zaidi 4) Nur Shar'Fiera Bt Rahim 5) Nurul Hafidzah Bt Abd Razak
03	Falah	Pembersih Sesuatu	1) Nur Syamilah Alia Binti Ahmad 2) Nur Fatin Azlin Binti Mohd Zamri
04	Homo Sapiens	NAM's Dishwasher	1) Nurin Khairunnisak Binti Mohd Zaki 2) Asmaleana Binti Abdul Rahman 3) Mimi Wahidah Binti Ali Huzain 4) Nurul Syamimi Binti Ahmad Tarmizi

3.1 EVENT DAY SUMMARY

The final competition was held on 17th November 2017 at the school. Altogether 4 teams came prepared for the final event with their inventions. The theme for the final competition was 'Invention/Process to help your School/Community be more Efficient'. The event started at around 8.00 a.m. with the students gathering at the school assembly hall. A total of 4 teams came prepared for the competition. After that, the participants were allowed to setup their models and poster. Once the models and posters were set up, the judging process began. Four judges were present to judge the inventions. The judges were the teachers from SMK Sri Pantai. While the judging and cross judging process was on going, the reports submitted by the participants were marked. After the judging process was complete, the public viewing session was opened for other students to view the inventions and the students were released for a break. The prize giving ceremony was next after the break. The participants of the final competition were called on stage to be given medals & certificates. The judges were also called on stage to be given certificates as a token of appreciation. The winners of ASTI Leap Challenge SMK Sri Pantai 2017 were announced and the event was officially closed.

Winning Teams of ASTI Leap Challenge SMK Sri Pantai 2017

Champion – Homo Sapiens

Invention Title – NAM's Dishwasher

- Received Trophy, Cash Prize of RM300.00 and Certificate

1st Runner Up – Falah

Invention Title: Pembersih Sesuatu

- Received Trophy, Cash Prize of RM200.00 and Certificate

2nd Runner Up – The Fifth

Invention Title: Aircond Machine

- Received Trophy, Cash Prize of RM100.00 and Certificate

4.0 JUDGING

On 16th November 2017, a training was conducted by Ms. Noorul Huda and Mr. Sakthivel for the judges in the school library. The judges were selected among the school teachers from Science and Mathematics background by the teacher in-charge. Six teachers had attended the training which was conducted in the school library. The judges were given brief explanation about the ALC, purpose of competition, and judging rubric. The training went on for half an hour. On the day of the competition, only 4 teachers were available for the judging process. The judges were divided into two groups, for the purpose of cross judging. Each competing group were assessed two times by different group of judges, after which the marks were given to the ALC-CCT team to finalise the overall marks comprising of report and competition marks. The judges and the teacher in-charge were very motivated to take part in more science and innovation related competition in the future.

5.0 VOLUNTEERS MANAGEMENT

We had 2 volunteers to help us on the event day to make sure that the event takes place smoothly. There were also 3 ASTI staff present on the day to make the event a success.

6.0 ASSESSMENT EVALUATION

A survey was conducted for the students for all the 3 trainings and also in the final competition.

6.1 1st Training

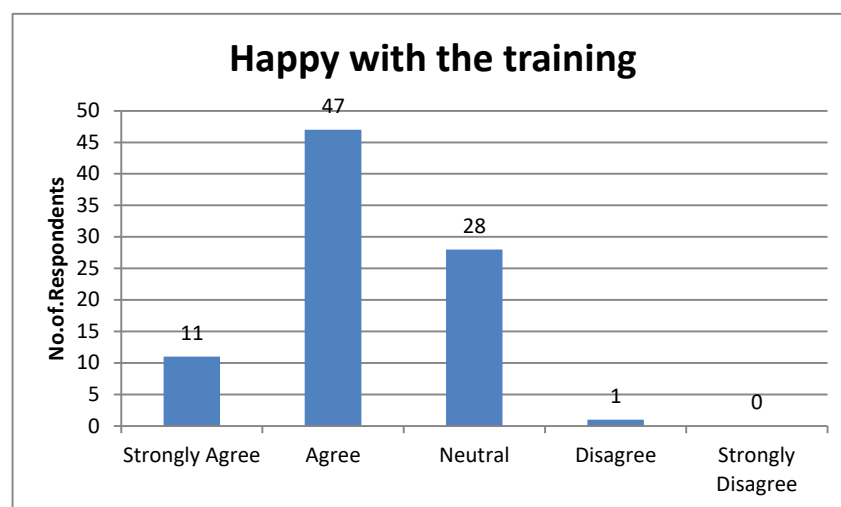


Figure 1: Happy with the Training

According to the above graph (Figure 1), most of the students were happy with the 1st training. Eleven and forty seven students stated strongly agree and agree. Only 1 student stated disagree.

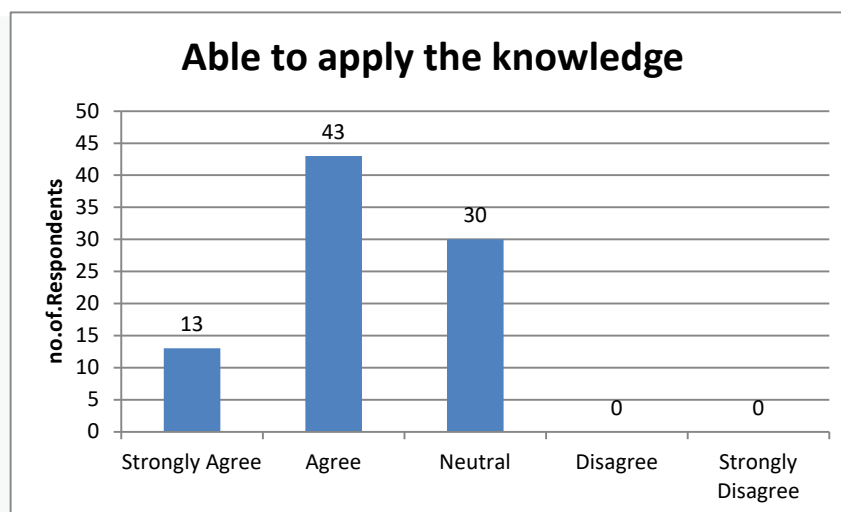


Figure 2: Able to apply knowledge

Figure 2 shows the ability to apply the knowledge that they learned in 1st training. Forty three students stated agree to the statement. No one disagreed or strongly disagreed the statement.

6.0_ASSESSMENT EVALUATION

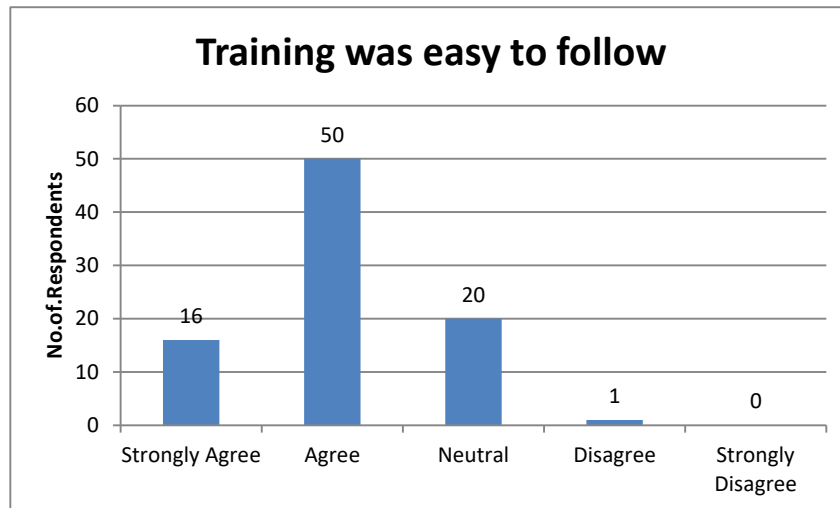


Figure 3: Training was easy to follow

The above graph (Figure 3) shows the responses given for the question “The training was easy to follow”. According to the survey 50 students stated agree. Only 20 students stated neutral.

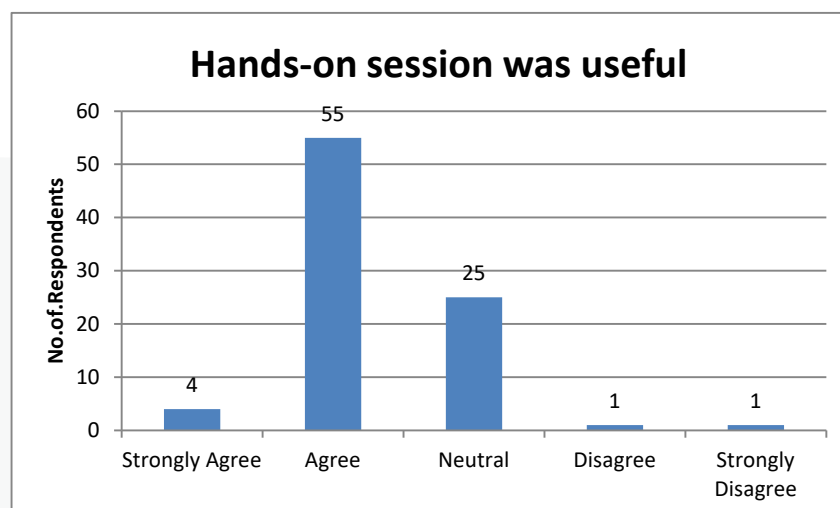


Figure 4: Hands-on session was useful

Above graph (Figure 4) shows the survey about hands-on session was useful for the understanding in the training. Four students strongly agreed and said the hands-on session was useful for their understanding. However, there was 1 student who disagreed and strongly disagreed respectively for the question.

6.0_ASSESSMENT EVALUATION

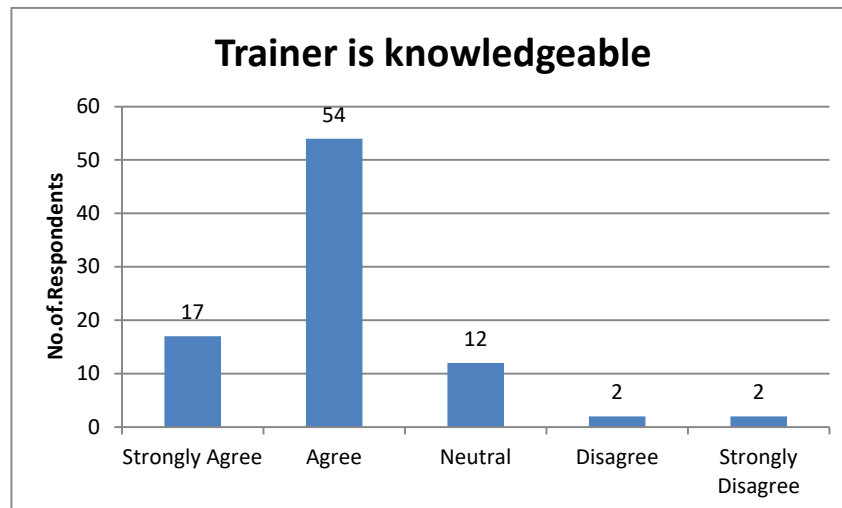


Figure 5: Trainer was knowledge

According to Figure 5, 17 and 54 students stated strongly agree and agree respectively that the trainer was knowledgeable. Only 2 students strongly disagreed the statement.

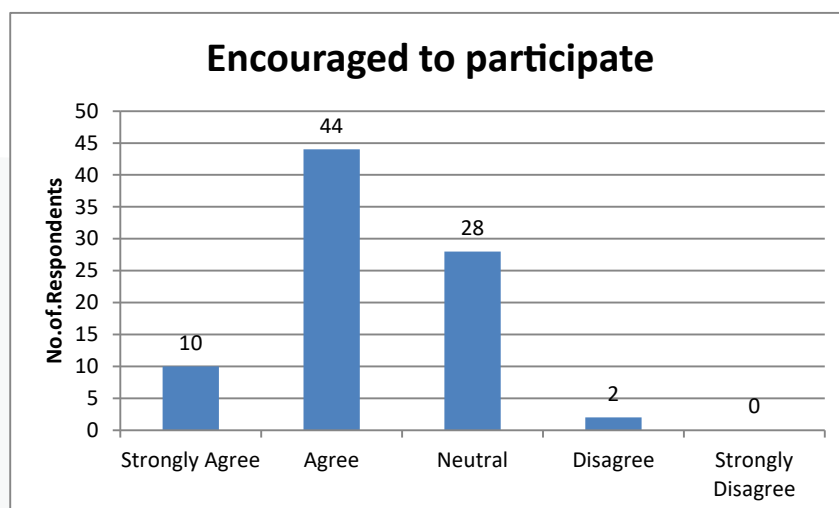


Figure 6: Encouraged to participate

Above graph (Figure 6) shows the number of students who were encouraged to participate. Forty four students agreed. Majority of the students were encouraged to participate in the 1st training.

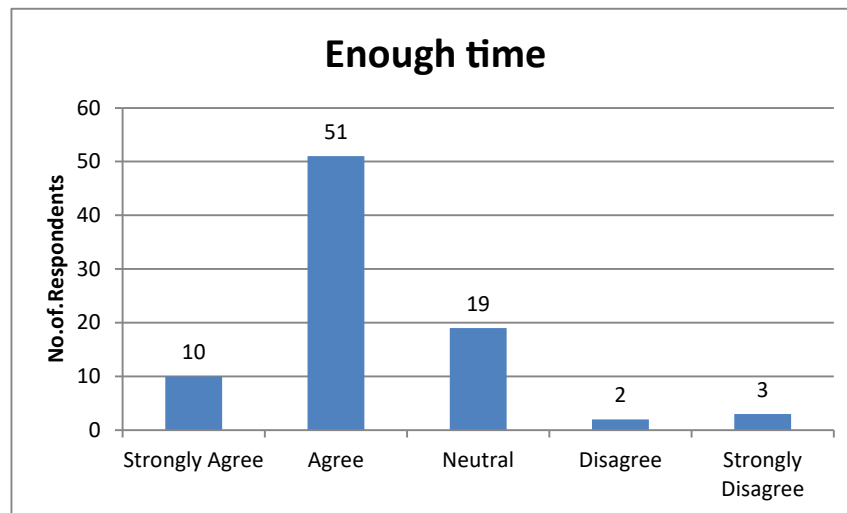


Figure 7: Enough Time

Figure 7 shows the timing that was given to the students. Majority of the students agreed that they had enough time to prepare. However, 3 students stated strongly disagree for the question.

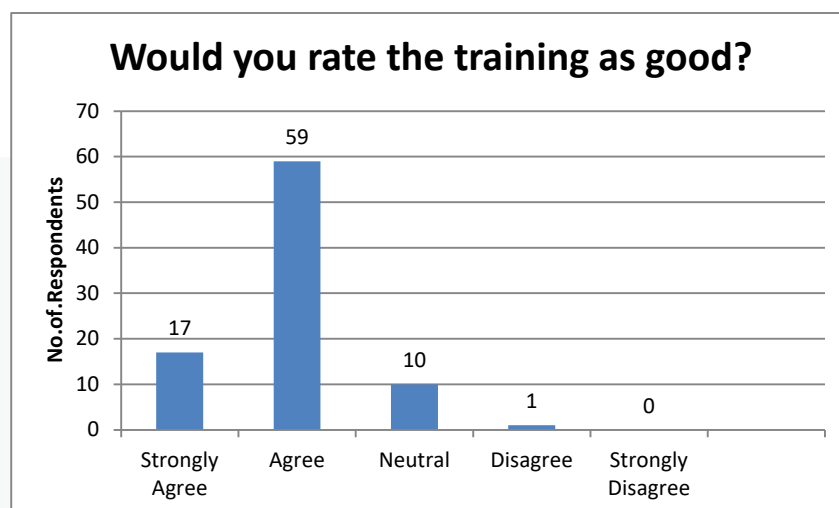


Figure 8: Would you rate the training as good

Figure 8 shows how many students rate the training as good. Only one student was not satisfied with the training. But, majority of the students stated the training was good. Ten students rated neutral for the question.

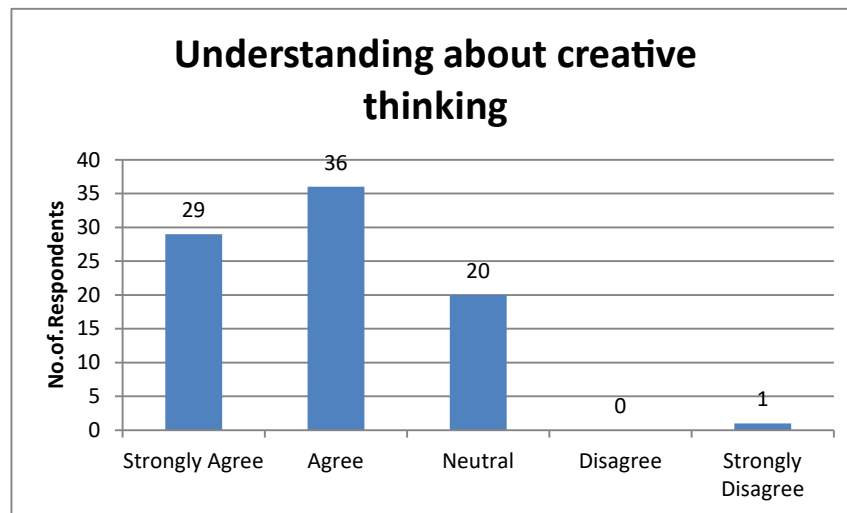


Figure 9: Understanding about creative thinking

From Figure 9, it is known how many students understood about creative thinking. Twenty nine students strongly agree that they understand well about creative thinking.

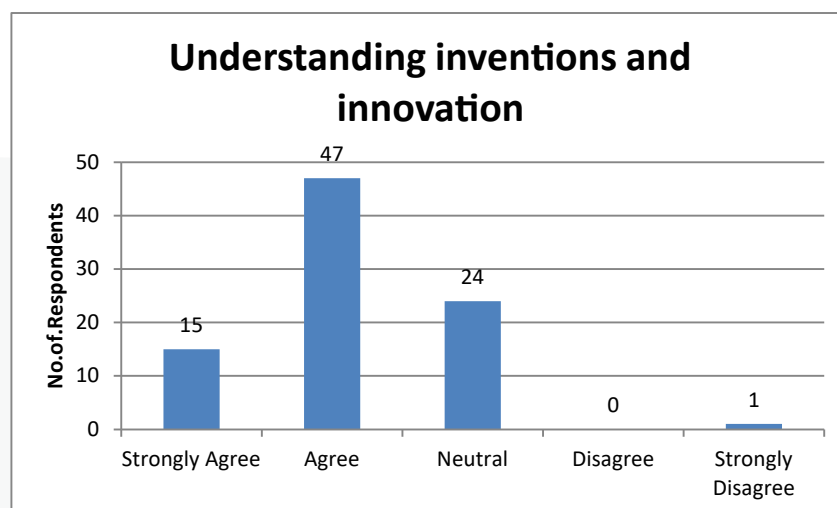


Figure 10: Understanding inventions and innovation

Forty seven students agree that they understand well about inventions and innovation. However, 1 student strongly disagreed. This is explain in Figure 10.

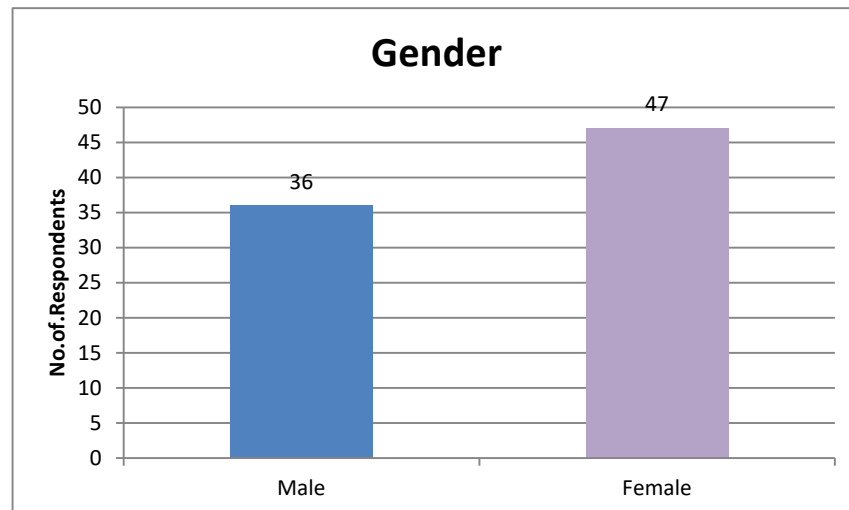


Figure 11: Gender

According to Figure 11, 36 male students and 47 female students took part in the survey for first training at SMK Sri Pantai. Eighty three SMK Sri Pantai students took part in the survey for 1st training.

6.0 ASSESSMENT EVALUATION

A survey was conducted for the students for all the 3 trainings and also in the final competition.

6.2 2nd Training

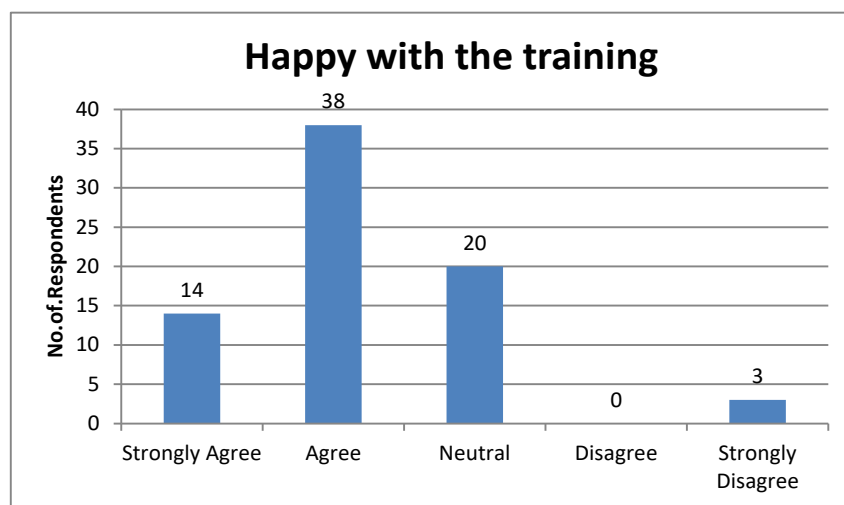


Figure 12: Happy with the training

From Figure 12 we know that majority of the students were happy with the 2nd training which was held at SMK Sri Pantai. However, 3 students strongly disagreed for the question.

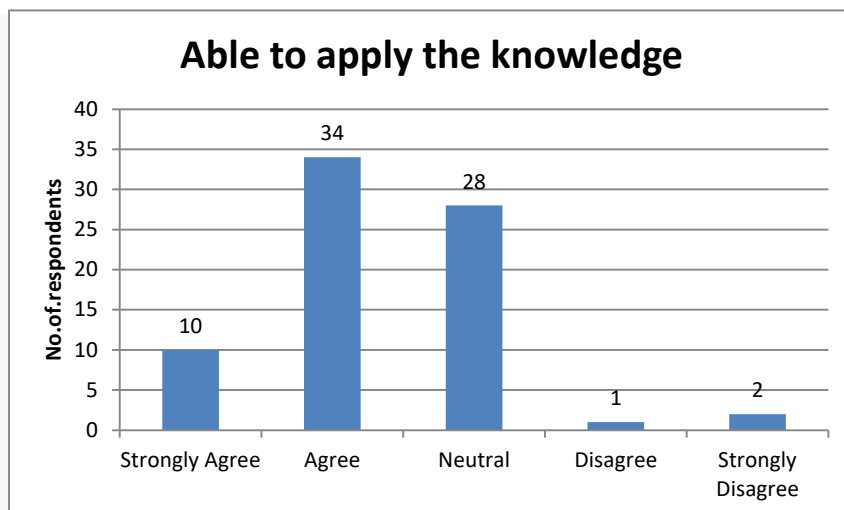


Figure 13: Able to apply the knowledge

Figure 13 shows the ability to apply the knowledge learned from 2nd training. Thirty four students agreed and stated that they are able to apply the knowledge they gained from the training. However, 2 students stated strongly disagree for the question.

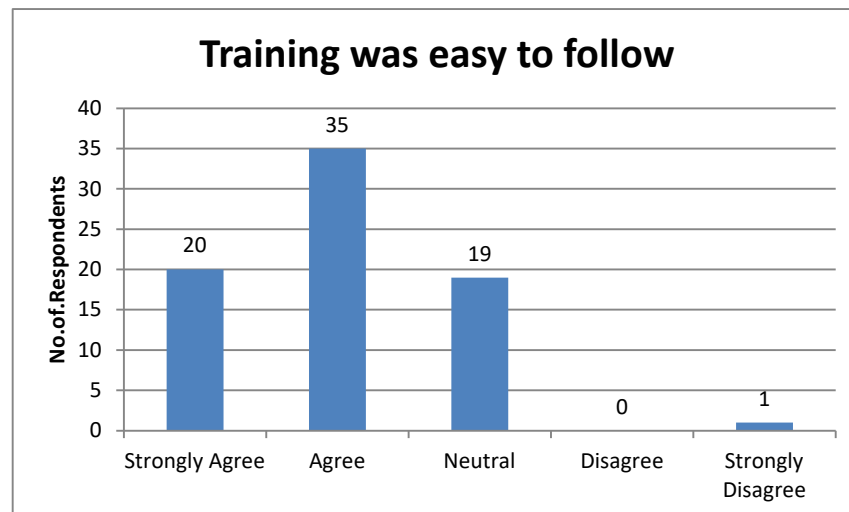


Figure 14: Training was easy to follow

According to Figure 14, 35 students stated that the training was easy to follow. However, 1 student strongly disagreed. Nineteen students stated neutral for the question.

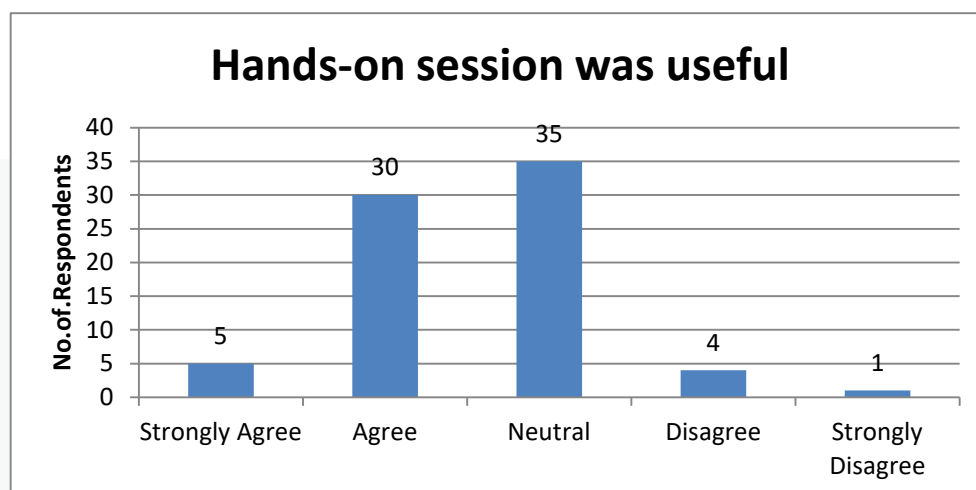


Figure 15: Hands-on session was useful

Figure 15 shows if the hands-on session was useful. Thirty five students rated neutral. But, 1 student strongly disagreed. Majority of the students strongly agreed and agreed to the question.

6.0_ASSESSMENT EVALUATION

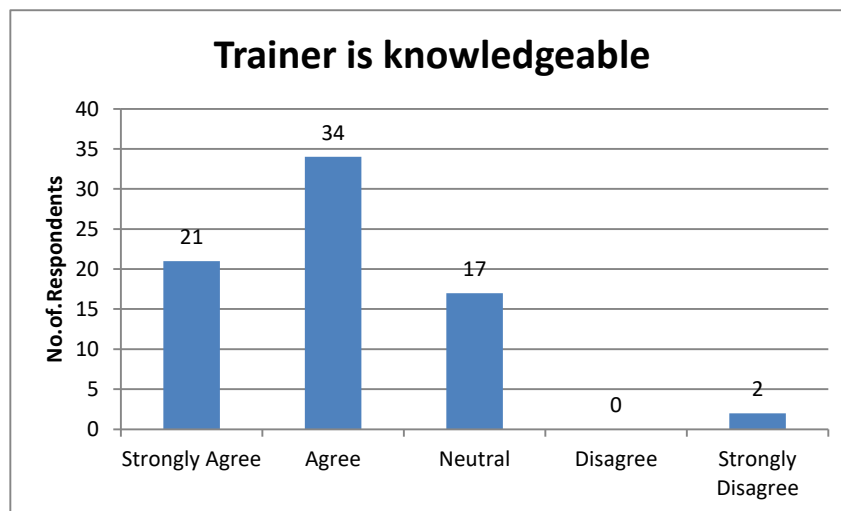


Figure 16: Trainer is knowledgeable

Figure 16 shows the students ratings of the trainers for 2nd training. Most of the students rated the trainer to be knowledgeable. Only 2 students stated strongly disagree for the statement.

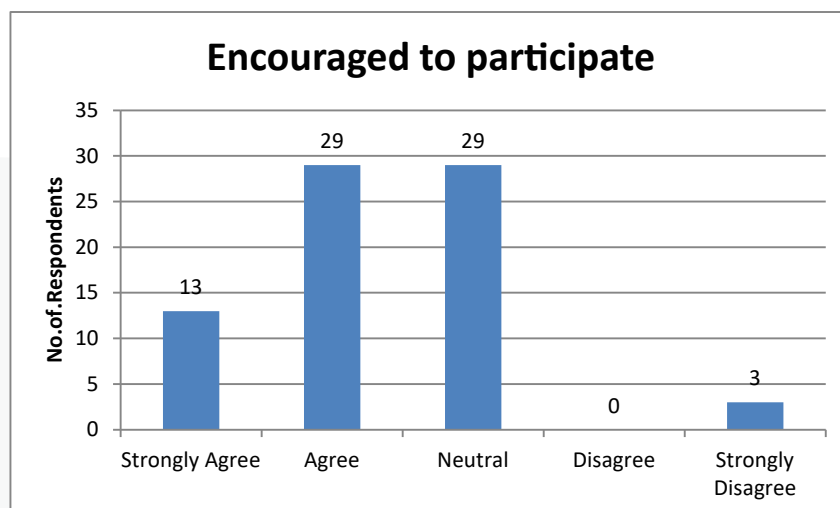


Figure 17: Encourage to participate

Above graph (Figure 17) shows the number of students who were encouraged to participate in the 2nd training. Twenty nine stated agree and neutral respectively for the question. However, 1 student strongly disagreed the statement.

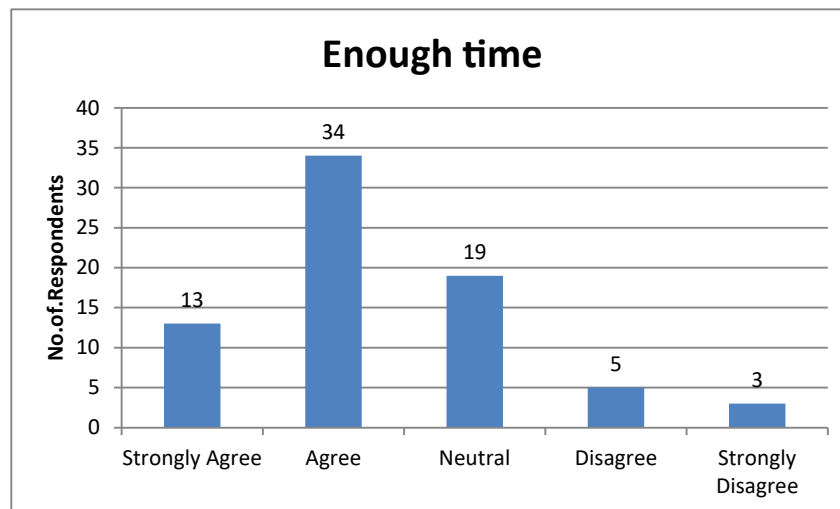


Figure 18: Enough time

Figure 18 shows about the timing for the 2nd training. Thirty four students agreed and said that they had enough time in 2nd training. However, 3 students stated strongly disagree.

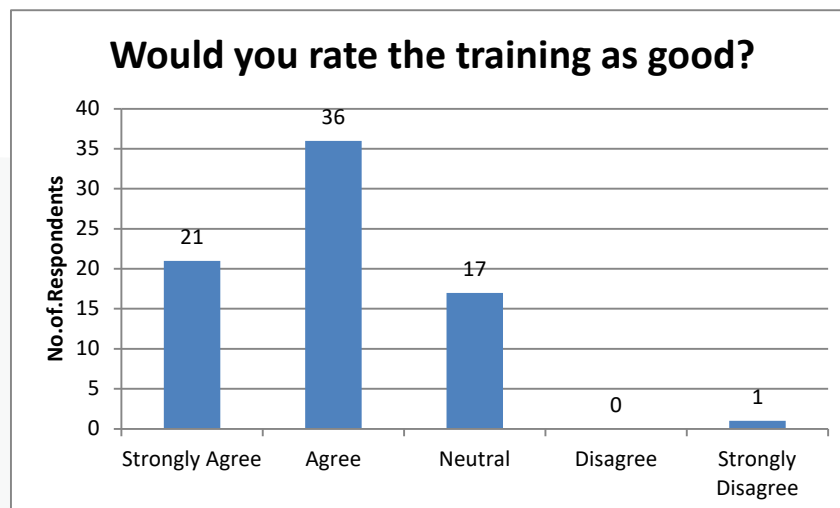


Figure 19: Would you rate the training as good

SMK Sri Pantai students also rated if the 2nd training was good. According to Figure 19, 36 students stated agree. However, 1 student strongly disagreed. Twenty one students strongly agreed and said the training was good.

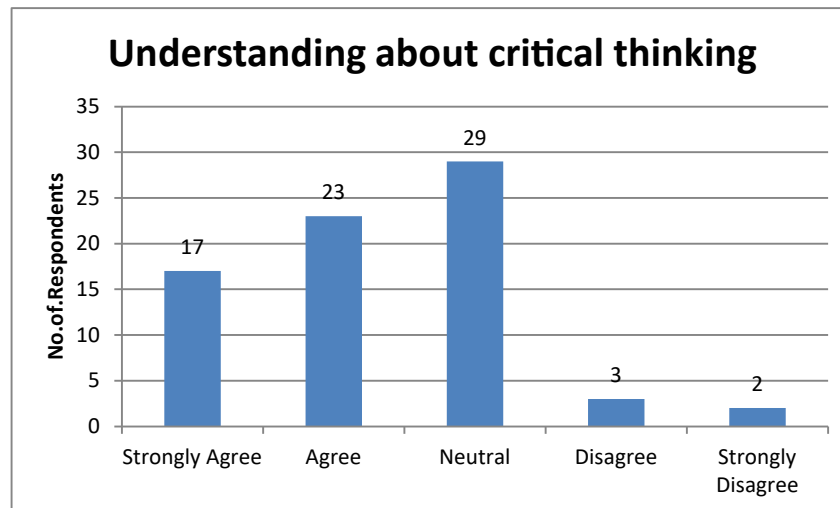


Figure 20: Understanding about critical thinking

Figure 20 shows the number of students who understand well about critical thinking. Majority of the students understood well about critical thinking. But, 2 students stated strongly disagree.

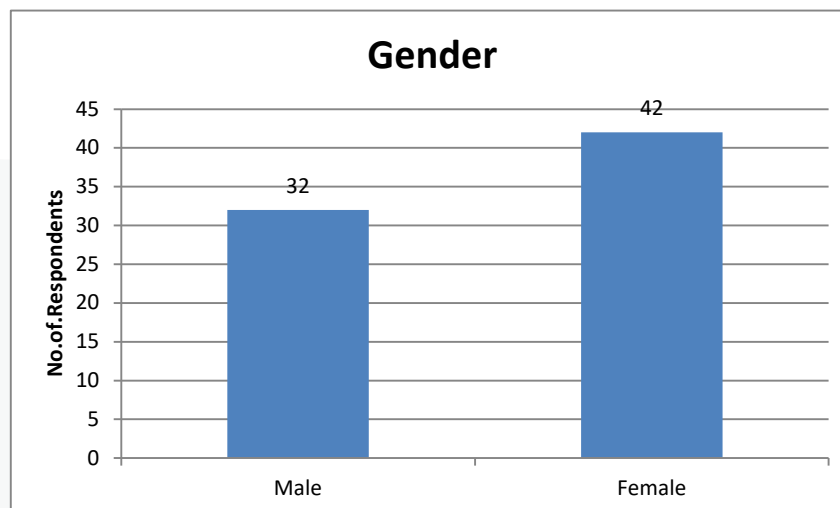


Figure 21: Gender

Seventy four SMK Sri Pantai students took part in the survey for 2nd training. From the survey and Figure 21, 32 male and 42 female students took part in the training.

6.0 ASSESSMENT EVALUATION

A survey was conducted for the students for all the 3 trainings and also in the final competition.

6.3 3rd Training



Figure 22: Happy with the training

According to Figure 22, 23 students stated strongly agree. They were very happy with the training. However, 2 students strongly disagreed the question.

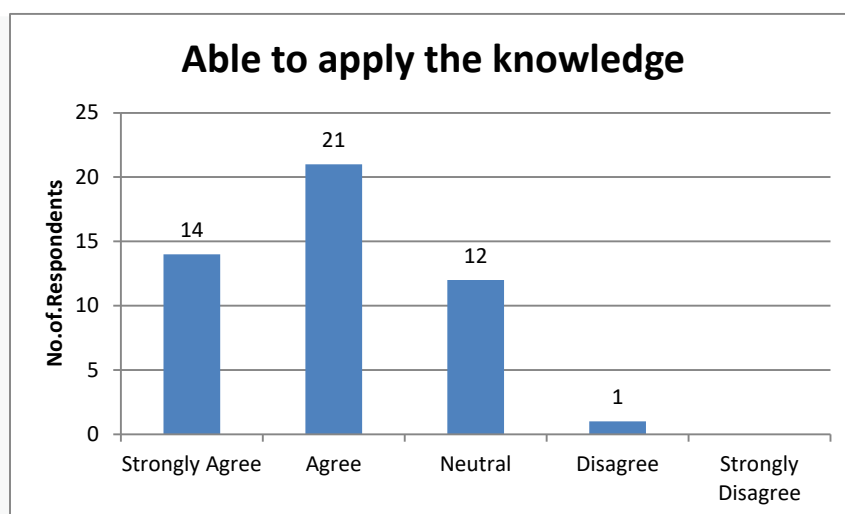


Figure 23: Able to apply the knowledge

Figure 23 shows the ability of the students to apply the knowledge they gained from 3rd Training. Majority of the students strongly agreed and agreed for the question. Only 1 student rated disagree. Most of the students were able to apply the knowledge that they learned from 3rd Training.

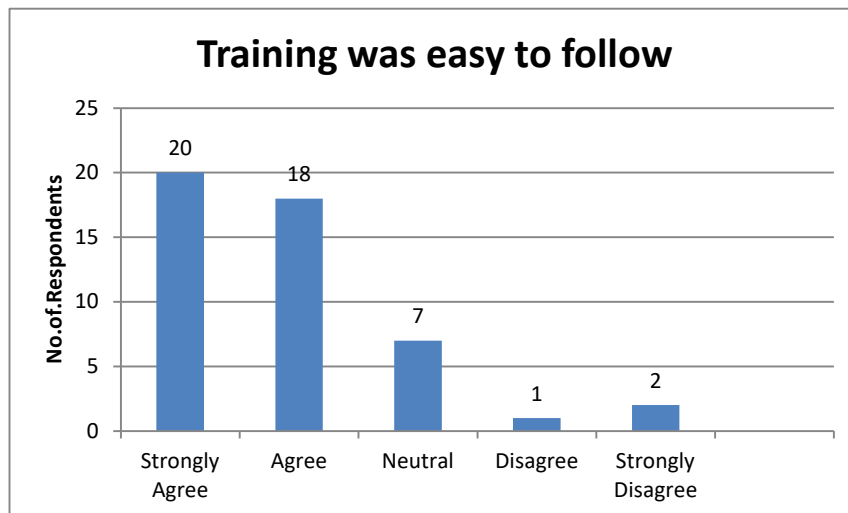


Figure 24: Training was easy to follow

Majority of the students said the training was easy to follow according to Figure 24. But, 2 students strongly disagreed.

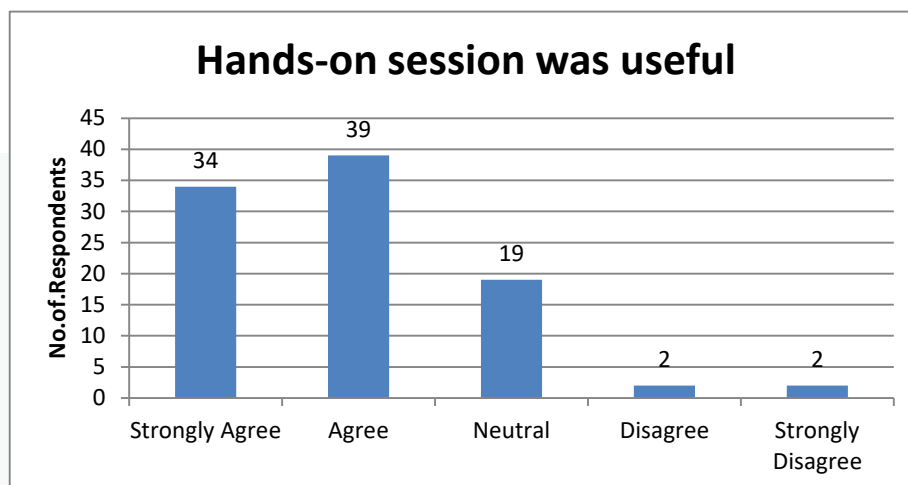


Figure 25: Hands-on session was useful

According to the above graph, 34 and 39 students rated strongly agree and agree respectively for usefulness of hands-on session. Most of the students said that the hands-on session was useful for them which is shown in Figure 25.

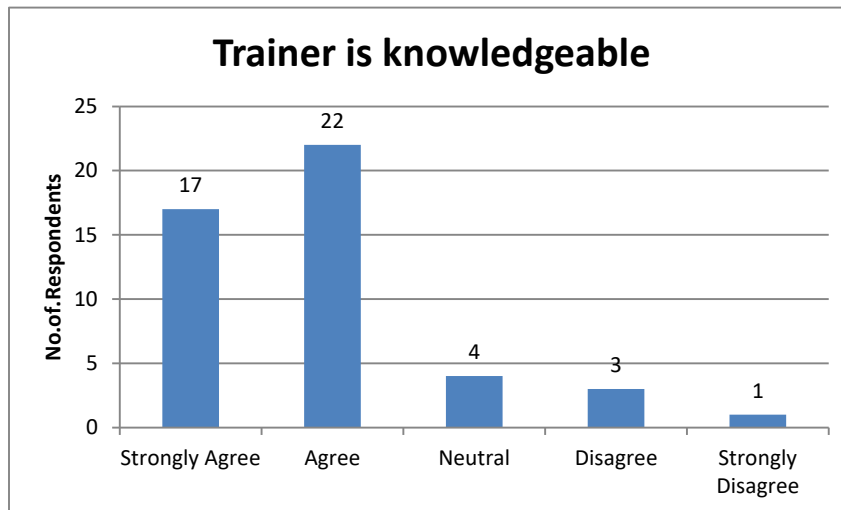


Figure 26: Trainer is knowledgeable

Students rating about the trainer is shown in Figure 26. Most of the students were satisfied with the trainer. They strongly agreed and agreed respectively that the trainer was knowledgeable. However, 1 student stated strongly disagree for the question.

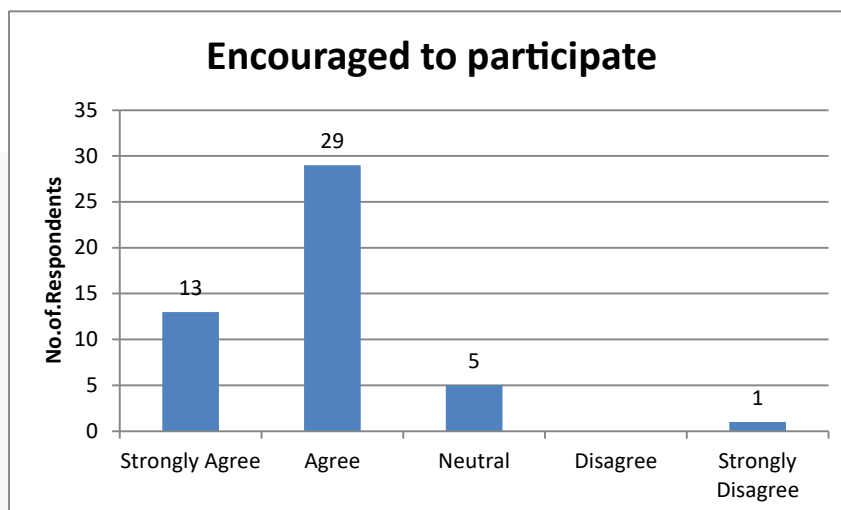


Figure 27: Encouraged to participate

The above graph (Figure 27) shows the number of students who were encouraged to participate in the training. Majority of the students were encouraged to participate in the 3rd training which was held at SMK Sri Pantai. But, 1 student rated strongly disagree.

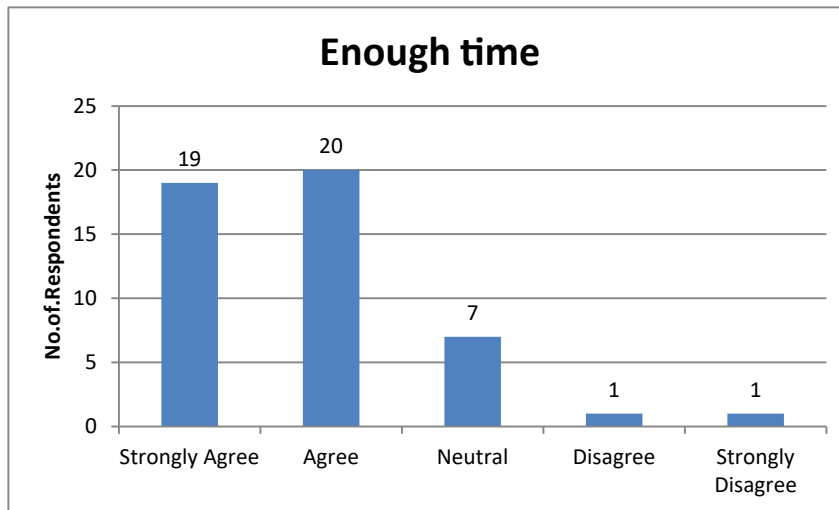


Figure 28: Enough time

From Figure 28, majority of the students rated that they had enough time for the 3rd training. However, only 1 student rated disagree and strongly disagree respectively for the question.

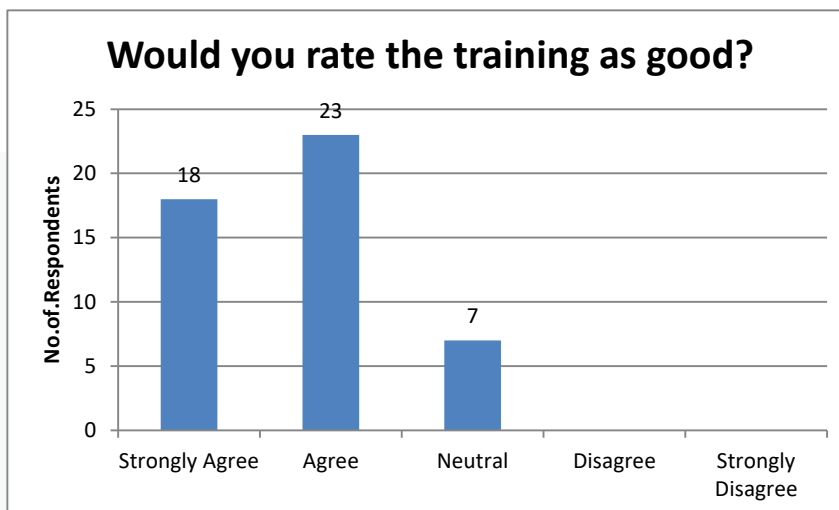


Figure 29: Would you rate the training as good

All the students were satisfied with the 3rd training according to Figure 29. No one stated disagree and strongly disagree for the statement. Only 7 students stated neutral. Majority of SMK Sri Pantai school students who participated in ASTI Leap Challenge rated the training as good.

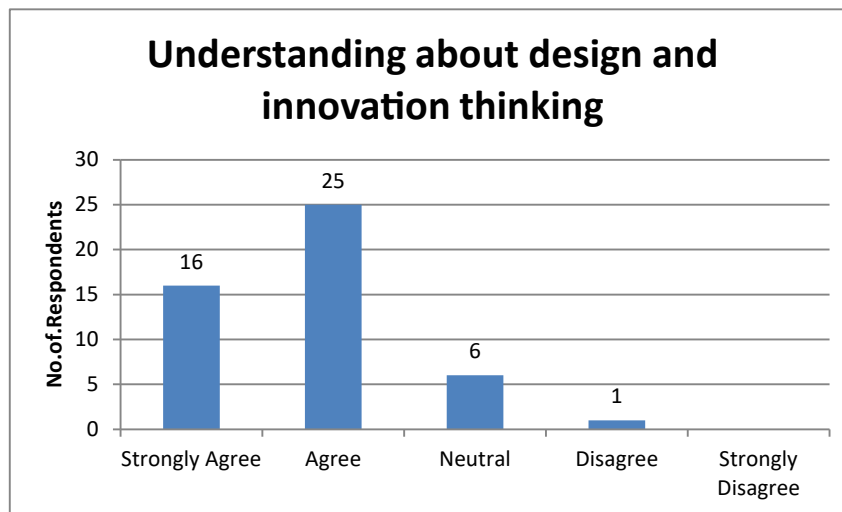


Figure 30: Understanding about design and innovation thinking

Above graph (Figure 30) shows the number of students who understand about design and innovation thinking. Most of the students understood design and innovation thinking through the 3rd training.

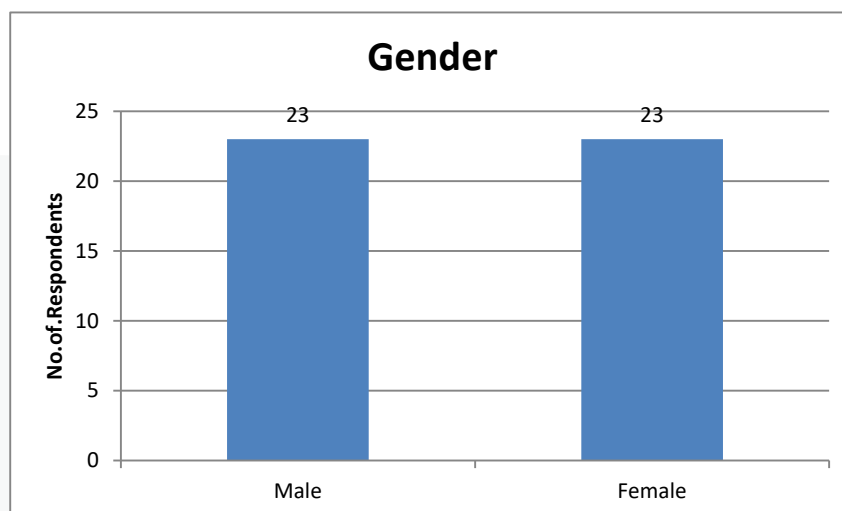


Figure 31: Gender

According to Figure 31, the total number of students who took part in the survey for 3rd training is 46. Twenty three male and 23 female students took part in the training.

6.0 ASSESSMENT EVALUATION

6.4 Final

Four teams came with their inventions for the final event. A total of 14 students participated in the survey held at the final event at the school.

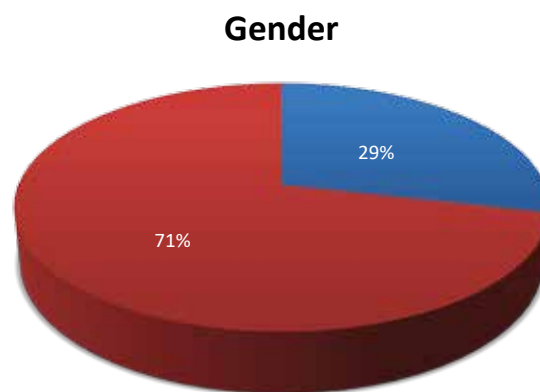


Figure 32: Gender

Figure 32 explains the gender of the participants at the final event. From the total participants of 14 students, 71% of the participants were female students. Meanwhile only 29% of the participants were male students.

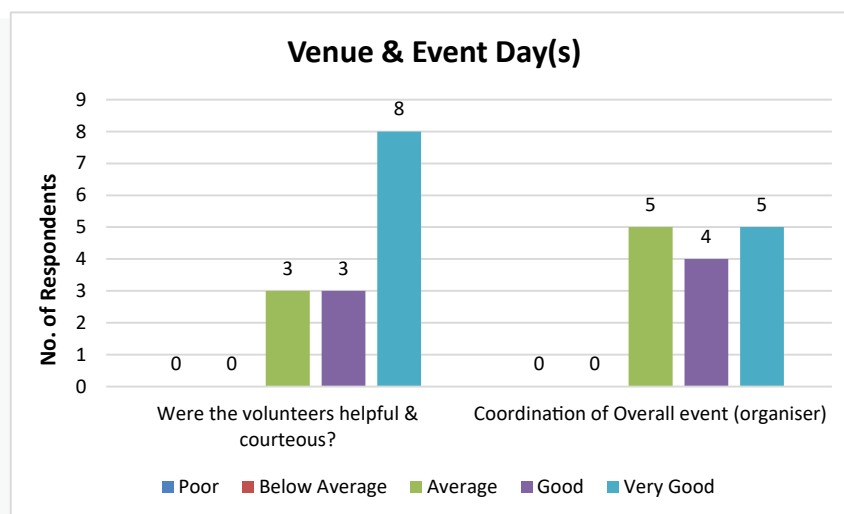


Figure 33: Venue & Events(s)

Figure 33 explains about the venue and the event day. The students were asked how helpful & courteous were the volunteers and the coordination of the overall event day. Most students rated average and above. None of the students rated poor and below average for the venue and event day.

6.0_ASSESSMENT EVALUATION

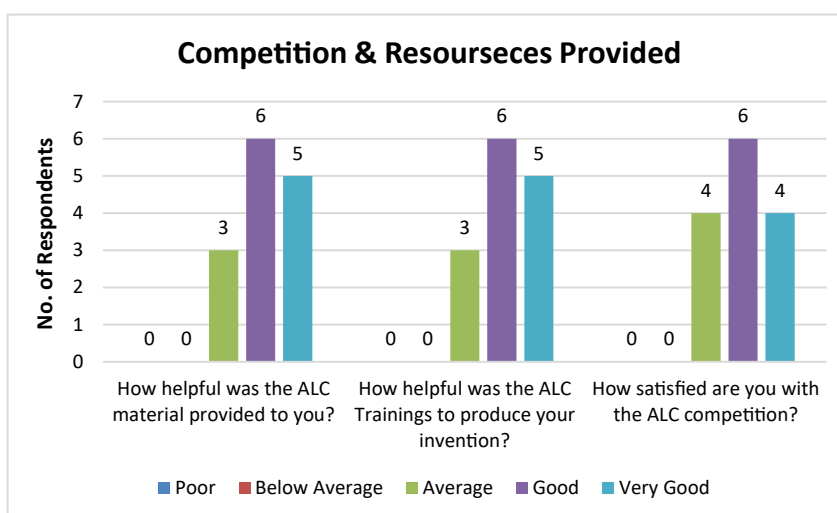


Figure 34: Competition & Resources Provided

Figure 34 explains about the competition and resources provided. To know the feedback of the students on the competition and resources provided, the students 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 the students with the ALC competition. None of the students rated poor and below average for those aspects.

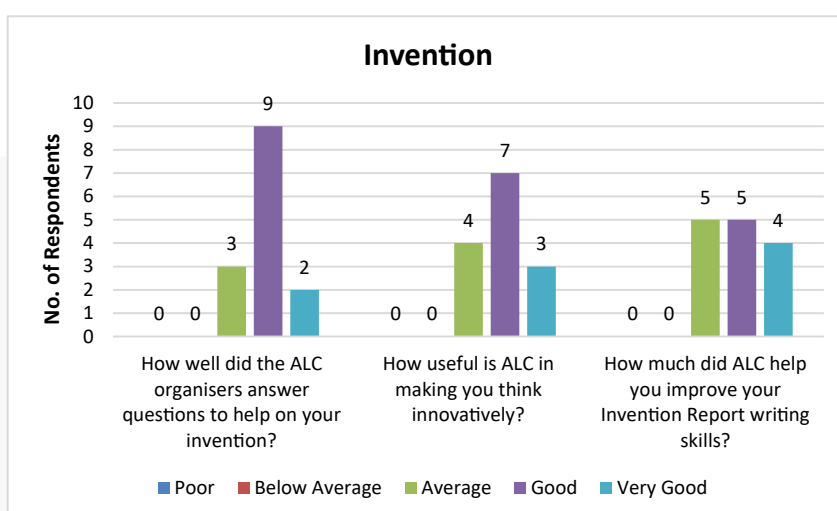


Figure 35: Invention

The feedback of the students on invention is shown in Figure 35. The students were questioned how well did ALC organisers answer 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. All the students rated either average, good and very good.

6.0_ASSESSMENT EVALUATION

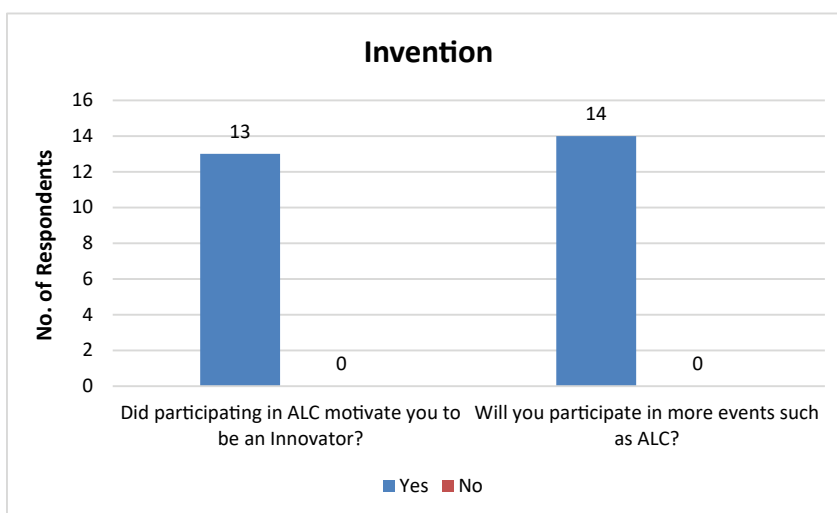


Figure 36: Invention

Figure 36 is also on invention. The students were asked if participating in ALC motivated them to be an innovator and if they will participate in more events such as ALC. All the students who answered the survey form said yes for both the questions above on invention.

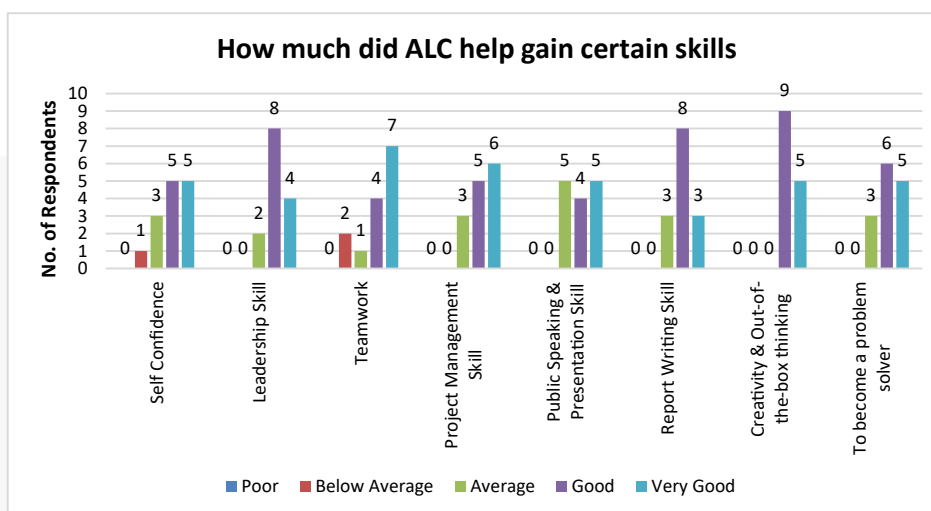


Figure 37: How much did ALC help gain certain skills

Students were also asked how much did ALC help them gain certain skills which is shown in Figure 37. The skills that we wanted the students to gain through ALC are self confidence, leadership skill, teamwork, project management skill, public speaking & presentation skill, report writing skill, creativity & out-of-the-box thinking and to become a problem solver. Most students rated average and above except for 1 student who rated below average for self confidence and 2 students who rated also below average for teamwork. Modules on project management and presentation skills should be further improved.

6.0_ASSESSMENT EVALUATION



Figure 38: Next year's ALC (2017 – 2018)

Feedback for next year's ALC is shown in Figure 38. The students were questioned 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 organised at school level next year. All the students said yes for all the above questions.

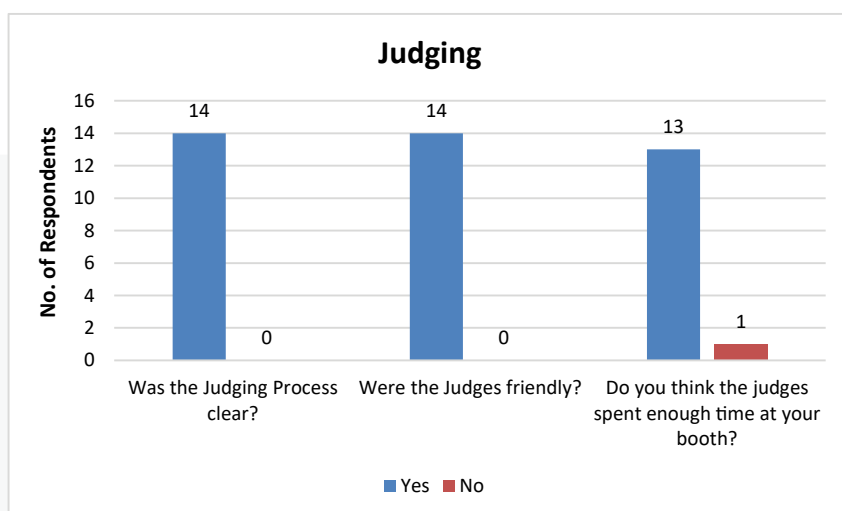


Figure 39: Judging

The feedback on the judging process is shown in Figure 39. To know the students opinion on the judging process, the students were asked if the judging process was clear, if the judges were friendly and if they think the judges spent enough time at their booth. All the students said yes for these questions except for only 1 student who said no and disagreed that the judges spent enough time at their booth.

7.0 SWOT ANALYSIS

Strength:

- Module content was good but there is room for improvement
- School is best place for this event
- Participants were responsive and some group came up with simple but new inventions
- Teachers should spread this event among their students, and make sure the participants should participate in all activities
- Volunteers - Sportive and Friendly
- Sufficient Funding
- Working Group Committee (WGC) - Well prepared for any changes occurred, well organized

Weakness

- modules should be modified with mobilizing and interactive activities
- Try to occupy more facilities and places inside school rather than doing in one same place
- Decreasing in number - some groups came with complicated inventions and finally dropped it
- Less head count – the event was held after the students final exams whereby they are already in a 'holiday mood'. Most did not turn up in school.
- Faced difficulties to gather all Committee members

Opportunity

- Participants came up with simple inventions
- Teachers were more interested in ASTI activities

Threat

- Natural Phenomenon - Rain, Thunderstorm as there was no properly covered place available for bigger events
- Other event clashes - one training day clashed with another event for the same students.

8.0 CONCLUSION

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 school should be able to conduct the programme on their own as an annual event which will involve more students. The students should also be able to participate in various national and international invention competitions. The participants were also seen to be more confident after going through the programme. The students even came up with some good inventions at the final which shows that with proper guidance, students can come up with good inventions.





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