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TRAINING ACTION Nº 2

SATISFACTION QUESTIONNAIRE REPORT

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Introduction

The present Report presents the analysis of the **Satisfaction Questionnaires** applied during the Training Actions N° 2 of VISIR+ Project "*Educational Modules for Electric and Electronic Circuits Theory and Practice following an Enquiry-based Teaching and Learning Methodology supported by VISIR"* which took place in the Latin American Higher-Education Partners from August 22nd to September 16th, 2016.

The Satisfaction Questionnaire was devised as a data collection instrument to evaluate the impact of the three training actions (TA1, TA2 and TA3) which take place along the development of VISIR+ Project. The tool was already implemented during the TA1 in Karlskrona (Sweden, February 2016) and the results were subsequently analysed and reported. In the case of the Training Actions 2, the questionnaire was given to all participants at the end of each HE meeting, different from the single TA1 where attendees answered the questionnaire at the end of each day module. TA2 did not have virtual participants.

The TA2 took place in five VISIR+ Latin American higher-education institutions, three host Partner universities from Brazil:

1. Federal Institute of Education, Science and Technology of Santa Catarina (IFSC),
2. Universidad Federal de Santa Catarina (UFSC),
3. Pontifícia Universidade Católica do Rio (PUCRio),

and two host Partner universities from Argentina.

1. Universidad Nacional de Santiago del Estero (UNSE),
2. Universidad Nacional de Rosario (UNR).

The main lecturers for each TA2 were from European Partner universities:

1. Instituto Politécnico do Porto and Instituto Superior de Enghenharia do Porto (IPP-ISEP), Portugal
2. Universidad Nacional de Educación a Distancia (UNED), Spain
3. Universidad de la Iglesia de Deusto (UDeusto), Spain
4. Carinthia University of Applied Sciences (CUAS), Austria.

The distribution of lecturers for each LA HE institution was:

Host Institutions	Guest Institutions	City
UFSC	IPP/ISEP	Araranguá
IFSC	IPP/ISEP	Florianópolis
PUCRio	CUAS	Rio do Janeiro
UNSE	UNED	Santiago del Estero
UNR	UDeusto	Rosario

About the instrument

The instrument was designed by the members of VISIR+ Project Workpackage 3 who are researchers from Research Institute of Education Sciences (IRICE) from the National Technical and Scientific Research Council (CONICET) from Argentina and from the Instituto Politécnico do Porto (IPP) from Portugal.

The Satisfaction Questionnaire has 8 closed questions and 1 open question, all questions expressed in statements about the training workshops (Appendix). The questions refer to:

a)The workshop and the lecturers as regards:

- TA objectives (*Q1.The objectives for the session were clearly explained)*.
- The interaction between lecturers and participants workshop (*Q2.The instructor raised questions and posed problems for workshop participants; Q3.The*

lecturer was sensitive to the participants' interests, priorities, and concerns; Q4.There was a genuine effort to get participants involved in discussions about the use of VISIR).

- The time allotted (*Q5.The time allotted for presentation and discussions was enough*).

b)The use of technological equipment, i.e. VISIR Lab, as regards:

- didactic implications (*Q6. The technological equipment enhanced the effectiveness of teaching and learning*).
- practical use (*Q8. How difficult do you feel about the practice for VISIR?)*

c) Participants' expectations (*Q7. Overall, the presentation about the VISIR systems met my expectations*)

All questions had an evaluation range from 1 to 5 which expressed:

a. participant's evaluation of the workshop aspect for Q1 to Q6 with the following option: *1.Unsatisfactory; 2. below average;3. Average; 4. Above average; 5. Excellent*.
b. participant's evaluation of level of achievement for Q7 with the following options: *1.Poor , 2. Fair, 3. Satisfactory, 4. Highly satisfactory, 5. Excellent.*
c. participant's evaluation of range of difficulty for Q8 with the following options: *1. Too difficult, 2. Difficult, 3. Just right, 4. Easy, 5.Too easy.*

The option NA (0), not answered was also included.

An open question was also included in the satisfaction questionnaire in order to provide a qualitative perspective to the evaluation by eliciting reflection on positive and negative aspects of the whole experience. The questions was: *Please write about the positive aspects of Training Action 2 and the aspects to be improved.*

Participants

A number of 124 participants attended the TA2. Most of them (64) were university professors from host universities, some from Associated Partner Institutions (24). In Argentina, CONFEDI set up a Dissemination Project by inviting representatives of

engineering universities grouped by geographical regions. Therefore, these participants attended UNSE and UNR workshops who for the sake of data analysis will be identified as *CONFEDI Participants.*

Analysis of Results

From a grand total of 87 questionnaires administered, 31 were answered at UFSC, 8 at IFSC, 7 at PUCRio, 22 at UNSE and 19 at UNR. Chart 1 below shows the results.

Country	Brazil			Argentina		Grand total
Institution	UFSC	IFSC	PUC Rio	UNSE	UNR	
Total per institution	31	8	7	22	19	87

Chart 1. Number of SQ answers

From 87 questionnaires, 696 questions were analyzed. Only 7 questions were not answered which represents 1% from grand total. Results from Open Questions were 71 answers, ie, 81,6% total of the survey, and provided very rich information.

The results are shown below in charts and figures. Charts show the scoring given for each each in each institution; the last line sums up the results in percentages. Figures present the information in two axes. Each horizontal bar represents in the X axis both: **1**. the extent to which evaluation by participants have chosen between the rank from *1 to 5* and **2**. the number of answers given according to the number of participants in each session. Each colour stands for each institution: UFSC blue, IFSC, red, PUC.Rio green, UNSE purple and UNR light blue. The Y axis represents the rank of evaluation from 1 to 5. Detailed institutional results are in the Appendix.

Question 1. Objectives

The first question "*The objectives for the session were clearly explained"* refers to three dimensions of objectives which all TA2 had to address in one way or another.

1. The objectives of the VISIR+ Project which would provide the contextualization of the workshops. They were:

> *The VISIR+ project objectives are: (O1) to allow teachers enriching course curricula, on electric and electronic circuits theory and practice, by including hands-on, simulated and remote labs; (O2) to scaffold student's learning and foster their autonomy, namely by allowing them to conduct real experiments, over the Internet (on a 24/7 basis); (O3) to increase students' meaningful knowledge acquisition and retention by enabling them to compare results from calculus, simulation and real experiments, at any place / anytime; (O4) to increase students success rates in continuous assessment modalities, particularly those covering the acquisition of experimental skills; (O5) and, finally, to allow the partner institutions using an ICT-based tool for attracting students to STEM careers, particularly amongst secondary schools*

2. The second dimension refers to the objectives of Training Actions 2 in the Project, narrowing the scope of contextualization:

> *A 2nd training action in each partner country IHE, led by the two representatives of each host institution, who attended the 1st training action, plus two representatives of one European partner . This 2nd action targets all teachers with lecture duties in the institution's courses related to electric and electronic circuits, plus two representatives from the nearby associated partners. Other teachers from the associated partners may participate remotely. The instructional design of all target courses. At the end of this activity the expected result is a set of educational modules comprising the use of hands-on, simulated and remote labs, following an enquiry-based methodology, this accomplishing O1. The course curricula, lessons plans, and the contents of the target courses LMS pages will provide the measurable indicators.*

3. The third dimension referred to the objectives of each local workshop which implied getting participants involved in the use of VISIR Labs by understanding the didactic principles and the technical aspects which underlie remote lab use.

Chart 1 below sums the number of answers under each scoring (1 to 5, including NA not answered) meaning *1.Unsatisfactory; 2. Below average; 3. Average; 4. Above average; 5. Excellent*.

Host Institution	NA	1	2	3	4	5	Total
UFSC	-	-	-	1	11	19	31
IFSC	-	-	-	-	2	6	8
PUC Rio	-	-	-	-	2	5	7
UNSE	1	-	1	3	10	7	22
UNR	-	-	-	-	6	13	19
Total answers	***1.14%***	**-**	***1.14%***	***5.97%***	***35.63%***	***57.47%***	*87*

Chart 1. Objectives

Out of 87 Questionnaires analyzed, 57.47% answered the objectives were explained in an excellent way, 35.63% considered explanations were above average level and only 5.97% average and 1.14% below average, i.e. only 7.11% seemed to have failed to understand the objectives of TA2. Only one participant did not answer question 1.

Figure 1 sums up the results of participants' answers to Q1 in all HE institutions.

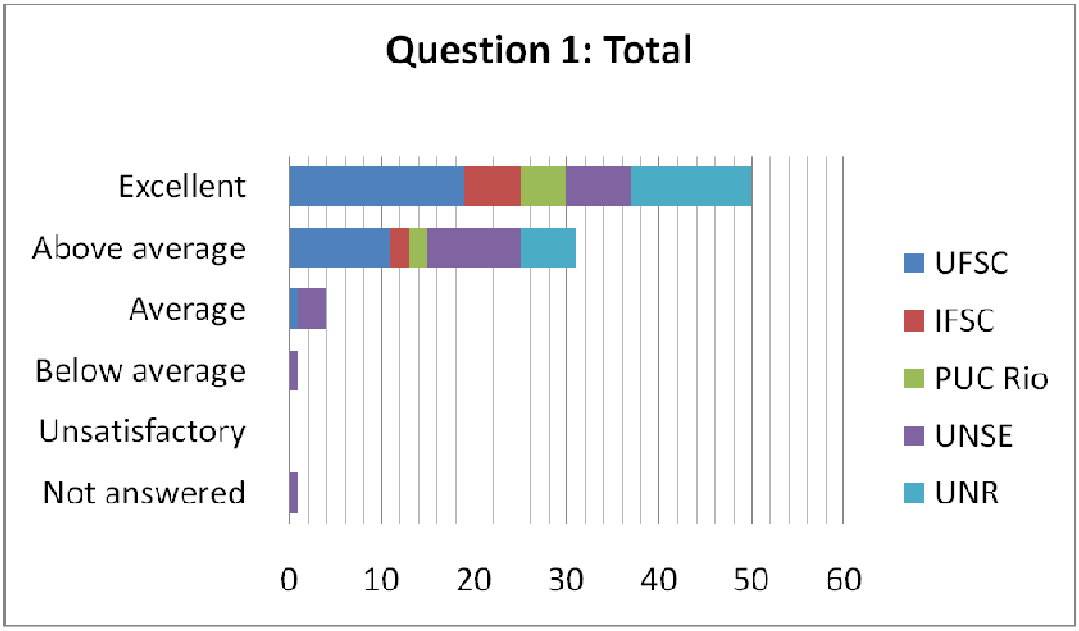


Figure 1. *Q1. The objectives for the session were clearly explained.*

Question 2. Interaction

SQ Question 2 *"The instructor raised questions and posed problems for workshop participants"* refers to the didactic approach chosen by lecturers to interact with participants of workshop. Within the enquiry-based methodological framework which stands as the pedagogical rationale for the Project, the training sessions aimed at activating participants' schemata by meaningful questions and problems rather than delivering presentations of the teacher-centred lecturing type.

Chart 2 below shows TA2 participants' answers within the range which was selected: *3. Average; 4. Above average; 5. Excellent*.

Host Institution	3	4	5	Total
UFSC	2	7	22	31
IFSC	-	-	8	8
PUC Rio	-	1	6	7
UNSE	4	4	14	22
UNR	-	4	15	19
Total answers	**6.98%**	**18.39%**	**74.71%**	87

Chart 2. Interaction

From 87 questionnaires analyzed, 74.71% considered an excellent interaction between lecturers and participants took place, 18.39% considered the interaction was above average and only 6.98% average. The figures lead to the conclusion that the content of presentations was displayed by involving attendees in steady attention and reflection.

Figure 2 below sums up the result in a visual layout.

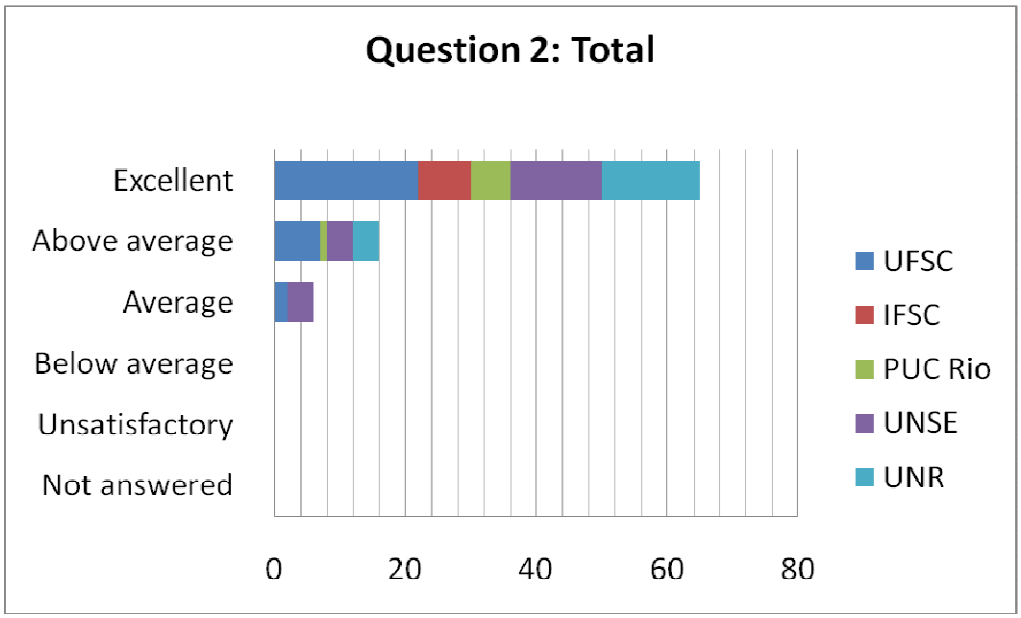


Figure 2. *The instructor raised questions and posed problems for workshop participants.*

Question 3. Listening to participants'needs

SQ Question 3 *"The lecturer was sensitive to the participants' interests, priorities, and concerns"* also refers to the didactic factors which contribute to successful presentations. Interaction implies exchanging ideas, experiences and opinions. Being sensitive to participants' needs implies allowing attendees to refer to their own personal situations in the classroom, their own teaching of content subjects related to electric and electronic circuits and their stance as to problems which usually turn up when carrying out lab practice.

Chart 3 below also shows the results in the range 3 to 5 where *3. Average; 4. Above average; 5. Excellent*. Only 2.98% from 87 answers reveal lecturers' were average in their concert with participants' needs while almost 70% consider they were excellent and almost 30% they were above average.

Host Institutions	3	4	5	Total
UFSC	1	8	22	31
IFSC	-	2	6	8
PUC Rio	-	1	6	7
UNSE	1	10	11	22
UNR	-	4	15	19
Total answers	***2.98%***	***28.73 %***	***68.96%***	***87***

Chart 3. Participants' needs

Figure 3 below show the results in all HE institutions.

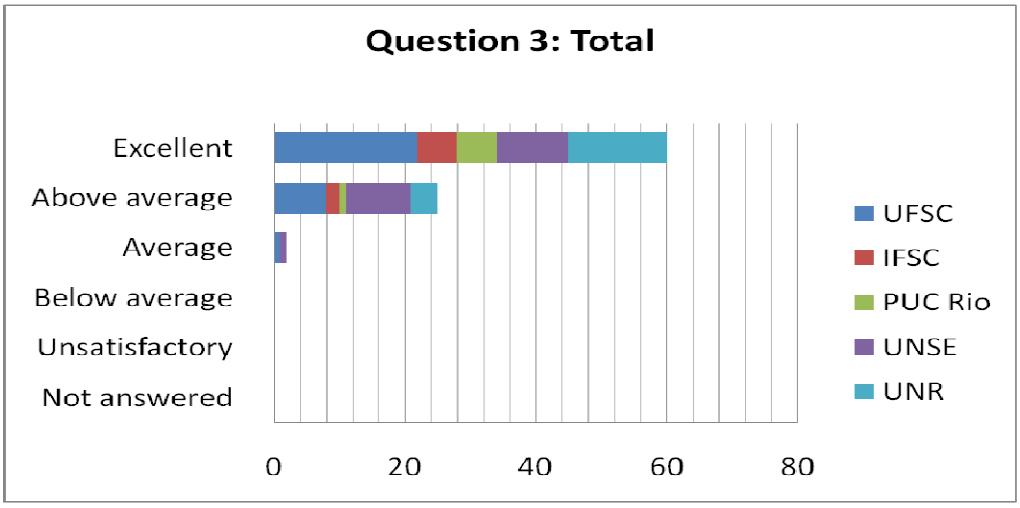


Figure 3. *The lecturer was sensitive to the participants' interests, priorities, and concerns.*

Question 4. Enhancing motivation

Satisfaction Questionnaire Question 4 *"There was a genuine effort to get participants involved in discussions about the use of VISIR"* is also part of the group of questions which intends to explore the didactic resources used to carry out the presentations. Motivation about VISIR Lab, which for most participants proved a new teaching-learning technique, was a challenge for TA2. Participants' interest about the many aspects which contribute to make remote labs such resourceful tool plus the fact that

there was a main focus on electric circuits became paramount to TA2 effectiveness. Also, advantages and disadvantages of VISIR remote lab had to be aired in order to give participants a clear view of what using VISIR implies. It was at this point that lecturers' expertise on the use of remote labs for their own university classes turned out to be essential to engage participants' interest.

Chart 4 below show the results: from 87 answers, 63.21% considered lecturers managed to get participants involved in an excellent manner; 33.33% above average and only 2.29% and 1.14% in an average or below average way. Almost 97% agreed the level of engagement about VISIR Lab was high.

Host Institution	**2**	**3**	**4**	**5**	**Total**
UFSC	-	1	9	21	31
IFSC	-	-	1	7	8
PUC Rio	-	-	1	6	7
UNSE	1	1	10	10	22
UNR	-	-	8	11	19
Total answers	***1.14%***	***2.29%***	***33.33%***	***63.21%***	*87*

Chart 4. Participants' interest on VISIR

Figure 4 below shows the results in two axes.

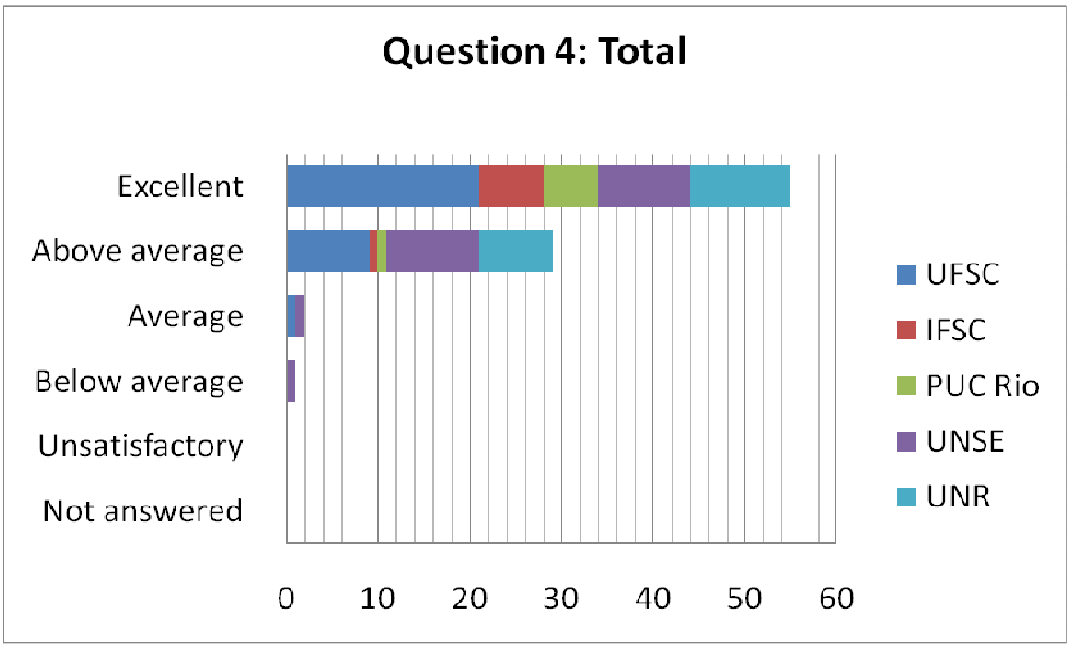


Figure 4. *Effort to get participants involved in discussions about the use of VISIR*

Question 5. Timing

The time allotted to TA2 varied in each institution, as reported in "TA2 General Report" *"The time load of agendas varied in every session. They ran from two full morning shifts (IFSC y UFSC), plus a post lunch slot in PUC Rio, to morning and afternoon shifts of five modules (UNR) and eight modules (UNSE)"*. However, all agendas fulfilled the minuum time load of 6 hours presented in the "TA2 General Guidelines".

Chart 5 below show the participants' answers to the question *"The time allotted for presentation and discussions was enough"* in a scoring from 2 to 5, meaning *Below average, average, above average and excellent*.

Host Institution	NA	1	2	3	4	5	Total
UFSC	1	-	-	9	9	12	31
IFSC	-	-	-	-	2	6	8
PUC Rio	-	-	-	-	2	5	9
UNSE	2	-	-	8	7	5	22
UNR	-	-	-	5	12	2	19
Total answers	***3.44%***	**-**	**-**	***25.28%***	***36.78***	***34.48%***	*87*

Chart 5. Timing

From 87 questions, 3 were not answered. All answers show even results as to 34.48% considered an excellent time load, 36.78% above average and 25.28% average.

Results may suggest participants could have needed more time to come to grips with VISIR Lab, especially larger groups as in the case of UFSC, UNSE and to a lesser extent UNR. Figure 5 below shows this tendency.

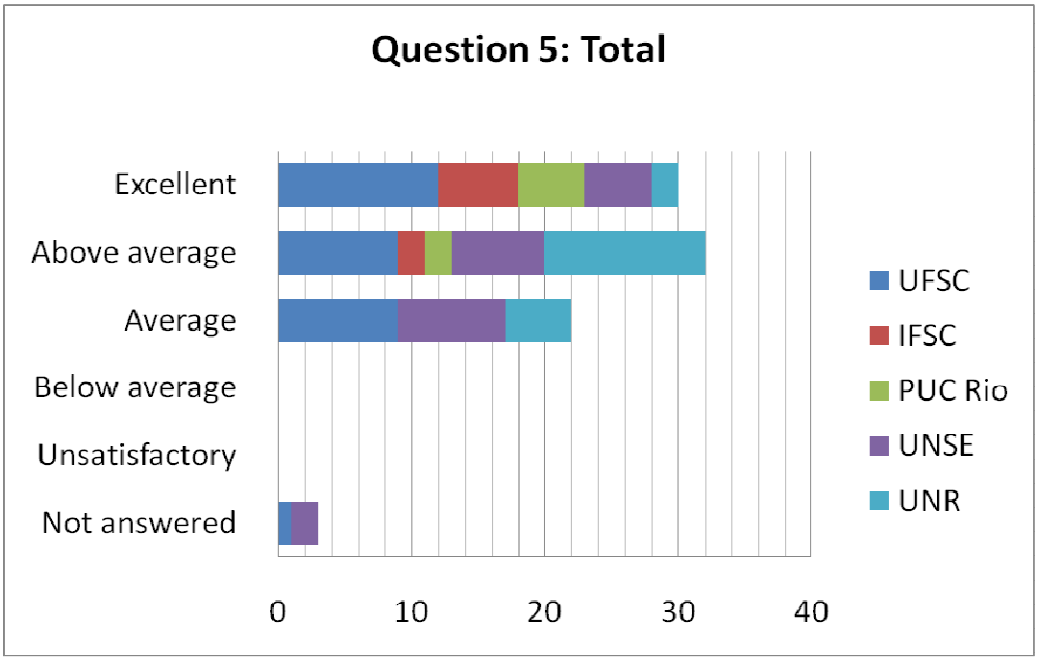


Figure 5. The time allotted for presentation and discussions was enough.

Question 6. Equipment

Question 6 in Satisfaction Questionnaires evaluated participants' opinions as to whether *"the technological equipment enhanced the effectiveness of teaching and learning*". Answers ranged mainly from 3 to 5, i.e. average, above average and excellent. Chart 6 below shows even percentages being the highest for above average with 39%, second excellent with 34.48% and third average with 20.68% . Only 4.59% find equipment below average at to enhancing teaching-learning effectiveness.

Host Institutions	**NA**	**1**	**2**	**3**	**4**	**5**	**Total**
UFSC	1	-	1	4	15	10	31
IFSC	-	-	-	-	2	6	8
PUC Rio	-	-	-	1	2	4	7
UNSE	-	-	3	9	6	4	22
UNR	-	-	-	4	9	6	19
Total answers	***1.14%***	**-**	***4.59%***	***20.68%***	***39%***	***34.48%***	87

Chart 6. Equipment effectiveness

It is worth mentioning that at the moment TA2 took place, only one HE Partner institution had their VISIT Lab installed. All other institutions resorted to the equipment they have in their European institutions. Another important aspect related to equipment effectiveness is Internet connectivity which many a time could prove a handicap for short term training sessions.

Figure 6 below shows answers to Q6. The distribution of answers in the four horizontal bars reveal that the Lab installation seemed not to be a determinant factor to participants' opinions.

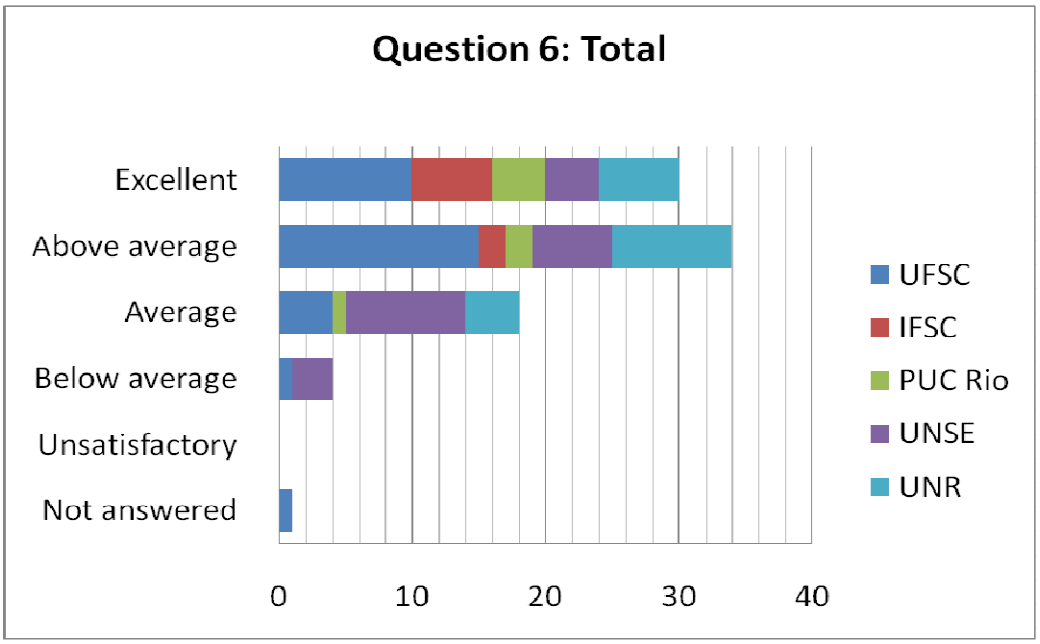


Figure 6. The technological equipment

Question 8. User-friendly Remote Lab

Question 8 was also connected to equipment evaluation. The question *How difficult do you feel about the practice for VISIR?* refers mainly to the actual interface characteristics of the Remote Lab which enable the different lab activities as e.g. measurements.

Chart 7 below shows the answers. Above half of the answers (58.62%) consider "just right" (3) while a low 4.59 "too easy" and 29.88% "easy". 5.74% found practice with VISIR "difficult".

Host answers	**NA**	**1**	**2**	**3**	**4**	**5**	**Total**
UFSC	1	-	3	19	7	1	31
IFSC	-	-	-	2	5	1	8
PUC Rio	-	-	-	3	3	1	7
UNSE	-	-	2	14	6	0	22
UNR	-	-	-	13	5	1	19
Total answers	***1.14%***	**-**	***5.74%***	***58.62%***	***29.88%***	***4.59%***	***87***

Chart 7. VISIR Practice

Figure 7 clearly shows the highest percentage of participants' answers considered were VISIR practice neither difficult nor easy. The distribution of answers among HE institutions is even.

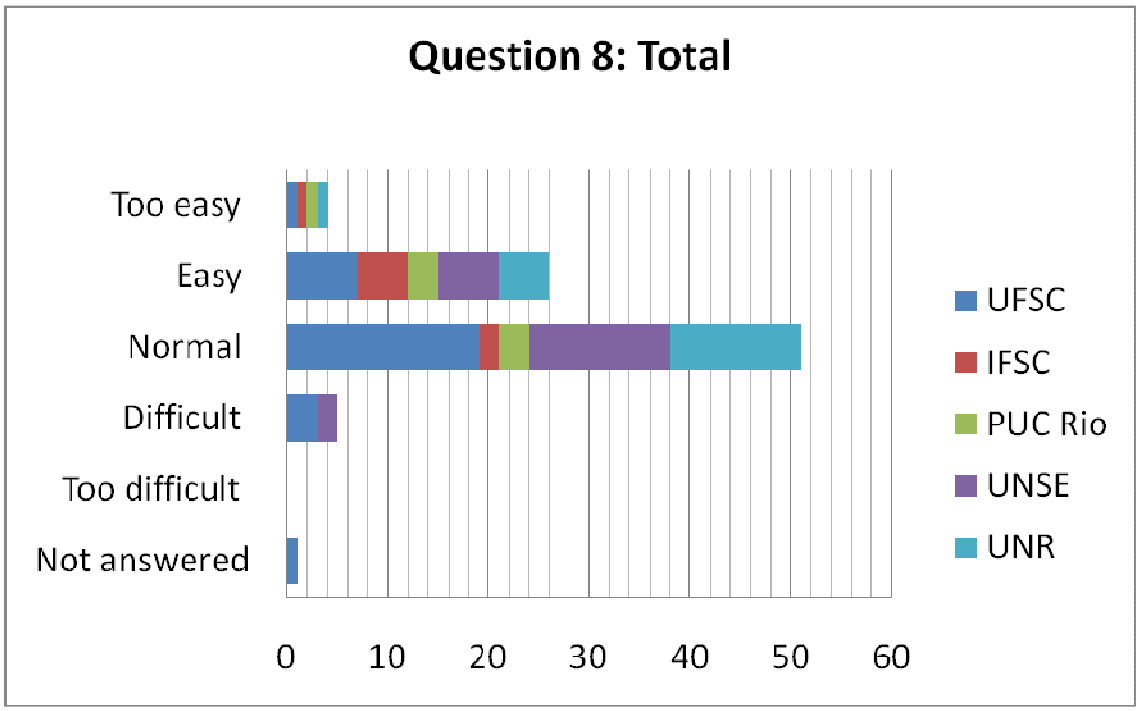


Figure 7. How difficult do you feel about the practice for VISIR?

Question 7. Participants' expectations about VISIR

Finally, Question 7 intended to give participants the opportunity of evaluating the overall TA2 perfomance. The questions was *"Overall, the presentation about the VISIR systems met my expectations" and* the options ranged from *1.Poor, 2. Fair, 3. Satisfactory, 4. Highly satisfactory, 5. Excellent.*

Host Institutions	2	3	4	5	Total
UFSC	1	2	13	15	31
IFSC	0	3	2	3	8
PUC Rio	-	1	1	5	7
UNSE	6	6	6	4	22
UNR	-	2	8	9	19
Total answers	***8.04%***	***16.09%***	***34.48%***	***41.37%***	***87***

Chart 8. TA2 overall impression

From 87 questions analyzed, 41.35% participants considered the training actions were excellent in meeting their expectations and 34.48% were highly satisfactory. Only 16.09% found the workshop satisfactory and 8.04% fair.

Figure 8 shows the results in two axes per institution.

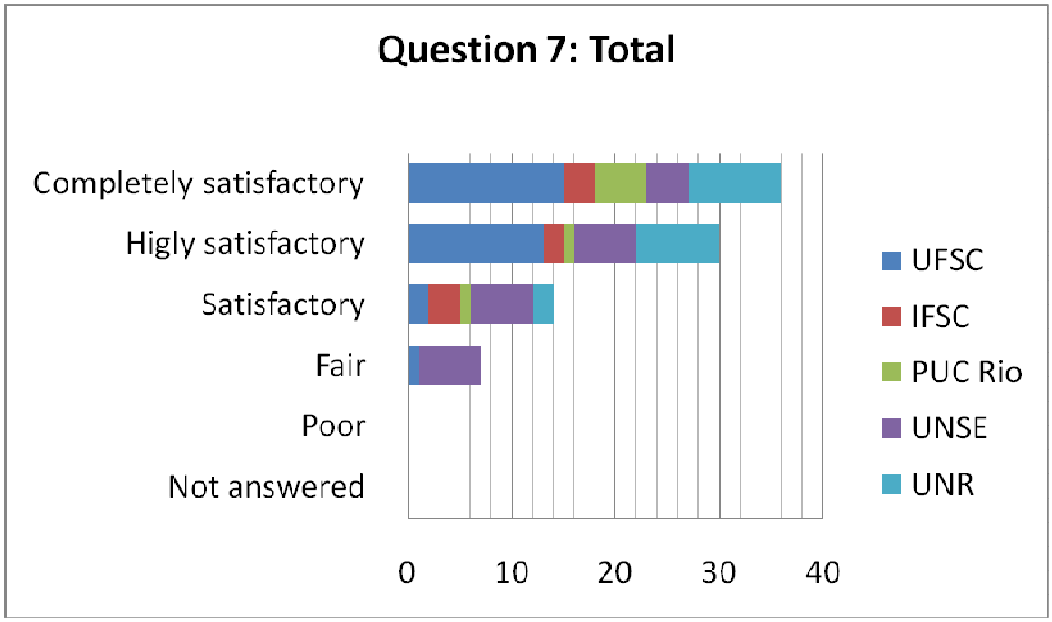


Figure 8. The presentation about the VISIR systems

Qualitative Analysis: Positive aspects and aspects to be improved in TA2

The aim of open question number 9 aimed at eliciting qualitative information about positive and negative aspects of training actions. Although explicit encouragement and plenty of room (both, time and questionnaire layout) was given for participants to write down airing their opinions in paper, few attended answered this questions and those who did write short comments.

On the positive aspects there is reference to the learning environment as regards lecturers' assets ("kindness", "clarity", "feedback") and their presentations ("I could understand information about VISIR and how to use it"; "Visual presentations were very effective"). Also some positive comments refer to the value of VISIR Lab as a tool ("the potential usefulness of VISIR could be observed". The TA organization and the possibility of attending to them was also pointed out.

As to the aspects to be improved, most comments refer to the need to count on more time availability to practise the use of the remote lab, to exchange experiences and to explore the possibilities VISIR has. Wifi connections was also highlighted as a key aspect to facilitate or hinder lab use ("There was saturation in wifi connection making the online use slow").

Finally some recommendations for extension of the experience were given: "I hope VISIR could be taken to Angola, my country" and "The lab has to be promoted to many departments of electric engineering careers".

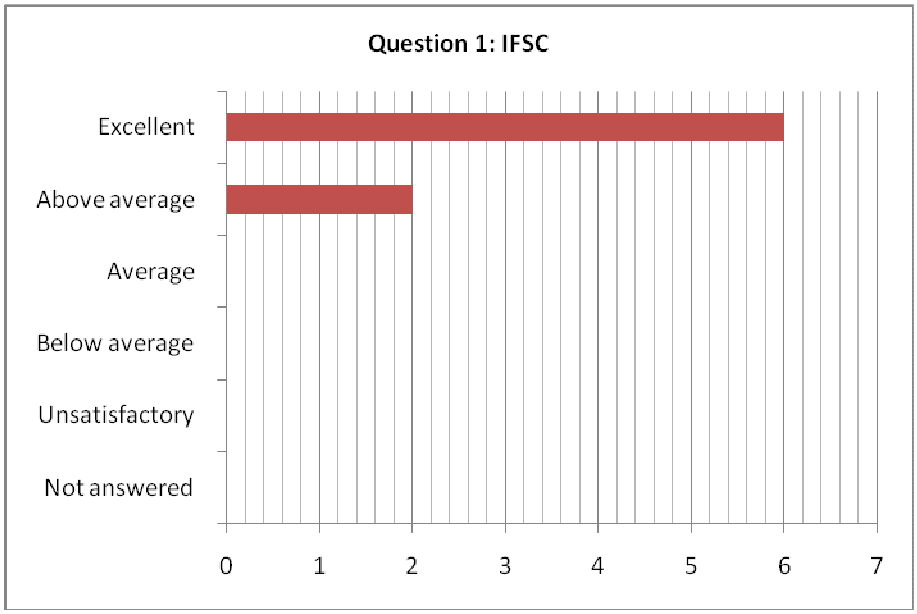
Conclusion

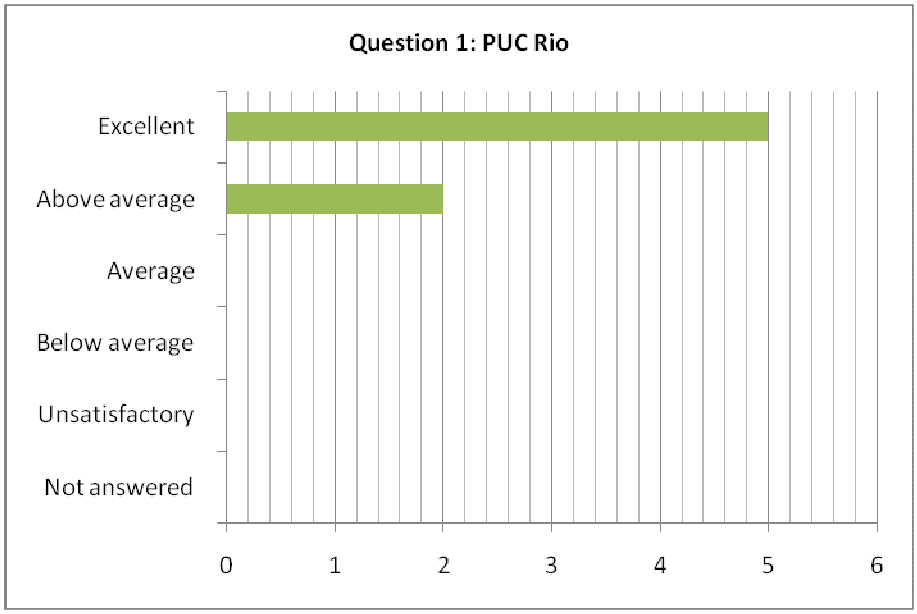
The information presented from Satisfaction Questionnaires applied to participants of the five training actions which took place in Latin America HE Institution, reveal that the workshops have fulfilled their aims: the objectives of the workshops were clearly presented and the learning environment created was effective to engage participants in the possibility of using VISIR lab in their engineering classes.

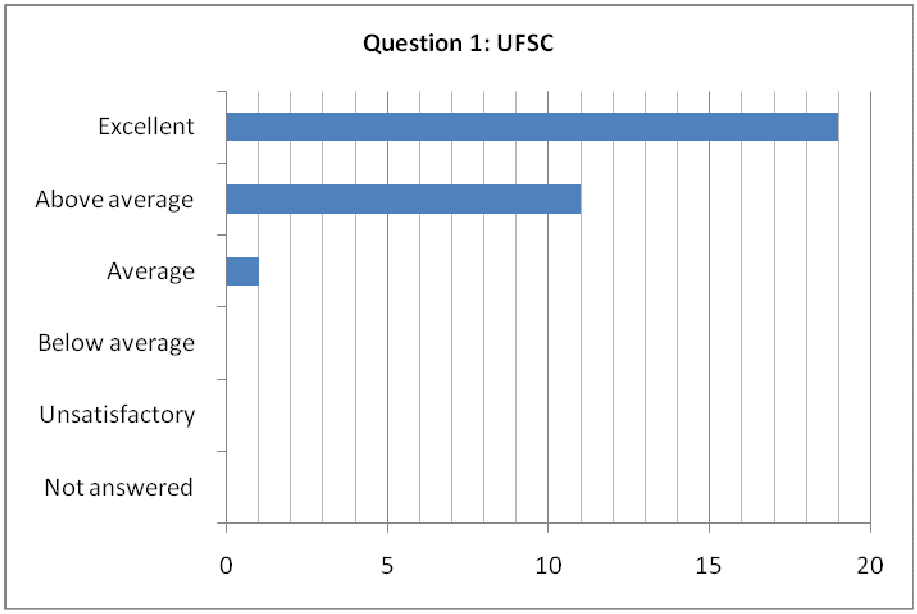
The challenge ahead in the implementation in actual engineering courses and the design of Modules which could lend themselves to research experiences and the rendering of knowledge about the use of VISIR Remote Labs.

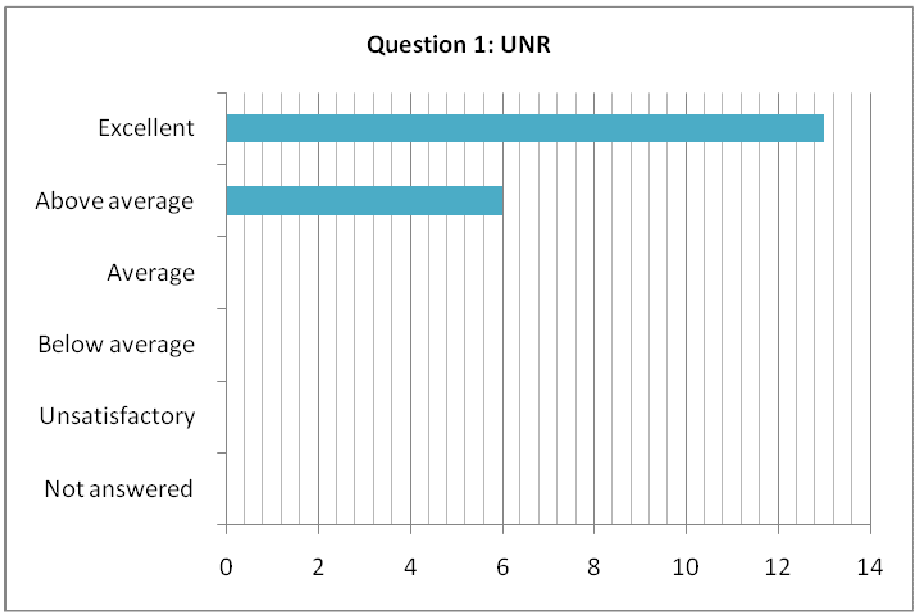
Appendix: Detailed institutional results (in alphabetical order)

Question 1






Question 1: UFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
5
10
15
20


Question 1: UNR
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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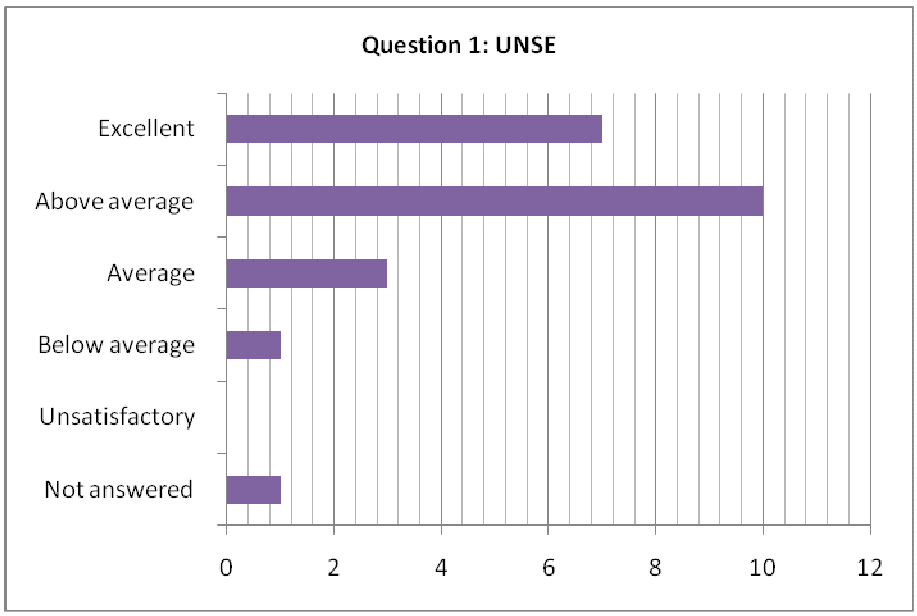
8
10
12
14


Question 1: UNSE
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
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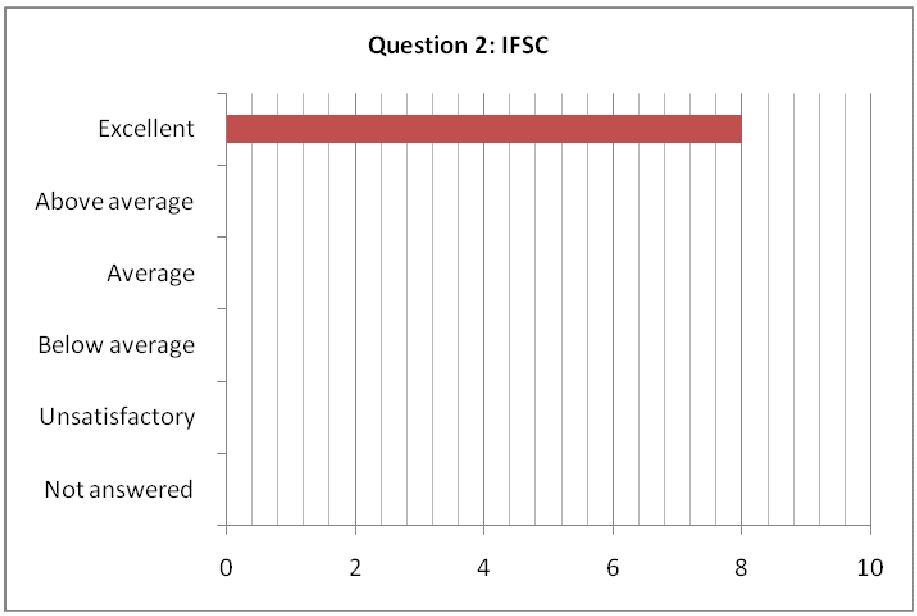
10
12

Question 2


Question 2: IFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
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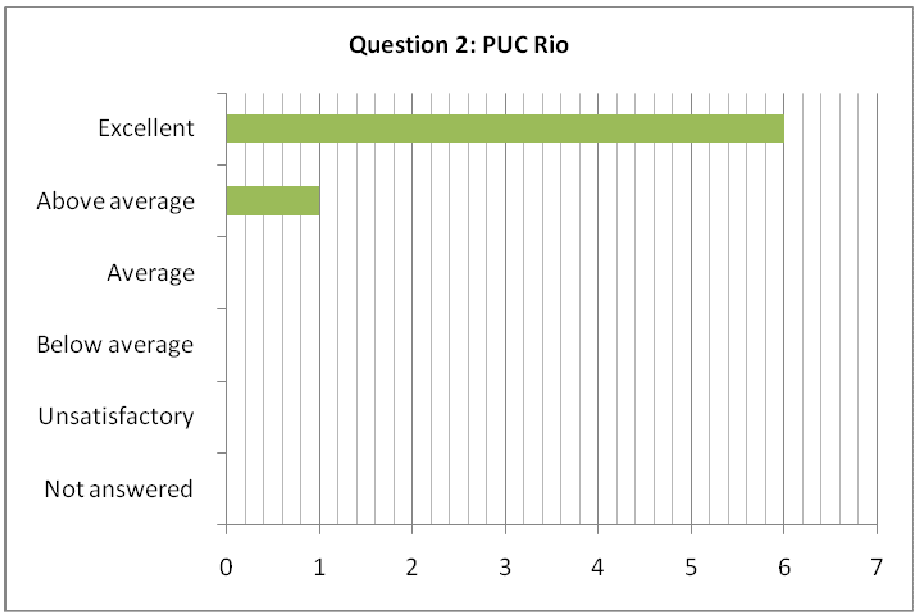
Question 2: PUC Rio
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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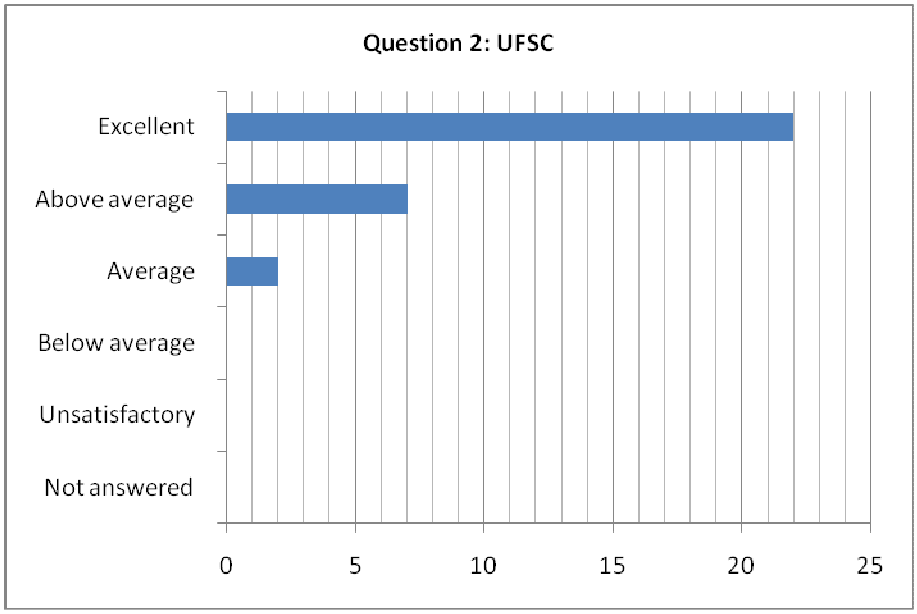
Question 2: UFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
5
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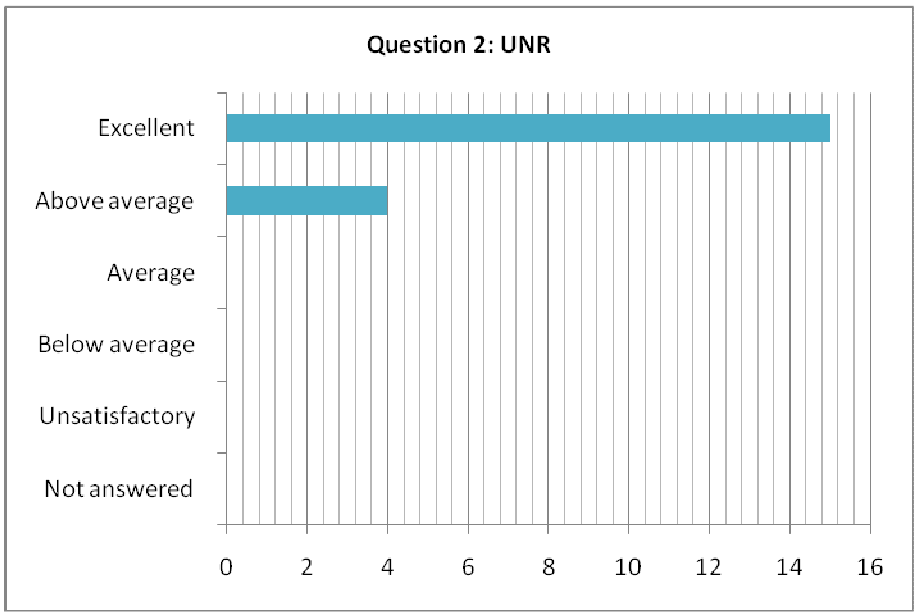
20
25


Question 2: UNR
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
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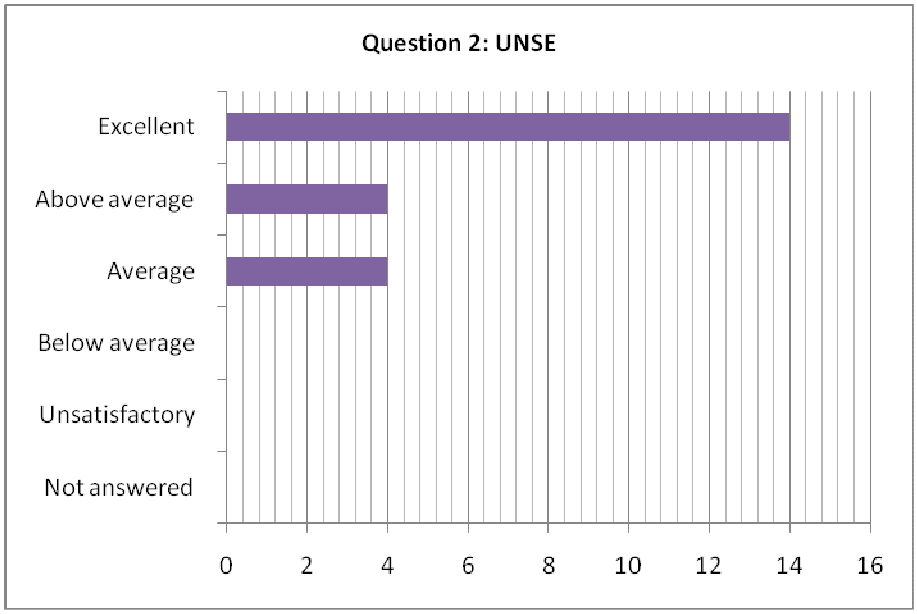
8
10
12
14
16


Question 2: UNSE
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
2
4
6
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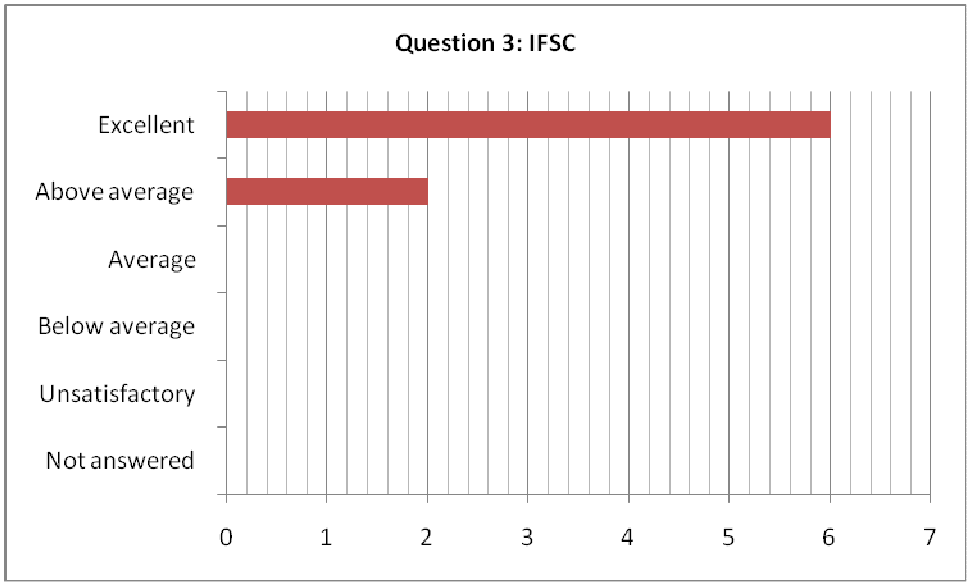
10
12
14
16

Question 3


Question 3: IFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
0
1
2
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4
5
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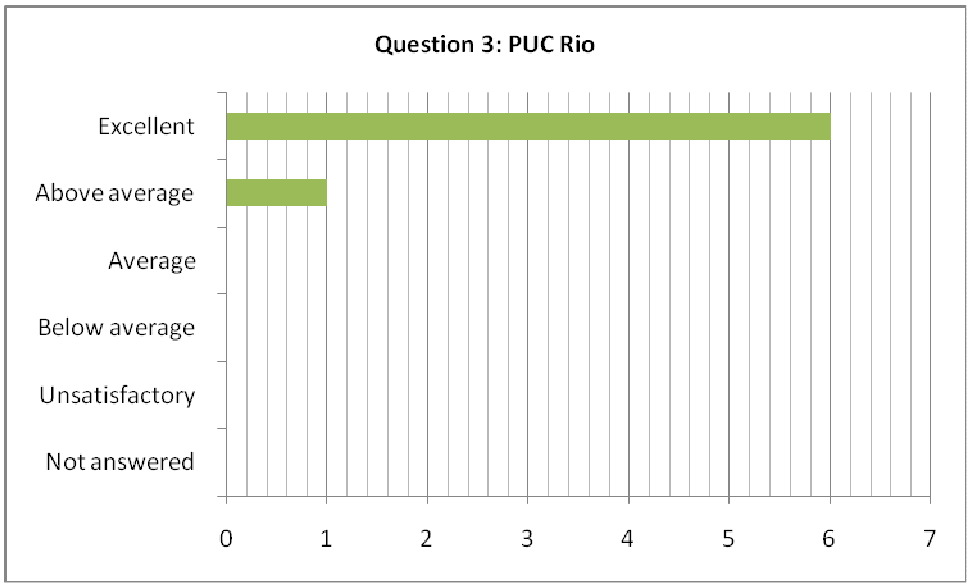
Question 3: PUC Rio
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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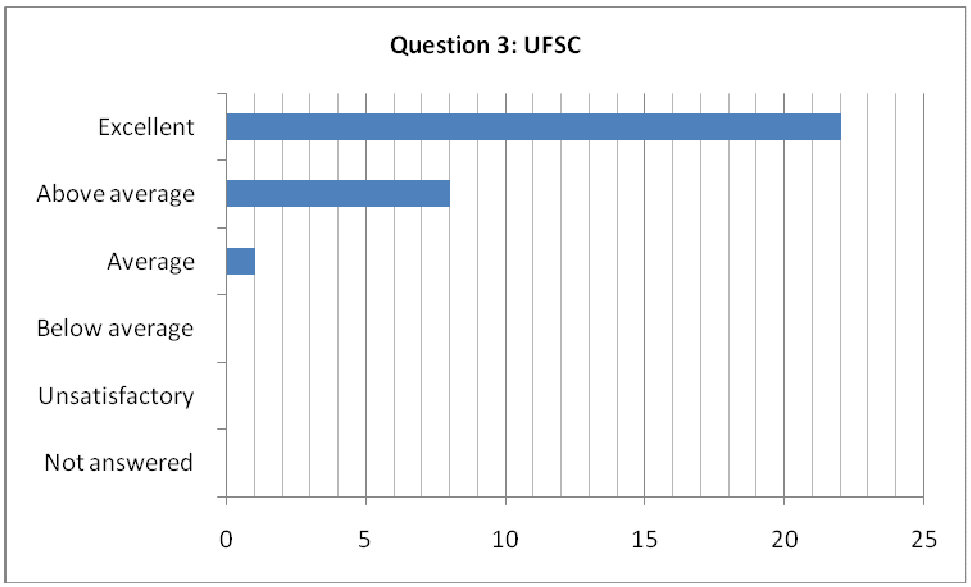
Question 3: UFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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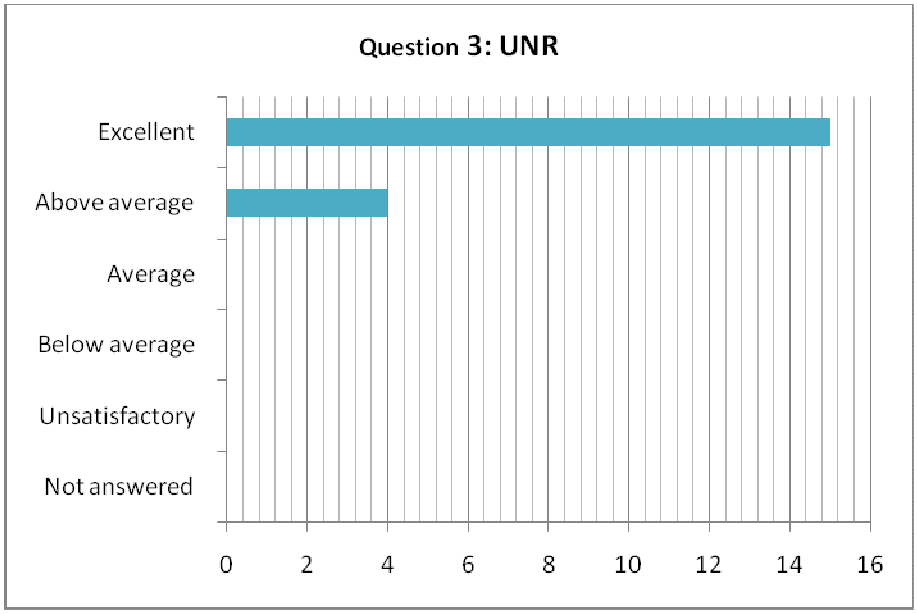
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Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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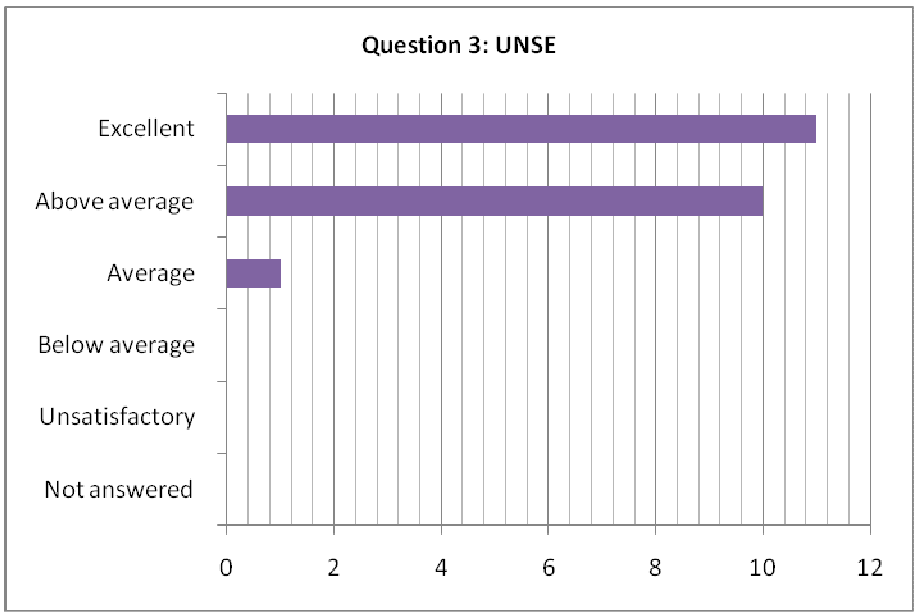
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Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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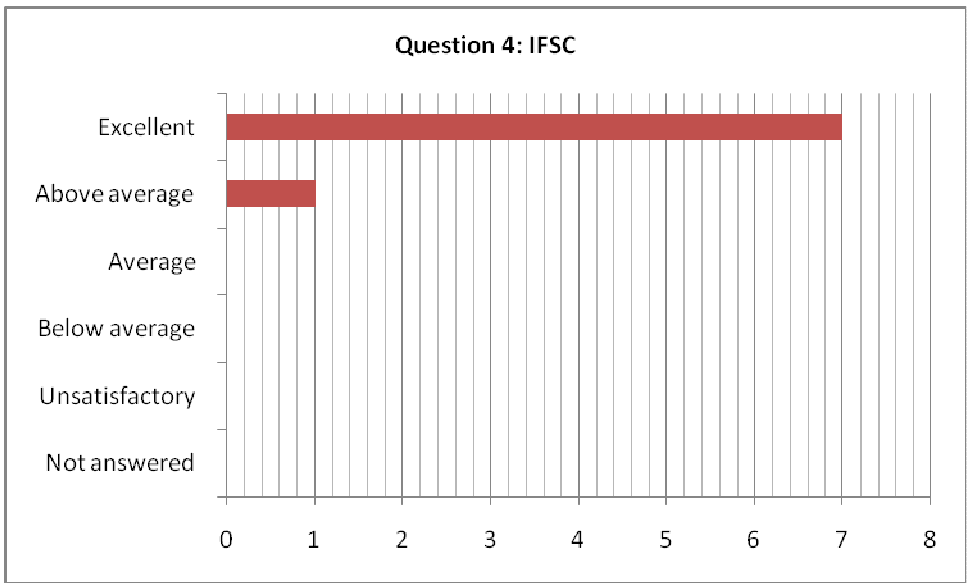
Question 4


Question 4: IFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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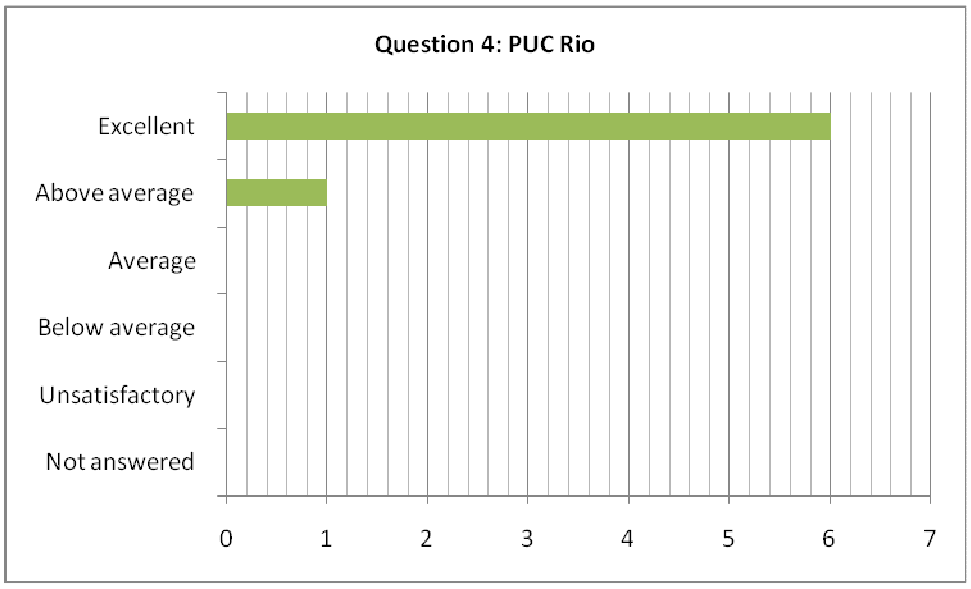
Question 4: PUC Rio
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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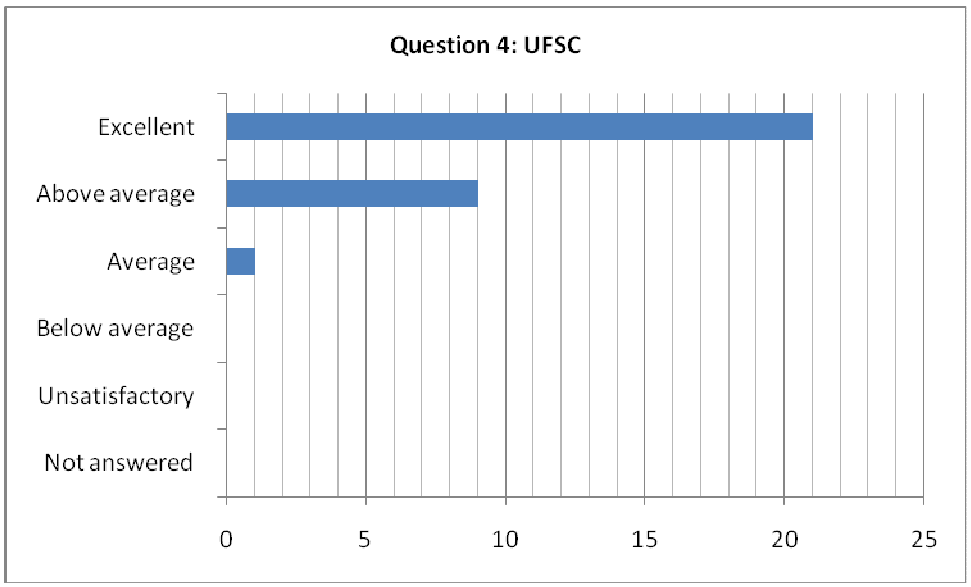
Question 4: UFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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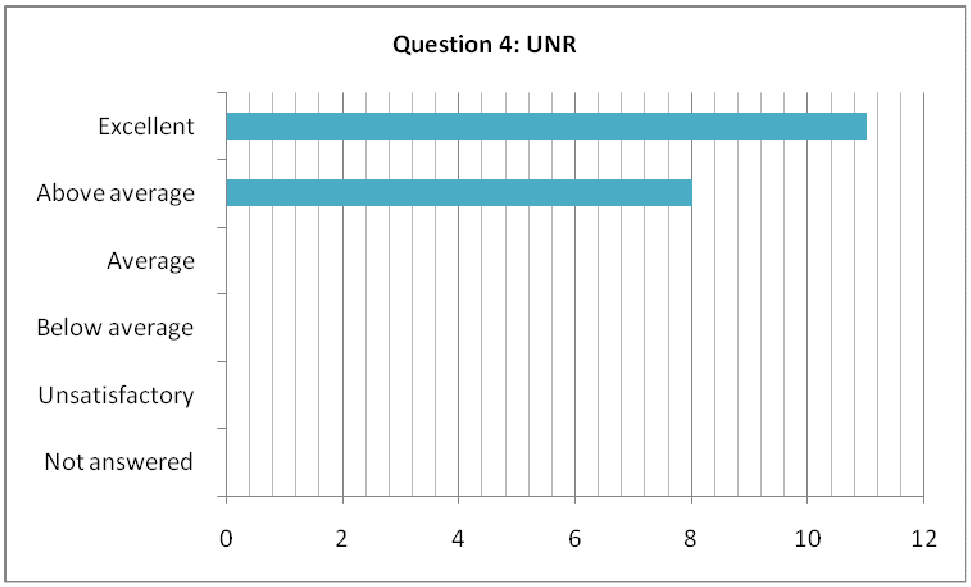
Question 4: UNR
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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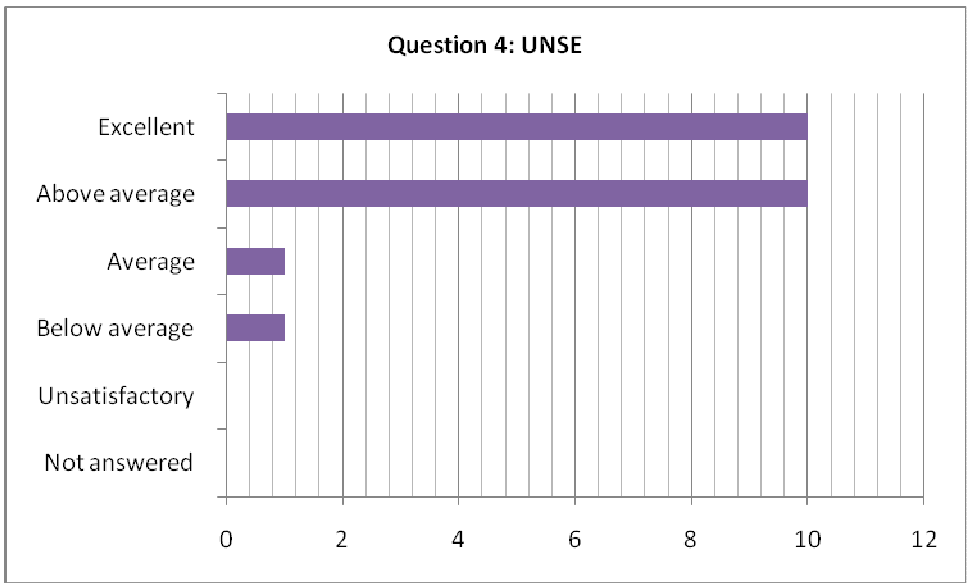
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Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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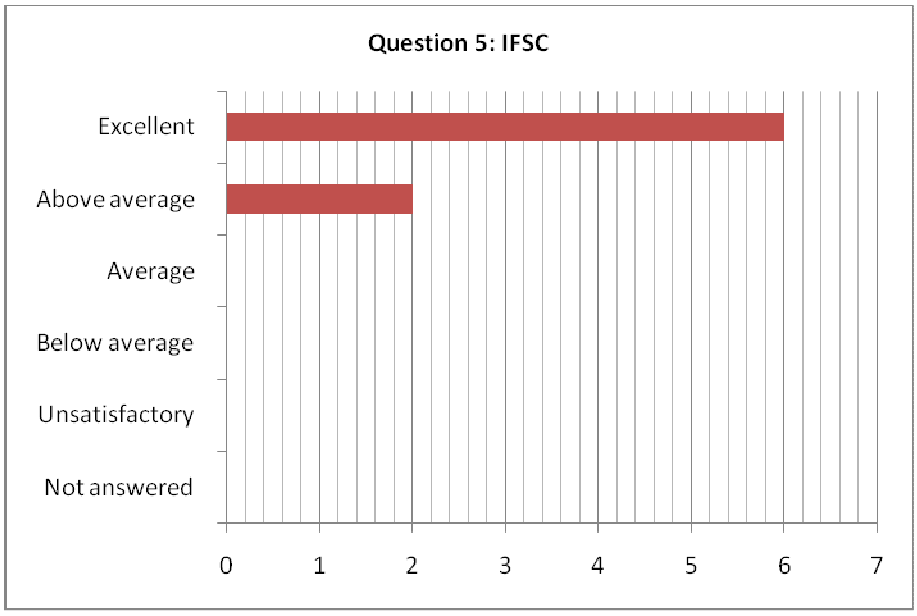
Question 5


Question 5: IFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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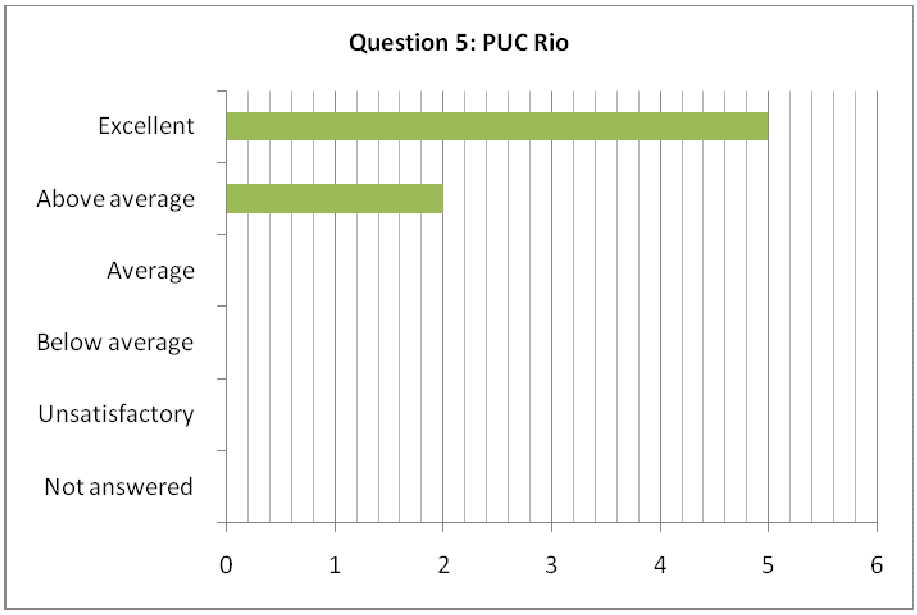
Question 5: PUC Rio
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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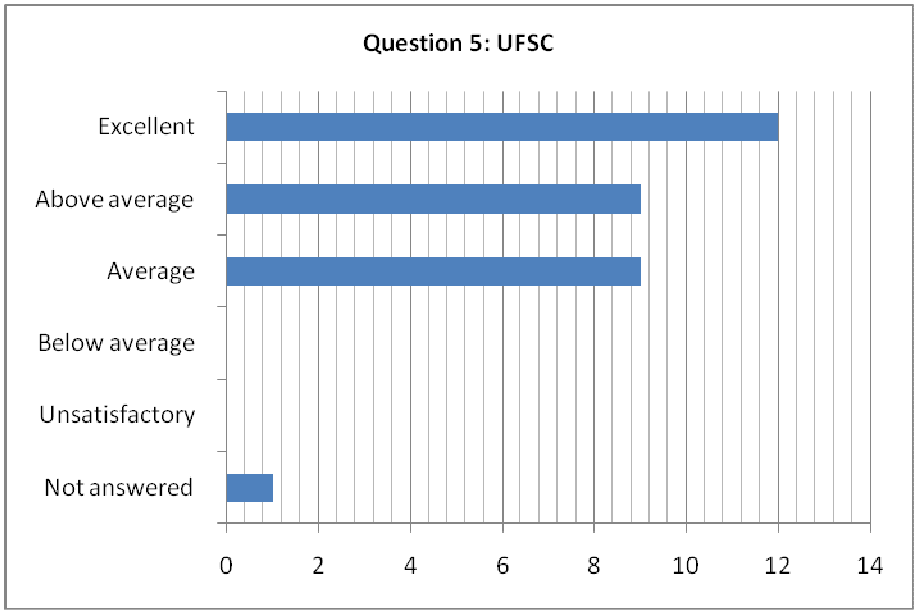
Question 5: UFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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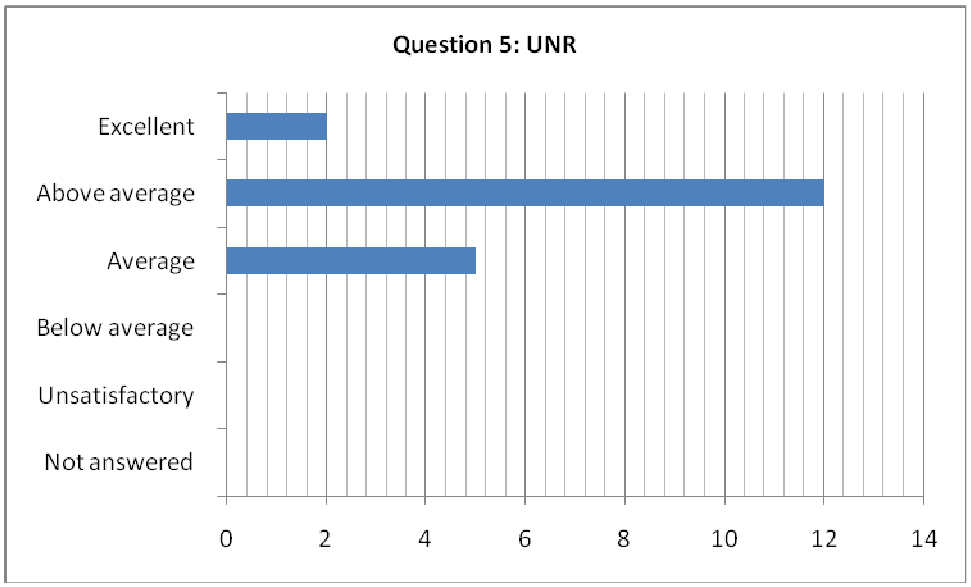
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Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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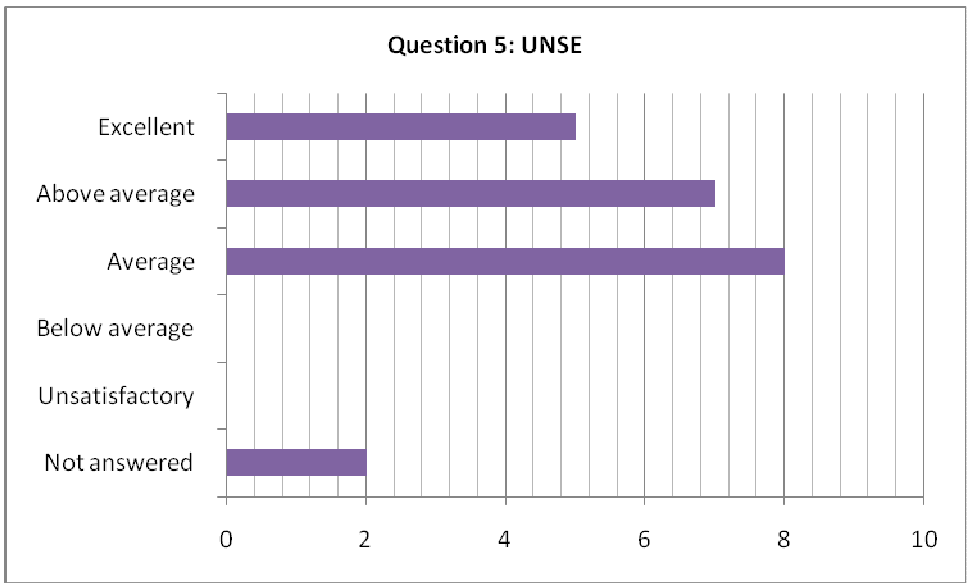
Question 5: UNSE
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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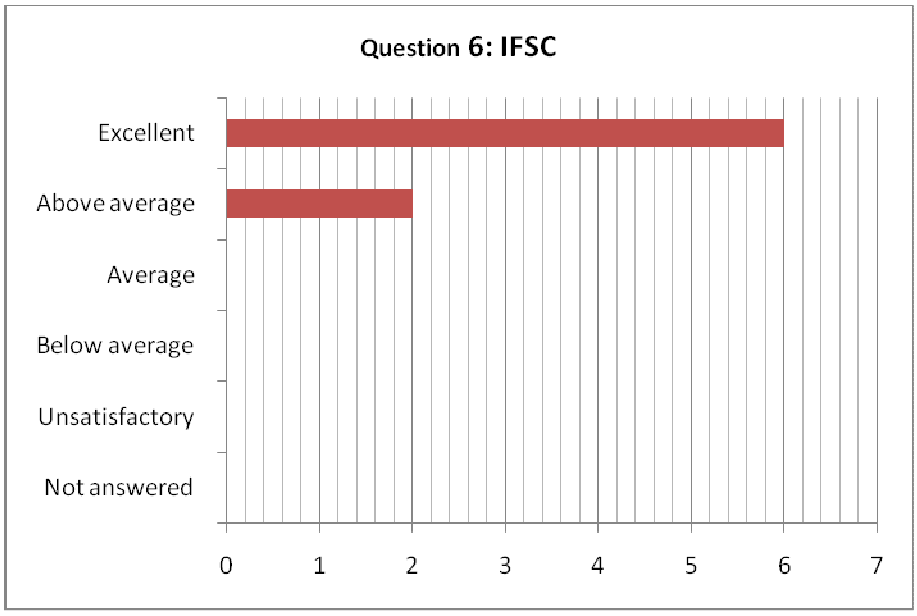
Question 6


Question 6: IFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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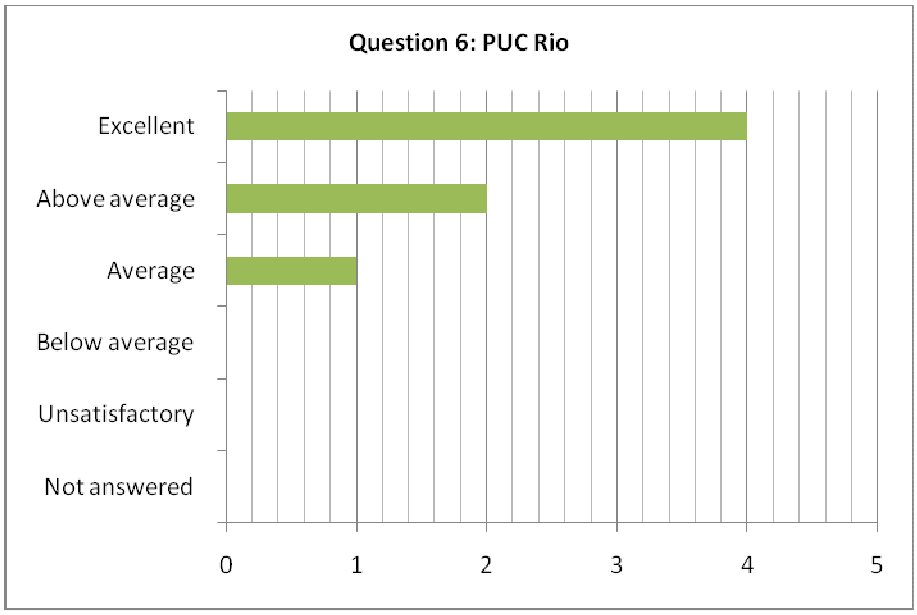
Question 6: PUC Rio
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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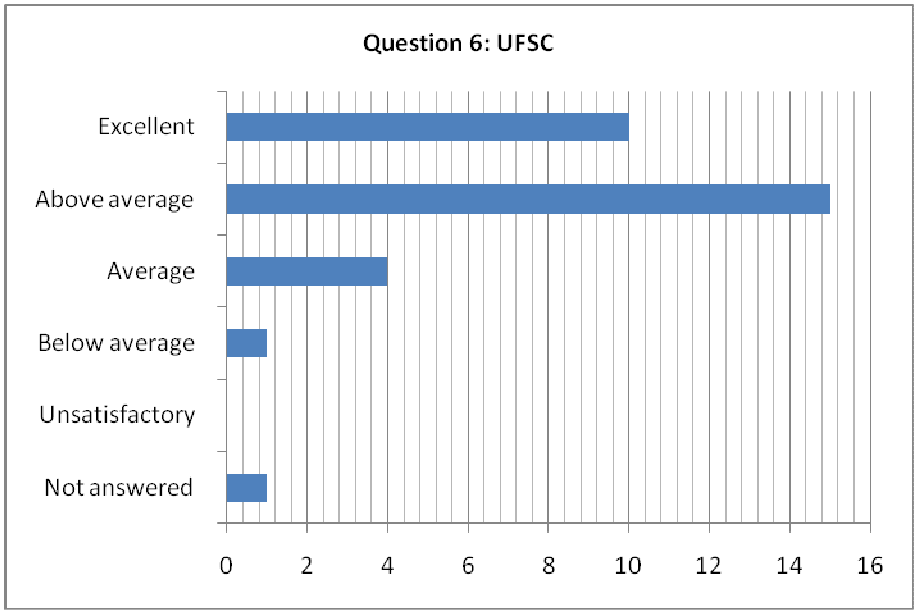
Question 6: UFSC
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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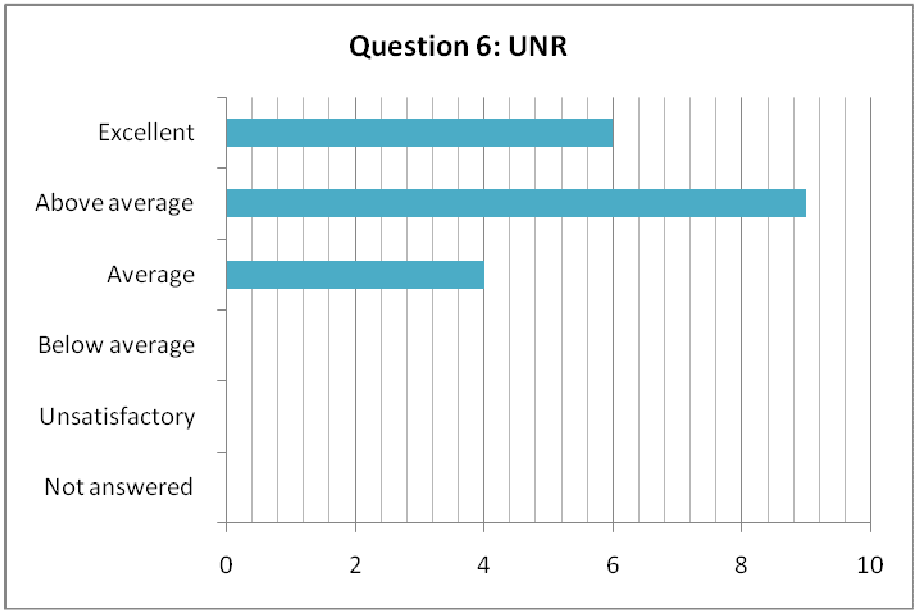
Question 6: UNR
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Above average
Average
Below average
Unsatisfactory
Not answered
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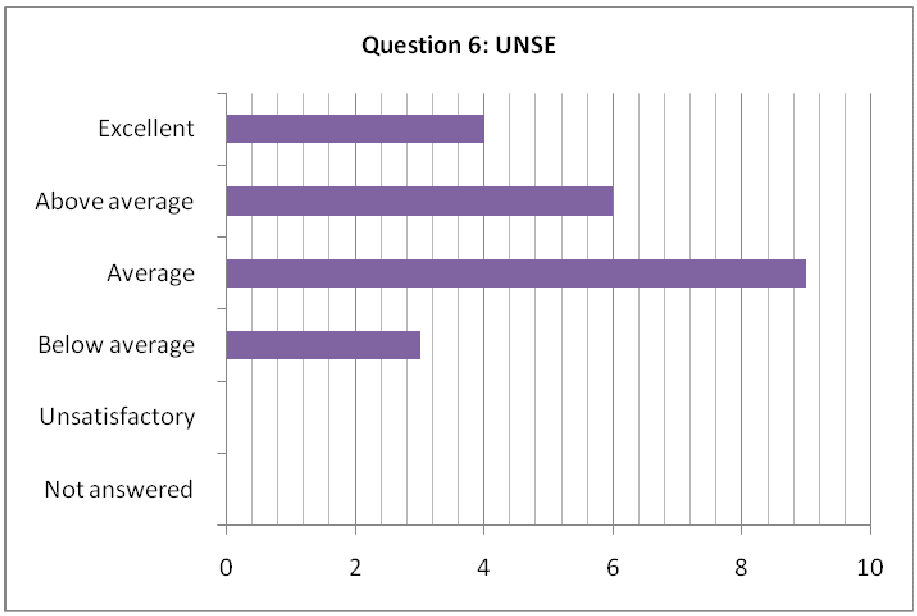
Question 6: UNSE
Excellent
Above average
Average
Below average
Unsatisfactory
Not answered
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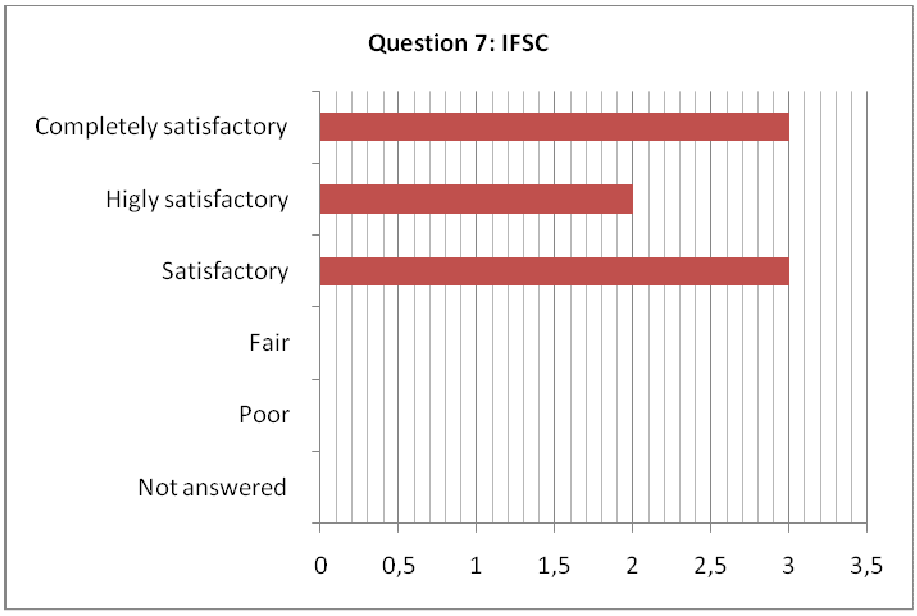
Question 7


Question 7: IFSC
Completely satisfactory
Higly satisfactory
Satisfactory
Fair
Poor
Not answered
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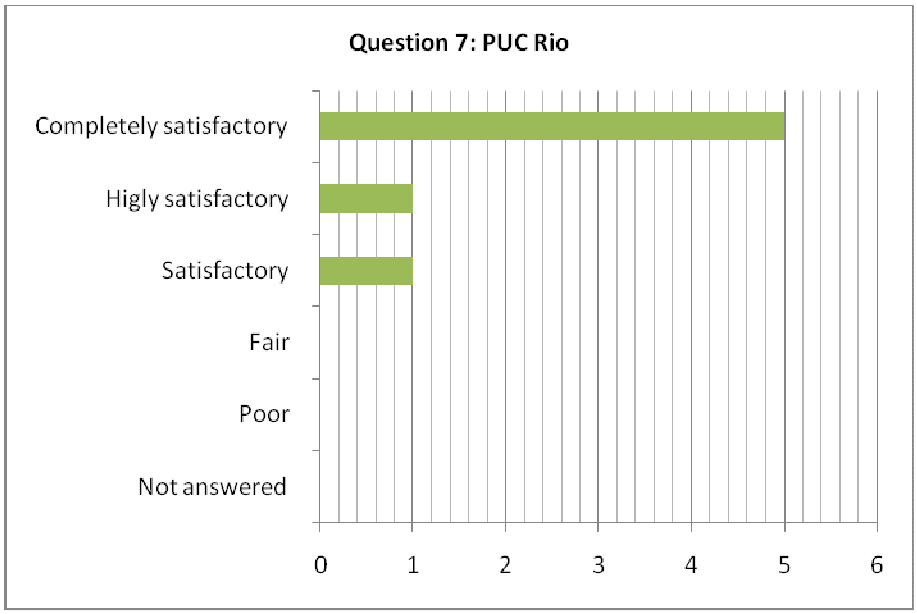
Question 7: PUC Rio
Completely satisfactory
Higly satisfactory
Satisfactory
Fair
Poor
Not answered
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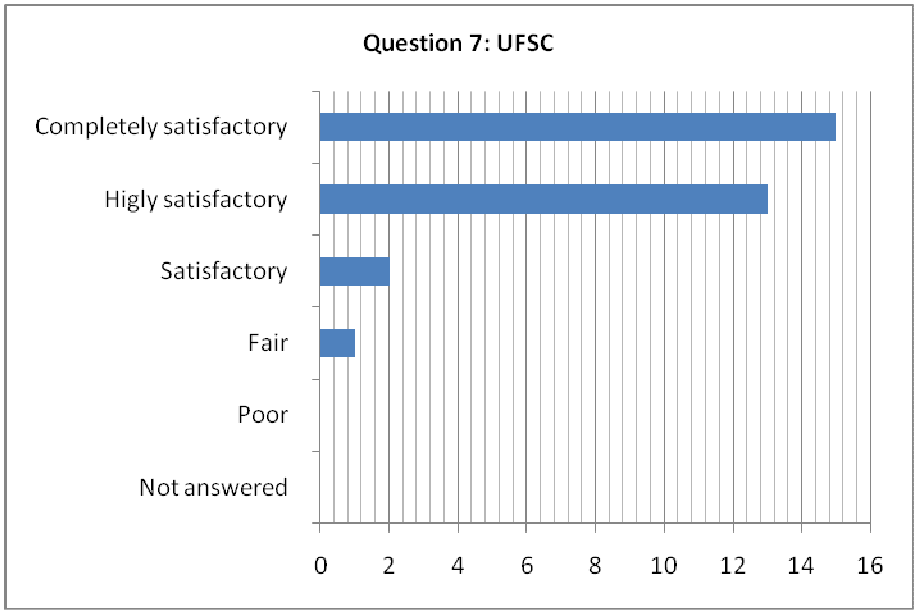
Question 7: UFSC
Completely satisfactory
Higly satisfactory
Satisfactory
Fair
Poor
Not answered
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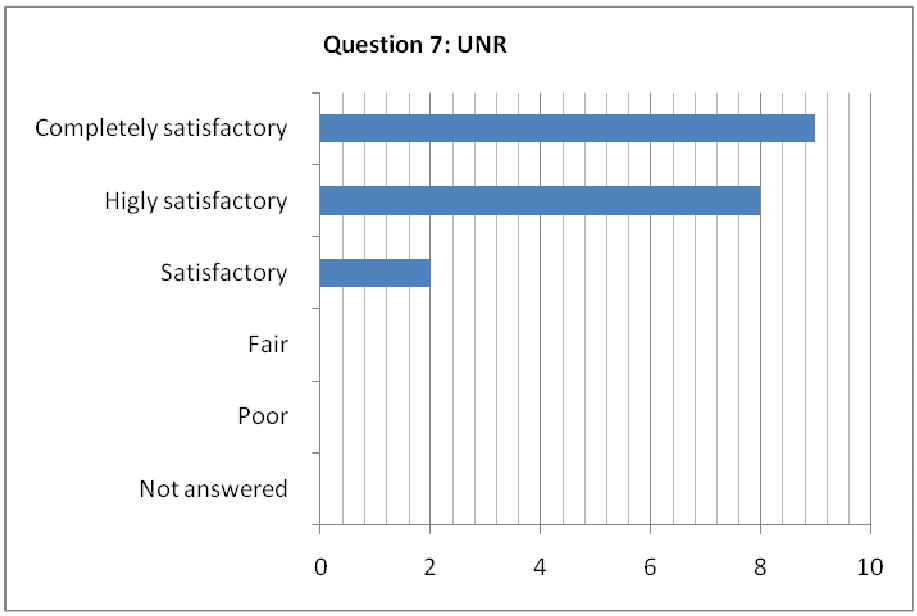
Question 7: UNR
Completely satisfactory
Higly satisfactory
Satisfactory
Fair
Poor
Not answered
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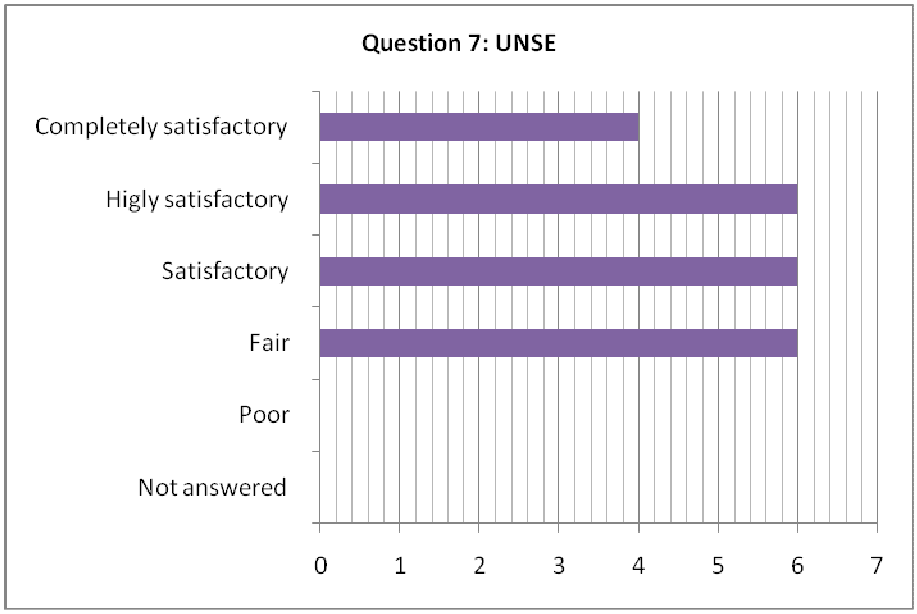
Question 7: UNSE
Completely satisfactory
Higly satisfactory
Satisfactory
Fair
Poor
Not answered
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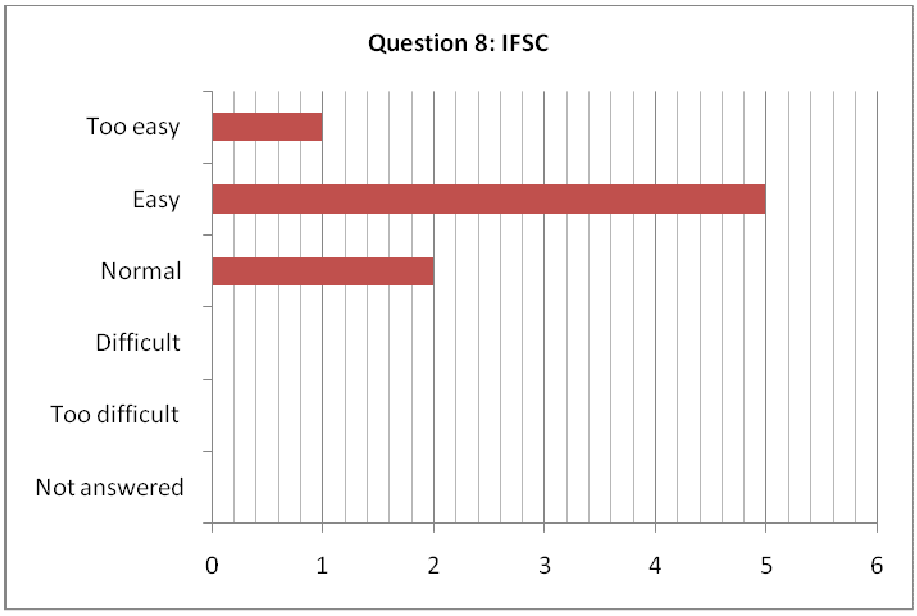
Question 8


Question 8: IFSC
Too easy
Easy
Normal
Difficult
Too difficult
Not answered
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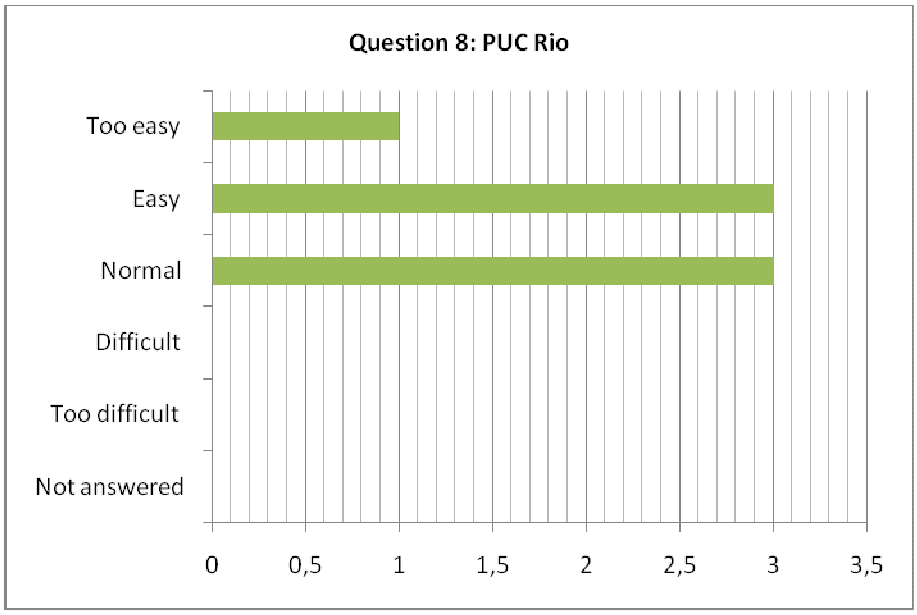
Question 8: PUC Rio
Too easy
Easy
Normal
Difficult
Too difficult
Not answered
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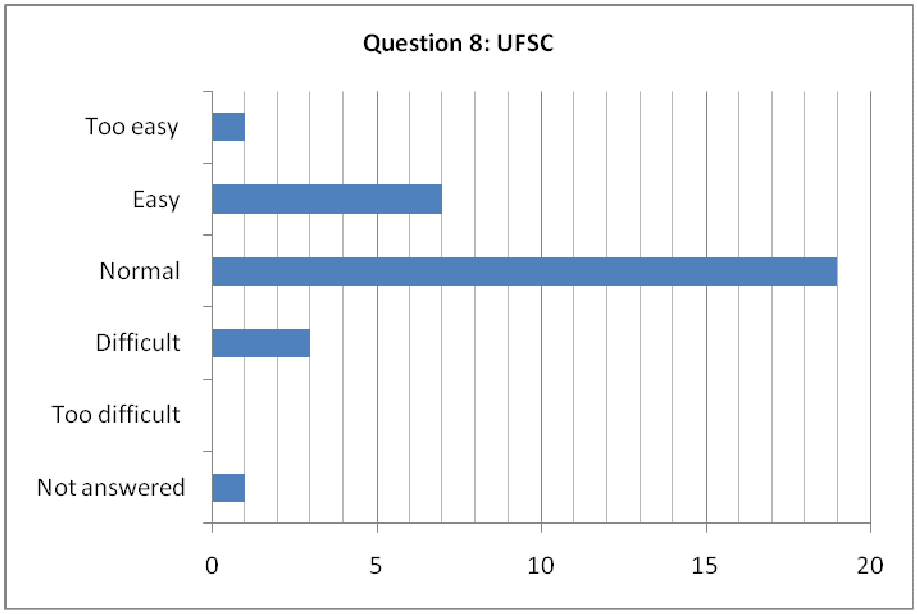
Question 8: UFSC
Too easy
Easy
Normal
Difficult
Too difficult
Not answered
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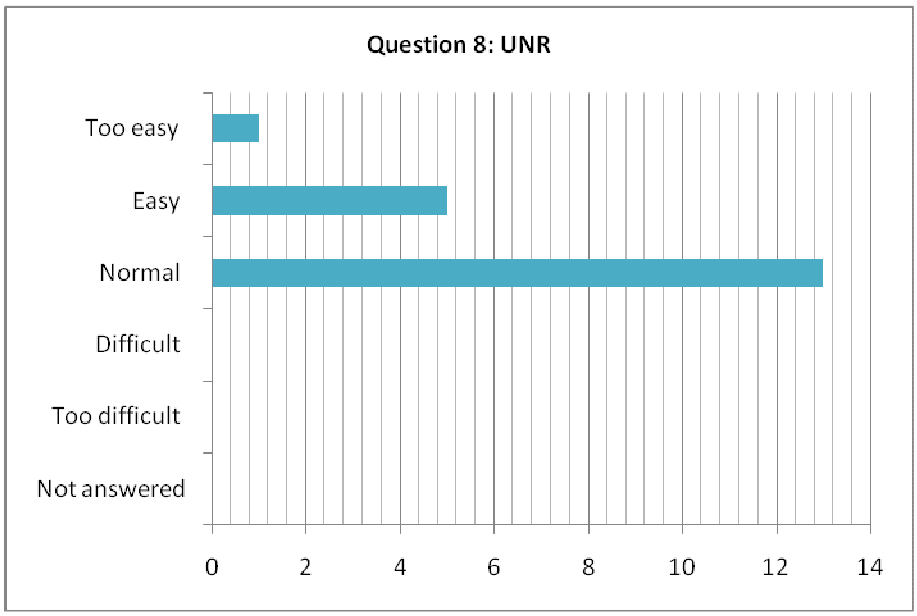
Question 8: UNR
Too easy
Easy
Normal
Difficult
Too difficult
Not answered
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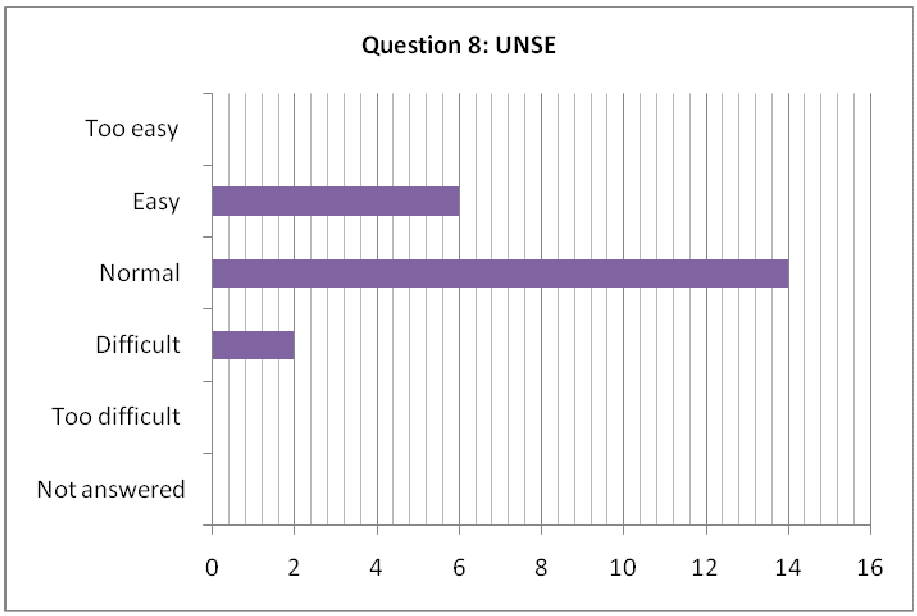
Question 8: UNSE
Too easy
Easy
Normal
Difficult
Too difficult
Not answered
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