

44th ISYA in Cape Town, South Africa, 19th November-9th December 2023

Table of contents	Page
• Summary	2
• Venue	2
• Organizers	2
• Announcement	3
• Student Selection	3
• Lecturers and Scientific Program	4
• Development of the School	6
• Complementary Activities	7
• Student's Feedback	7
• Lecturer's Feedback	8
• Directors' Final Remarks	8
• Appendix A: List of Students	9
• Appendix B: Schedule	10
• Appendix C: List of Students' Presentations	11
• Appendix D: Students' Feedback by Numbers	13
• Appendix E: Lecturers' Feedback by Numbers	13

Summary

The 44th ISYA was hosted by the South African Astronomical Observatory (SAAO) in Cape Town, South Africa. The school intended to train early graduate students in Astronomy & Astrophysics in Africa, with an emphasis in Southern African countries.

The school applications and activities were published in a dedicated webpage that SAAO designed: <https://isya2023.saa.ac.za>

Venue

The school was held at the Auditorium within the premises of *the Observatory - the location of the headquarters of SAAO in Cape Town*. For two days the school moved to Sutherland to do observations with SAAO telescopes, visit SALT, and we also scheduled some lectures there.

The lecturers were hosted while in Cape Town in the hotel *City Lodge in Pinelands*, while two thirds of the students were accommodated in Campus Key hotel and one third were in the beginning at the Green Elephant (for the first two weeks of the school) and later at the All Africa House (the last week of the school). The change of hotel was because in the Green Elephant the students were in dormitory-type accommodation (several students in one room) with common showers and a noisy environment, and these conditions were difficult for them. Commute from students' hotels to SAAO was about half an hour, done by bus.

While in Sutherland we were all hosted in Sutherland hotel, with students sharing accommodation and lecturers assigned individual rooms.

The Observatory had a large teaching auditorium that also served as the computer room, where the lectures and labs were held. In Sutherland we used the Community Training facility as a classroom, which was a bit narrow for the lectures, but acceptable. On the last day, due to a longer than usual power outage, we moved to the hotel restaurant, powered by generators, that could host us to maintain some of the scheduled program of lectures.

Organizers (Name Surname)

DIRECTORS

Moses Mogotsi - Local Director, SAAO
Daniël Groenewald - Local Deputy Director, SAAO
Itziar Aretxaga - ISYA program director
David Mota - ISYA deputy director

LOCAL ORGANIZING COMMITTEE

Zara Randriamanakoto – SAAO
Solohery Randriamampandry – SAAO
Sally Macfarlane – SAAO
Sabyasachi Chattopadhyay – SAAO
Glenda Snowball – SAAO
Valencia Cloete – SAAO
Nazli Mohamed – SAAO

Technical support and teaching assistants:

Antoine Mahoro - SAAO

Daniel Egbo - SAAO

Hannah Worters - SAAO

JC Viljoen - SAAO/NWU

Mikhail de Villiers - SAAO/UCT

Narges Hatamkhani – SAAO

Announcement

The school was announced by email sent to all IAU members in target member countries in Africa and OAO national nodes, through the Newsletter and social media of the IAU, through the regional network of the OAD based in South Africa, and through the distribution list of ISYA alumni and the ISYA All Alumni page in Facebook. We made a special effort to clarify that regional students in Southern Africa were to be preferentially selected, and that the school was targeting graduate students and advanced BSc students with strong interest on Astronomy. This decreased the number of applications of students that would have been disqualified based on remoteness or academic background.

Student Selection

We received 172 applications. Out of these, 14 were from non-regional candidates in Armenia, Brazil, Ecuador, Pakistan, Russia, India, Iran, Taiwan, UK and Malaysia.

The distribution of regional candidate applications (App), accepted (Acc) and attending (Att) students was:

Nationality	App	Acc	Att
Algerian	8	0	0
Angolan	2	0	0
Botswanan	3	2	2
Burkinan	2	1	1
Cameroonian	1	1	1*
Egyptian	21	0	0
Ethiopian	12	0	0
Ghanaian	3	1	1 [†]
Ivorian	2	0	0
Kenyan	9	2	2
Malagasy	9	2	2
Mauritian	1	0	0
Moroccan	4	0	0

Mozambican	4	1	1
Namibian	2	2	2
Nigerian	22	1 [±]	0
Rwandan	3	0	0
South African	17	11	11
South Sudanese	1	0	0
Sudanese	7	1	1 [†]
Tanzanian	4	2 [±]	1
Ugandan	9	1	1
Zambian	8	1	1
Zimbabwean	2	1	1 [†]

† Students registered in South African institutions at the time of application

* Student registered in an Ethiopian institution

± Student cancelled participation after invitation

The selection of students was done by a small committee: the two local directors and the ISYA program directors. There were many more deserving candidates than available places at the school. We initially aimed at accepting ~30 students, including some SAAO students (1st year MSc students, mainly). All local SAAO students that wished to attend some of the lecture courses were allowed to participate too, but they were not registered as official ISYA students.

After sending the acceptance letters we had a couple of rejections due to passport and visa delays, and also one student could not come because the ISYA dates overlapped with his start at a PhD school abroad. Students were replaced by others in the waiting list whenever possible.

The final list of 28 attending students to the 44th ISYA can be found in Appendix A. The distribution of attending students was 48% national and 52% regional, with a gender split of 55% female and 44% male students and 1 non-binary student.

Their level of studies was 21/28 MSc students and MSc candidates, 3/28 PhD students and 4/28 BSc students doing research for their final thesis.

Lecturers and Scientific Program

Lecturers were selected by the local and ISYA program directors to meet the needs of the proposed program. A balance of blackboard and practical hands-on classes was intended, with practical classes being mostly in the afternoons. The lecturers and topics were as follows:

- Stellar Structure and Evolution, Itumeleng Monageng (SAAO/UCT, South Africa) [M], 5 slots
- Galaxy Evolution, Michelle Cluver (Swinburne University of Technology, Australia) [F], 6 slots
- Cosmology, David Mota (U. Oslo, Norway) [M], 4 slots
- Galactic (MW) Astronomy, Francesca Figueras (University of Barcelona, Spain) [F], 5 slots
- Interstellar Medium, Alexander Tielens (Leiden University, Netherlands) [M], 4 slots
- Solar System and Exoplanets, Jane Luu (MIT, USA) [F], 3 slots
- Virtual Observatory and Databases, Itziar Aretxaga (INAOE, Mexico) [F], 3 slots
- Radio Astronomy, James Chibueze (North-West University, South Africa) [M], 5 slots
- Astrostatistics Lab, Juan Rafael Martínez Galarza (Harvard & Smithsonian, USA) [M], 5 slots
- Optical Observational Techniques, (mini-course), Rudi Kuhn (SAAO, South Africa) [M], 1 slot
- Career Development Workshop, Itziar Aretxaga (INAOE, Mexico) and David Mota (University of Oslo, Norway) [F/M], 4 slots

We, thus, had 10 lecturers (including directors): 3 from South Africa, 1 from Australia, 1 from Mexico, 1 from the Netherlands, 1 from Norway, 1 from Spain and 2 from USA. The gender split among lecturers was 40% female, 60% male. Most lecturers stayed for 2 to 3 weeks in the school, and all of them interacted closely with students.

In addition to these lectures, we had a series of two talks on “Biosignatures and Technosignatures” by Daniel Czech (University of California, Berkeley), and a talk on “The IAU and the Center for Protection of the Sky” by the IAU Interim General Secretary Piero Benvenuti.

The final schedule of classes and activities is detailed in Appendix B

We also had a team of teaching assistants (mostly graduate students and postdocs) for the observing practice, practical courses and projects:

- Antoine Mahoro – SAAO
- Daniel Egbo – SAAO
- Hannah Worters – SAAO
- Jassie C Viljoen - SAAO/NWU
- Mikhail de Villiers - SAAO/UCT
- Narges Hatamkhani – SAAO

Academic activities included a set of projects that groups of 3 students had to develop during homework time (Appendix C). Group projects were coordinated by Moses Mogotsi (SAAO). The groups were defined by school directors to enhance the mix of students from different countries and experience levels (BSc, MSc, PhDs). Project results were presented at the end of the school. The list of projects is included in Appendix C.

Students were scheduled to visit the optical Southern African Large Telescope (SALT) in Sutherland and observe with other 1-2m class telescopes in the site. The data was acquired during full Moon, and while valid for observational practice, it was not designed to be used for the Group Projects. Pre-acquired SALT data was used instead. Other practical hands-on classes were planned within the following courses: Virtual Observatory and Databases, Radio Astronomy, Astro Statistics and Galactic Astronomy.

The final program also included 4 sessions on Career Development: CV, applications for jobs/schools, challenges such as impostor syndrome and implicit biases (gender and other minority biases), and work ethics.

Development of the School

School activities happened mostly within the premises of SAAO - Observatory. Most lunches and dinners were also held at the Observatory, except for four days in which participants had box lunches at midday and the 4 days spent in Sutherland and travelling.

The final schedule was packed with activities, and students mostly complied with all of them. We gave students explicit instructions not to work after 8:30pm (when the bus was scheduled to return to their hotels) and rest on weekends and free afternoons to avoid burn-out with the intense academic program.

The activities in the school were carried out according to plan, with some minor scheduling changes. We had to cut 2 classes from the intended 5 series on Solar System and Exoplanets by Jane Luu and 1 on Optical Observational Techniques by Rudi Kuhn, due to power outages and delays in Sutherland. We also gave one of the originally planned Career Development slots to Galactic Astronomy to include a hands-on practice with Gaia data guided by Francesca Figueras. Other than that, the program ran as expected.

Observations were carried out during the planned 2 nights using 1-2m SAAO telescopes in Sutherland up to 3pm. Students were split into four groups and rotated among 3 telescopes and SALT. In SALT they witnessed how the queue was run by their lecturer Rudi Kuhn, also the SALT astronomer on duty those nights. The trip to Sutherland and back to Cape Town took 5 hours by vans.

The school had 10 dedicated laptop-computers connected to internet through WIFI. Most lecturers prepared python notebooks for practices, and these were mostly efficiently done in a combination of the school laptops-computers and laptops that belonged to the students themselves, all with virtual machine installations. The students managed to follow the practice in groups of 3 other than for some Radio Astronomy practice, where the configuration of their virtual machines did not allow the aperture synthesis imaging planned. In the VO and databases classes the connectivity was not ideal as the students could not download data required for the practice without overloading the WIFI.

All lecture notes were made available to the students in pdf format through Google Drive, which was the usual communication application for academic exchanges.

All the students had a very good command of English to interact with lecturers and fellow students efficiently.

Within the Career Development sessions we performed a roster of 1-min flash talks on individual research projects that the students are carrying out for their degrees in their home universities. All students were asked to give a flash talk. These short talks prepare them for quick presentations of poster results and interactions at conferences. The session was followed by an analysis on what could be improved for each of the presentations. The list of presentations is included in Appendix C.

The students' group presentations were also of high quality. Group projects were developed under the close supervision of project tutors and the result was articulate presentations about a topic students had not worked on before.

We offered students personalized IAU mentorship upon request and emphasized the role and use of mentors during the Career Development Workshop. The ISYA program directors will keep sending to their email addresses announcements for schools and studentships, as in previous editions of the ISYA. Many of the students were looking for opportunities to pursue MSc/PhDs abroad and lecturers spoke to them about the experience and opportunities in their departments and countries.

Complementary Activities

Optional free cultural/leisure activities during the weekends and afternoons included:

- A tour to Cape Point.
- A tour to Kirstenbosch Gardens.
- One cultural night when the students dressed in their traditional national attires
- Three nights after dinner with games and quizzes.

The LOC organized both a reception at the SAAO premises and a closing dinner in a nearby restaurant. The IAU invited lecturers to a dinner out during the second week on the occasion of the visit of the IAU Interim General Secretary to SAAO due to the celebration of the General Assembly in 2024.

Students' Feedback

The feedback form with the questionnaire, answers, statistical analysis and comments from the students can be found in Appendix D. We present here the directors' analysis on their answers. In this school we opted to hand in electronic questionnaires to save on paper. We got 24 replies out of 28 students.

The students value very positively all academic activities: the satisfaction with seminars and hands-on classes is high. The majority of the students declare to have learned from all courses at some level, and most to have identified topics they need to learn more about. The perception of balance between seminars and hands-on classes was good.

Some students express that the lecturing room was uncomfortable, mainly due to the air conditioning and temperature regulation. There was a split between students feeling the temperature was too high and those feeling it was too cold. The majority value the support provided with the computers in spite of the need to share 1 computer among 3 students.

Some students would have liked to have more time to devote to group projects, but most think that the time spent on them was right. Directors emphasized during the school that obtaining an end result for the projects was not the most important aspect, but making progress together. The experience of working in groups to develop a project was valued positively, the school content had prepared them for the challenge and they had received good supervision. They unanimously value as positive both the flash talk and group presentation exercises.

The trip to Sutherland was valued as a positive experience, and all the students valued the experience of doing observations with SAAO telescopes unanimously as positive.

The students also show a positive outlook into the future and the opportunities ISYA has offered them: the majority recognizes they have developed an international network, they have identified better their research interests, and that the ISYA has broadened their perspective on astronomy and that they have therefore greatly benefited from attending the school.

Travel to school, school applications and food are all within reasonable good scores. The feedback on the accommodation is however split between those students who were lodged in Campus Key (good scores) and those students who were lodged in The Green Elephant (low scores). This was expected as the conditions in the Green Elephant were far from ideal. Thanks to the local organizing committee the students were moved to the All Africa House, with better living conditions.

The leisure time and planned cultural tours and activities are marked as mostly fair to low by the students. From the comments, it is clear that the main reason put forward by the students is the school long days, with high number of hours of lectures, and the work intensity.

Lecturers' Feedback

The direct transcription of the lecturers' feedback forms can be found in Appendix E.

Lecturers seem happy about the set up and response from the students, but they are dubious about the course having reached all students due to their inhomogeneous level. Lecturers that required computational resources for exercises express that it could be improved. They all appreciate the invitation and declare that their time was well invested in the school.

ISYA Directors' Final Remarks

The directors are pleased with the development of the school and the commitment of lecturers and students to make the most out of the three weeks.

In the directors' view, the lectures and labs were all at a level to reach the students at some level, although by design, the last lectures of each course were at a more advanced current research level.

Among the lecturers, tutors, assistants, and LOC of the 44th ISYA we can find the following ISYA alumni: Juan Rafael Martínez Galarza (lecturer, 2005 Mexico), Daniël Groenwald (Local Deputy Director, 2012 South Africa), Antoine Mahoro (project assistant, 2017 Ethiopia).

Lecturers Francesca Figueras, Juan Rafael Martínez Galarza and James Chibueze had taught in previous ISYAs. The rest of the lecturers and project supervisors were all new to ISYA.

Project supervision was at a very good level and commitment. Very often at least two supervisors were in the project class up to 8:30pm. The project presentations showed that dedication. Student's talks were of excellent quality for both project presentations and flash talks.

ISYA directors think the 44th ISYA was very successful, meeting the expectations of local and OYA organizers in the progression of Astronomy opportunities for research students in the region.

Appendix A: List of Students

SURNAME	NAME	DEGREE	INSTITUTION	CITY	COUNTRY
Baloyi	Nhlengani (NJ)	MSc student	University of South Africa (UNISA)	Johannesburg	South Africa
Bechoo	Keshav	MSc student	University of Kwa-Zulu Natal	Durban	South Africa
Chisabi	Mukadi	BSc Honours			Zambia
Fadul	Abubakar	MSc student	African Institute for Mathematical Sciences (AIMS)	Cape Town	South Africa
Gaolape	Boitumelo	MSc student	International University of Science and Technology	Palapye	Botswana
Govender	Saarisha	BSc student	University of Kwa-Zulu Natal	Durban	South Africa
Homera	Brenda	MSc student	North-West University	Potchefstroom	South Africa
Hug	Rigardt	MSc student	North-West University	Potchefstroom	South Africa
Idala	Yonas Samwel	MSc graduate	The University of Dodoma	Dodoma	Tanzania
Iiyambo	Emilia Nandjamba	MSc student	University of Namibia	Windhoek	Namibia
Katjaita	Hiiko	MSc graduate	University of Namibia	Windhoek	Namibia
Kgwatalala	Lister	MSc student	International University Of Science and Technology	Palapye	Botswana
Kinyumu	Marcelina	MSc student	Kenyatta University	Nairobi	Kenya
Letsoalo	Jane	MSc student	North-West University	Potchefstroom	South Africa
Macaringue	Laurinda	BSc Honours	Universidade Eduardo Mondlane	Maputo	Mozambique
Maheso	Dimakatso Jeannett	MSc student	University of Johannesburg	Johannesburg	South Africa
Nazziwa	Lukiya	PhD student	Mbarara University of Science and Technology	Mbarara	Uganda
Ndunge Mbonteh Roland	Mbonteh Roland Ndunge	MSc student	Addis Ababa University	Addis Ababa	Ethiopia
Nel	Johan	MSc student	Centre for Space Research (CSR)	Potchefstroom	South Africa
Ngwane	Thobekile	MSc student	South African Astronomical Observatory	Cape Town	South Africa
Nyangi	Samuel	BSc Honours	University of Nairobi	Nairobi	Kenya

Papiah	Tasmiya	MSc student	University of KwaZulu Natal	Dunbar	South Africa
Pillay	Coral	BSc Honours	University of the Witwatersrand	Johannesburg	South Africa
Rakototafika	Miora	MSc graduate	University of Antananarivo	Antananarivo	Madagascar
Seconna	Lisa	MSc student	University of Cape Town	Cape Town	South Africa
Seidu	Mavis	PhD student	North West University	Potchefstroom	South Africa
Tantely	Bénite	MSc student	University of Antananarivo	Antananarivo	Madagascar
Zoungrana	André	PhD student	Astrophysics Observatory	Ouagadougou	Burkina Faso

Appendix B: Schedule

		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
	19 Nov	20 Nov	21 Nov	22 Nov	23 Nov	24 Nov	25 Nov	26 Nov
	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
9:00		OPENING (with SAAO director, AfAS, ISYA directors)	ISM2	TRIP TO SUTHERLAND			TRAVEL TO CPT	
10:30		COFFEE	COFFEE					
11:00		EXOPLANETS 1	EXOPLANETS 2					
12:30		LUNCH	LUNCH		LUNCH	LUNCH		
13:30		COMPUTER SETUP	RADIO 1		ISM3			
15:00		COFFEE	COFFEE		COFFEE	COFFEE		
15:30	ARRIVAL	ISM1	GALAXIES 1		OPTICAL TECHNIQUES 1			
17:00	DINNER (Braai - South African style Barbeque)	CAREER DEV 1	VO 1	DINNER	OPTICAL TECHNIQUES 1	EXOPLANETS 3		
18:30		DINNER	DINNER	Telescope Tour	DINNER	DINNER		
19:30		ACTIVITY	FREE EVENING		Leave to Plateau	Leave to Plateau		
20:30		END OF DAY		STAR GAZING	OBSERVING	OBSERVING		
				VISIT TO SALT	OBSERVING (until 03:00)			

	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
	27 Nov	28 Nov	29 Nov	30 Nov	1 Dec	2 Dec	3 Dec
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
9:00	CAREER DEV 2	GALAXIES 2	COSMOLOGY 1	GALAXIES 3	GAL STRUCTURE 3	WEEKEND ACTIVITIES	WEEKEND ACTIVITIES
10:30	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE		
11:00	ISM 4	GAL STRUCTURE 1	GAL STRUCTURE 2	COSMOLOGY 2	COSMOLOGY 3		
12:30	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH		
13:30	RADIO 2	ASTROSTAT 1	ASTROSTAT 2	OAD/AIAS	ASTROSTAT 4	KBSOC SH	CAPE POINT
15:00	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE		
15:30	SAAO Historical TOUR	VO2	VO3	ASTROSTATS 3	CAREER DEV 3		
17:00	GROUP PROJECT	Talk by IAU GS Piero Benvenuti	GROUP PROJECT	GROUP PROJECT	GROUP PROJECT		
18:30	DINNER	DINNER	DINNER	DINNER	DINNER		
19:30	GROUP PROJECT	ACTIVITY	GROUP PROJECT	GROUP PROJECT	CULTURAL EVENT		
20:30	END OF DAY	END OF DAY	END OF DAY	END OF DAY	END OF DAY		

	Day 15	Day 16	Day 17	Day 18	Day 19
	4 Dec	5 Dec	6 Dec	7 Dec	8 Dec
	Mon	Tue	Wed	Thu	Fri
9:00	STARS 1	COSMOLOGY 4	GALAXIES 5	GALAXIES 6	STDT PRESENTATIONS 1
10:30	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE
11:00	GALAXIES 4	STARS 2	STARS 3	STARS 5	STDT PRESENTATIONS 2
12:30	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
13:30	SETI & BIOSIGN 3	SETI & BIOSIGN 2	STARS 4	GAL STRUCTURE 4	LAB GAIA ARCHIVE 5
15:00	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE
15:30	RADIO 3	RADIO 4	ASTROSTAT 5	RADIO 5	CAREER DEV 5
17:00	GROUP PROJECT	GROUP PROJECT	GROUP PROJECT	GROUP PROJECT	CLOSING
18:30	DINNER	DINNER	DINNER	DINNER	DINNER
19:30	GROUP PROJECT	ACTIVITY	ACTIVITY	GROUP PROJECT	
20:30	END OF DAY	END OF DAY	END OF DAY	END OF DAY	

Appendix C: List of Students' Presentations (1 min flash talks and posters)

Surname	Name	Title
Baloyi	Nhlengani	Using machine learning to detect star clusters in Gaia DR3
Bechoo	Keshav	On-sky characterization and analysis of HIRAX prototype and dish verification arrays

Chisabi	Mukadi	Timing and noise analysis of five millisecond pulsars observed with MeerKAT
Fadul	Abubakar	Looking for complex organic molecules in a protoplanetary disk
Gaolape	Boitumelo	Investigating star formation rate indicators in spiral galaxies
Govender	Saarisha	Age and Metallicity Determination of the open stellar cluster M67
Homera	Brenda	Cataloguing compact sources for SFR studies in MERGHERS pilot fields
Hug	Rigardt	Benchmarking exoplanet transit depths with the SAAO Lesedi telescope
Idala	Yonas Samwel	Understanding the emission of fast radio bursts
Iiyambo	Emilia Nandjamba	Identification of hadronic events in HESS data using a novel photosensor clustering
Katjaita	Hiiko	Studies on using trigger level information for gamma-hadron rejection in HESS
Kgwatalala	Lister	Spectroscopic study of selected candidate Maia type stars observed in the TESS fields
Kinyumu	Marcelina	Properties of isolated galaxies ($0.005 < z < 0.080$)
Letsoalo	Jane	The masses of Milky Way Globular Clusters Gaia data
Macaringue	Laurinda	Determining radio halo/mini-halo upper limit
Maheso	Dimakatso Jeannett	Spectral and temporal analysis of SGRBs and the MGF, GRB200415A
Nazziwa	Lukiya	Modelling of ion acoustic solitary structures in magnetized three component electro-positron-ion plasma
Ndunge Mbonteh Roland	Mbonteh Roland Ndunge	On the connection between solar surface magnetic flux density and solar UV variability
Nel	Johan	Accurate cross-matching for next generation optical and radio surveys
Ngwane	Thobekile	Developing instrumentation and software for rapid follow-up and characterization of near-Earth asteroids
Nyangi	Samuel	Measurements of galactic hydrogen with a tabletop radio telescope (TTRT)
Papiah	Tasmiya	Analysis of drone beam mapping data for the HIRAX testbed array
Pillay	Coral	Identifying dual AGN with MeerKAT and MeerKAT+
Rakototafika	Miora	Photometric study of the star cluster population in Apr 147
Seconna	Lisa	Investigating the influence of the host environment on star formation in CRGs through the properties of their young massive star cluster population
Seidu	Mavis	Triggered star-formation in star forming regions
Tantely	Bénite	Investigating the lifecycle of two radio galaxies in the XMM-LSS fields
Zoungrana	André	Morphological and spectroscopic study of small solar system bodies trajectory simulation and impact risks in Burkina Faso

GROUP PROJECTS

The group projects consisted in doing a spectral analysis of different objects both galactic and extragalactic using SALT spectroscopic data. The students were divided in groups of 3 and each of the groups analyzed individual objects.

Appendix D: Students Feedback

See below the “STUDENT ISYA 44 Evaluation Form”. 24/28 students filled the form. Some of the students identified themselves. Disclosing their identity in the feedback form was optional.

Appendix E: Lecturers’ Feedback by Numbers

See below the “LECTURERS ISYA 44 Evaluation Form”. 4/12 lecturers filled in the form (we excluded school directors and INAOE members) filled the form.

Itziar Aretxaga

INAOE, Mexico

ISYA Program Director

David Mota

Univ. of Oslo, Norway





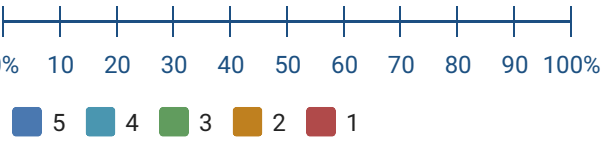
ISYA Deputy Director

STUDENT ISYA 44 Evaluation Form

Updated: 18 December 2023 at 19:48

Application

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

Submissions	5	4	3	2	1	Chart
The website told me everything I needed to know to prepare for the school	14 56%	8 32%	3 12%	0%	0%	
The application form was easy to fill in	16 61.5%	6 23.1%	3 11.5%	1 3.8%	0%	
I understood well the questions	18 69.2%	5 19.2%	3 11.5%	0%	0%	
I received a prompt reply to my application	14 53.8%	7 26.9%	5 19.2%	0%	0%	
						

Comments

- The full schedule only released a day or two prior to the actual school.
- Information I got from website was very well detailed at least I appreciate that I got exactly to know what do
- The school was well organized and the content up to date.
- The reply to my application only came a few months after my application. I would imagine this is normal considering the number of applicants. The difficulty associated with the workload and schedule was something that could have been emphasised more.
- I am sick now because the flu i got first week is not getting better because i get sooooo cold in class and when i complain i am told to bring a jacket ,which i did but was not enough. Also it would have been better to start our group projects even before we went to Sutherland , we would have learnt more , practiced the steps properly and really took time to understand the analyses. Please give the group projects the first 2 days of the school. Overall i am grateful for this opportunity and i would come every year if i could.

Lectures

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

Submissions	5	4	3	2	1	Chart
The hands-on classes were a very useful part of the ISYA training	19 73.1%	6 23.1%	1 3.8%	0%	0%	
The time spent on school activities was right	10 38.5%	8 30.8%	4 15.4%	3 11.5%	1 3.8%	
The lectures/labs were well presented	14 53.8%	8 30.8%	4 15.4%	0%	0%	
The lecturers responded well to my questions	20 76.9%	5 19.2%	1 3.8%	0%	0%	
I have identified in this school material I need to study further	18 69.2%	8 30.8%	0%	0%	0%	
I found it easy to get on with the lecturers	16 61.5%	7 26.9%	2 7.7%	1 3.8%	0%	
The lecture room was comfortable	11 42.3%	9 34.6%	2 7.7%	2 7.7%	2 7.7%	
The computer support was good enough for me to follow the practice of the school	15 57.7%	5 19.2%	5 19.2%	1 3.8%	0%	
I think there was a good balance of hands-on and seminal lectures	8 30.8%	12 46.2%	6 23.1%	0%	0%	
I found the Career Development (Job hunting, CV/paper writing, Ethics) sessions useful	19 76%	4 16%	0%	2 8%	0%	
The organizational support was good	19 73.1%	4 15.4%	2 7.7%	0%	1 3.8%	

Comments:

- Most lectures were not audible or clear enough
- I think we spent too much time on school activities. It very quickly became overwhelming and tiring, and as much as all the new material being presented was interesting and useful, I found it very difficult to retain that information seeing that so much time was spent on school activities and learning more and more concepts. I think more hands-on lectures in the day could have helped with this as we usually only had hands on lectures after lunch. The lecture room was comfortable but the lack of ventilation and light was not ideal. Other than that, I was very happy with everything related to these matters. :)
- I appreciate all the lecture and hands-on sessions were very useful to learn and get updated on the current issues about astronomy. On the other hand, we had a very little time to go through the previous sessions by self study and group discussion.
- It would be better if they gave a computer to each student (especially those who didn't bring their own) for activities during school.
- The school's educational part was extremely wholesome and eye-opening. Very well planned by the lecturers who gave insightful lectures on their topics, I enjoyed and learnt a lot!For the practical sessions, more time could be allocated , maybe 2 hours or more, because they require more time to set up and follow steps.
- For next schools to come in future I request that all areas should be catered for especially the Theoretical Astrophysics but however I benefited a lot in whatever was presented
- Mid-lecture breaks, much like in Itu's lectures would really helpful, given that trying to concentrate on a 90 min lecture all the way through, especially when tired, is not an easy task.
- The room was too cold for some people who are sensitive to Aircon air. Made it difficult to concentrate most times. Also got sick from how cold it was. Had to skip a day to go get medication.I think having the data preloaded to the computers before would make the tasks move easier and quicker.

Observations and Project training

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

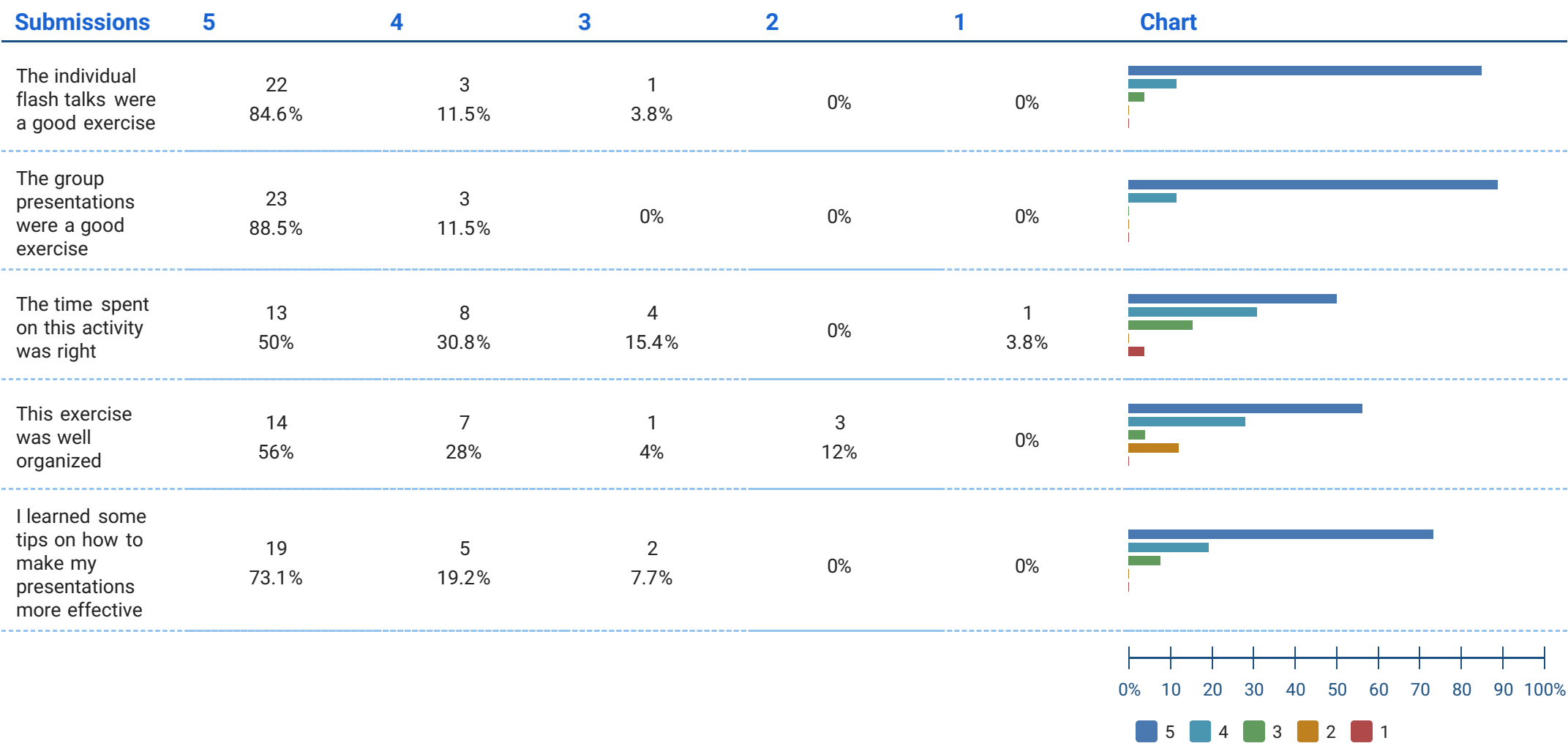
Submissions	5	4	3	2	1	Chart
The group project was challenging but I learned about the topic and about working in a group environment	18 69.2%	5 19.2%	3 11.5%	0%	0%	
The time spent on projects was right	7 26.9%	11 42.3%	4 15.4%	2 7.7%	2 7.7%	
The lectures prepared me adequately for the project	9 34.6%	8 30.8%	6 23.1%	3 11.5%	0%	
The tutoring I got for my project was good	12 46.2%	8 30.8%	4 15.4%	2 7.7%	0%	
I found the project supervisors helpful and easy to get on with	23 88.5%	2 7.7%	1 3.8%	0%	0%	
The observing nights were good training for me	23 88.5%	2 7.7%	1 3.8%	0%	0%	
It would have liked to have more observing training	20 76.9%	3 11.5%	2 7.7%	1 3.8%	0%	
The visit to SALT was of interest to me	26 100%	0%	0%	0%	0%	

Comments

- I would have liked more formal explanations regarding the group projects - maybe a small lecture beforehand because I felt quite out of my depth when it came to the group project work. I think getting more context beforehand would have helped my understanding.
- The salt visit was great and more experience like that would be recommended
- The observations at the Sutherland Observatory were very interesting. I wish we'd spent more time there, like whole nights making complete observations and then using the data we collected ourselves for processing.
- I enjoyed and learnt a lot on observational and analytical skills
- The visit to Sutherland was a great firsthand and practical session that we got a chance to observe firsthand what astronomers do.The rotation for the telescope groups and the involved personnel were helpful and very insightful.
- Since most of times I handle paper work and these projects needed alot of scientific tools my groupmates didn't give help. By the time i wound understand one concept they would be on next one. Otherwise I would have loved more observing trainings
- The observation nights were short but very meaningful.
- The group project, while real fun, was very taxing. Perhaps it should have been shortened.
- I'm happy we had sessions on observations and visited the telescope site. 3 days was short to grasp everything but I am glad I learnt some technical stuff.
- I think we should have started the group work earlier, maybe even before the SALT visit, it would have been easier for us to ask questions there and maybe do better with the projects.

Presentation exercises

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA



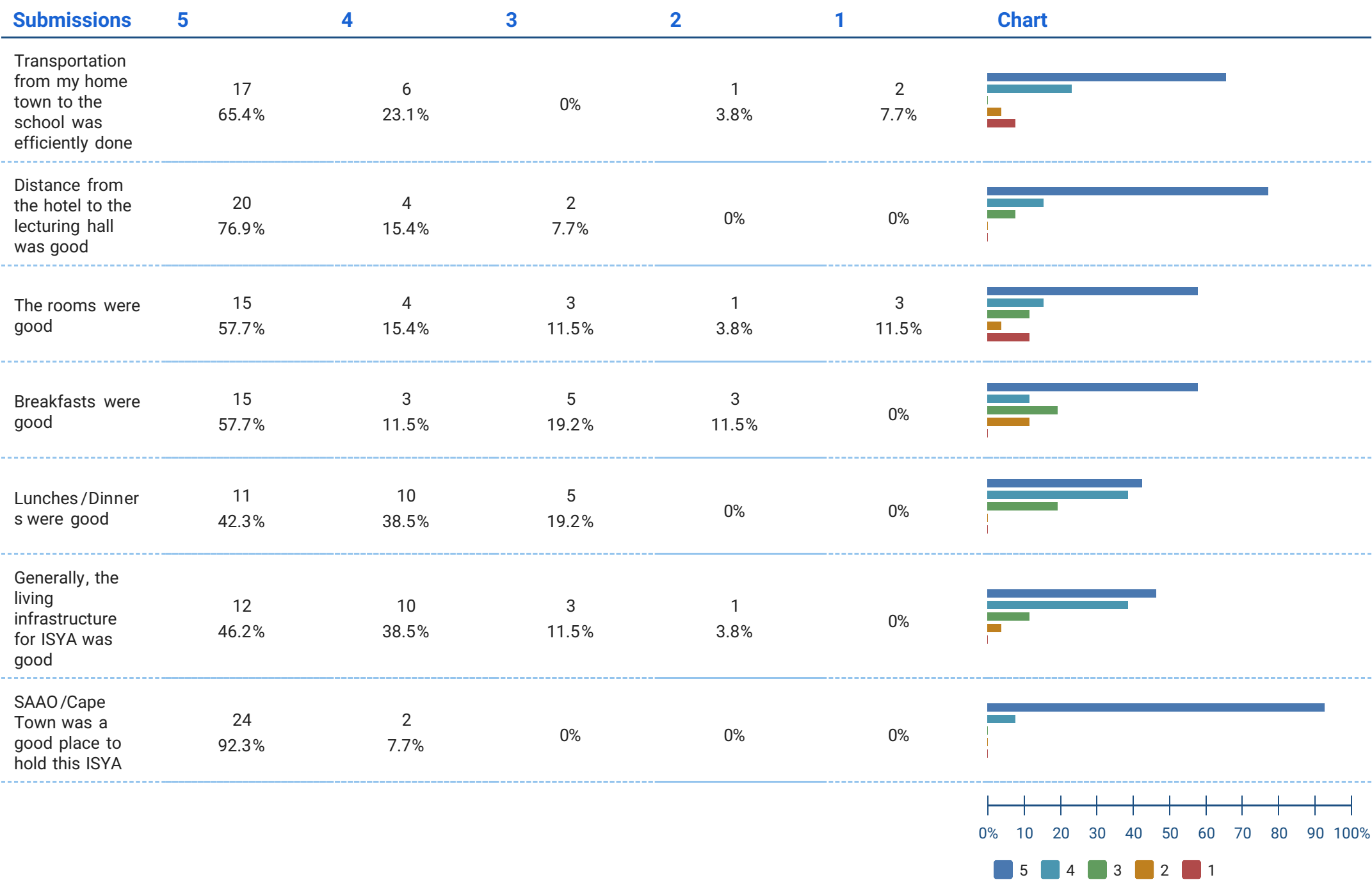
Comments

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

- I would just that these presentations could continue even on zoom since it is a good exercise
- No complaints.

Accommodation

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

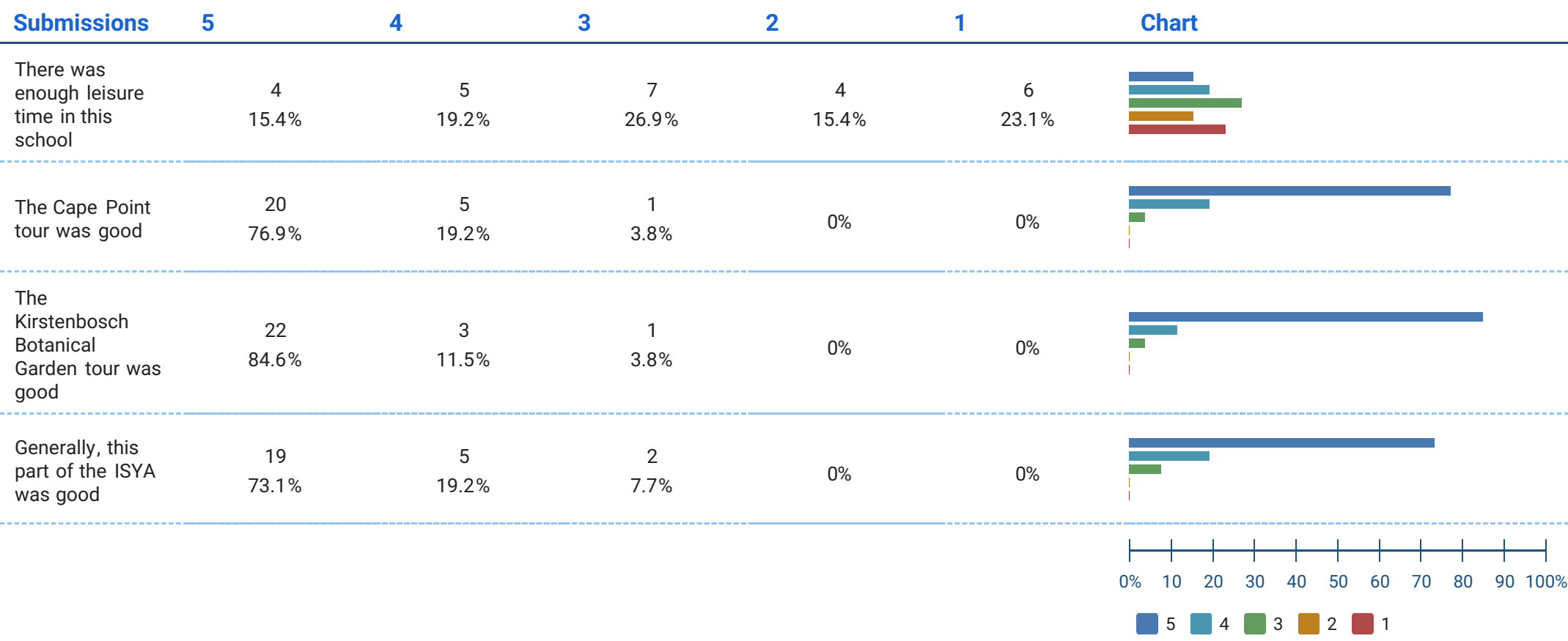


Comments

- I was left behind by the bus twice.
- The first hotel we stayed in didn't suit us very well. In fact, there were no personal showers in each room, and every morning and evening we had to line up in order to take a shower. What's more, in the evenings, some residents made noise in the hotel bar, which is very close to the rooms. This made it difficult for us (students) to get organized so that we could work in quiet and rest. However, the second hotel we went to afterwards was very well suited to us. I would like to take this opportunity to thank you for your understanding and for finding us this second hotel. Thank you very much!
- Thank you to the team that considered moving us from Green Elephant to All Africa House which was satisfactory by all standards. Maybe next time the team could pay a pre-visit to the accommodation to get ground truth.
- Initially, for the first two weeks, the rooms at Green Elephant were difficult to adjust to. Living in a confined space with five other people was less than ideal, especially for maintaining a sense of personal space and recharging after a tiring day.However, I can't express enough appreciation for the local organizing committee's prompt and helpful response once we raised our concerns about the accommodations with them. The rooms at the All Africa House, where we were subsequently moved to, were spectacular and super comfortable.
- Excellent! Keep it up. At least guys @ campus key didn't complain about accomodation. The challenge was the lot of cheese and butter in the food.
- I would have preferred the lecture room and accomodations to be closer.
- The Green Elephant accomodation was honestly appalling.
- The breakfast was okay, however, there is more room for improvement
- Everyone staying in the same accomodation would have made it easier to get to know the rest instead of only interacting with 1 group in the classes.

Cultural tours and Leisure time

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

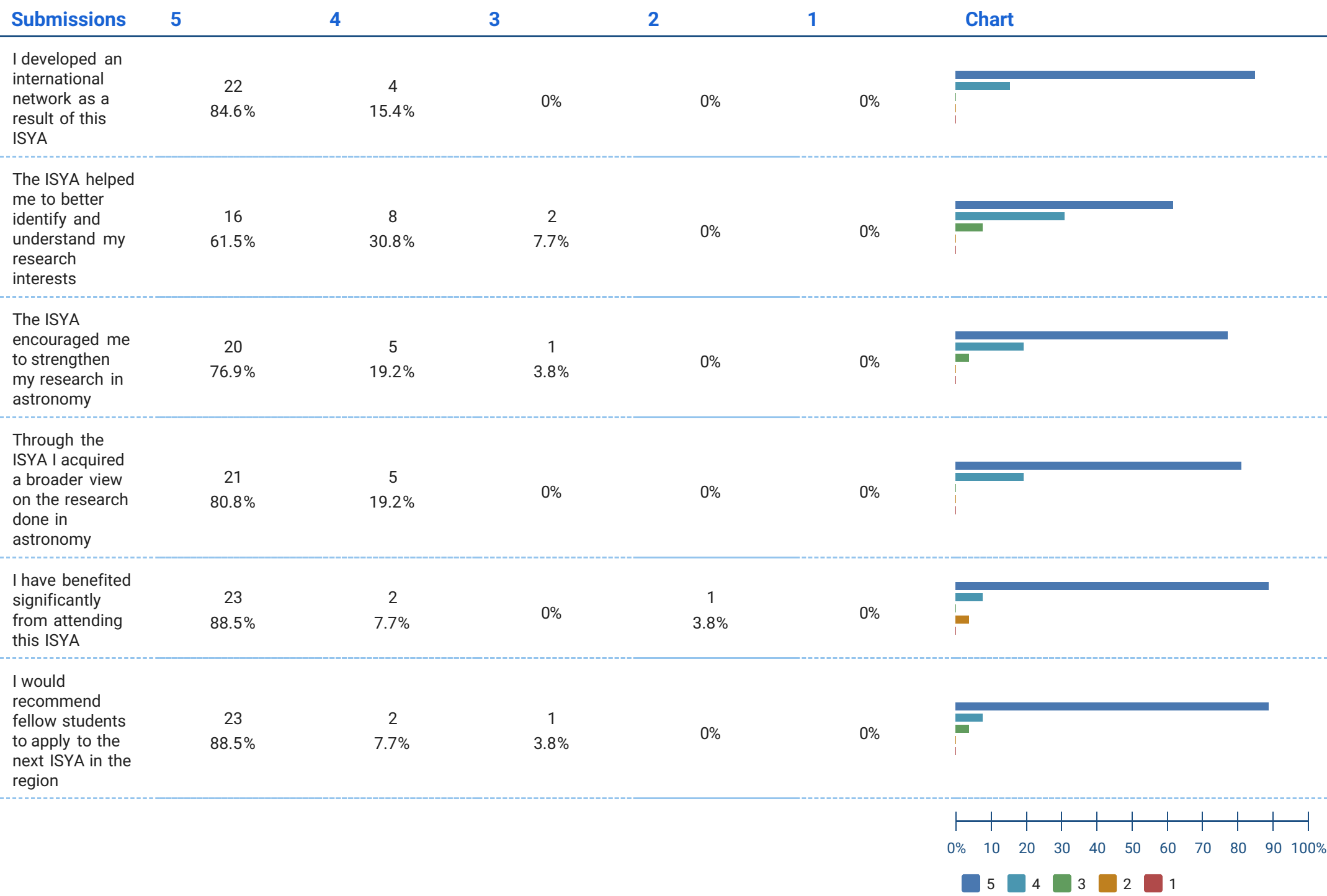


Comments

- The lectures and networking opportunities was good.
- I think more leisure time was definitely necessary. The weekend activities were super fun, but it wasn't much of a rest from the week because we were so active. I think I especially needed a break in the middle of the week when lectures became draining. I think shorter days or a mid-week break would definitely have made the experience both more enjoyable and more productive overall.
- It would have been preferable if the leisure-time activities were optional, as not everyone would have enjoyed participating in them. Some individuals would have preferred to spend their leisure time differently, perhaps engaging in other activities at their own expense or simply using the time to rest and recharge after a hectic week of lectures. But I do appreciate the efforts made to have these activities.
- I think if the lectures end at 18:00 it will be very nice so that the students find time to interact with each other after returning to their accommodation.Also if all the students live in one place it will be more fun than divide them into two groups.
- For sure you made us feel @ home during that time
- The time to rest was not the best.
- I liked every part of the tour
- There was not enough leisure time to rest after the lessons. We would be exhausted at the end of the day

The future

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA



Comments

- I appreciate the diversity sessions during the 44th ISYA. The sessions included almost all important areas for the ISYA students.
- Isya has helped to meet lectures and students for further collaborations
- No complaintts.
- Loved the variety of the classes.

If you have any other comments, please add them here



- I am truly grateful for my time at ISYA 2023. The highlight was undoubtedly the wonderful people I had the privilege to meet - both fellow students and dedicated lecturers. Their warmth and expertise made my experience memorable. A heartfelt thank you to the organizers for creating such a welcoming and enriching environment. Thank you very much.
- Generally, I enjoyed the time spent attending the ISYA 2023 program.
- Thank you for the opportunity to be part of ISYA. I really appreciate the knowledge acquired within the 3 weeks period, this will definitely help in future work . A heart warming thank you to the organisers as well.
- ISYA was a great experience, I would definitely recommended it to future students
- The school was generally a success. I learned a lot about astronomy and I enjoyed it. Thank you to the organisers and all the lecturers!
- I hope next ISYA will be more improved in terms of diversity and hands-on activities
- I liked too much the experience of being a ISYA student, for the first time a learnt a lot about networking and the interration with the other colleagues.I learned many interesting tips that will be important for me in my next academic stage.the career development sections were the cherry on the cake!
- I am immensely grateful for the opportunity to be an ISYA participant, this has been my best, most inspiring and most practical astronomy experience so far! Long live ISYA, and may many more young astronomers across Africa get the opportunity to change Africa's astronomy landscape through such programs.
- I would like to express my sincere gratitude to ISYA and all of its organizers for providing me with the opportunity to attend this school. I had certain expectations when applying and entering this school, and I can comfortably say that all of those expectations were not only met but exceeded. The learning environment provided by the school made the learning process enjoyable and easy to follow. I sincerely hope that the school continues to offer such amazing opportunities to many more aspiring astronomers across the globe. I am truly grateful to be an ISYA alumnus.
- Thank you very much, everything was alright
- I would like to take this opportunity to thank whoever was involved participating in the school particularly the organizers, our good lectures and isya students. May God Almighty bless you.
- I appreciate being selected to attend the school. There was so much to learn.
- All the lecturers were top-notch.
- Overall, the program organization was great. The lectures were good but some lecturers can do better. Thanks to the organizers for the opportunity.
- The school was amazing. The organisers and the lecturers were beyond great. Some tutors were a bit weak for the project and the accommodation provided for males initially were below par. I would have also liked a bit more physical/interactive activity to balance out the demanding working schedule.
- Thank you for the wonderful experience, lectures and connections.
- I think students should be given some time because they need to wash their dresses, go shave their hairs and get some rest.

LECTURERS ISYA 44 Evaluation Form

Updated: 18 December 2023 at 19:49

ORGANIZATION BEFORE THE SCHOOL

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA











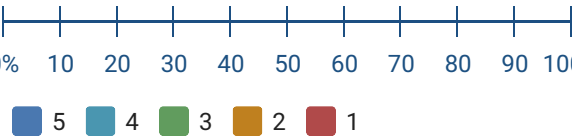
Submissions	5	4	3	2	1	Chart
The website /emails told me all I needed to know on how to prepare my lecture course	2 40%	1 20%	2 40%	0%	0%	
The website /emails told me all I needed to know to go and come back from the school	3 60%	1 20%	1 20%	0%	0%	
Communication with ISYA program directors was efficient and they replied to my queries timely and accurately	5 100%	0%	0%	0%	0%	
The planning of my trip to/from the school was easily done through the IAU Office (when applicable)	3 75%	1 25%	0%	0%	0%	
						<div><div></div><div></div><div></div><div></div><div></div></div> <div>0%10%20%30%40%50%60%70%80%90%100%</div> <div>54321</div>

Comments

- I would like to express my most enthusiastic gratitude to the organizers of the school, both to the local committee and to the Director and Deputy Director. I want to highlight the work environment that they managed to maintain at all times. Even the intense work for the students, they manage to maintain an environment that was tremendously productive as well as endearing. These are, from my point of view, two essential qualities to generate future scientific collaborations among all the participants, both students and teachers.
- I arranged my travel by myself.

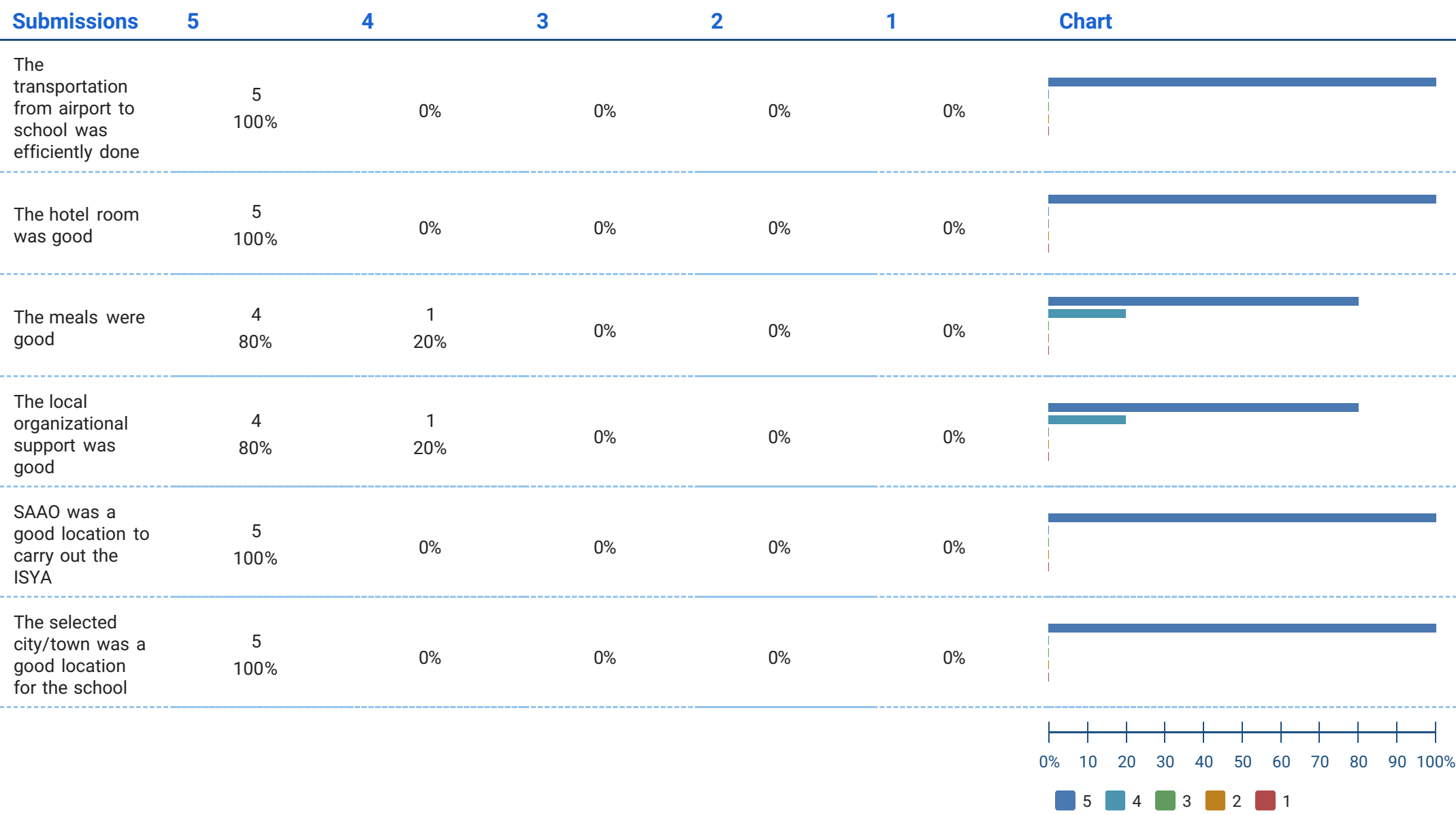
LECTURES/STUDENTS AT THE SCHOOL

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA

Submissions	5	4	3	2	1	Chart
The school infrastructure was appropriate for me to lecture efficiently	3 60%	1 20%	1 20%	0%	0%	
The lecturing time I requested was awarded by the school	5 100%	0%	0%	0%	0%	
I found the students could follow my lectures at a reasonable pace	3 60%	1 20%	1 20%	0%	0%	
The background of the students was too diverse for my lectures to reach them all at a good level	0%	3 60%	0%	2 40%	0%	
On hindsight , I would have needed more time / another arrangement to lecture my topic efficiently	1 25%	1 25%	0%	2 50%	0%	
I believe my lecture course helped the students in advancing their graduate studies and will make them stronger candidates for any other graduate school they apply to.	2 40%	3 60%	0%	0%	0%	
I believe my course was well related to the rest of the courses at the school.	3 60%	2 40%	0%	0%	0%	
Generally, the ISYA environment was good and productive .	5 100%	0%	0%	0%	0%	
I am willing to maintain future contact and mentor some of the students I met at the school	5 100%	0%	0%	0%	0%	
I believe my time and effort was worth it, and I promoted the education of the students .	5 100%	0%	0%	0%	0%	
						

INFRASTRUCTURE

Please mark 5 (strongly agree) to 1 (disagree) the following sentences, based on your experience at ISYA



PLEASE ADD ANY OTHER SUGGESTIONS OR COMMENTS YOU WOULD LIKE TO ADD:

- I was possitively impressed by the organization and the level of the students. I learned A LOT about African astronomy and I remain committed to mentor these students.
- I recommend more dedicated effort toward confirming that adequate computing resources are made available prior to start of future schools.