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A comparison of EUSO, IJSO, IBO,IChO and IPhO

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Drs Hans Morélis

Introduction

During a long time I was involved in IBO (International Biology Olympiad), in fact from the first event in 1990 until 2012. I served as head of coordinators (President) for 16 years, a honourable position, which I luckily could perform with great pleasure and satisfaction, thanks to the help of many nice and supportive colleagues. All these years brought me a lot of precious experience, skill and knowledge. This got an extra boost in 2014 as in that year I was the main author of the 25 years IBO Anniversary book, which meant a lot of interesting flashbacks and reflection.

Together with some Dutch colleagues, I saw the start of EUSO (2003) and IJSO (2004) and we often discussed procedures in the other Science Olympiads especially those in Chemistry (IChO) and Physics (IPhO)[1]. It was interesting to learn about all those Olympiads. In 2017 I was lucky to be a member of the group responsible for the tests of the IJSO (International Junior Science Olympiad), which was held in the Netherlands in that year. And last May I was present by chance as Jury member during the EUSO (European Union Science Olympiad) in Portugal.

In all those years I learned that by comparing these Olympiads there are many similarities, but peculiar differences do exist as well.

In this report I will discuss my observations in comparing the EUSO, IJSO, IBO, IChO and IPhO. I hope and expect that an overview of all the similarities and differences will offer hints for reflection and points for improvements and will induce more contacts between the Olympiads so we can learn from each other.

I will not focus upon the Olympiads for Mathematics (IMO), Computer Science (IOI), Geography (IGeO), Astronomy (IOAA), or other Olympiads as they fall outside the scope of this comparison.

Drs Hans Morélis, july 2019

[1] In producing this document I consulted my Dutch colleagues Emiel de Klein, Drs Hans Jordens and Dr Roel Baars. I like to thank them for their advices .

Aims

For all Olympiads the aims are similar: challenging gifted students to become the best in the world and stimulating them to choose a career in Science. Mutual understanding and meeting students from other countries and other cultures also is important, and often leads to close friendships. It is not strange that religious and political propaganda are strictly forbidden in all Olympiads, but this is only explicitly stated in the guidelines of IPhO and IBO.

Most delegation leaders are involved in science education. The yearly Olympiads are an excellent opportunity for them to share their experiences and knowledge in this field. EUSO, IJSO and IBO have these aims written explicitly in their official documents.
The IBO realises this aim by organising a special educational session during each competition..
The EUSO constitution document provides explicitly the aim to develop problem based material on experimental integrated science that may be used in EU secondary schools. Indeed the tasks of passed EUSO competitions are available, just as it is with all other Olympiads. But separate materials specially developed with the aim to be used in secondary schools are not available.

Organization

According to information found on the respective Olympiad websites, only IBO is an international registered body. IJSO, IBO and IChO have an official office.
Most Olympiads have a Steering Committee as managing board, consisting of at least a president, a secretary, a treasurer and two or more members.
Due to historical reasons EUSO so far only has a President and no Steering Committee. In IBO, IChO and IPhO the Steering Committee is supported by a group of advisors, mainly recruited from past and future Olympiads. In IBO the Advisory Board plays an important role. They meet in between each Olympiad and discuss important issues relevant for improving IBO progress.
During each competition all international country leaders are the decisive committee in relation to the Olympiad procedures. Their names differ a little bit in each Olympiad (e.g. International Board, Governing Body, General Assembly) but their responsibilities and authority are comparable.

Available information

Relevant information about the Olympiads can be found on their websites.

EUSO: http://euso.eu
IPhO: http://ipho.org/
IChO: https://www.iuventa.sk/en/Subpages/ICHO/ICHO.alej
IJSO: http://www.ijsoweb.org/
IBO: http://www.ibo-info.org/

Think about documents like
- History of the concerned Olympiad
- statutes (description of formal regulations)

- guidelines (indication of actions and procedures necessary to fulfil what is described in the statutes)
- syllabus (list of the skills, knowledge and notions the participants should be familiar with for the concerned competition)
- membership rules
- information for newcomers
- description of requirements and duties of hosts
- annual reports (proceedings) of past competitions

Looking to the different websites the one of the IPhO is most complete. All available documents are detailed and useful, with special attention and valuable hints for members, newcomers and IPhO organizers. The only minor point is that the site starts to become a little bit outdated. Very helpful are the descriptions about procedures helping to realizes a smooth moderation process and hints for marking rules, e.g. how to mark calculations, graphs, tables, and questions about problems requiring several steps to be taken in order to solve the problem (no punishing twice for the same error).

Similar information is also available on the IJSO, IBO and IChO websites, but IPhO's is much more detailed and complete.

A nice feature of the IPhO website is the existence of a detailed bibliography with a list of all kind of interesting publications relevant for IPhO. Furthermore the site offers extended statistics of IPhO. [2]

Compared to IPhO the EUSO website is scoring not well. A lot of necessary information is missing or incomplete. Guidelines and Rules & Regulations are not available as well as annual reports and a syllabus describing required skills and knowledge of the students.

The websites of IChO, IJSO and IBO are better and show what is necessary, although updates would be nice. IChO website offers and extra separate and very useful document with guidelines for mentors, observers and host countries. Quite some overlap is observable between the IJSO and IBO guidelines. It is obvious they borrowed from each other.
IJSO website is missing information about history.

The competition

The following table shows some features of each Olympiad.

	EUSO	IJSO	IBO	IChO	IPhO
Existing since (1st competition)	2003	2004	1990	1968	1967
Held in the month	Apr/May	Dec	July	July	July
Number of participating countries (approximately)	24	47	78	80	84
Maximum number of participating students per country	2x3	2x3	4	4	5
Student age	<17	<16	<20	<20	<20
Competition duration (days)	7/8	9	8	10	10

[2] The IMO website offers the same. In fact this site is very nicely designed and worth a visit. See: http://imo-official.org/results.aspx

Logo	EUSO	IJSO	IBO	None	None
Available time (hrs) per test	< 4	3	6	5	5
Type and ratio of maximum number of points per test	2xPr 50/50	Th 30 MC 30 Pr 40	Pr: 50 Th: 50	Pr: 40 Th: 60	Pr: 40 Th: 60
Average balance for gold/silver/bronze/honorable mention (merit)	10/30/ 50	10/20/3 0	10/20/30/ 10	appr. 10 /20/30/10	8/17/25/17
Annual fee for membership and for participation (USD)	none	250 / 750	300 / varies	- / 3000	- / 3500

According to the descriptions on the respective websites the procedures concerning exams, functioning of jury, balancing of tasks, and deciding about medals show great similarities. In order to maintain secrecy of the tasks for the students in all Olympiads is stated that there should be no contact between jury members and competitors once the jury has received the competition tasks for consideration. Information regarding the competition tasks must not be passed to the competitors directly or indirectly prior or during the competition.
For this reason students have to hand in their electronic communication devices, like (smart)phone and laptop, during competition time.

Summary of some special features:

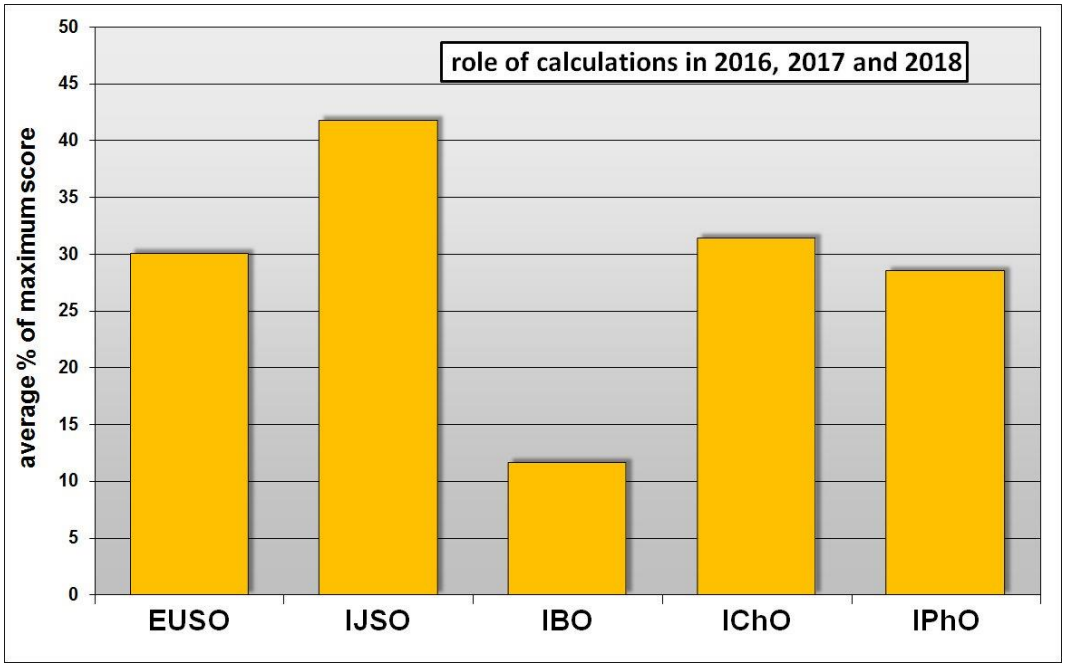
- In IJSO and in IBO during Opening Ceremony students and jury members take an oath and swear solemnly to act honestly according to the principles of *Fair Play*.
- In IBO students have to sign a declaration confirming that their participation is in line with the requirements stated in the rules.
- Participation in EUSO is restricted to countries being a member of the European Union
- Both IJSO and EUSO are an interdisciplinary competition, combining aspects from Biology, Chemistry and Physics.
- IBO, IChO and IPhO are individual competitions.
  In EUSO and IJSO students have to cooperate in teams of three during Practical tasks. It means that EUSO is completely teamwork based as there are just two Practical Tasks and no Theoretical Tasks.
- In IChO and IPhO participating countries have to pay a participation fee to the host. In addition in IBO and IJSO countries have to pay a membership fee. EUSO mostly is completely free of charge.
- Each country, willing to become a member of IBO has to supply IBO Office with a description of their National competition. The reason is that in the past sometimes countries did send unofficial teams, like students from one and the same school, without having a national selection.
- Due to the chosen medal distribution in IBO, IChO and IPhO a substantial number of students will not receive a medal, possibly leaving a country without any medal. This is impossible in EUSO and IJSO. In EUSO all students get a medal. In IJSO is taken care that at least one student per country gets a medal.

- In IPhO students may bring their own (on forehand approved) calculator to the exams.

Tasks and Exams

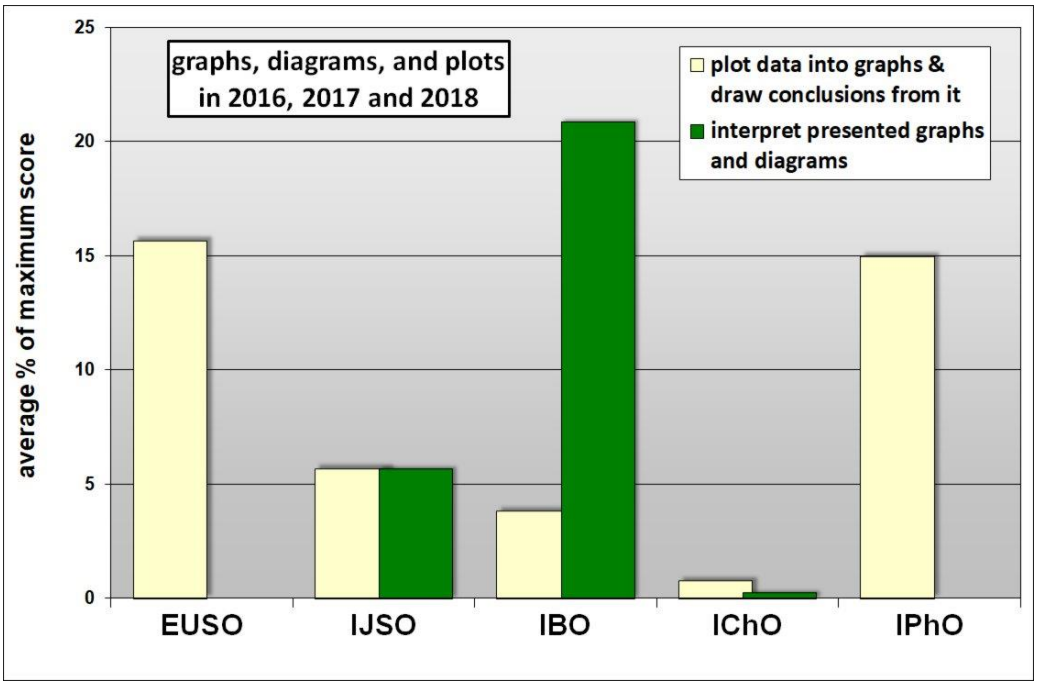
Over the years I checked quite some tasks used in EUSO, IJSO, IBO, IChO and IPhO. Especially for this report I thoroughly analysed of these Olympiads the tasks of 2016, 2017 and 2018. Virtually all tasks are constructed in such a way that objective marking is possible. Multiple choice is popular, and also matching aspects and judging statements on true or false. Open ended questions like questions requiring students to write an explanation or description (in their own language) are avoided.

In the tasks I observed a lot of similarities in the structure of the different tasks and the type of questions, but focusing upon specific skills it is obvious that there are differences, related to the type of science. In Physics and Chemistry asking students to calculate something is much more important than in Biology. The following picture shows the average % of points dedicated to calculations in 2016, 2017 and 2018.



Be aware the diagram shows a three years average. In fact the variation per year within one and the same Olympiad can be quite substantial.

Besides calculations also graphs are prominent in science. It is quite common to produce graphs (plots) of obtained data after performing experiments and draw conclusions from them. The next picture shows the average in the last three Olympiads of the maximum score dedicated to plotting a graph and the interpretation of presented graphs and diagrams.



IJSO, IBO and IChO put far less emphasis on plotting graphs and draw conclusions from it than EUSO and IPhO.
Drawing conclusions based upon the interpretation of presented graphs and diagrams is another story. This is very poor in EUSO, Chemistry and Physics , but in Biology tasks this is extremely important. Especially in IBO theoretical task the majority of the questions test this skill.
A skill which is very specific for IPhO is deriving mathematical expressions of phenomena in order to describe relationships, especially in the theoretical test. Normally in IPhO it is at most 30 % of the maximum obtainable score, while this skill is neglected almost completely in the other Olympiads. Please note that this varies through the years, with IPhO 2017 as an extreme example: that year almost all questions in the theoretical task were dealing with mathematical expressions.

In IPhO multiple choice questions (MCQ) are completely ignored, while all the other Olympiads use them, but not all in the same way and proportions.

The IJSO has a separate MCQ Theoretical test, covering 30% of the available maximum score. All questions in this MCQ task are rigidly restricted to 4 alternatives. It is better to drop this requirement as it is not in line with general accepted assessment directives. Often less or more than 4 alternatives do suite. Think about judging the change of an aspect. Three alternatives (decrease, remain the same, and increase) are in that case very appropriate. And in questions related to matching and sequencing three aspects the number of possibilities are 3!=6. So in that case 6 alternatives would be suitable.

Judging statements on their correctness (true/false) also is very popular, in particular for the IBO theoretical tests, which in fact completely is composed of True/False questions. A disadvantage of these questions is the high probability to guess correctly (50%). The discriminatory power of such a question is relatively low.

The IBO tackled this issue by grouping multiple True/False statements together in multiple choice questions and using a gradual marking scheme.

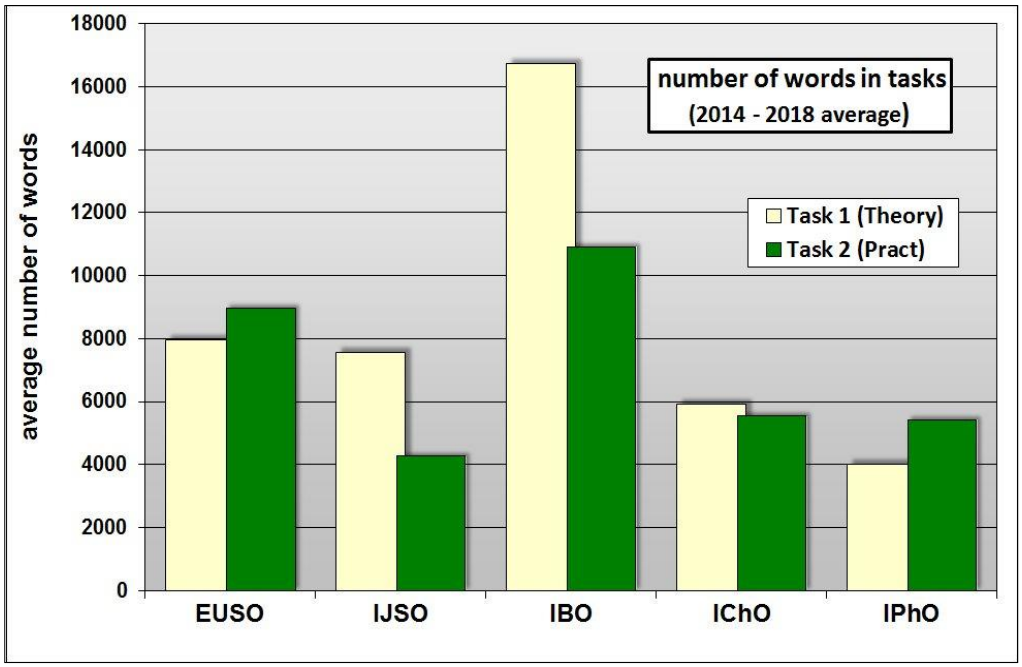
Another disadvantage of True/False questions is the difficulty to test skills of students in performing calculations and plotting graphs. As a consequence these skills are somewhat under exposed in IBO.

But there is also an advantage. The use of True/False questions makes the moderation process easy. Of course it is necessary that all delegations agree with the marks given to the answers of the students by the local Science Committee of the host. This moderation process can be quite time consuming. A True/False answer key makes the discussions about awarded points very simple and limited in time. For this reason the duration of IBO is two days shorter than IChO and IPhO. These two Olympiads have to cope with more complex marking due to questions involving

- plotting a graph
- producing chemical equations
- deriving mathematical expressions
- consecutive calculations

IPhO quite well has solved the complex marking in developing useful directives for marking these type of questions.

In comparing tasks it is clear that over the years the way the questions are phrased is slowly changing. Although it is advised in al Olympiads to phrase questions brief and concise we observe a trend to frame problems not just in a scientific simple way but to offer all kind of extra contextual information. This especially is the case in IBO, where the exam word count is highest of all Olympiads.
See diagram.

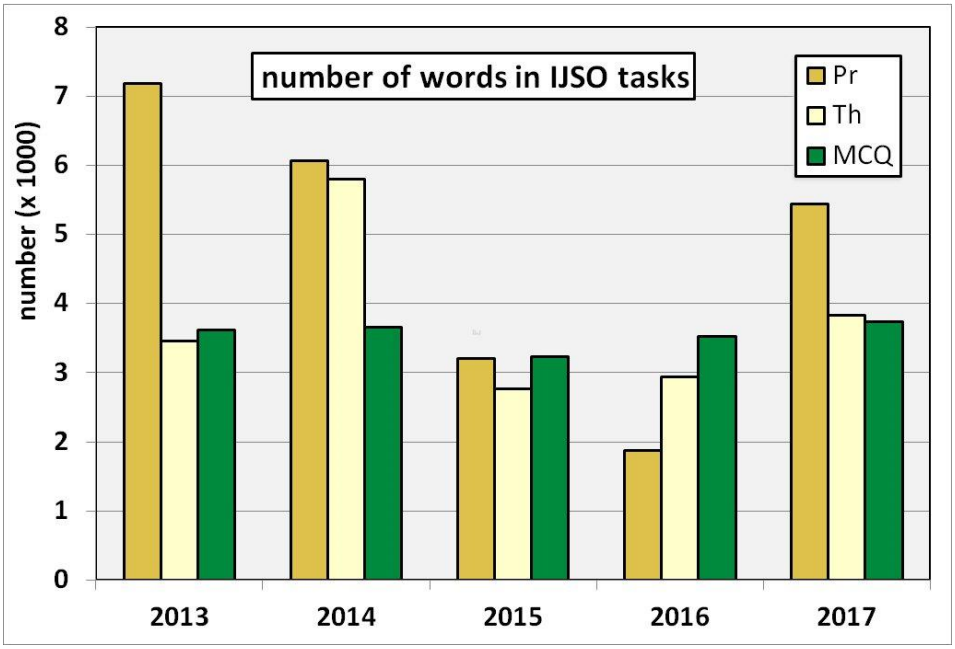


Two extra reasons for the many words in IBO are:

- Test are longer because the available time per test is 6 hours, which is longer than in any of the other Olympiads
- Designing multiple True/False questions requires more words than asking a calculation or plotting a graph.

In order to limit the number of words IJSO, IChO and IPhO have special restrictions formulated in their guidelines in explicitly fixing a maximum of the allowed words or characters per test. This is a good help for jury members, as their translation job is less exhausting.

The number of words also is related to preferences of the host country. The diagram mentioned above shows a five years average (2014-2018) but the variation within each Olympiad can be considerable. To illustrate this, the diagram below shows the number of words for IJSO in the years 2013 up to 2017.

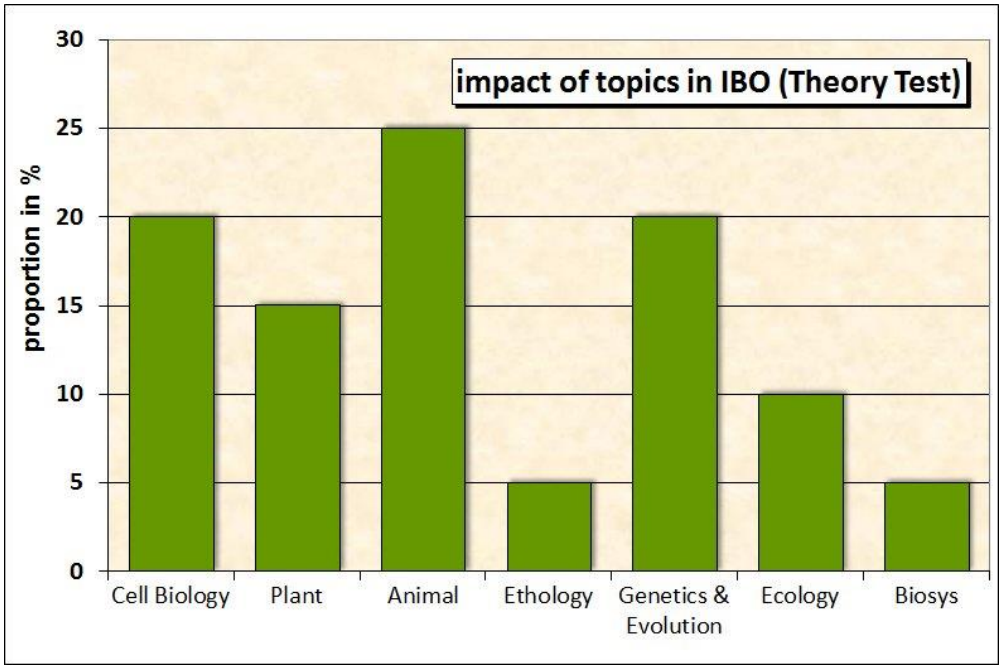


The IChO has a very special feature related to the preparation of students: so called Preparatory Tasks. Roughly half a year before the competition, all countries receive a set of all kind of problems involving specific knowledge and skills that their students should use in preparation for the next IChO.

In some IJSO and IChO tasks *obliged reading time* is an issue. It means that students are not allowed to start after receiving their test, but should only read during 15 minutes or more. They should not write or calculate during this time otherwise they even are disqualified. This procedure is a kind of solution for the situation that a test is judged too long by Jury. So the solution is to offer students not more working time but extra reading time. My personal opinion is that it would be more sensible to offer extra time for the test as a whole and leave it to the students how to use their time. In fact it is a nice test aim to assess how well students are able to work properly and use their available time efficiently.

IBO has an active Advisory Board that meets in between each IBO in order to discuss possible improvements. As a result of this, in comparison to the other Olympiads, IBO has quite some extra features. Some examples are the following.

- A special IBO exam pre-check subgroup has been installed. This group, consisting of experienced Jury members skilled in assessment, arrives a week prior to the actual competition at the IBO location in order to check and discuss the IBO tasks and advises about improvements of it.
- A special document has been developed for IBO hosts about producing valuable and reliable test questions, with a lot of assessment hints.
  Also is stated in the IBO Guidelines that hosts should involve assessment experts in the process of producing the IBO tests.
- All Olympiads present tasks in English language and discussions are also in this language. Due to historical reasons the IBO host provide an extra service for Russian speaking countries. Tasks are presented in Russian as well.
- In all Olympiads, except EUSO, syllabuses exist describing required knowledge, notions an skills of the students. Also IBO used to have a list of required theoretical knowledge and skills students should be familiar with for the IBO competition. The description of the IBO Practical skills was useful but that was not the case for the list of theoretical notions. So this list has been skipped. But what still exists is an overview of the proportions in which important biology domains should feature in the theoretical test. This one has proven to be useful. It limits that the theoretical test focuses too much on special specific topics. See diagram.

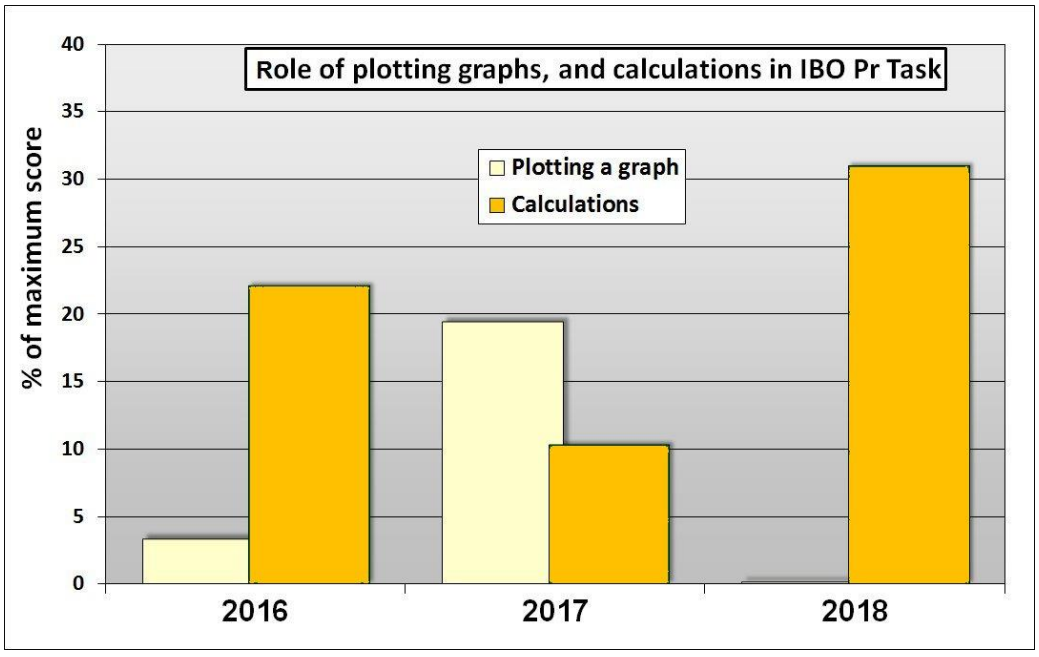


- During Exams objective inspectors appointed by the jury are present and check whether the testing conditions are in accordance with the Rules. They also look for irregularities and their observations are helping to smoothen the following moderation process. The inspectors are recruited among jury members of past and future IBO organizers and among newcomers attending the IBO as observer without a team. In fact during IJSO- and IChO-exams also inspectors are present, but these are recruited among members of the Steering Committee.
- Many countries are using the IBO test questions in their national competition, not only for training, but also as a selection tool. For this reason it has been fixed in the rules that publication of the tasks (particularly on the internet) should not happen within two years after their use in the IBO.

Role of the host

It is obvious that the host is very crucial. Usually during and after the Olympiad everybody is very happy with the efforts of the host and the quality of the tasks. This is related to the fact that most hosts stick to the available hints described in regulations which are based on past experiences. Besides this every host invests in presenting something special and this leads to a great and nice variety. Of course every country has its own preference in topics, and focus upon knowledge, skills and experiments. That also brings variety. In fact questions about just knowledge should be banned and in IChO and IPhO this indeed is practised. The amount of pure knowledge questions is zero, while EUSO-, IJSO- and IBO–hosts still sometimes do break this rule a bit.

The greatest variety in the different Olympiad tasks is noticed in the way the Practical tasks are designed and the skills which are assessed. Just as an example the following picture shows this for plotting a graph and applying calculations in three consecutive Practical tasks by IBO.



If money is no problem the experiments in the Practical task can be very modern and sophisticated with advanced equipment. But we also sometimes are confronted with traditional old fashioned experiments, which is a pity. That's all in the game.

More worse is the situation if a host don't pay enough attention to essential conditions. Properly setting Olympiad exams requires careful attention. Pretesting practical exams, consulting assessment experts and following other existing guidelines is of great importance. Fortunately, in most cases this works out well, and does not lead to unpleasant situations and discussions during the competition. But exceptions do occur.

Two important regulations for the marking process are.

- Avoid errors carrying forward (also known as error propagation). Consequential marking should be used so that students are not punished twice for the same error,
- The all or nothing principle should not be used in questions requiring different steps to answer. Partly correct answers should deserve some points.

Still sometimes a host do not apply the above mentioned marking regulations sufficiently with the unpleasant result of non acceptance by Jury members of the awarded scores followed by a time consuming extra marking and moderation process. So the hint is: stick to the guidelines.

Producing a report after the Olympiad is a requirement for all hosts. It should contain information about the procedures, tasks, results and much more. IBO, IJSO and EUSO offer a nice and complete list of all the points to be included.
The report is a very useful document for recording history, offering hints for the future and justification of the procedures during the Olympiad.

Unfortunately, notwithstanding the clear indications so far in EUSO annual reports are missing and this often also is the case in IChO and IJSO. This is worrying as it means that a check upon the correctness of the final results and ranking of the students is missing. Of course in every Olympiad the host provide all delegation leaders with a list of their students' total results before the closing ceremony. But this is no guarantee that the presented ranking in the closing ceremony indeed is the correct one. More about this in the following topic.

Reliability of the final ranking

Not all Olympiads are equally transparent in presenting their final ranking, particularly EUSO, IJSO and IChO. In contrast with IBO and IPhO these Olympiads do not provide all raw results + ranking after the competition.So it is impossible to verify the reliability of the final ranking. This really is necessary as the following errors do occur.

- Cheating by the host.
  It is not nice to mention, but it has happened
- Exchanging codes of students of the same and/or of different countries leading to mixing up their scores

- Typing errors while inputting scores in a spread sheet
- Typing errors while applying corrections in a score after the moderation process
- Calculation errors while creating the final ranking

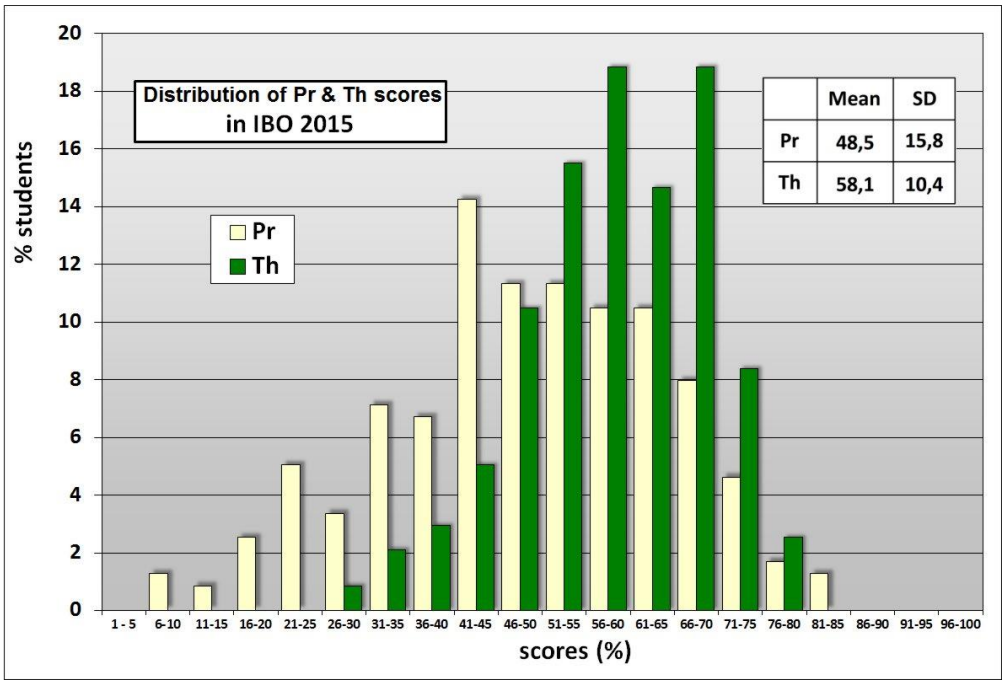
Luckily these events are very rare, but should be avoided by all means necessary. It is advisable to have a thorough check of the results and ranking before and after the closing ceremony. A later presented report offers an extra check.

Determining the final ranking

There are other arguments to be keen upon the correctness of the final scores and particularly the ranking of the students. This is related to the balance between the different tasks in the Olympiads. Most Olympiads want to fix to which extent each task has a weight in determining the final ranking of the students. And this is realized in fixing the maximum obtainable score per task.
The following table shows what the balance of the maximum scores should be.

EUSO	2x Pr, each 50 %	IChO	Pr 40%, Th 60%
IJSO	Pr 40 %, Th 30%, MCQ 30%	IPhO	Pr 40%, Th 60%
IBO	Pr 50%, Th 50%.		

Nice balances, but the problem is that in the actual situation this will not work out. Not only the actual obtained mean and maximum scores will be different, but also the standard deviation of the tasks will be different, which means that the task with the highest SD will be most decisive for determining the final ranking. The next example, showing the distribution of the scores for IBO-2015, proves this.



The desired Pr/Th balance should be 50/50, but it is obvious this is not the case here. In fact it is about 60/40. The Pr tasks is much more decisive for the final ranking than the Th task, so the resulting ranking will not be in line with the desired Pr/Th balance.

Another even more problematic balance is visible in the IJSO 2013 results. According to the regulations the balance between Practical test, Theoretical test and MCQ test should be 40/30/30. But in checking the actual means and standard deviations it can be calculated that the Pr/Th/MCQ balance was 28/38/34 in that year: a total different ratio.

These examples show that without a correction the desired balance never will be realised. An easy method to cure this problem exists: z-scores. Applying this correction method will result in a ranking being in line with the desired balance. The principle is that for each student not his or her actual score is decisive for the ranking, but the distance to the mean with the standard deviation as measuring unit.

$$\text{z-score} = \frac{\text{score minus mean}}{\text{standard deviation}}$$ in formula: $$Z = \frac{x_i - \bar{x}}{SD}$$

Applying the z-score method will not cause a big rearrangement of the ranking. There are only small changes and the effect will be most upon students with outlaying scores. At least the resulting ranking will be more consistent with the desired balance.

Calculating z-scores is very easy with Excel. Adding the z-scores of each task (if necessary multiplying with 0.3, 0.4, 0.5 and/or 0.6) will offer the desired final ranking.

According to the definition of z-scores the mean of all z-scores of a task will be equally to zero and the corresponding SD will be equally to 1. Participants with a raw score lower than the original mean will have a negative z-score, participants with a raw score higher than the original mean will have a positive z-score.
The z-score correction procedure for weighing different tests is well known to experts in statistics and in assessment. But to people not familiar with z-scores it may be odd and giving the impression that something is wrong. For this reason often mean and SD of all z-scores are transformed to 50 and 10 in applying the following simple procedure.

$$\text{T-score} = 10 * \left(\frac{x_i - \bar{x}}{SD} \right) + 50$$

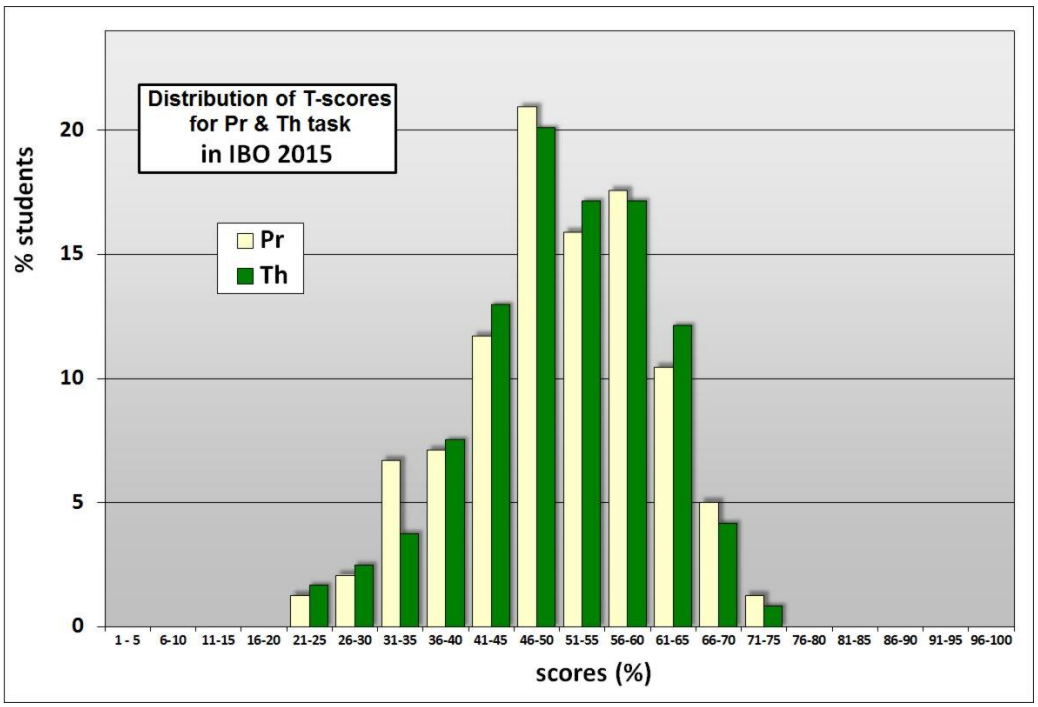
x_i = score of student i

$\bar{x}$ = mean of the whole group

SD = standard deviation

We call this T-scores.

Looking again to IBO 2015 the score distribution after applying z-scores is shown in the following picture.



Now the balance of Pr and Th is in line with the desired 50/50 balance. And so it was done in IBO 2015, as after some hesitations and discussions IBO is using the z-score correction since 2000.

Not everybody is convinced of the use of z-scores as a valuable tool to weight different tests in the desired ratio. An objection regards the distribution of the scores. If the results of a test show no nice continuous pattern or skew curve, the distribution will not show a Gauss curve and the standard deviation will be somewhat higher than it should be. That indeed can be a problem as a condition for applying z-scores is that the distribution of the scores will follow the normal distribution.
In fact Olympiad results never will follow exact the normal distribution but in practice this irregularity is low and of minor importance.

Another objection against z-scores regards the standard deviation itself. A test with a relatively low SD discriminates poor. Apparently the quality of the test is low. So the question is whether it is wise to apply a correction in order to give such a test more weight. Maybe it is better to ignore the standard deviation and leave the results as they are and agree with the lower weight of a test with a lower SD in the realization of the final ranking.

This objection is convincing, but it depends on the aim of the competition what to decide. Should we take the discriminating power (SD) into account and apply z-scores or just restrict to the raw scores.
In fact the z-score offers a compromise as according to the definition both SD and raw score are included in the calculation of the z-score.
And luckily extreme low standard deviations never are the case in Olympiad tests.

Recommendations

In General

Stick to the Rules
Tricky aspects sometimes neglected and leading to problems in the actual competition are:

- pretesting the tasks
- avoiding double penalties and the all-or-nothing principle during marking

Take note of the nice descriptions existing in IPhO about the way questions concerning calculations, graphs (plots), tables and questions requiring several answer steps should be marked. These descriptions are very useful for smoothening the moderation process.

The host always should involve assessment experts in producing the tasks. It will lead to better (more reliable) tasks, smoothen the process of discussion in jury and speed up translation.

In inspecting the tasks of the different Olympiads I got the impression that sometimes topics in the theoretical tasks were overexposed, while other relevant topics were under exposed. May be it is a good idea for each Olympiad to indicate approximately in which proportions important domains should feature in the Theoretical task (like right now in IBO).
Maybe it also is interesting to do the same concerning skills like producing plots, interpreting diagrams and graphs, performing calculations and deriving mathematical expressions

Take note of the z-score method as correction upon the raw scores of the students and consider whether this could be an improvement in determining a correct ranking.

Always supply all delegations with the scores and ranking directly after the closing ceremony. It is nice for the students and in the case of a mistake it can be corrected at once.

Insist that every host will produce and distribute a report after the competition. A good custom is to present this at the next competition. Details about what should be included in the report are well known and described in IBO Guidelines.

EUSO

Ireland, Germany, Greece and Spain were at the cradle of EUSO. Right from the beginning Michael Cotter (Ireland) became President and he still since 2003 holds this position and determines mainly the EUSO policy. Really a great job. Thanks to him EUSO has grown bigger and bigger.
But it is obvious that EUSO cannot go on as a one-man-show as the number of participating countries has become too big now. Important matters are not accomplished yet. The website shows this. The site is lacking necessary information that should be available. Missing not yet produced documents are a separate Guidelines, Regulations, Statutes and a Syllabus describing required knowledge, notions and skills of the students.

The available so called Constitution document does not provide this information sufficiently. There is a need now for a Steering Committee and Advisory Board in order to catch up with all this.

One of the EUSO aims described in the Constitution is comparing syllabi and educational trends as well as developing problem based material on experimental integrated science to be used in European secondary schools but. In fact, besides publishing tasks of former competitions, these matters so far are ignored. Probably it is better to skip these advanced aims. Other priorities need attention.

IJSO

Refrain from sticking to 4 alternatives in the MCQ test. This is too rigid. There is no reason to expel three or more than four alternatives.

A description of IJSO history on the website would be useful.

Reconsider the purpose and benefit of the obliged reading time (else disqualification or punishment) at the start of a test.

IBO

The tasks are too long and cause long lasting discussions and lengthening of the translation process. Reduce unnecessary contextual information .

More attention in the tasks for important science skills like calculations and producing/plotting graphs would be advisable. A disadvantage is that this maybe leads to more time necessary for moderation.

Is the existing embargo on publication of tasks within two years after the concerning competition still useful? The same counts for providing Jury with Russian translations of the tasks.

IChO

More attention in the tasks for producing/plotting graphs would be useful.

Reconsider the purpose and benefit of the obliged reading time (else disqualification or punishment) at the start of a test.

IChO has quite an extensive syllabus, describing which knowledge, notions and skills students should have mastered. Most problems in IChO indeed are described in the syllabus, but fall completely outside the scope of secondary education. Just as a support for preparation of students for IChO participation the IChO host has the duty to send on forehand to all countries a substantial set of preparatory tasks, involving this extra notions and skills. That's a very nice help, but it means a lot of extra work for the host. Maybe it could be enough to send a simple list with a summary of these extra requirements, just as it is in the other Olympiads.

Besides this it is could be wise to reconsider the way in which IChO tasks are designed. Maybe the focus should be more upon reasoning and understanding instead of recalling very specific notions of the Preparatory Tasks.

IPhO

IPhO website needs an update.