

# Leadership training in medical students using systemic awareness: an evaluation study

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## Research article

**Keywords:** Medical leadership, transformational learning, experimental learning, tacit knowledge, teamwork, systemic approach

**Posted Date:** August 8th, 2019

**DOI:** <https://doi.org/10.21203/rs.2.12524/v1>

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# Abstract

## BACKGROUND

The growing demand for the development of leadership skills among medical students is widely recognized. For leadership development to occur, awareness of the organisational and social context and the impact of this context on personal and group functioning and well-being is essential. However, this social context awareness is largely based on tacit or implicit knowledge. We argue that the systemic training approach with the method of systemic constellations, is effective in making this implicit knowledge explicit and enhancing social context awareness. The systemic training approach is already widely used in business settings for leadership development and team building, but has not been applied in the medical education setting. It offers active and experiential learning and supports transformative learning. The aims of this research are (1) to evaluate the reaction of medical bachelor students on this novel approach for systemic awareness training and (2) to investigate if type of trainer (i.e., experienced systemic trainers versus newly trained systemic trainers with experience in the medical teaching setting) makes a difference for students' reaction on the training.

## METHOD

In 2018 and 2019, we included systemic awareness training in the medical curriculum of the University of Groningen, the Netherlands. We evaluated the training in approximately 300 third-year medical bachelor students right after finishing the training. RESULTS Most students liked the training (64.1%, N=143), 17.0% (N=38) were neutral and 18.8% (N=42) did not like it. The training gave useful insights to 148 students (66.4%) and for the majority, timing of the training was appropriate (N=164, 77.0%). Having trainers who were familiar with teaching medical students significantly increased students' reports of liking and usefulness.

## CONCLUSIONS

Systemic awareness training using the constellations method is liked and regarded as useful, especially when it is given by systemic trainers with experience in the medical teaching setting. A next step is to investigate whether such a training increases systemic awareness and as such contributes to medical students' leadership development.

## Background

The growing demand for leadership skills among healthcare professionals is widely recognized (1, 2). Adequate leadership skills among healthcare professionals were found to be an important determinant of healthcare quality and patient safety (3–5) and are regarded as essential in shaping tomorrow's healthcare (1, 2, 6). Improvement of leadership skills may also add to well-being of healthcare professionals themselves and help tackle the relatively high occurrence of burnout (7, 8). For this reason, it has been emphasised to include leadership development in medical education (1, 6).

However, leadership is difficult to define and so are the related competences that should be developed. The definition of leadership is influenced by time and context (9, 10) and depends on whether it is regarded as, for instance, a role, a behaviour, a process or a set of skills (9, 11). In contemporary medical education, leadership often refers to the social process that creates change and to the skills needed to be effectively engaged in this social process (1, 2, 6). In this light, leadership development requires a deep understanding and awareness of the organisational and social context of the medical system, and how this context influences individual and group functioning (1, 3, 11). People's understanding of the social context is largely based on tacit knowledge (12). Tacit knowledge is the collective, implicit knowledge, that consists of habits, beliefs, values, informal social structures, and 'how we do things here', also called 'embedded knowledge' (13, 14). Tacit knowledge is regarded as an essential source of knowledge for the healthcare professional, but is not easy to transfer (12). In contrast to explicit knowledge, which can be learned through lectures and books, acquiring tacit knowledge is experiential and requires social interaction (13).

A promising method to develop this awareness for the surrounding social system and to become able to tap into this embedded knowledge and make it explicit, is the systemic training approach. Previous practical experience and research in various organisational settings shows that the systemic training approach could be very useful in developing awareness of the surrounding social system (in short, systemic awareness) (15–18). This approach is already widely used in business settings for organisational development, team building, and consultancy and for leadership training in non-medical workplace settings (15–18). The basis of this approach is to zoom out from the individual level to the larger social system level and make the system visible and explicit. ‘Social system’ refers to any group of people (e.g. colleagues, team members). The systemic approach aims to aid people in developing skills to identify complex, often informal or implicit, patterns and inter-dependencies within an organisation and to deal with these patterns. The systemic approach can be characterised as a method of experiential learning for the individual and the group. It enables cognitive and affective learning and has been shown to support transformative learning (19). In transformative learning, students are offered an experience that stimulates a critical reflection of current beliefs that may lead to a change in perspective on the situation and change in behaviour (20).

In 2017, we piloted a systemic awareness training using the systemic training approach in the medical curriculum of the University of Groningen, the Netherlands, as part of the educational line on leadership development (21). We repeated the training in 2018 and 2019, after the pilot showed that the training could be practical implemented in this setting and time frame. The theoretical underpinning of the educational line lies in transformative and experiential learning, which fit well with the systemic training method.

### *The systemic training approach*

#### *Systemic perspective*

The systemic training approach invites people to take another perspective than their own on organisations, teams or any group of people and thereby making them more aware of their social context (e.g. the perspective of an external observer or of someone else in the team). The method was originally developed for psychotherapy (focused on the family system) by Hellinger and was further developed and applied to other systems such as organisations (15, 18, 22). The basic idea behind this approach is that individuals are part of many different social systems at the same time, in line with the concept of habitus from Bourdieu (23). Organisations can then be seen as complex networks of, often informal, relations, dependencies, and patterns which are interwoven with each other in many ways. When you zoom out from the individual level to the system level, often a different or richer picture emerges.

#### *Systemic constellation method*

The systemic training approach makes use of the intuitive, tacit knowledge people have about the inter-dependencies, structures and patterns in teams and organisations and makes this implicit knowledge explicit. It aims to display the structures of a system and the inter-dependencies between different elements of this system. To this end, systemic constellations may be used. Systemic constellations are a visualization of a system, using a spatial arrangement of elements (using people or objects) relevant to the organisation and its context (Figure 1). Elements can be a function or role in the organisation (e.g. nurse), stakeholders (e.g. patients), and concepts or societal aspects (e.g. insurance). By externalising the elements of a system, systemic constellations render the inner image someone has of a system in a visible and tangible way.

#### *Systemic constellation process*

A constellation is performed with a group of people led by a trained facilitator. The facilitator interviews a focal person regarding a team or organisational issue. Together they identify elements that are relevant in this case and create a visualization of the system. The other people who are present actively participate as representatives of one of the elements or as observers. The facilitator examines the constellation together with the focal person by interviewing the focal person or the elements and invites the person to literally try different perspectives. Important is that the facilitator keeps an open, non-

judgemental attitude at all times, and does not aim for solutions, to allow for other perspectives or ideas to develop. At a point of saturation, the constellation process is closed with a short reflection.

### *Aim*

To our knowledge, leadership training using the systemic approach has currently not yet been included in undergraduate or graduate medical curricula. Because of the novelty of the approach for the medical learning setting, reaction of the students on the training needs to be explored before further implementation can take place. In this study, we describe how we applied the systemic training approach in the medical learning setting in a large group of undergraduate students. We evaluate the first reaction (liking and perceived usefulness) of the students, and, because of the important role of the facilitator in the constellation process, we compare two different types of trainers, i.e. experienced systemic trainers versus trainers newly trained in the systemic method, but experienced with working in the medical teaching setting.

## **Methods**

### *Description and aim of the training*

The 2-hours systemic training was developed in 2017 in cooperation with the Bert Hellinger Institute the Netherlands, ([www.hellingerinstituut.nl/en](http://www.hellingerinstituut.nl/en)) (Appendix 1). The aim of the training for medical students was to develop: 1) awareness of the implicit source of knowledge that they already have about social systems in general (implicit knowledge becomes explicit); 2) the ability to use this knowledge in relation to their bachelor research project team so that they become aware of the social system they are currently in; 3) the ability to reflect on this social system with other students. The training was piloted with bachelor students and facilitators who gave the trainings. The training focused on the bachelor research project team in which the students worked in groups of 2–5 students at the moment of the training. Per training, 2–4 bachelor research project teams were included, in total 10–15 students. The training focused on the level of the project team, no personal issues of the students were addressed during the trainings.

### *Setting and context*

The training was held at the medical faculty of the University of Groningen, the University Medical Center Groningen, the Netherlands. It was scheduled during the second semester in the third bachelor year. The training was compulsory and part of the educational line on leadership development (21). The medical training in the Netherlands is 6 years and consists of a three-year bachelor programme and a three-year master programme. In general, the bachelor has a focus on gaining theoretical knowledge, while the master has a focus on developing (medical) skills and consists mainly of internships. Hence, the second semester in the third bachelor year, is the last semester before the students start their medical internship.

### *Participants*

The third bachelor year consists of about 380 students, of whom about 75 were completing their bachelor research project abroad during the training period. In the evaluation study in 2018 and 2019, respectively 180 and 223 students participated (Figure 2).

### *Trainers*

The content and the setting for the training was the same in all years, but we used two different trainer groups. In 2018 we worked with trainers who had a thorough training in the systemic method and who had at least 5-years' experience with the systemic method (experienced systemic trainers). Most trainers worked in business contexts and in professional leadership development. In 2019, we worked with educated trainers appointed at the medical faculty, who were trained in the systemic method during a 4-day training programme at the Bert Hellinger Institute the Netherlands. These trainers were acquainted with the medical setting, but not with systemic work.

## *Study design*

In 2018 and 2019, the students evaluated the training by using an anonymous, digital questionnaire, implemented by using Qualtrics that could be accessed by smartphone, tablet, or laptop. The link to the questionnaire was emailed to the students enrolled for the training the night before the training. The students were asked to complete the questionnaire directly after the training. This questionnaire was part of a larger education evaluation study. All students were informed about the aim of the study and gave informed consent. The study was approved by the Ethical Committee of Psychology at the University of Groningen.

## *Measures and data analyses*

The questionnaire contained questions on age, gender and familiarity with the method (Appendix 2). Reaction was assessed in three items: 'I liked the training', 'The training gave me useful insights or help with the teamwork' and 'The training set-up was clear to me', with a 7-scale answer category ranging from 'strongly disagree' to 'strongly agree'. Timing was assessed by the question: 'The training came .... during my training', with a 3-scale answer category being 'too early', 'at the right moment', 'too late'. Overall satisfaction with the training was assessed by the question 'How satisfied were you with the training, on a scale from 0 to 100?'. In an open question students were asked about their suggestions on how the training could be improved. In 2019, we added an open question on what the students liked about the training. Based on the answers on the open questions, answer categories were defined and the answers were coded independently by two researchers. In case of discordant coding, the coding was discussed until consensus was reached. The data were analysed using SPSS (IBM SPSS Statistics for Windows, Version 23.0).

## **Results**

In 2018, the training was attended by 305 students, of which 180 (59%) successfully completed the evaluation questionnaire. In 2019, the same training was attended by 308 students, of which 223 (72%) successfully completed the evaluation questionnaire (Figure 2). For both years, the majority of the students was female and about a quarter of students had some prior experience with systemic training or constellations (Table 1).

### *Evaluation of the training in 2018*

In 2018, when the training was given by experienced systemic trainers, almost half of the students (49.4%, N = 89) liked the training, 13.3% (N = 24) was neutral and 37.3% (N = 67) disliked the training (Table 2). The training gave useful insights to 74 students (41.1%) and came at the right moment according to 123 students (71.1%). Satisfaction of the students with the training got a score of 55.4 on a scale of 0 to 100. Female students and students with experience with constellations, in general, liked the training more often than male students (53.6% of female students versus 30.7% of male students) and students with no experience (56.8% of students with experience versus 46.3% of students with no experience). On the open question 'Do you have any suggestions for improvement?' 44 students provided comments (Table 3). These students suggested to plan the training earlier in the curriculum (18.2%, N = 8), shorten the training (22.7%, N = 10), prepare the students better before the training (22.7%, N = 10), and explain the aim and method of the training in more detail (20.5%, N = 9).

### *Evaluation of the training in 2019*

In 2019, when the training was facilitated by experienced medical trainers who were newly trained in the systemic method, the reaction of the students was more often positive (Table 2). Liking increased to 64.1 % (N = 143) in 2019 and the percentage of students that reported that the training gave useful insights increased to 66.4% (N = 148) in 2019. Overall, satisfaction of the students with the training increased to a mean score of 67.6 on a scale of 0 to 100. This increase was statistically significant following an independent t-test with a mean difference of 12.2, 95% confidence interval [8.1–16.3],  $p < 0.001$ . On the open question that was added to the questionnaire in 2019 'What did you like about the workshop?' 136 students

provided answers (Table 3). More than half of the students liked the visualisation of the group dynamics, the new insights and new perspectives (54.4%, N = 74). Also, the good atmosphere (11.8%, N = 16) and the interactive method was appreciated by the students (14.7%, N = 20).

## Discussion

Our results show that almost two-third of the students liked the systemic awareness training by using the systemic constellations method and evaluated it as useful. Having trainers who were familiar with the medical teaching setting significantly increased liking and perceived usefulness of the training.

For most of the students in this sample the training was a first encounter with experiential learning in general and with systemic training in particular. As bachelor students they are used to cognitive learning and have mostly teaching in the form of lectures. This might explain the critical appreciation of some of the students and their suggestions to explain more about the training. Furthermore, we anticipated that the training might come too early, because the students had no experience with working in the medical setting yet. However, the majority of the students indicated that the timing of the training was adequate. This finding supports the idea to start this type of training in the bachelor phase, and link the training to student team work.

The trainers who were familiar with medical teaching setting were probably more successful in connecting with the students and were able to translate the method and the observations during the training into the students' language, which could explain the increased appreciation and perceived usefulness when working with trainers who were familiar with medical teaching setting. When being confronted with a new learning setting and new method, having a trainer who speaks your language, probably makes the setting more familiar and thereby easier for students to actively engage in the training. Indeed, studies from the medical learning setting show that being able to communicate well with the trainee and being approachable are important attributes for effective trainers (24, 25).

With this training, we offered the students a new experience and created a setting for experimenting and trying-out different perspectives on the project team. A strength of the systemic training method is that it, literally, makes the social system explicit by visualising the system using the spatial arrangement of representatives (the other students). This allowed all the students present to have a look at the same external image of the social system as a representation of their own internal images (of the project team) and view it from different perspectives. By having the training with other medical students, it was a shared experience which allowed for personal reflection as well as group discussion, an important element of transformative learning (20). The large number of students that reported to have gotten useful insights, and the specific appreciation of the visualisation and change of perspective mentioned by 74 students, supports the assumption that the systemic constellation method can be useful for students to get a new view on the social system they are currently in and activate a change in perspective.

To our knowledge, this is the first time that systemic awareness training using constellations in an undergraduate setting was studied. The large number of students and repeating the evaluation in two successive years, give a good picture of the appreciation and the perceived usefulness by the students. A limitation of the study is that we only evaluated reaction of the students and did not include other levels of training evaluation outcomes (26). The next step will be to perform a study on the effectiveness of the training on enhancing systemic awareness and development of leadership skills. In addition, via the open questions, we only have scant view on the reasons behind the level of appreciation and perceived usefulness. Further research is needed to get more insights in this.

With the results from this study we can proceed with the trainings in systemic awareness and have ample starting points for improvement, such as having trainers who are familiar with the medical teaching setting, provide students a preparatory assignment in advance, and explain even more clearly why we offer this training. As leadership development among students requires repeated training and connection with the broader medical system (2, 9, 27), we aim to embed the systemic

awareness training in the medical curriculum at different stages, as part of the line leadership development (21). This way, healthcare professionals become equipped from an early age with an understanding of their social context and the skills to deal with its dynamics, an essential ingredient for medical leadership.

## Declarations

Ethics approval and consent to participate

All students were informed about the aim of the study and gave informed consent. The study was approved by the Ethical Committee of Psychology at the University of Groningen.

Consent for publication

Not applicable

Availability of data and materials

The dataset supporting the conclusions of this article is available in the institutes' repository, this can be accessed via: [www.groningendatacatalogus.nl](http://www.groningendatacatalogus.nl).

Direct link:

[https://www.groningendatacatalogus.nl/menu/main/dataexplorer/details/umcg\\_collections/aaaac3bneaop76qwh3rgblaaae](https://www.groningendatacatalogus.nl/menu/main/dataexplorer/details/umcg_collections/aaaac3bneaop76qwh3rgblaaae)

Competing interests

The authors declare that they have no competing interests

### *Funding*

No funding was required for this study.

Authors' contribution

JF, AS, and SS designed the study and the data collection. AS supervised the data collection. SS wrote the manuscript with support from AS, JS and MS. SS and HB performed the data analyses. JF supervised the project. All authors discussed the results and contributed to the final manuscript.

Acknowledgments

We would like to show our gratitude to all trainers who contributed to the development of the training or who were involved as trainer during the training. We thank Hendertje Wierenga for her efforts in the data collection and support in preparation of the training and Maya Schroevers for the critical review of the study and the manuscript.

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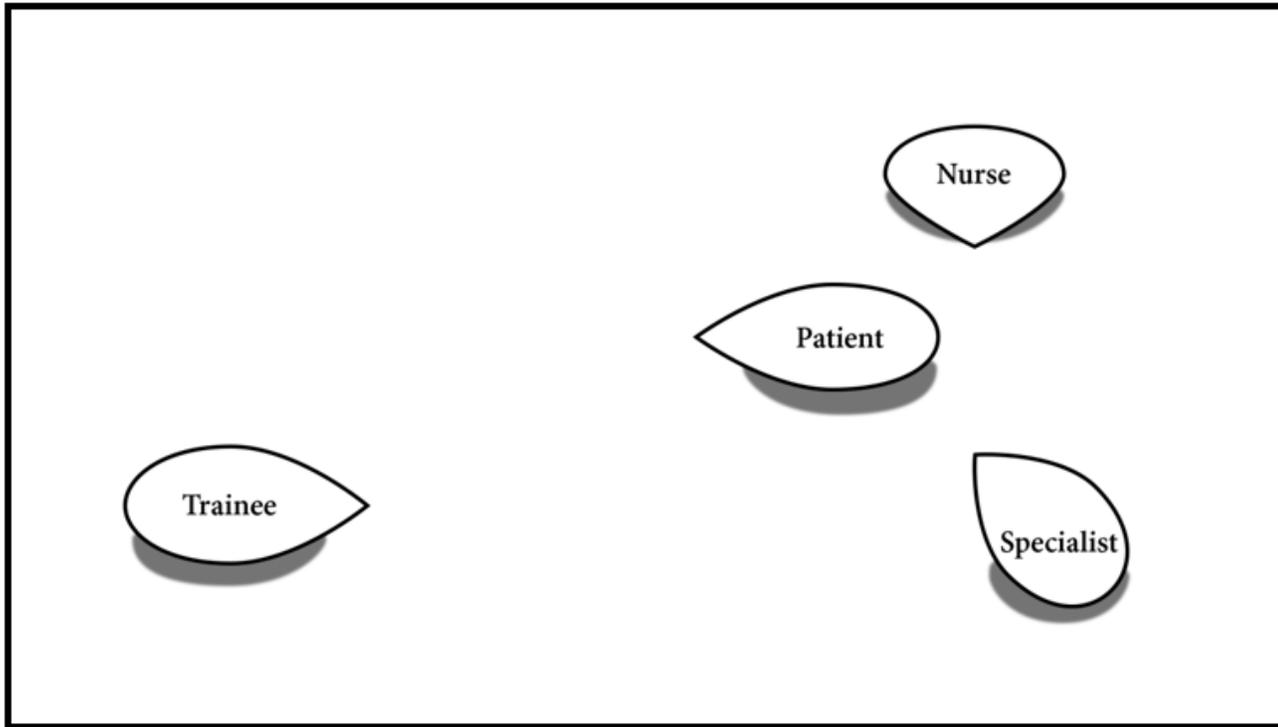
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## Tables

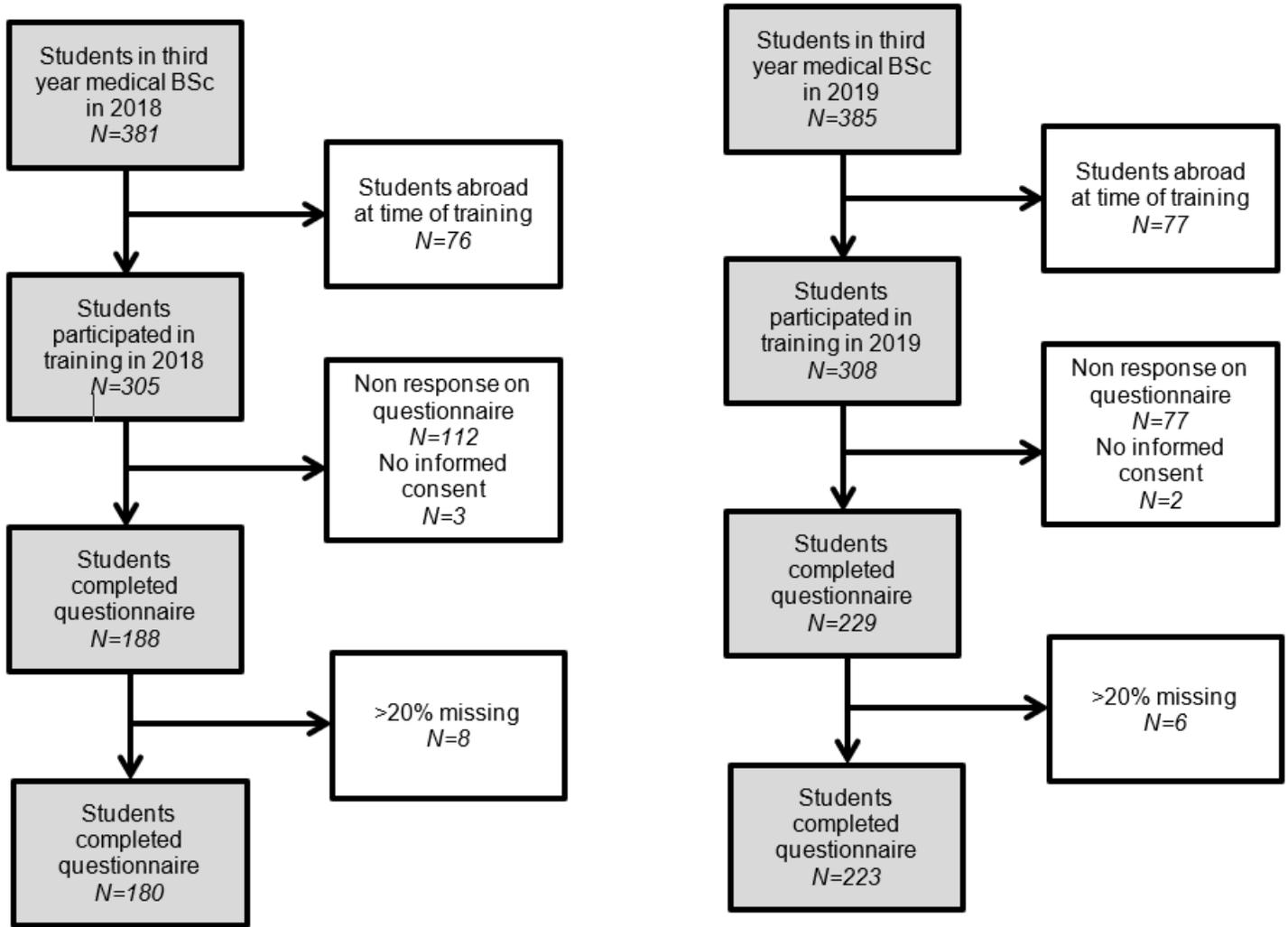
Due to technical limitations, Tables 1, 2 & 3 are only available as downloads from the Supplementary Files section.

## Figures



**Figure 1**

Schematic example of an organisational constellation with functions from the medical setting. The figures 'Trainee', 'Patient', 'Specialist' and 'Nurse' are persons or objects representing these functions. The constellation shows the positions (relative to each other) and interactions between these different function in a spatial setting.



**Figure 2**

Flowchart of number of students involved in the training and in the study in 2018 (figure left) and 2019 (figure right).

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

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