

**Evaluation of the California Institute of
Technology (Caltech)
Global Relay of Observatories Watching
Transients Happen (GROWTH)
Partnership for International Research and
Education (PIRE)
2018 Winter School**

Funded by the National Science Foundation

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Prepared by

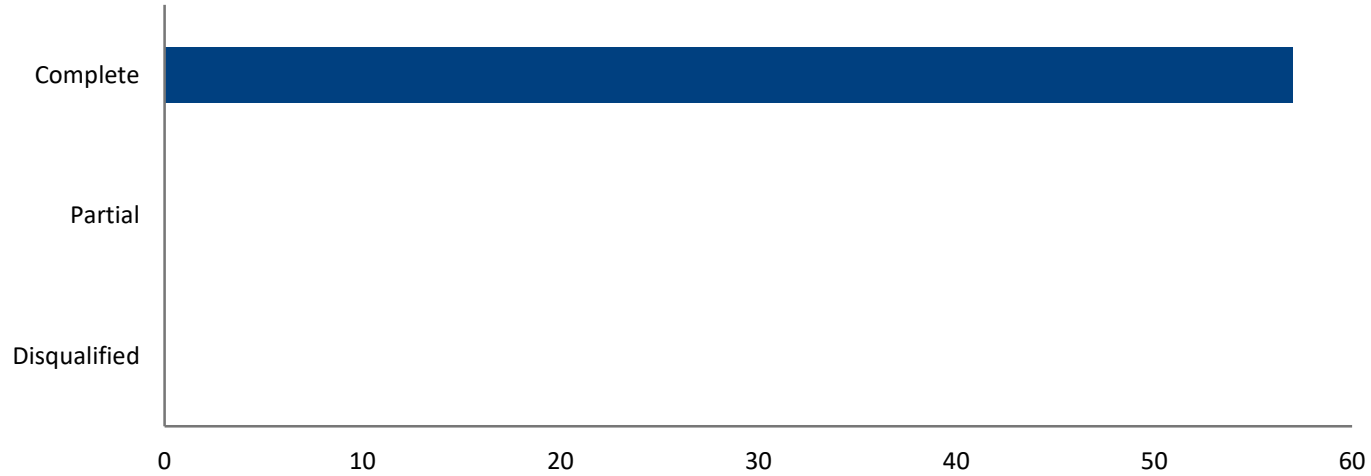
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Response Statistics



	Count	Percent
Complete	57	100 %
Partial	0	0
Disqualified	0	0
Totals	57	

Note that, for open-ended questions, respondents might have mentioned more than one theme, and evaluators coded their responses in multiple ways; therefore, the total number of responses for themes related to each question might exceed the total number of respondents.

Please rate your agreement with the following statements regarding the influence of the Winter School on your skills and abilities.

	Strongly disagree		Disagree		Neither disagree/agree		Agree		Strongly agree		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
The Winter School increased my knowledge of multiwavelength follow-up observations to transient events.	2	4%	0	0%	1	2%	24	42%	30	53%	57
The Winter School increased my ability to use practical tools for multiwavelength follow-up observations to transient events.	2	4%	0	0%	3	5%	23	40%	29	51%	57
The Winter School increased my understanding of my research area.	2	4%	2	4%	13	23%	20	35%	20	35%	57
The Winter School increased my knowledge of new tools that will enable me to achieve my research goals.	2	4%	0	0%	2	4%	19	33%	34	60%	57
The Winter School increased my interest in a new area of observational astronomy.	2	4%	1	2%	7	12%	19	33%	28	49%	57

What was your main goal in attending the Winter School?

Gain astronomy knowledge

(19 respondents)

Gain exposure to astrophysics/astronomy field and research

(11 respondents)

Gain more analysis/coding skills

(9 respondents)

Learn more about tools used in astronomy/astrophysics

(7 respondents)

Learn/Further develop skills in general

(5 respondents)

Discover research interest

(3 respondents)

Teach other people

(2 respondents)

What was the most beneficial concept, topic, or idea that you gained from the Winter School?

Using/Learning Python

(9 respondents)

Data analysis and coding tools

(9 respondents)

Observing run preparation/planning

(7 respondents)

Imaging and image processing

(6 respondents)

Light curve analysis

(6 respondents)

Radio astronomy

(6 respondents)

Spectroscopy

(3 respondents)

Optical analysis

(2 respondents)

Photometry

(2 respondents)

All modules were helpful

(2 respondents)

Asteroids

(1 respondent)

Hands-on activities

(1 respondent)

How will you utilize what you have learned in the Winter School?

Use in future research projects

(23 respondents)

Continue to use new skills and knowledge in professional development (e.g., independent study and practice of skills learned)

(13 respondents)

Implement tools for data analysis and coding

(5 respondents)

Use in future for specific school/degree-related research

(4 respondents)

Adopt Python techniques into research

(2 respondents)

Six respondents did not indicate how they will utilize what they learned in the Winter School, but they did note that they gained exposure to astronomy and astrophysics through the experience.

Please rate your agreement with the following statements about the Winter School program structure.

	Strongly disagree		Disagree		Neither disagree/agree		Agree		Strongly agree		Not applicable		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
The sessions were organized well and in a logical manner.	2	4%	1	2%	1	2%	23	40%	29	51%	1	2%	57
The mixture of lecture and hands-on sessions was well-balanced.	1	2%	6	11%	2	4%	16	28%	31	54%	1	2%	57
The lectures were the appropriate length of time for the content.	3	5%	10	18%	8	14%	21	37%	14	25%	1	2%	57
The hands-on activities were the appropriate length of time for the content.	3	5%	14	25%	6	11%	20	35%	12	21%	2	4%	57
The group projects were helpful for learning the content.	1	2%	3	5%	5	9%	26	46%	8	14%	13	23%	56
Using the theme of GW170817 was helpful in making connections between the material presented in different sessions.	2	4%	5	9%	8	14%	23	40%	17	30%	2	4%	57

Did you appreciate the exposure to follow up observation techniques in multiple wavelengths or would you have preferred a school that explores deeper a particular wavelength?

Value	Percent	Count
I would have liked a more focused program.	16%	9
I was content with the multiwavelength approach.	18%	10
I really appreciated the multiwavelength approach.	67%	38
Totals		57

Please explain the rating you provided.

Appreciated program/approach

- Helped provide exposure to different topics (19 respondents)
- Appropriate framework for the given topics (4 respondents)
- General positive comments (3 respondents)
- Program was well-organized (3 respondents)

Suggestions for improvement

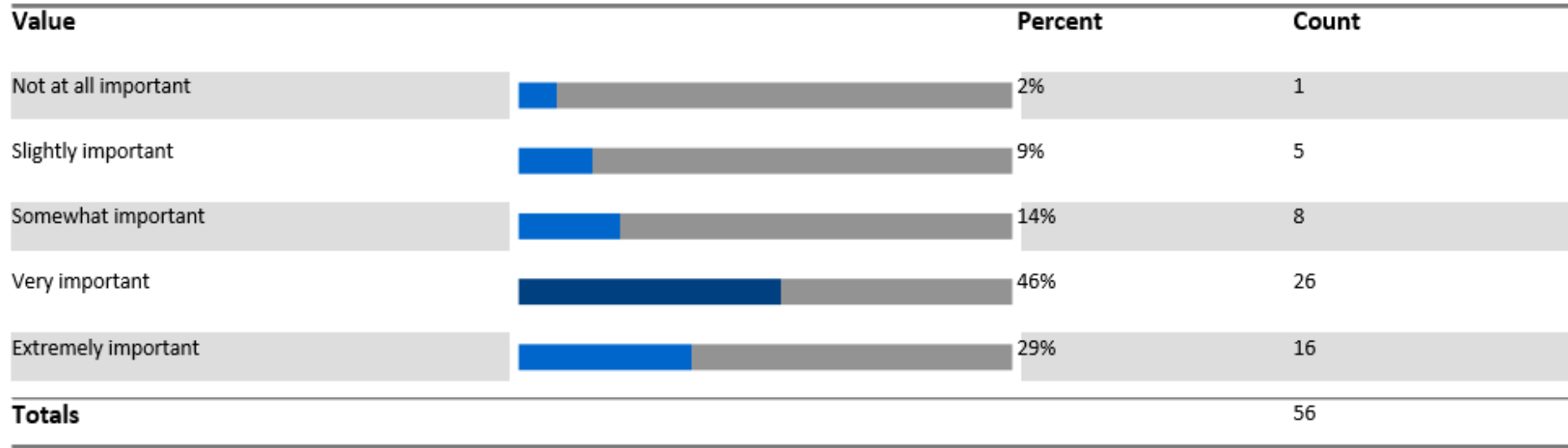
- Sessions were too short (5 respondents)
- Would like more days to cover information (3 respondents)
- Sessions could have been better (2 respondents)
- Divide into groups based on level of proficiency (2 respondents)
- Suggestion to implement RAD@home for future winter schools (1 respondent)
- Framework was not useful for own research (1 respondent)

Was the content of the school presented at the right level for you?

Value	Percent	Count
Too difficult	25%	14
Just right	70%	39
Too easy	5%	3
Totals		56

A horizontal stacked bar chart with three rows. The first row, 'Too difficult', has a blue segment representing 25% and a grey segment representing the remaining 75%. The second row, 'Just right', has a dark blue segment representing 70% and a grey segment representing 30%. The third row, 'Too easy', has a blue segment representing 5% and a grey segment representing 95%. The 'Totals' row is not represented by a bar.

Did you find the observing run with the GROWTH-India telescope to be an important addition to the program?



Were there any major obstacles (i.e. funding issues, conflicting time commitments, travel barriers) that made it difficult for you to participate in the Winter School? If so, what were they?

No major obstacles

(40 respondents)

Did not receive funding

(2 respondents)

Timing conflicts with academic calendar (e.g., graduate school application due dates, university placement exams were occurring, and final exams week)

(4 respondents)

Python module was too short

(1 respondent)

Logistical problems (e.g., difficulty in getting to the school, food not meeting dietary needs, and difficulty in accessing notebooks)

(3 respondents)

Shortlisted (no further explanation)

(1 respondent)

What did you like most about the Winter School?

Lectures and hands-on sessions

(17 respondents)

Exposure to multiple topics

(9 respondents)

Learning new analyses and tools (e.g., Python modules and x-ray analysis) in general

(9 respondents)

The organization of the event

(6 respondents)

Networking opportunities

(5 respondents)

The observing session

(3 respondents)

Helpful lecturers and tutors

(2 respondents)

The helpful notebooks

(2 respondents)

The multiwavelength approach

(1 respondent)

What did you like least about the Winter School?

Winter School duration too short

(9 respondents)

Many technical problems (e.g., software issues and package installations)

(7 respondents)

Sessions were too short in general

(6 respondents)

More time for hands-on sessions

(4 respondents)

Talks contained too much technical terminology for beginners

(4 respondents)

Accommodations (e.g., rooms were too small and not very clean)

(4 respondents)

Poor explanation of session content from lecturers

(3 respondents)

Some parts of presentations were boring

(2 respondents)

Too much hands-on focus

(1 respondent)

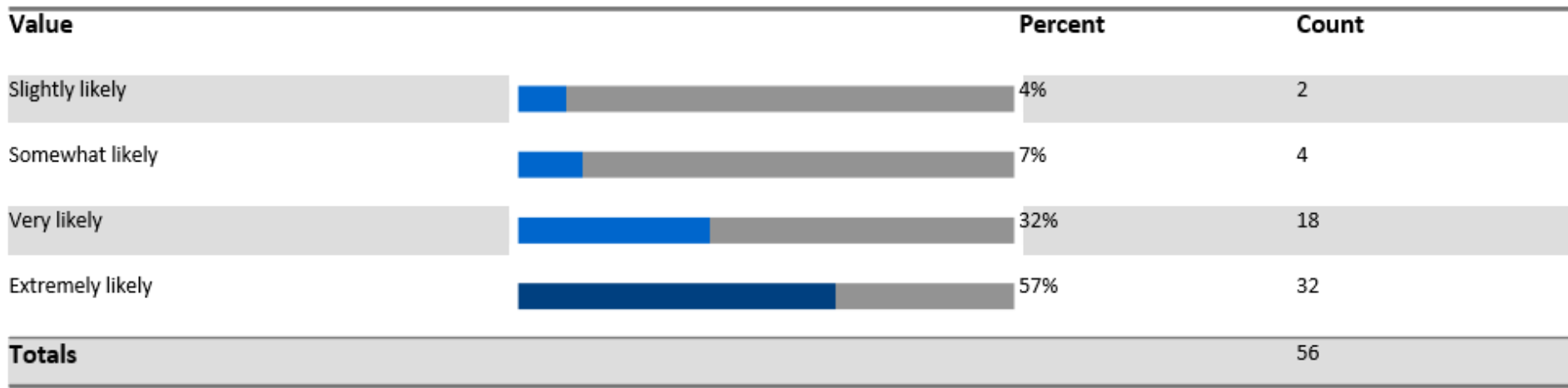
Wanted better food options

(1 respondent)

Nothing

(5 respondents)

How likely are you to recommend the Winter School to your peers?



What could be improved about the Winter School?

Make Winter School duration longer

(15 respondents)

Fix the technical difficulties

(8 respondents)

Share session material before the Winter School

(5 respondents)

Decrease the module content and cover more important/complicated content in more depth

(4 respondents)

Identify target audience for difficulty level of sessions

(3 respondents)

Make the sessions longer

(3 respondents)

Explain what the code does and why it is being run

(3 respondents)

Improve the way material is shared

(3 respondents)

Similar difficulty level for all modules

(2 respondents)

More guidance from lecturers during sessions

(2 respondents)

Have more expert lecturers

(2 respondents)

Better and equal accommodations

(2 respondents)

Increase interaction in sessions

(1 respondent)

Usefulness of Day 1 Sessions

Session 1 [9:00 am]: Overview of transient follow up and Python Basics

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Mansi Kasliwal)	0	0%	2	4%	14	25%	19	34%	18	32%	3	5%	56
Hands-on activity (Leo Singer)	0	0%	5	9%	13	23%	17	30%	19	34%	2	4%	56

Session 2 [10:30 am]: GW localization--galaxy crossmatch

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Leo Singer)	0	0%	0	0%	8	14%	26	46%	20	36%	2	4%	56
Hands-on activity (Leo Singer)	0	0%	0	0%	8	14%	24	43%	22	39%	2	4%	56

Session 3 [12:30 pm]: Observing Run Preparation

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Robert Quimby)	0	0%	0	0%	8	14%	14	25%	33	58%	2	4%	57
Hands-on activity (Shubham Srivastav)	0	0%	1	2%	9	16%	20	36%	24	43%	2	4%	56

Session 4 [3:00 pm]: X-ray analysis -- Swift, Astrosat, Chandra

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Dipankar Bhattacharya)	1	2%	2	4%	11	19%	21	37%	19	33%	3	5%	57
Hands-on activity (Dipankar Bhattacharya)	1	2%	4	7%	9	16%	23	40%	17	30%	3	5%	57

Quality of Day 1 Sessions

Session 1 [9:00 am]: Overview of transient follow up and Python Basics

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Mansi Kasliwal)	0	0%	11	19%	43	75%	3	5%	57
Hands-on activity (Leo Singer)	2	4%	9	16%	42	76%	2	4%	55

Session 2 [10:30 am]: GW localization--galaxy crossmatch

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Leo Singer)	0	0%	9	16%	45	80%	2	4%	56
Hands-on activity (Leo Singer)	0	0%	7	13%	47	84%	2	4%	56

Session 3 [12:30 pm]: Observing Run Preparation

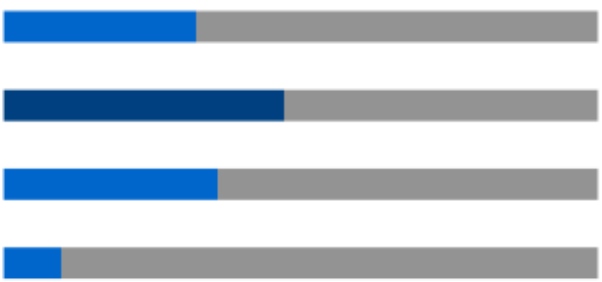
	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Robert Quimby)	0	0%	8	14%	47	83%	2	4%	57
Hands-on activity (Shubham Srivastav)	2	4%	12	22%	39	71%	2	4%	55

Session 4 [3:00 pm]: X-ray analysis -- Swift, Astrosat, Chandra

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Dipankar Bhattacharya)	3	5%	20	35%	31	54%	3	5%	57
Hands-on activity (Dipankar Bhattacharya)	4	7%	17	30%	33	58%	3	5%	57

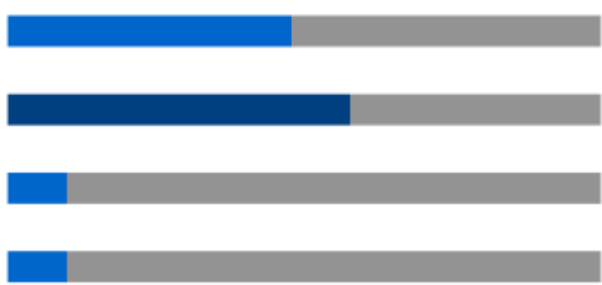
Usefulness of observing run with GROWTH-India telescope (Shubham Srivastav)

Value	Percent	Count
Somewhat useful	26%	14
Very useful	41%	22
Extremely useful	30%	16
Did not attend	4%	2
Totals		54



Quality of observing run with GROWTH-India telescope (Shubham Srivastav)

Value	Percent	Count
High Quality	41%	21
Medium Quality	51%	26
Low Quality	4%	2
Did not attend	4%	2
Totals		51



How could Day 1 sessions have been improved?

Troubleshooting/Fewer technical problems

(5 respondents)

Improve Python session (allow for more time and cover more advanced topics)

(4 respondents)

More instruction for software installation

(1 respondent)

Longer and/or more detailed lectures

(1 respondent)

More interactive sessions in general

(1 respondent)

- One respondent stated that the x-ray analysis session was boring, while another respondent shared that the content for the Python session was presented at a level too low for him/her. One respondent would have liked more time for the overview of transient lecture. Another respondent shared that he/she would have liked a discussion on preparing for the observations, such as the reliability of the packages being used, how the data is catalogued, and can astrophysics be trusted. Two respondents indicated that the sessions did not need improvement.

How could the quality of Day 1 sessions have been improved?

Only three respondents provided suggestions for how to improve the quality of the sessions. One respondent shared that he/she would like the x-ray lecture to be more interactive and interesting, while another would like longer hands-on activities. The remaining respondent indicated that the observation session could have been more prepared.

Usefulness of Day 2 Sessions

Session 5 [9:00 am]: Image data reduction

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Gadiyara Anupama)	0	0%	4	7%	8	14%	24	43%	17	30%	3	5%	56
Hands-on activity (Kishalay De)	0	0%	1	2%	6	11%	16	29%	31	55%	2	4%	56

Session 6 [11:00 am]: UV/optical/IR photometry

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Sudhanshu Barway)	1	2%	4	7%	14	25%	21	38%	13	23%	3	5%	56
Hands-on activity (Kishalay De)	0	0%	2	4%	10	18%	15	27%	27	48%	2	4%	56

Session 7 [12:30 pm]: Image subtraction

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Christoffer Fremling)	0	0%	3	5%	8	14%	23	41%	19	34%	3	5%	56
Hands-on activity (Igor Andreoni)	0	0%	2	4%	8	14%	18	32%	25	45%	3	5%	56

Session 8 [3:00 pm]: Optical/IR spectra

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Robert Quimby)	0	0%	0	0%	8	14%	16	28%	31	54%	2	4%	57
Hands-on activity (Robert Quimby)	0	0%	1	2%	7	12%	17	30%	30	53%	2	4%	57

Quality of Day 2 Sessions

Session 5 [9:00 am]: Image data reduction

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Gadiyara Anupama)	2	4%	14	25%	37	65%	4	7%	57
Hands-on activity (Kishalay De)	1	2%	9	16%	45	79%	2	4%	57

Session 6 [11:00 am]: UV/optical/IR photometry

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Sudhanshu Barway)	5	9%	19	33%	30	53%	3	5%	57
Hands-on activity (Kishalay De)	1	2%	11	19%	43	75%	2	4%	57

Session 7 [12:30 pm]: Image subtraction

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Christoffer Fremling)	0	0%	17	30%	37	65%	3	5%	57
Hands-on activity (Igor Andreoni)	0	0%	8	14%	46	81%	3	5%	57

Session 8 [3:00 pm]: Optical/IR spectra

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Robert Quimby)	0	0%	7	12%	48	84%	2	4%	57
Hands-on activity (Robert Quimby)	1	2%	9	16%	45	79%	2	4%	57

How could Day 2 sessions have been improved?

More specific information or details about topics (e.g., focusing more in atomic and molecular Spectra and more in depth explanation of the data analysis packages)
(3 respondents)

Logistics and organization (e.g., the observing session could have been better organized and some sessions went too long)
(2 respondents)

Quality of the lectures was not good
(2 respondents)

Lecture pace was too fast
(1 respondent)

Provide copies of files for the examples used
(1 respondent)

Longer hands-on sessions
(1 respondent)

Pair data file activity with the lecture
(1 respondent)

Talks contained too much technical terminology for beginners
(1 respondents)

Troubleshooting before the sessions start
(1 respondent)

How could the quality of Day 2 sessions have been improved?

Only one respondent shared he/she would have liked more instruction during the hands-on module since he/she did not know much about the topic and had difficulty in solving the module.

Usefulness of Day 3 Sessions

Session 9 [9:00 am]: Light curve analysis

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Melissa Hayes-Gehrke)	0	0%	0	0%	8	14%	19	33%	27	47%	3	5%	57
Hands-on activity (Melissa Hayes-Gehrke)	0	0%	0	0%	11	20%	21	38%	22	39%	2	4%	56

Session 10 [10:30 am]: Asteroids

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Ashish Mahabal)	1	2%	5	9%	19	34%	19	34%	11	20%	1	2%	56
Hands-on activity (Ashish Mahabal)	2	4%	4	7%	23	41%	16	29%	10	18%	1	2%	56

Session 11 [12:30 pm]: Radio analysis I – VLA

2	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Poonam Chandra)	1	2%	3	5%	22	39%	17	30%	12	21%	1	2%	56
Hands-on activity (Poonam Chandra)	1	2%	2	4%	21	38%	20	36%	10	18%	1	2%	55

Session 12 [3:00 pm]: Radio II – GMRT

	Not at all useful		Not very useful		Somewhat useful		Very useful		Extremely useful		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Hands-on activity (David Kaplan)	2	4%	6	11%	18	33%	14	26%	11	20%	3	6%	54

Quality of Day 3 Sessions

Session 9 [9:00 am]: Light curve analysis

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Melissa Hayes-Gehrke)	0	0%	7	12%	49	86%	1	2%	57
Hands-on activity (Melissa Hayes-Gehrke)	1	2%	12	21%	43	75%	1	2%	57

Session 10 [10:30 am]: Asteroids

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Ashish Mahabal)	4	7%	20	35%	33	58%	0	0%	57
Hands-on activity (Ashish Mahabal)	3	5%	23	40%	31	54%	0	0%	57

Session 11 [12:30 pm]: Radio analysis I – VLA

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Lecture (Poonam Chandra)	3	5%	21	37%	31	54%	2	4%	57
Hands-on activity (Poonam Chandra)	6	11%	19	34%	30	54%	1	2%	56

Session 12 [3:00 pm]: Radio II – GMRT

	Low Quality		Medium Quality		High Quality		Did not attend		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
Hands-on activity (David Kaplan)	8	15%	13	24%	30	55%	4	7%	55

How could Day 3 sessions have been improved?

More explanation for radio analysis (at a slower pace)
(5 respondents)

Last lecture was not of good quality
(3 respondents)

More explanation of hands-on activities
(3 respondent)

Provide files of codes for reference during session
(2 respondent)

Less concentration of Python in one day
(1 respondent)

GMRT module was difficult to understand
(1 respondent)

Greater focus on interferometry and basic statistics
(1 respondent)

More time for radio analysis
(1 respondent)

Increased the number of hands-on sessions
(1 respondent)

Increase time allotted for hands-on sessions
(1 respondents)

Radio II lecture/hands-on activity should be presented separately
(1 respondent)

More interesting astrophysical objects
(1 respondent)

Radio astronomy lecture should be more focused
(1 respondent)

No improvement needed
(1 respondent)

How could the quality of Day 3 sessions have been improved?

Four respondents, who answered this question, felt these sessions were not of good quality compared to the previous days.

- One respondent shared that one hands-on module was not presented at a pace that was easy to follow.
- Another one shared the hands-on module was too difficult.
- The third respondent felt that the notebooks were short and “could have modeling of light curves built in for [the] students.” He/she also shared that the content was not covered in as much depth as the other sessions and lacked in providing an understanding of the “why” behind things.
- The fourth respondent felt that one of the lecturers did not contribute much during his/her session.

Findings

Overall, respondents agreed that participating in the Winter School increased their skills and abilities related to observation of multiwavelength events. This was especially true for their knowledge of multiwavelength follow-up observations to transient events and their ability to use practical tools for multiwavelength follow-up observations to transient events, as 52 to 54 respondents agreed or strongly agreed that the Winter School impacted these areas. This aligns well with respondents reason for attending the Winter School was to gain astronomy knowledge, exposure to the field, and knowledge of tools used in the field, including those used for analysis and coding.

Generally respondents agreed that the organization of the sessions and the content were well done. Respondents did note that some of the hands-on activity sessions were too short for the content or there were technical difficulties that detracted from hands-on sessions. Respondents appreciated the multiwavelength approach to the Winter School as this allowed them to be exposed to different topics across the three days. Respondents also indicated that they would have like for the Winter School to be longer as this would allow for more sufficient time to go in depth to the sessions or even allow for more topics.

Most respondents found almost all of the sessions to be very or extremely useful, with the session earlier in the Winter School being rated generally as more useful. The lecture on preparing for the observation run was rated as the most useful session, followed by both the lecture and hands-on components of the GW localization session. Overall the quality of seven sessions was rated highly by over half of respondents and none of the sessions were rated as low quality by more than 8 respondents. Respondents suggested that the content of some sessions varied with it either being too basic or too difficult/complex to learn in such a short time.

Recommendations

Continue to organize future Winter Schools around larger thematic topics, like the multiwavelength approach utilized during this iteration. This seemed to be very helpful for respondents to learn how the different topics connect. By continuing to do this, lecturers can help demonstrate how many topics connect together to form a larger field and how they impact and build off of each other.

Determine the intended scale of impact (e.g., influence only those with a rudimentary level of knowledge in proposed topics or those at any level) and consider the following options as budget allows. If Summer School targets:

- Students at all levels: Divide sessions into two tracks (basic/intermediate and advanced) and label the difficulty level clearly on the agenda/course description. Students should be provided the opportunity to select which level may be most appropriate and to ask the event coordinators which level may be most applicable based on their experience.
- Students who are at a basic level: Host sessions at a basic to intermediate level and ask instructors to provide more advanced resources for some advanced concepts and/or allocated 30 mins discussion time or practice time with those advanced students separately.
- Students who are at an advance level: Host sessions at an advanced level. If feasible, provide resources at a more basic level or spend 10 minutes at the beginning of each session discussing the basic level information for review.

Plan ahead for any technical issues during the sessions. Respondents noted this as a persistent issues, especially when it came to the hands-on activities. Announcing that some time early on the first day would be dedicated to installing needed packages and software can help ensure students have the needed software without delaying the session. Alternatively, needed software packages could be hosted on an internal website for students to download in advance of the Winter School. Consider if a dedicated IT team could also be on standby in the case that unforeseen issues arise during the Winter School.