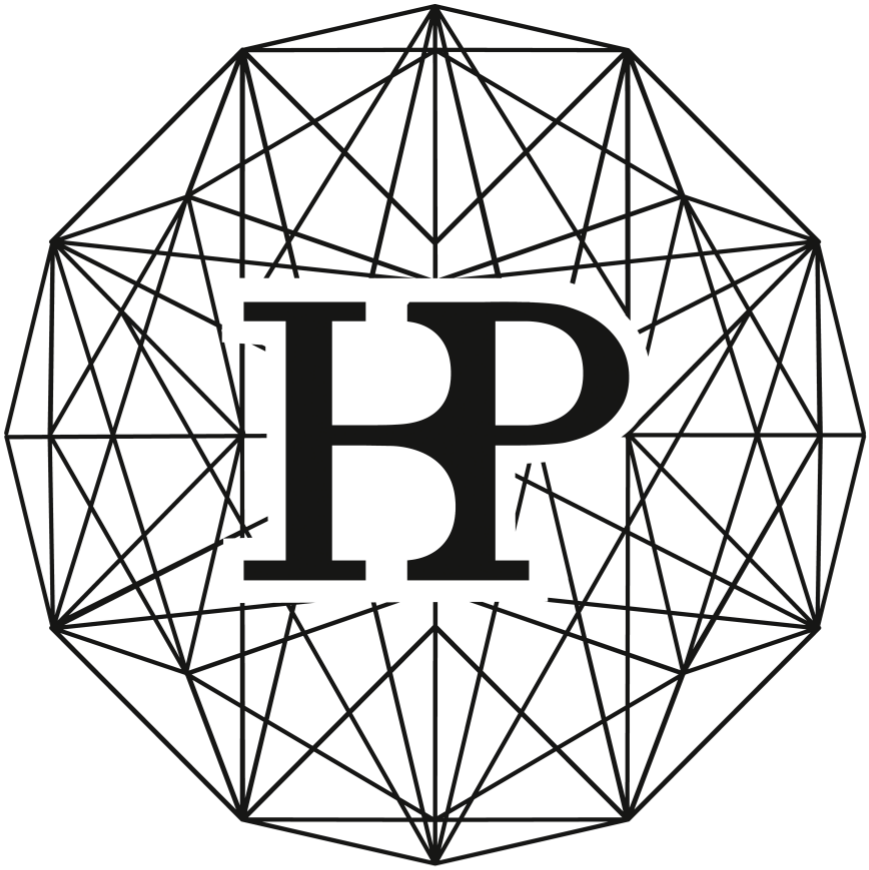
# HBP Education Programme Long-Term Assessment



Human Brain Project
Education Programme

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| Abstract: | This document outlines the main findings of the long-term impact of HBP Schools, HBP Student Conferences, HBP Young Researchers Events and HBP Curriculum Workshops (taken place in RUP and SGA1) analysed via online questionnaire. |
| Keywords: | Education, Education Programme, School, Curriculum, Workshop, Student Conference, Young Researchers Event, long term assessment, RUP, SGA1 |

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# 1. Introduction

The Human Brain Project Education Programme offers innovative education and training events for early-career researchers working in and across the fields of neuroscience, information and communications technology (ICT) and medicine. The programme especially targets advanced Master's-level and PhD students, as well as early post-doctoral researchers, from within and outside the Human Brain Project (HBP). The HBP Education Programme's objectives are to provide young scientists with transdisciplinary knowledge and skills, to connect early-career researchers within the HBP and beyond as well as to build awareness of the HBP's work and results.

Since the first funding period of the HBP by the European Commission under the Ramp-Up Phase (RUP, October 2013 - March 2016), the HBP Education Programme has developed and introduced various education formats: HBP Schools, HBP Student Conferences, HBP Young Researchers Events and HBP Education Workshops that later developed into HBP Curriculum Workshops during the second funding period under the Special Grant Agreement 1 (SGA1, April 2016 – March 2018)[1]. Figure 1 below gives further details on the different HBP Education event formats.

| | HBP Curriculum (Workshops) | HBP Schools | HBP Student Conference | HBP Young Researchers Events |
|---|---|---|---|---|
| ***Format*** | Keynote lectures, hands-on tutorials, poster sessions, online courses | Advanced lectures, hands-on tutorials, student presentations, poster sessions | Keynote lectures, student presentations, poster sessions | Overview & introductory talks about HBP Research Infrastructure, short demos |
| ***Contents*** | Neuroscience, ICT & brain medicine & complementary topics, online & face-to-face workshops | Transdisciplinary approach on specific research questions, HBP tools training | Interdisciplinary collaboration and scientific exchange in neuroscience, ICT & brain medicine | Introduction to HBP RI & example scientific or application workflows |
| ***Duration*** | 2-3 days, once per year per topic, year-round online courses | 5 days, 1-2 times per year, year-round online lectures | 2-3 days, once per year, year-round online lectures | 1-2 days, once per year, year-round online lectures |
| ***Users*** | Early-career researchers | Early-career researchers | Organised by early-career researchers for early-career researchers | Early-career researchers, wider scientific community |
| ***Materials*** | Video lectures, self-assessment, supporting materials, forum, ECTS accreditation | Video lectures, supporting materials, project work results | Video lectures, supporting materials, post-conference proceedings | Video lectures, supporting materials |

[1]

Annex 1: Overview of the different HBP Education Programme activity formats

**Figure 1: HBP Education Programme event formats**

To measure the long-term impact of the HBP Education Programme's activities, the programme office conducted an online survey with former participants of HBP Education events during RUP and SGA1.

The overall aim of the assessment was to find out what long-term impact the participation in an HBP Education event had for participants in regard to collaborations, use of the HBP Infrastructure and their careers. The results should, as a next step, enable the HBP Education Programme to make adjustments or improvements where necessary to ensure that the events truly benefit their participants.

The results of the evaluation will be presented and analysed in this report. First, the survey structure including its specific thematic foci is introduced, followed by an outline of the methods describing how the survey was conducted. The next part presents the survey results and the final discussion includes a comparison of results of the long-term assessment with results derived from event surveys that were conducted immediately after each event.

# 2. Methods

## 2.1 Survey design

The aim of this long-term assessment is to measure the long-term impact of the HBP Education Programme's specific education events that have taken place during RUP and SGA1, between spring 2014 and spring 2018 (HBP Schools, HBP Student Conferences, HBP Young Researcher Events and HBP Education/Curriculum Workshops). The online questionnaire has thus been structured into four parts with different thematic foci to collect information on:

1. the (perceived) long-term impacts on respondents' careers and their overall satisfaction with the events that they attended,
2. respondents' opinions of the HBP in general,
3. respondents' background information,
4. respondents' interest in future contact with the HBP Education Programme.

The survey questions and response summary can be found in Annex 2[2].

Before answering the actual survey questions, respondents were introduced with a short text stating the overall aim of the assessment. The anonymity of the survey was guaranteed and the HBP Education Programme's email address was provided in case respondents have any questions about the survey. As a further incentive to complete the survey, respondents were informed that they can choose to participate in a prize competition to win an e-reader (the winner was drawn after the survey had been closed).

The first part of the survey contained questions regarding the different education formats and events individually and focused on their long-term impact on participants' careers. Respondents were asked if they have attended HBP Curriculum Workshops, HBP Student Conferences, HBP Schools, HBP Young Researchers Events, and/or HBP Education Workshops. For each event format, when a respondent answered "yes", they were asked more detailed questions about the event. If the initial answer was "no" (e.g. has not attended any HBP Curriculum Workshops), they skipped to the next question on whether they attended a different event format. All questions in this part were multiple choice and respondents could choose one or more items (where applicable) from a

[2] Annex 2: HBP Education Programme Long-Term Assessment survey questions and response summary

list of given answers. Respondents could also choose to give an additional open-ended textual response as an answer to each question.

Part two of the questionnaire asked about the respondents' opinions about the HBP. In particular, respondents could indicate to what extent they agree or disagree with the HBP being an example where EU funding is successfully addressing societal challenges, if the HBP offers a valuable interdisciplinary approach to brain research, or if the HBP is an example of a global success story of science and science policy.

The third part of the long-term assessment focused on respondents' professional backgrounds as well as demographic data. The first question asked which HBP Infrastructure, if any, respondents are using for their research or work, with multiple answer options listing different elements of the HBP Research Infrastructure, as well as an open comment box. The following section asked which field/sector the respondents are currently working in and in which country, and also contained two optional questions about the respondents' age and gender.

In the final part, respondents could indicate if they are interested in future contact with the HBP Education Programme. Respondents could choose to answer "yes" or "no" to whether they are willing to share more information about their career development, if they would like to receive the HBP Education Programme newsletter and if they want to participate in the prize competition. If participants answered "yes" to any of these questions, they could, optionally, provide their email addresses. This part again clearly stated that the entire survey is completely anonymous and that survey responses will not be linked to respondents when providing their email addresses in the survey.

## 2.2 Data collection

To conduct the long-term assessment, the software "Surveymonkey" was used. The tool supports the technical set-up of an online questionnaire with questions and answer options, the invitation of respondents to the questionnaire, as well as the consequent data collection and analysis. An email invitation was sent on 5 June 2019 to all participants of Education Programme events that took place in RUP and SGA1. The invitation contained the following introduction text:

> *The HBP Education Programme is currently conducting a long-term assessment of its activities.*
> *As a former participant in HBP education and training events, we would very much appreciate your feedback on what impact your participation in (an) HBP Education event(s) has had on your career. This will help us to make improvements to the programme to ensure that the events truly benefit their participants. The survey should only take 5-10 minutes and the responses are completely anonymous.*
> *By completing the survey you can also choose to participate in a prize competition to win a Kindle E-Reader.*
> *If you have any questions about the survey, please email us: education@humanbrainproject.eu*
> *We really appreciate your input!*

In total, 530 participants were contacted and three reminder emails were sent in bi-weekly intervals. The survey was closed after two months. Out of 530 invitations, 357 participants (67.4 %) opened the survey. There was a total of 74 respondents (13.9 %) who completed the survey and 2 respondents (0.4 %) who did not finish the questionnaire. 30 email addresses (5.7 %) were invalid and could not reach the participants (cf. Figure 2).

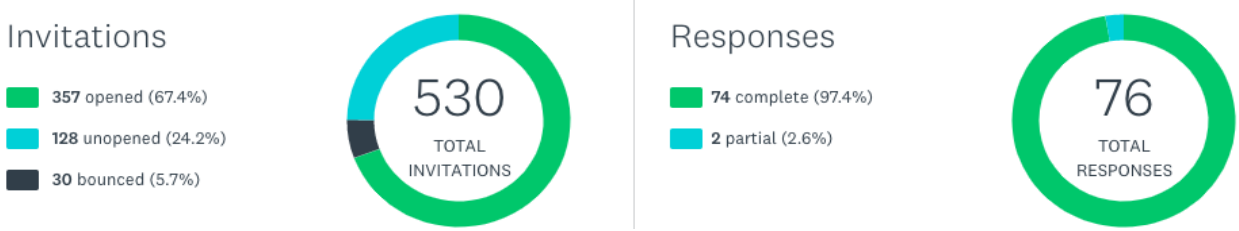


**Figure 2: Invitations and response statistics of the HBP long-term assessment questionnaire**

# 3. Results

Survey responses will be presented in this part of the report. All survey questions and response summaries can be found in Annex 2. Not all individual additional comments could be incorporated in the evaluation of results of this report, but can be provided upon request.

## 3.1 HBP Education Programme event formats

This section will present the survey responses according to each HBP Education Programme event format that took place during RUP and SGA1. When comparing results from different event formats, it is important to consider the different sample sizes per event, as survey respondents have attended different events. 27 respondents indicated to have attended HBP Curriculum Workshops, 18 respondents attended HBP Student Conferences, 24 attended HBP Schools, 11 attended HBP Young Researchers Events, and 10 attended HBP Workshops.

### *3.1.1 HBP Curriculum Workshops*

27 (out of 76) respondents answered that they previously participated in an HBP Curriculum Workshop, out of which 9 (33.34 %) respondents stated that they also attended one or several of the HBP Curriculum online courses.

Regarding the question about how respondents perceived the participation in an HBP Curriculum Workshop to benefit their careers, the answer options can be ranked from most to least often selected:

- Acquisition of new information (21 persons),
- Contact with other young scientists (20),
- New ideas for research (18),
- New skills – techniques (10),
- New skills – planning of your own projects (6),
- Contact with senior scientists (6),
- Other: “CV and preparations of PhD project” (1).

None of the respondents answered that there were no perceived benefits.

20 (74.07 %) respondents answered that they did not establish any new collaborations while participating in an HBP Curriculum Workshop. 4 (14.81 %) established a collaboration but are not sure if their counterpart was affiliated with the HBP, 2 (7.41 %) established collaborations with researchers from HBP partner institutions and 1 (3.7 %) established collaborations with members of both HBP- and non-HBP-affiliated institutions.

All respondents answered that their participation in an HBP Curriculum Workshop did not contribute to any scientific publications.

Finally, 15 respondents (55.56 %) indicated that they “definitely would” and 12 (44.44 %) “probably would” recommend HBP Curriculum Workshops to others (cf. Figure 3).

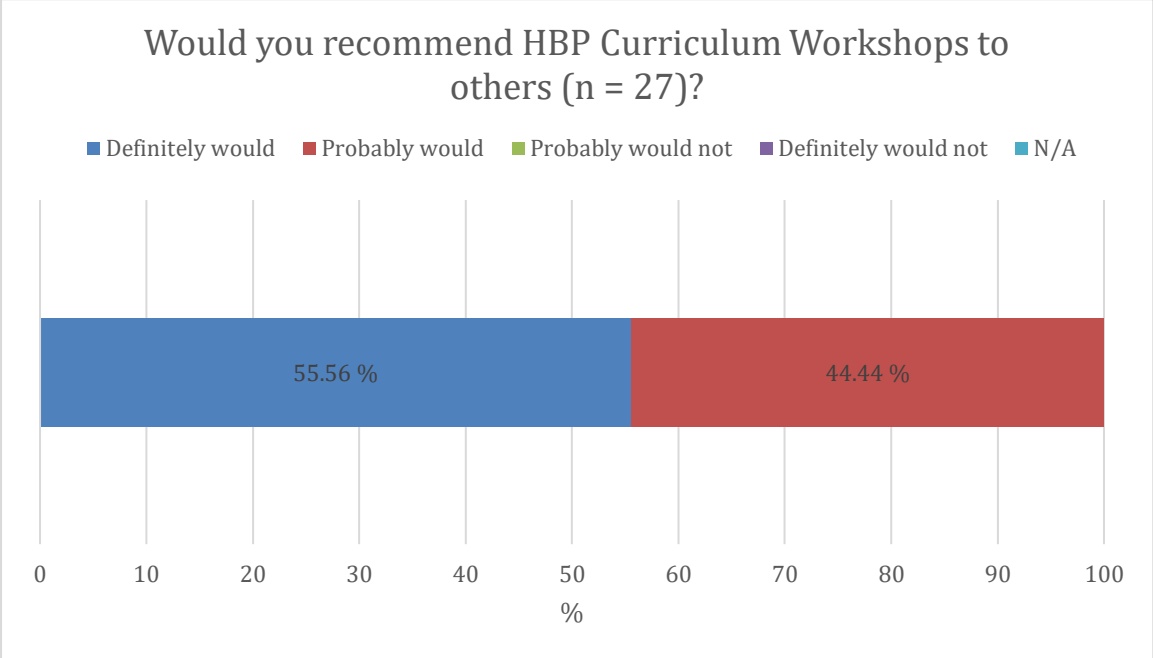


**Figure 3: Recommending HBP Curriculum Workshops to others**

### *3.1.2 HBP Student Conferences*

18 respondents (out of 75) replied that they have participated in one or both of the HBP Student Conferences. One survey respondent did interrupt the survey after the HBP Curriculum Workshops section, thus, the number of total respondents is reduced from 76 to 75 from this section.

Perceived benefits from participating in (a) HBP Student Conference(s) were mentioned as:

- Contact with other young scientists (14 persons),
- Acquisition of new information (12),
- New ideas for research (8),
- Contact with senior scientists (7),
- New skills – techniques (6),
- New skills – planning of your own projects (6)
- Two persons indicated that the conference had no perceived benefits for their career (cf. Figure 4)

One person commented that they “learned how it is to attend a conference” because they had never attended a conference before.

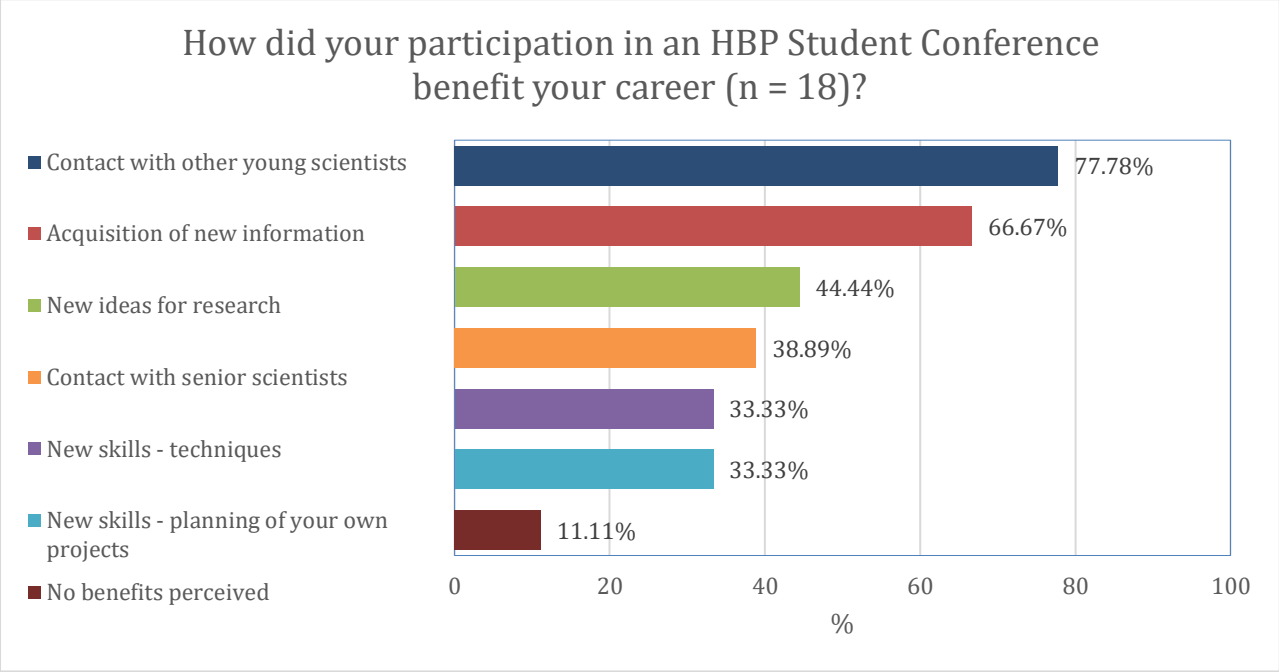


**Figure 4: Perceived benefits from participating in an HBP Student Conference**

13 (72.22 %) respondents answered that they did not establish any new collaborations when participating in an HBP Student Conference. However, 5 (27.78 %) replied that they did establish new collaborations, out of which 4 (22.22 %) stated with members of (an) HBP partner institution(s), while 1 (5.56 %) was not sure if the new collaboration was affiliated with the HBP.

Regarding the question whether participation in an HBP Student Conference contributed to scientific publications, 1 (5.56 %) respondent answered "yes, to two or more publications", 2 (11.11 %) answered "yes, to one publication", while 15 (83.33 %) indicated that their participation did not contribute to scientific publications. One of the two additional comments provided by respondents states that "People at the conference were very much about presenting their own work, not really open to new ideas". The second comment, however, reads "But we are still thinking about publishing related work".

When asked if respondents would recommend HBP Student Conferences to others, 11 (61.11 %) respondents answered that they "definitely would", 3 (16.67 %) "probably would", while 3 (16.67 %) replied "probably would not". 1 (5.56 %) respondent did not answer this question. An additional comment provided by one respondent notes that from the perspective of a student with a limited travel budget, other international conferences may be more important for them to attend.

### *3.1.3 HBP Schools*

24 survey respondents (out of 75) indicated that they have attended an HBP School.

The respondents' estimates of how their participation in an HBP School has benefited their careers can be ranked as follows:

- Acquisition of new information (22 persons),
- Contact with other young scientists (18),
- New ideas for research (14),
- New skills – techniques (14),
- New skills – planning of your own projects (10),
- Contact with senior scientists (10).
- One person indicated that they did not perceive any benefits.

9 (37.5 %) respondents replied that they have established new collaborations by participating in an HBP School, out of which 4 (16.67 %) stated with members of (an) HBP partner institution(s), 1 (4.17 %) with members of institutions not affiliated with the HBP, 1 (4.17 %) with both HBP- and non-HBP-affiliated institutions, and 3 (12.5 %) were not sure if their new collaboration was affiliated with the HBP (cf. Figure 5).

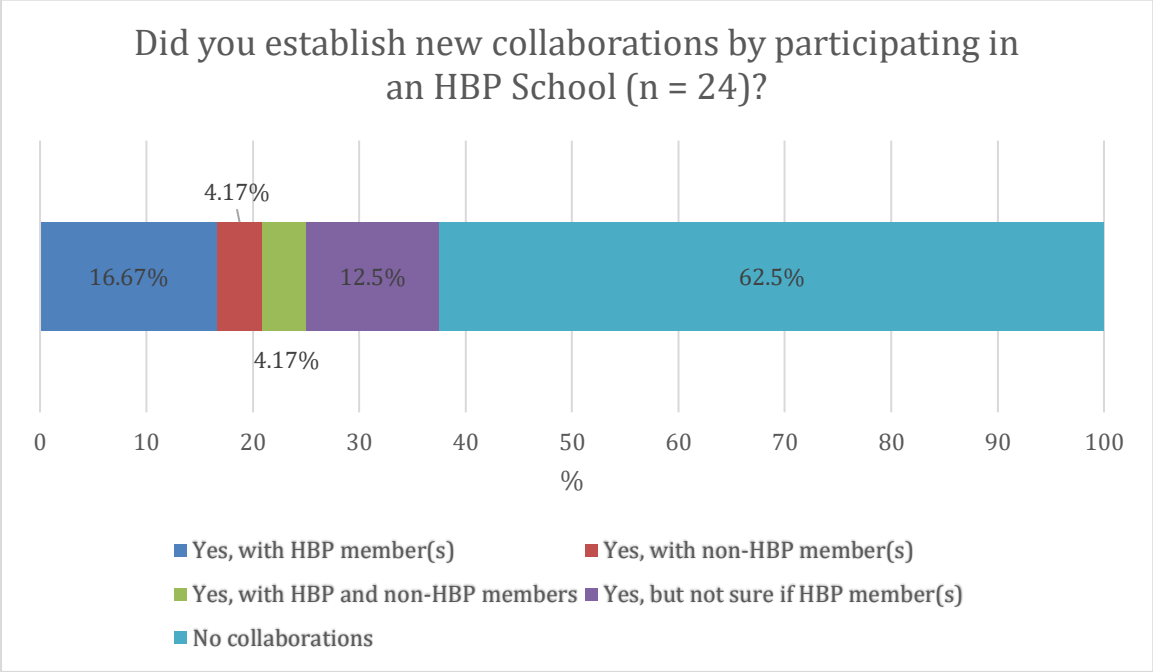


**Figure 5: Established collaborations at HBP Schools**

5 (20.83 %) of the respondents further indicated that their participation in an HBP School contributed to one scientific publication, while the remaining respondents answered that their participation did not contribute to scientific publications.

HBP Schools would "definitely" be recommended to others by 18 (75 %) respondents, "probably would" by 5 (20.83 %), and "probably would not" by 1 (4.17 %).

### *3.1.4 HBP Young Researchers Events*

Out of 75 respondents, 11 indicated that they have previously participated in HBP Young Researchers Events.

In terms of career benefits,

- All 11 respondents indicated contact with young scientists, followed by
- Acquisition of new information (8 persons),
- New ideas for research (6),
- Contact with senior scientists (6),
- New skills – techniques (5),
- New skills – planning of your own project (5).

None of the respondents stated that they did not perceive any benefits from attending an HBP Young Researchers Event.

4 (36.36 %) respondents answered that they established new collaborations by attending an HBP Young Researchers Event. 2 (18.18 %) were not sure if their collaborations were affiliated with the

HBP, while 1 (9.09 %) indicated to have established collaborations with members of HBP partner institutions and 1 (9.09 %) with both, HBP- and non-HBP-affiliated institutions.

All respondents stated that their participation did not contribute to any scientific publications.

Out of all 11 respondents, 8 (72.73 %) would "definitely" and 3 (27.27 %) would "probably" recommend HBP Young Researchers Events to others.

### *3.1.5 HBP Workshops*

Out of 75 survey respondents, 10 (13.33 %) replied that they have participated in HBP Workshops. However, for all detailed questions about HBP Workshops, 9 persons will be considered as 100 %, as one respondent stopped answering further questions from this section onwards.

Regarding the question about how the participation in an HBP Workshop benefits the respondents' careers, the answer options are ranked from most to least often selected as follows:

- Acquisition of new information (7 persons),
- Contact with other young scientists (6),
- New ideas for research (4),
- Contact with senior scientists (4),
- New skills – techniques (3).

None of the respondents answered that they perceived "new skills – planning of your own project" as a benefit, or that they did not perceive any benefits.

1 (11.11 %) respondent answered that they established new collaborations by participating in an HBP Workshop with members of (an) HBP partner institution(s), while all 8 other respondents (88.89 %) stated that they did not establish any new collaborations.

Also, 1 (11.11 %) respondent answered that their participation in an HBP Workshop contributed to one scientific publication, while all 8 other respondents stated that their participation did not contribute to scientific publications.

The question about recommending HBP Workshops to others was answered as "definitely would" by 4 (44.44 %) respondents, "probably would" by 4 (44.44 %) respondents and "probably would not" by 1 (11.11 %) respondent.

## 3.2 Opinion about the Human Brain Project

As two survey respondents have previously interrupted the survey, there is a total of 74 respondents counted from this section onwards.

Respondents could choose to what extent they agree or disagree with the statement that the HBP is an example where EU funding is successfully addressing societal challenges. 20.27 % indicated to "strongly agree", 52.7 % "agree", 13.51 % "disagree" and 4.05 % "strongly disagree". 9.46 % chose not to rate the statement by answering "N/A" (no answer).

The second statement to be rated read that the HBP offers a valuable interdisciplinary approach to brain research. 47.3 % of respondents indicated to "strongly agree", 40.54 % "agree", while 8.11 % "disagree" and 1.35 % "strongly disagree". 2.7 % provided no rating and instead answered "N/A" (cf. Figure 6).

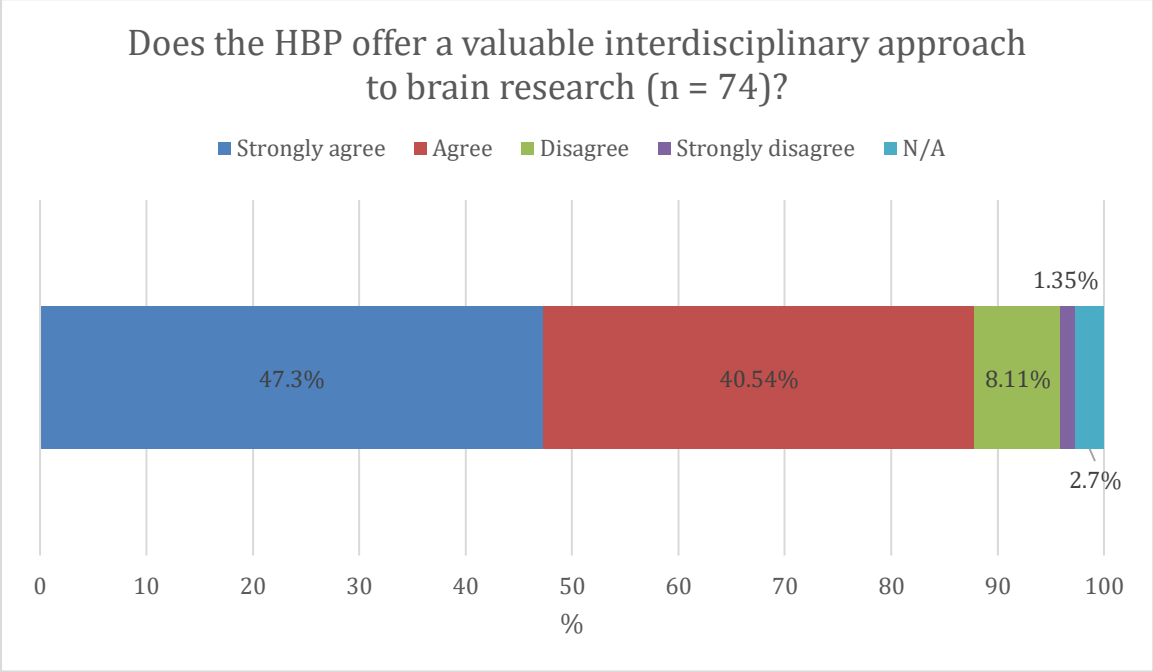


**Figure 6: Rating of whether the HBP offers a valuable interdisciplinary approach to brain research**

The third statement referred to whether the HBP is an example of a global success story of science and science policy. 29.73 % rated this comment with "strongly agree", while 36.49 % answered "agree". 10.81 % of respondents chose "disagree", 5.41 % strongly disagree, and 17.57 % replied "N/A".

Summarising additional comments provided by respondents to the questions in this section, some participants perceive the HBP as in-transparent in terms of governance structures and dissemination of scientific results.

## 3.3 Background information

The following section of the survey contains questions about the respondents' professional as well as demographic backgrounds.

The first question addresses which HBP Infrastructure respondents are using for their research/work, to which multiple answers could be given. 15 respondents each indicated to use the HBP Collaboratory and the HBP Brain Simulation Platform, followed by the HBP Neuroinformatics Platform (14 respondents), HBP High Performance Analytics and Computing Platform (5), HBP Neuromorphic Computing Platform (5), HBP Medical Informatics Platform (4) and HBP Neurorobotics Platform (3). 38 respondents answered that they are not using any HBP Infrastructure, while no respondents mentioned any other elements or services of the HBP Research Infrastructure that were not listed as answer options (cf. Figure 7).

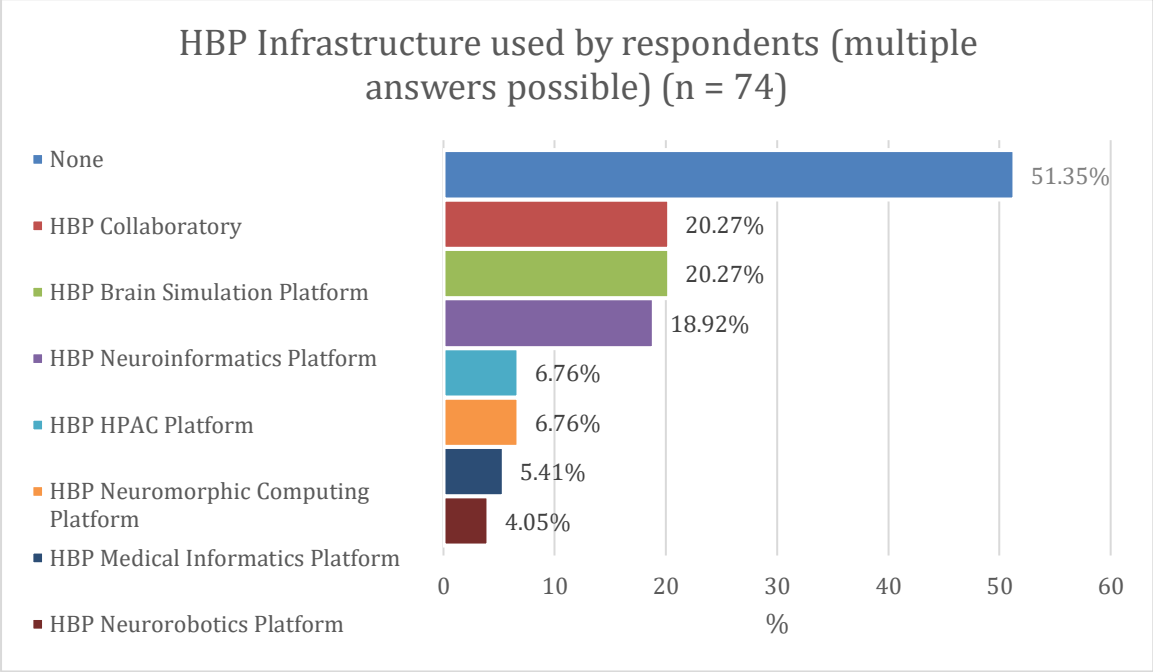


**Figure 7: HBP Infrastructure used by respondents (multiple answers per respondent were possible)**

As more than half of the respondents stated that they are not using any elements of the HBP Research Infrastructure for their work, Figure 8 also shows the distribution of respondents by country.

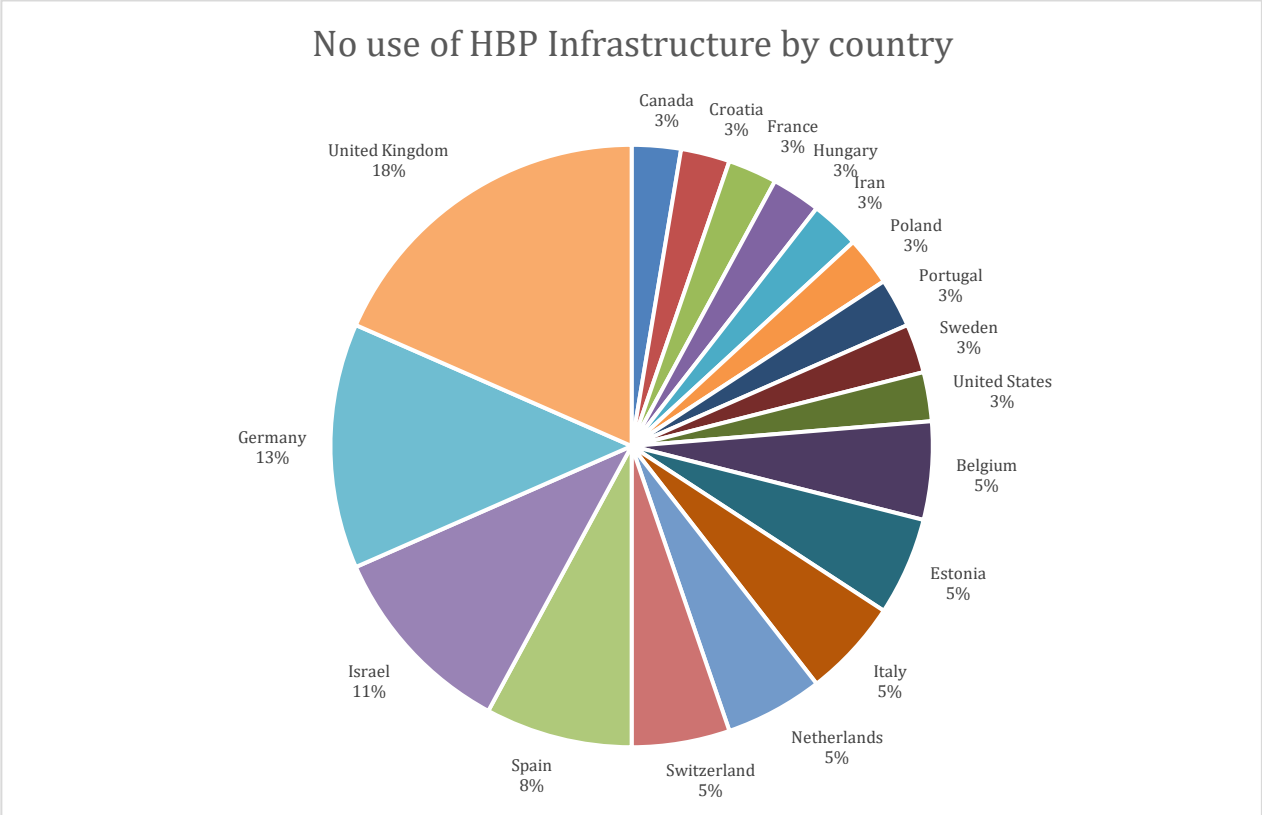


**Figure 8: Respondents who stated not to be using HBP Infrastructure, by country.**

When compared, it is shown that over three quarters of these currently work in an EU country, and more than 80 % work in countries involved in the Human Brain Project (cf. **Error! Reference source not found.**).

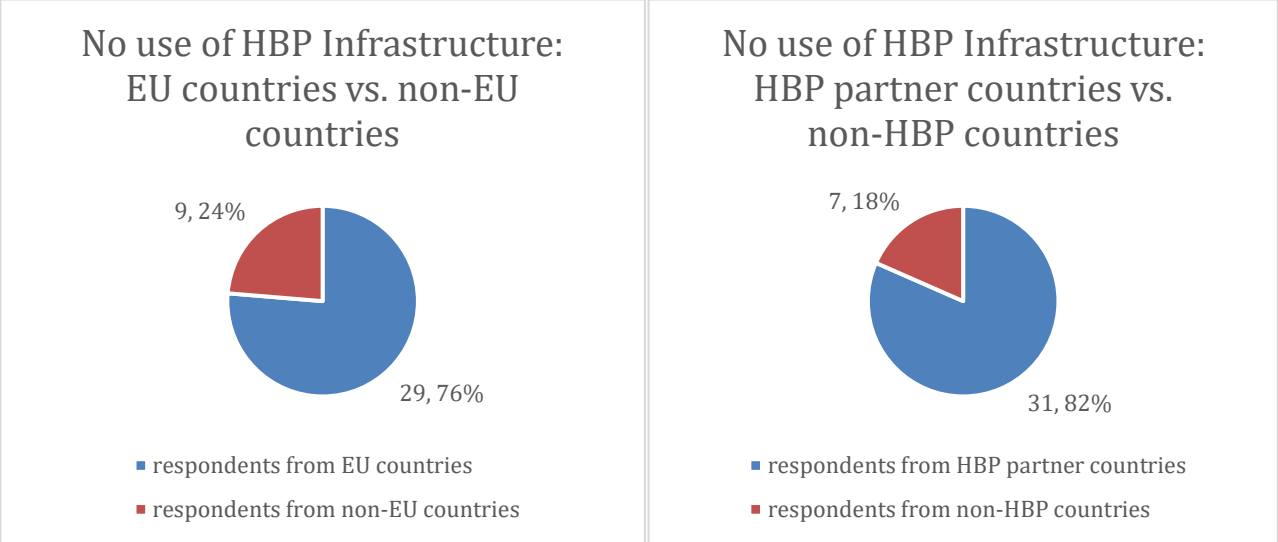


**Figure 9: Respondents who stated not to be using HBP Infrastructure, by EU / non-EU countries and countries involved in HBP.**

Regarding the field/sector that respondents are currently working in, 86.49 % of respondents answered "Scientific organisation (Higher education, research)", 8.11 % indicated to work in "Industry/Private sector" and 1.35 % to work with "government". None of the respondents indicated to work in a civil society organisation or in media. 2 respondents added in the open comment section of this question to work as freelance researchers.

Respondents could answer which country they are currently working in. The results show that 72 of the survey respondents are working in 25 different countries, while 2 respondents did not answer this question. The countries represented the strongest are Germany (11 respondents), United Kingdom (9) and Italy (8). The following chart shows the distribution of survey respondents by country (cf. Figure 10).

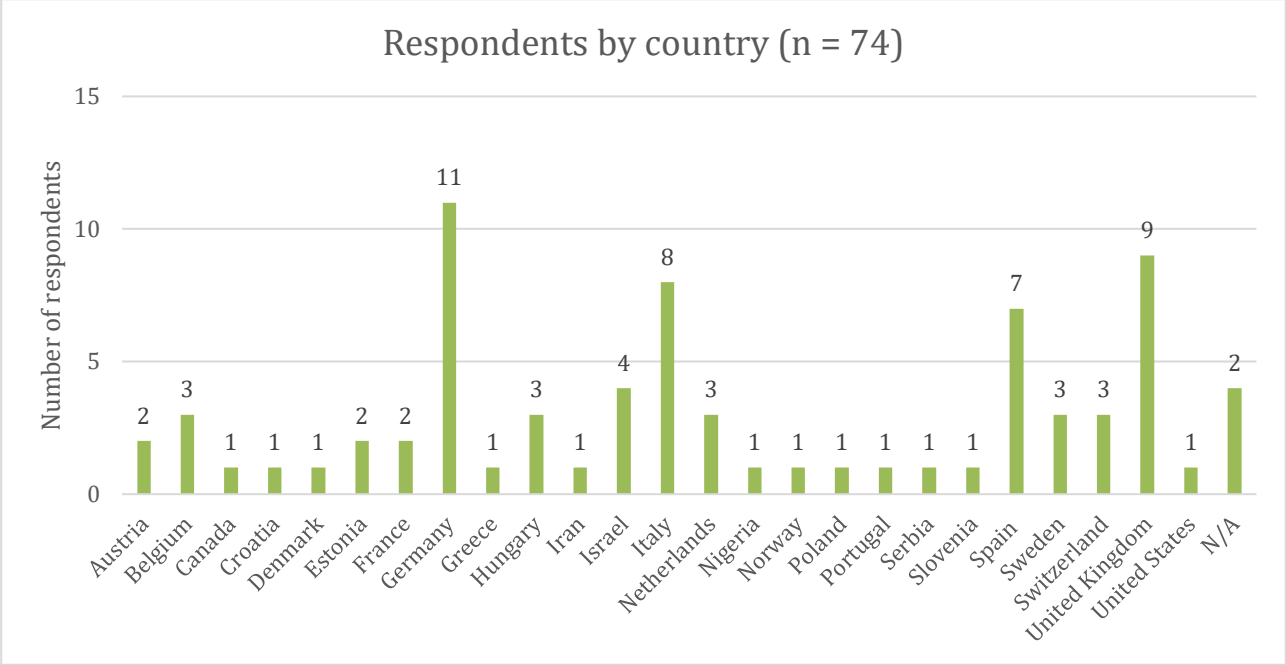


**Figure 10: HBP Education Programme long-term assessment respondents by country working in at the time of filling the survey**

In terms of demographic data, 44.59 % of the respondents belong to the age group 20-29, 51.35 % to the age group 30-39, and 4.05 % are 40-49 years old. None of the respondents were younger than 20 or older than 50 years.
The gender distribution of respondents to the long-term assessment was 56.76 % male and 43.24 % female (n = 74) (these numbers exclude the two respondents who quit the survey early).

# 4. Discussion

## 4.1 Long-term assessment main findings

***Perceived benefits***

It can be observed that, independent of the event format, survey respondents largely agree that the acquisition of new information as well as the contact with other young scientists were the most prominent benefits of their participation. This indicates that the objectives of the HBP Education Programme are met with regard to connecting early-career researchers within the HBP and beyond, as well as conveying new, transdisciplinary knowledge and skills based on the Project's achievements.

***New collaborations***

With regard to establishing new collaborations, answers differ depending on the event format. While only one quarter of participants in HBP Curriculum Workshops stated that they did establish new collaborations, this may to some extent be related to the nature of the format. Since it is very interdisciplinary and gathers researchers from a vast variety of backgrounds, the potential for collaboration might often not be as obvious. In addition, the objective of the format is rather to provide an introduction to the various fields outside participants' expertise, in order for them to use this complementary knowledge for specific aspects of their work.
HBP Schools, on the other hand, offer a more in-depth approach that tackles specific research questions in the light of the various disciplines and also require for participants to have a certain

level of knowledge in the respective field. Together with the fact that this format is also designed in a more time-intense manner with a scientific programme spanning five days and including various opportunities to interact formally (e.g. in group or project work) as well as informally (e.g. at social events), it can be argued that it provides a more fertile soil for establishing collaborations. The feedback survey shows that 9 out of 24 respondents (37.50 %) who attended one or more HBP Schools stated to have formed collaborations as a result of their participation.
For future events, it can be considered to increase the opportunities for semi-formal interaction, such as in poster sessions, in all event formats to further encourage the exchange across disciplines and the establishment of new collaborations. For the HBP Curriculum, poster sessions were added to the scientific programme already for some of the workshops in SGA2.
One quarter of respondents who attended a Student Conference established international collaborations. As the aim of this event format is to encourage collaboration and scientific exchange across the fields of neuroscience, brain medicine and computer science, the results show that there is still room for improvement. An assumed reason for the relatively low number of established collaborations is the interdisciplinarity of the conference, where students from various different disciplines meet. A measure to foster an increased number of collaborations is to also offer more concrete examples and hands-on sessions that focus on collaborations between different disciplines. For this purpose, in SGA2, hands-on Workshop days were organised back to back to Student Conferences, and it remains to be seen in the next long-term assessment whether this format encourages interdisciplinary collaborations.
While Young Researchers Events provide a setting for the HBP Research Infrastructure to present the Project's tools and results to early-career scientists and future users, results suggest that participants also succeed to establish collaborations when attending these events (36.36 % of respondents indicated to have esablished collaboarations following their participation).

***Publications***

The survey results show that only few respondents would state that their participation in an HBP Education event contributed to scientific publications. It can be assumed that the answers to this question are related to the collaborations established in connection with each event format, which is underpinned by the fact that the highest rates of publications can be observed with regard to HBP Schools (5 out of 24 respondents) and HBP Student Conferences (3 out of 18 respondents).

When asked whether they would recommend participation in the respective event(s) to others, the majority of responses (63 %) stated that they "definitely would". This shows that in general, the formats are well received and confirms that survey respondents feel that they have benefited from their participation.

***Gender distribution***

The gender distribution of respondents to the long-term assessment was 56.76 % male and 43.24 % female (n = 74). Results show an equal distribution in terms of establishing collaborations among participants of HBP Education events, as approximately one third of female respondents and one third of male respondents indicated to have established collaborations during or after their participation in HBP Education events.

Interestingly, while 8 male respondents answered that their participation in an HBP Education event resulted in at least one publication, only one female respondent indicated that her participation led to a publication. This unequal distribution should be addressed further in the future. While HBP Education event formats such as Young Researchers Events or Curriculum Workshops may not be formats that induce many joint publications, it could be an interesting aspect to focus on during HBP Schools and Student Conferences.

***Use of the HBP Infrastructure***

More than half of the respondents stated that they are not using any elements of the HBP Research Infrastructure for their work. Over three quarters of these respondents stated to currently work in an EU country, and more than 80 % work in countries involved in the Human Brain Project.

These results indicate that there is room for improvement with regard to the usage of the infrastructure developed in the Project and the xsapproach of potential users. In SGA2, the Education Programme has already taken a step in this direction by introducing dedicated Infrastructure Training courses as a new event format, which focus on newly developed tools, services, workflows and hardware resulting from the interdisciplinary brain research released in the Human Brain Project (cf.

Annex 1 for further details on this event format).

***Opinion about the Human Brain Project***

The majority of respondents agreed that the HBP is an example where EU funding is successfully addressing societal challenges, offers a valuable inter interdisciplinary approach to brain research and is a global soccess story of science and science policy.

## 4.2 Comparison of results from the long-term assessment and individual event surveys

To measure the long-term impact of the HBP Education Programme's activities, this discussion will compare results from the long-term assessment with results from surveys directly conducted after the HBP Education events in RUP and SGA1.

The long-term assessment largely confirms the expectations participants had directly after attending an HBP Education event. For both RUP (n = 101) and SGA1 (n = 302), the post-event surveys show that respondents considered the contact with other young scientists as the most valuable impact for their research with weighted averages of 4.65 and 4.48, respectively (cf. Figure 11). The majority of respondents (91 %) also confirmed this aspect as a perceived benefit in the long-term assessment.

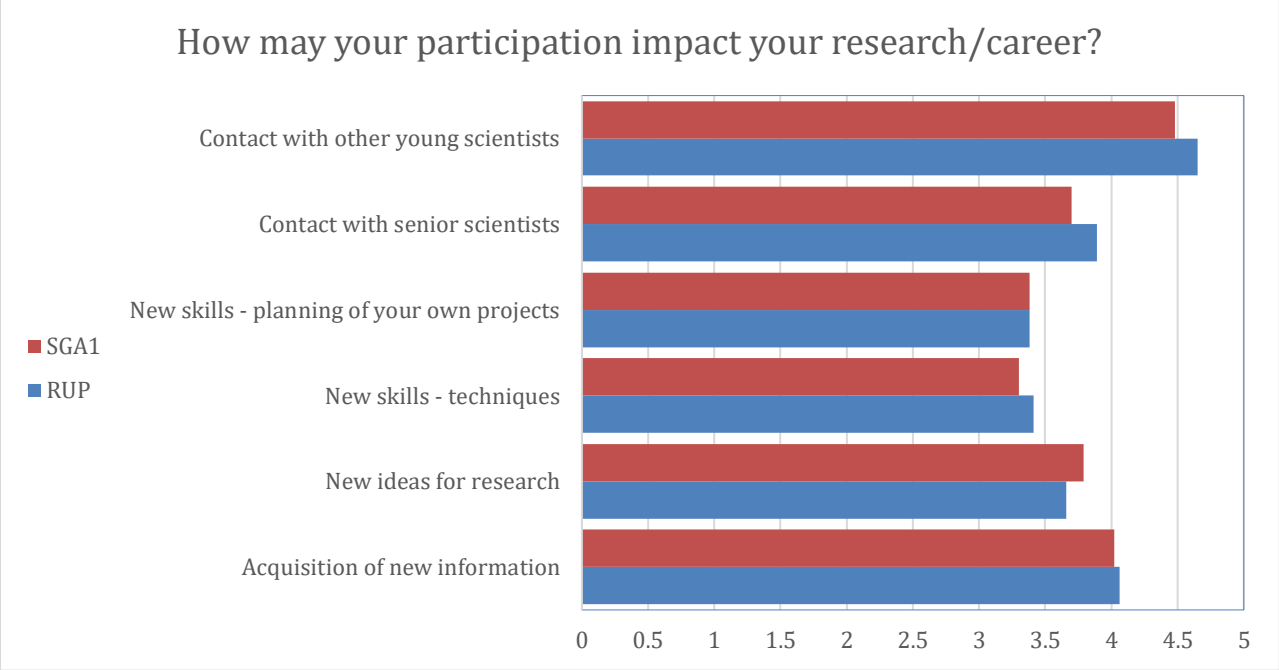


**Figure 11: Short-term evaluation of participants with regard to expected benefits for their research/career - RUP & SGA1 (weighted averages on a scale from "failed" = 0 to "excellent" = 5)**

In addition, the acquisition of new information and the contact with senior scientists as well as gaining new ideas for their research were perceived as benefits by respondents directly after attending an event, with weighted averages between 3.5 and 4. Even though long-term responses show that the vast majority of respondents (92 %) still consider the acquisition of new information as a benefit for their career, the approval varies for other aspects. Often, differences can be observed between various event types: While the contact with senior scientists was considered beneficial also in the long run by more than 50 % of respondents who attended Young Researchers

Events, only about a fifth of participants of HBP Curriculum Workshops checked this box. While the small sample size does not permit many conclusions to be drawn from this difference in the results, it could be examined in more detail in the future in order to determine potential factors.

For both post-event and long-term evaluations, the acquisition of new skills seems to have the lowest impact in the perception of participants. The majority of respondents (54 / 51.9 % for SGA1 and 61 / 62.79 % for RUP) to surveys immediately following events rated the acquisition of new skills as either "good" or "satisfactory" both with regard to new techniques and project planning. In retrospect, participants distinguish more between these two aspects. Overall, 38 (50 %) participants stated that their participation in one or more events fostered the acquisition of new techniques, whereas only 27 respondents (36 %) observed a benefit with regard to project planning skills (cf. Figure 12).

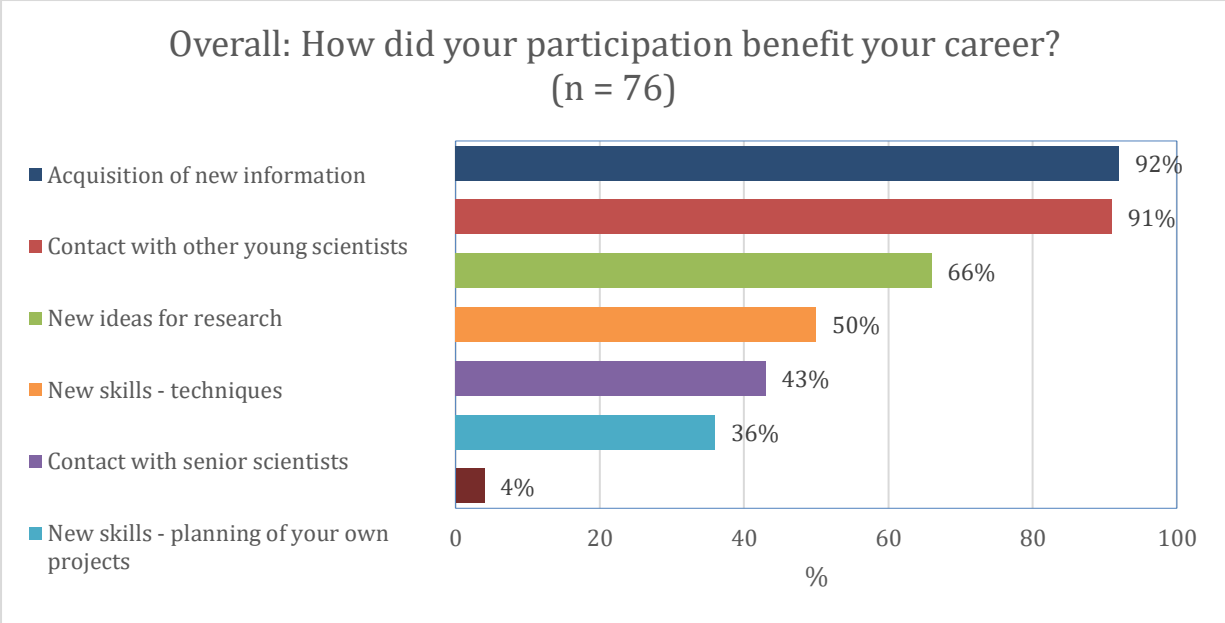


**Figure 12: Overall results of LTA responses on perceived benefits of participation in HBP events (percentage)**

Again, the perception varies between event types, as can be seen in Figure 13.

The comparison of results shows that, overall, the expectations of respondents with regard to the impact of their participation in HBP Education events on their work and career were mostly met in the long term.

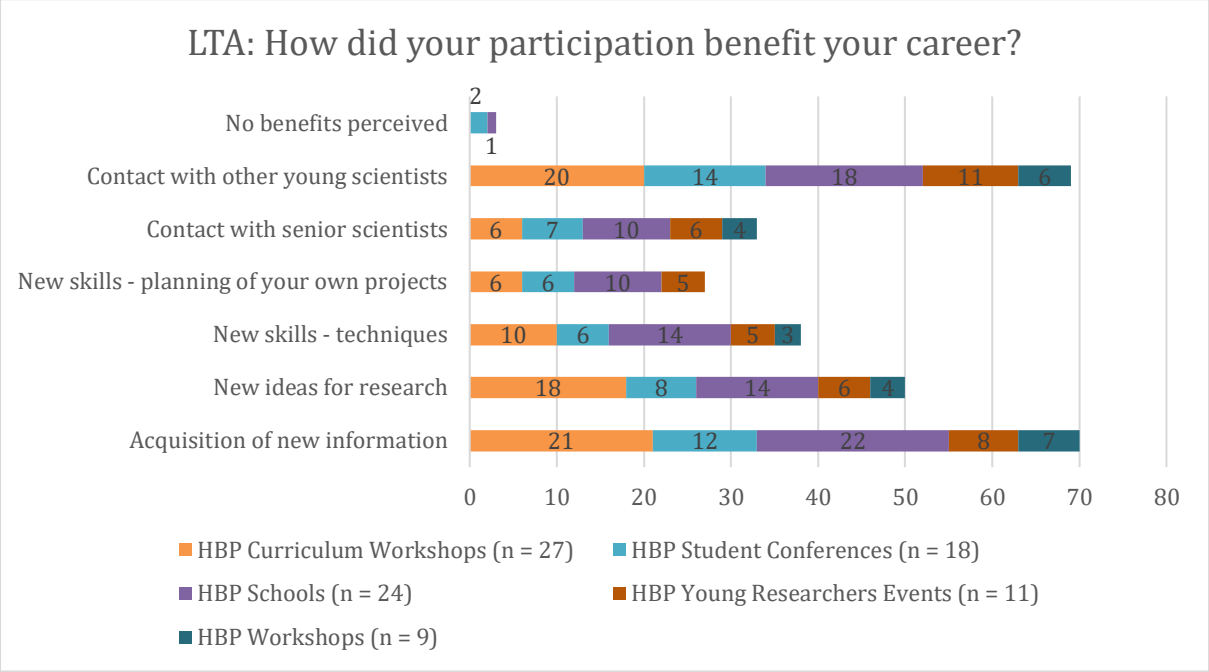


**Figure 13: Overall results per event format of LTA responses on perceived benefits of participation in HBP events (absolute numbers)[3]**

[3] This table does not serve as a direct comparison between event formats, but rather as a cumulative illustration of benefits.

# 5. Conclusion

Overall, the results of the long-term assessment show that the objectives of the HBP Education Programme have been met to different extents over the course of RUP and SGA1.

- **Objective 1:** Provide young European scientists with transdisciplinary knowledge and skills
    - Successful as shown with respondents' feedback on benefits
- **Objective 2:** Connect early-career researchers within the HBP and beyond
    - In each event format, a certain number of respondents answered to having established collaborations. While different event formats are designed differently and these numbers consequently vary, measures have already been taken and will also be considered in the future to further increase the number of collaborations contributing to the objectives of the HBP Education Programme.
- **Objective 3:** Build awareness of the Project's work and results
    - Respondents are aware of the Project and gave feedback on different aspects of the HBP. It will be continued to introduce the audience to the Project during HBP Education Programme events.

After Infrastructure Training events have been introduced in SGA2, it is expected that there will be a visible increase of the number of HBP Infrastructure users, which will be examined in the next long-term assessment by the HBP Education Programme, expected to be conducted in 2021.

As the evaluation shows, there is still room for improvement with regard to the potential for collaborations that continue after the participation in events. In SGA2, this has been considered especially with regard to HBP Student Conferences, which follow the main objective to foster collaboration and exchange across disciplines. For this purpose, hands-on tutorials on the topics of career planning and networking have been included in the scientific programme. This approach will be followed further for future conferences as well. In addition, semi-formal modes of interaction like poster sessions have been included also in formats like the HBP Curriculum to increase the contact and exchange among participants.

When compared to short-term event evaluations, the results of the feedback survey confirm that participants' expectations of the benefits for their research and professional life largely have been fulfilled. Finally, the results further indicate that the majority of respondents would recommend HBP Education Programme events to others.

# Annex 1: HBP EDUCATION PROGRAMME OVERVIEW

The HBP Education Programme offers innovative learning packages for early-career researchers working in and across the fields of neuroscience, information and communications technology (ICT) and medicine. The programme especially targets advanced master's-level and PhD students, as well as early post-doctoral researchers, from within and outside the HBP.

The HBP Curriculum on Interdisciplinary Brain Science combines web-based distance learning courses and complementary face-to-face workshops. It provides basic lessons in the HBP core fields neuroscience, medicine and ICT for early-career researchers outside their area of specialisation, as well as courses on the subjects of ethics and intellectual property rights, translation and exploitation of research. The HBP Curriculum developed from HBP Workshops, which was the name of this format in the early stage during RUP.

HBP Schools are five-day courses that provide more advanced lectures and tutorials. This format focuses on specific questions and challenges from a transdisciplinary point of view, to help break down barriers between different disciplines.

An annual HBP Student Conference, organised by early-career researchers for early-career researchers, aims to encourage collaboration and scientific exchange across the fields of neuroscience, brain medicine and computer science. At the conference, early-career researchers get the chance to present their own research and engage in extensive discussions with peers and principle investigators from within and outside the HBP.

Young Researchers Events provide a setting for the HBP Research Infrastructure to present the Project's tools and results to early-career scientists and future users. In addition, more specific Infrastructure User Training Events, introduced in SGA2 (April 2018 – March 2020), provide hands-on training in the use of the various services and tools offered by the HBP.

Video material from all HBP Education Programme activities is collected and made available to the public via the HBP Education Programme E-library.

Target audience:

- Master's-level students already carrying out research
- PhD students
- Researchers who received their doctoral degree within the past three years

Objectives of the HBP Education Programme

- **Objective 1:** Provide young European scientists with transdisciplinary knowledge and skills
- **Objective 2:** Connect early-career researchers within the HBP and beyond
- **Objective 3:** Build awareness of the project's work and results

# Annex 2: HBP EDUCATION PROGRAMME LONG-TERM ASSESSMENT SURVEY AND RESPONSE SUMMARY

All survey questions and the response summary can be downloaded here.