

## LAUNCH OF THE ISLP POSTER COMPETITION IN PAKISTAN: EXPERIENCES AND INSIGHTS

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*This paper presents an account of the launch of the ISLP Poster Competition in Pakistan for the very first time in 2020–2021. The first phase of the competition, the ‘national competition,’ attracted 23 posters from undergraduate students of various higher education institutions within the country, and in the second and final phase, the ‘international competition,’ the national winner from Pakistan was selected to be the international winner as well. Based on this positive experience, it is recommended that developing nations engage with such activities without any reservations because these are likely to promote not only self-confidence in their students enrolled in various disciplines but also the urge for learning the basics of statistics that will promote long-lasting appreciation of the subject.*

### INTRODUCTION

Although the importance of statistics and statistical literacy cannot be over-emphasized, we find that all over the world, a large majority of educated people regard statistics as a dry and difficult subject (Chew & Dillon, 2014; Habibullah, 2000, 2014; Macher et al., 2012; Onwuegbuzie, 1997; Williams, 2015). The International Statistical Literacy Project (ISLP) is an initiative with roots that can be traced back to 1994 when the International Statistical Institute (ISI) launched the World Numeracy Program (WNP). A few years later, the WNP was changed to ISLP. The prime objective of ISLP is to contribute to the spread of statistical literacy in all regions of the world and among people engaged in various fields of study and professions. The International Poster Competition and the Best Cooperative Project Award are two well-known initiatives of ISLP that are conducted biennially.

The International Poster Competition is organized by ISLP for lower secondary, upper secondary, and bachelor-level students biennially. The main purpose of the competition is to enhance awareness about the importance of statistical literacy and to develop students’ capabilities in this regard. The origins of the competition can be traced back to 2007 when a pilot competition was launched in Portugal (ISLP, n.d.b). The next two years witnessed the launch of the First International Statistical Literacy Competition in 2008–2009 (ISLP, n.d.a). The ISLP Poster Competition continued as a biennial event in subsequent years, with students participating from around the world. One of the key features of the above-mentioned competition was that the national winning posters were displayed on the ISLP website, and the *international* winners for various categories were announced at the ISI Sessions, World Statistics Congresses of the ISI, or the International Conferences on Teaching Statistics (ICOTS) that were held a few months after the ISLP Poster Competitions.

During the 2020–2021 academic year, Pakistan participated in the ISLP International Poster Competition for the very first time. This paper presents an overview of the launch of the competition in Pakistan by the author in her capacity as ISLP country coordinator and Honorary Director of the Pak Institute of Statistical Training and Research (PISTAR). The following sections of the paper present the methodology that was adopted for the launch, the response from various parts of the country, the procedure used to evaluate posters, feedback provided by participants, experiences gained, and insights gathered for organizing similar competitions in future years.

### LAUNCH OF ISLP POSTER COMPETITION IN PAKISTAN

The ISLP (n.d.c) Poster Competition for 2020–2021 required country coordinators from participating countries to organize national competitions, announce the results of national competitions, and upload winning posters to the ISLP website. Soon after receipt of the winning posters, ISLP created an international jury comprised of six experts in statistics who evaluated the winning posters from each participating country. Results of the international competition were announced during the virtual ISI World Statistics Congress held in the summer of 2021.

Pakistan took part in the competition for the very first time. The initiative was led by the author, who, in addition to her professorial responsibilities at Kinnaird College for Women in Lahore,

was rendering honorary services as (a) Honorary Director of PISTAR and (b) ISLP country coordinator for Pakistan. We present here a brief account of various aspects of the competition.

In accordance with the guidelines provided by ISLP, the national competition invited school and university students from various parts of Pakistan to design a statistical poster. The topics specified by ISLP were '*environment*,' '*biology*,' and/or '*sustainable development*.' The posters were required to reflect usage, analysis, interpretation, and communication of statistical information. The international competition followed the national competition to determine overall winners. The winning posters from each participating country were to be displayed on the ISLP website, and the international winners were to be announced at the 63rd World Statistics Congress of the International Statistical Institute to be held in July 2021.

An email for leaders and faculty-members of various higher education institutions in Pakistan was drafted to introduce them to the ISLP International Poster Competition for 2020–2021 as an exciting opportunity for students, which would be a highly educational, enriching, and horizon-widening experience for them. The email also mentioned that in the time of COVID-19, utilization of inner talent and potentialities for participation in this type of healthy activity would be truly worthwhile for students. The email was sent to a large number of faculty members serving in various universities and colleges as well as to heads of schools offering education at the upper secondary level all over Pakistan.

The bachelor-level category of the competition attracted 23 posters from seven higher education institutions in Pakistan: ten from Beaconhouse National University in Lahore, six from Kinnaird College for Women in Lahore, three from COMSATS University in Islamabad, and one each from Abdul Wali Khan University in Mardan, the Institute of Business Administration in Karachi, Jinnah University for Women in Karachi, and the University of Gujrat in Gujrat. Students from these institutions of higher education represented Departments of Visual Communication Design, Environmental Science, Art and Design, Statistics, Computer Science, Biotechnology, and Statistics, respectively. The upper secondary category of the competition did not attract any posters.

Subsequent to receiving the posters by the prescribed deadline, a panel of five judges comprised of five experienced academic statisticians from *various* regions of Pakistan was constituted. Panel members included representatives from Forman Christian College University in Lahore, Sindh Madressatul Islam University in Karachi, Islamia College University in Peshawar, the University of the Punjab in Lahore, and the University of Balochistan in Quetta. The judges carried out the evaluation process *independent* of each other. Marks were awarded to each poster in accordance with different criteria that had been formulated by the country coordinator following the guidelines provided by ISLP. The main criteria outlined in the guidelines were (a) clarity of the message being conveyed, (b) suitability of the data collected, (c) quality of the statistical analysis/graphs/tables, (d) creativity, and (e) visual appeal of the poster. The marks awarded by the five judges were added by the country coordinator to identify the top three posters.

The national competition culminated in a well-attended and cheerful prize distribution ceremony that was held on day one of the 18<sup>th</sup> International Conference on Statistical Sciences. Cash prizes of 10,000, 8000, and 6000 Pakistani rupees were awarded to the teams of students who produced the posters attaining the first, second, and third places, respectively.

Soon after the national competition culminated, the country coordinator uploaded the national winning poster on the ISLP website. The country coordinator and her PISTAR team were thrilled and truly delighted when, a few months later, they learned that the national winning poster of Pakistan had attained the *top position* in the bachelor-level category of the international competition as well. Soon, the ISLP website was updated to display the names of the experts from six different countries who were included in the panel of judges for the International Competition in 2020–2021. Also, it was indicated that, overall, the ISLP Poster Competition for 2020–2021 had as many as 16,600 participants from 31 countries despite the COVID-19 pandemic (ISLP, n.d.c).

## FEEDBACK RECEIVED

In this section, we present a synthesis of the feedback that was provided by four out of seven faculty members who guided teams of students for the national competition phase of the ISLP poster competition in 2020–2021. Out of the four faculty members who responded to the questionnaire

formulated by the country coordinator, three belonged to disciplines other than statistics, and one was a statistician.

The first question sought information about respondents' expectations from the competition when they first received information about it. Respondents indicated that they had expected a good competition that would provide students with exposure to a national platform along with opportunities to be creative and to learn about statistical analyses that they would usually not encounter in their programs.

The question, "what kind of an experience had it been?" led to a *variety* of responses. One respondent indicated that the competition was not forced upon students and that students who showed interest in the competition were allowed to choose their team members as well as their project topics. Another respondent, whose students submitted only one poster, shared that he and his students were already working on a proposal for a bachelor's-level thesis. They had already selected a topic based on COVID-19, a hot topic at that time, that happened to fall under the ISLP theme and that this team of students did not face any difficulty with the application of statistical analyses because statistics was their major field of study. Yet another respondent expressed the misfortune that only one team could prepare for the competition because at the time of team selection and poster preparation, students were busy with semester exams. The participating team combined two main ISLP themes, biology and sustainable development. After learning that one major hurdle in achieving sustainable development goals is solid waste, the team prepared a poster on waste management using biotechnology.

Two further questions aimed to gather (a) responses regarding the extent to which participants were satisfied with the mechanism adopted for evaluating posters, and (b) impressions about the quality of the Prize and Certificate Distribution Ceremony. A majority of respondents indicated that they were content with the procedure adopted for poster evaluation (one commented, "due to the transparency, timely, and open evaluation"), and all respondents indicated that they enjoyed and appreciated the Prize and Certificate Distribution Ceremony. According to respondents, their satisfaction was due to the fact that, during the ceremony, participants were given a chance to *express* themselves and were given *recognition*. Additionally, digital posters were displayed one after the other to allow each team of competitors to *compare* their work with that of the other teams.

Respondents' impressions about the mechanism adopted for the *organization* of the competition included, on the one hand, (a) an expression of a great deal of satisfaction for a well-organized and well-managed event and (b) a comment that Pakistan winning the international competition would *inspire* many other students from within the country and *motivate* them to participate in similar competitions in the future. On the other hand, one respondent provided a remark implying that a comment could be made only after participating in the competition several times.

The last two questions sought comments and suggestions for the improvement/enhancement of similar competitions to be organized in the future. Suggestions by respondents included (a) the need for an *online briefing* prior to the competition describing how the competition works (for some, the system was somewhat *complex* and demanded *effort* to understand how it worked), (b) the usefulness of including *domain experts* in the panel of judges along with statisticians (e.g., a biology subject expert to be included in panel of judges if the competition topic was biology), (c) the fruitfulness of *actual/verbal* poster presentations by students in addition to the submission of posters, and (d) the importance of recognizing the effort put in by the *teacher* in the form of a certificate (and cash prize in the case of a winning poster).

Responses to two questions by one of the respondents point to some amount of dissatisfaction with the mechanism adopted by ISLP for announcing results. Regarding the quality of the Prize and Certificate Distribution Ceremony for the national competition, the respondent mentioned that it "was excellent, *even better than international level* as all the participants was present at that time and they can observe the level of their poster comparatively." And, in response to another question, the respondent wrote, "After the national competition, *it was a blind review for us*." It appears that the respondent would have been happier if there had been a mechanism by which, at the time international competition results were announced, the respondent could look at winning posters from all participating countries to compare the quality of Pakistan's winning poster with the quality of each of the other posters.

## REFLECTIONS

In this section, we present a synthesis of reflective thoughts that occurred after Pakistan's participation in the ISLP International Poster Competition for the very first time. Reflections pertain to the challenges that were encountered, successes that were achieved, and lessons that have been learned.

### *Challenges Encountered*

The author and her PISTAR team began preparing for the ISLP International Poster Competition toward the end of 2020 and, as such, there was not much time to carry out the within-school/college/university competitions followed by the national competition. Consequently, one of the earliest challenges faced by the country coordinator and her team was the process of searching for email addresses of heads of schools, colleges, and universities to send to them information regarding the competition directly, which turned out to be a *time-consuming* and *exhausting* task in a short span of time.

Another challenge was the need to *motivate* students from diverse disciplines to participate in the competition beyond the emails that had been sent out. One of the possible reasons for this need seems to be a 'disconnect' between many other disciplines and the discipline of statistics.

### *Successes Achieved*

The successes that were achieved during the ISLP International Poster Competition include the following: (a) The country coordinator and her PISTAR team were able to develop a successful mechanism for evaluating posters, (b) the country coordinator and her team were able to organize a highly successful prize distribution ceremony, and (c) the winning poster from Pakistan was the international winner, which was an invigorating and highly morale-boosting experience for both the country coordinator and participants in the competition.

### *Lessons Learned*

The lessons that have been learned from participating in the ISLP International Poster Competition are as follows. First, it is *not optimal* to postpone commencing the national competition in one's country until the end of the first year of the two-year period designated by ISLP for any particular round of the poster competition; it would be much better to commence work in the very beginning of the two-year period. Second, although the email inviting students to participate in the competition had been sent out to numerous institutions offering upper secondary/intermediate-level education, not a single poster was received for this category of the competition. It seems that it is important to spend *time and effort* to devise strategies by which students from *all* targeted educational levels can get motivated to the extent that they take steps to participate in the competition with a spirit of *interest* and *enthusiasm*.

## RECOMMENDATIONS

In this section, we present some recommendations for further enhancement of the ISLP International Poster Competition in future years.

### *Recommendations to Central Management Team of ISLP*

The first point is that undergraduate students studying subjects other than statistics seem to be *handicapped* as compared to those who are studying statistics. An indication of this can be found in the results of the national competition in Pakistan launched by PISTAR in 2020–2021: although only two of the 23 posters received were prepared by students who were enrolled in bachelor programs in statistics, *both* the first and second prize were won by these students. The situation of upper secondary/intermediate-level students seems to be similar. Other than those who study statistics as a subject, students do not have much idea how to conduct statistical analyses. The gap in statistical knowledge between those who study statistics as a subject and those who do not leads to the following suggestion: At each of the two levels, upper secondary and undergraduate, ISLP should consider the establishment of *two separate categories* for the competition, Category 1 for those who study statistics as an elective/a major subject and Category 2 for those who do not. Each of the two categories should have its own set of prizes.

Based on feedback provided by one of the respondents, the second recommendation is that, when results are announced for the international competition, the central management team of ISLP might consider organizing an online presentation of all national winning posters so that students in various participating countries are able to compare their work with that of others. An online presentation may be arranged for each category of the competition because this might play an important role in enhancing the appeal of the ISLP International Poster Competition.

#### *Recommendations to ISLP Country Coordinators*

The first recommendation to ISLP country coordinators for achieving widespread participation in the poster competition is that, although the mechanism for organizing the national competition is country-dependent, country coordinators might consider adopting a procedure *very similar* to that which has been proposed by ISLP, i.e., the national competition should be scheduled over *an entire year* and be carried out in *a number of phases* (competitions within schools/colleges/universities, followed by competitions within cities/towns, then competitions within states/provinces, and finally the country-level national competition).

Another recommendation is that country coordinators might consider organizing *a nationwide series of online workshops* for students from upper secondary and undergraduate levels (along with their teachers). The target audience would be students enrolled in *a variety of disciplines other than statistics* who are not very familiar with statistical concepts. The purpose of these workshops would be to (a) provide awareness of the basic definition of statistical literacy, (b) orient students to the ISLP International Poster Competition, and (c) provide *training* for students to carry out introductory-level analyses of small-scale data using software so that students of various disciplines are able to participate in the competition with a certain degree of confidence.

Yet another recommendation is that, for every country participating in the competition, the country coordinator and his/her team should obtain *feedback* from national competition participants, possibly with two different sets of questions, one for each of the two categories of competitors (category 1 for those who study statistics as an elective/a major subject and category 2 for those who do not). Analysis of feedback provided by participants should also be carried out separately for each category of competitors because this might lead to important insights.

#### *Additional Recommendations to ISLP Country Coordinators from Developing Countries*

In this subsection, we present some additional recommendations to ISLP country coordinators from developing countries to help students cope with challenges typical to these countries.

It is well-known that there exist significant knowledge gaps between students from developed and developing countries. (See Archibugi & Coco, 2004; Khan et al., 2012; and Lavy, 2015.) Participation in an international competition that includes students from technologically advanced countries can thus be quite *daunting* for students from developing countries. As such, in addition to the recommendations given above, we present the following recommendation for ISLP country coordinators from developing countries: in addition to a series of online training workshops for students enrolled in a variety of disciplines other than statistics, efforts should be made to organize *motivational webinars* for faculty and students of various disciplines in order to promote *self-confidence* and the spirit of *trying out one's inner talent* to compete with students from around the world.

The usefulness and importance of statistical packages cannot be over-emphasized (e.g., see Chance et al., 2007). However, some of them are very expensive and are not affordable to students from developing countries (e.g., see Iliyasu et al., 2015). Country coordinators from developing nations might therefore consider including a session to familiarize students with *freely available software* in the series of online training workshop sessions so that teams of students are able to participate in the competition without any risk of copyright violation.

#### CONCLUDING REMARKS

The prime objective of the International Statistical Literacy Project is to promote statistical literacy in the world. It was a highly confidence-boosting experience for the country coordinator and the competitors from Pakistan when, subsequent to review by a panel of six international judges, the winning poster from Pakistan was announced as the international winner of the ISLP Poster

Competition. Based on the positive experience, it is suggested that educational institutions around the world, especially in developing countries, should organize such activities without any hesitation because the experience is likely to inculcate self-confidence in students from diverse disciplines. The experience will also encourage students to learn fundamental statistical concepts and methods, which will enable them to correctly analyze, interpret, and communicate statistics and statistical information.

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