



Photo: Liliann Edem

Experts in Teamwork

Interdisciplinary cooperative skills



Illustrative photo: Liliann Eidem

Knowledge for a Better World

In EiT, students face the challenge of sharing their knowledge with others – using their own skills as well as those of others to solve tasks as a team. They need relational skills; the capacity for cooperation and bringing out the best in each other.

The modern world of work is looking for exactly these skills. Success in complex tasks depends on effective cooperation. Teamwork skills help to realize the full benefits of the combined knowledge in the team.

The Experts in Teamwork (EiT) course was created in 2001 in response to demands from business and industry for students to gain experience in working together with people from other disciplines, and for students to be trained in using their academic competence to solve complex tasks.

Gunnar Bovim
Rector of NTNU

“EiT has laid a foundation for activities that have helped us to get better at creating a group culture. This has strengthened my ability to work together with the others. It will also be very valuable later, for example in the workplace.”

**Rikke Nerhus
Larsen**
Student in
Public Health

The signature course EiT

EiT provides a meeting place enabling cooperation by master’s students and students from programmes of professional study in a wide variety of subject areas.

Villages

EiT is compulsory for all students at second-degree level, and about 2000 students complete the course each year. The students are divided into classes called villages, each consisting of 25-30 students. Each village has its own theme as the starting point for its teamwork, usually drawn from relevant issues in civic and working life. In the villages, students are assigned to interdisciplinary teams of 5-6 people. Each team works with a project that it has defined within the theme of the village.

Unique focus on teamwork

The unique feature of EiT is that students not only work on their project, but also evaluate the way they work together. They analyse their teamwork, and based on their understanding they reflect on how they communicate, plan, make decisions, solve tasks, handle disagreements and relate to academic, social and personal differences. In this way, they learn from their own experiences and develop their teamwork skills.

Bjørn Sortland
Head of EiT



Illustrative photo: Liliann Eidem

“EiT provides a skills advantage”

EiT gives NTNU students a skills advantage in the workplace. Many tasks in industry and public administration require broad interdisciplinary competence. There are growing demands for people from different disciplines to work together to achieve solutions that society needs. Experience-based learning (EiT’s pedagogical method) is well suited for developing teamwork skills. This is because the things that you have learnt through your own experience are easier and faster to transfer to new tasks and new situations where teamwork is needed.

Are Holen
Professor Emeritus at NTNU

Learning teamwork

“For most of us, teamwork is an integral part of modern working life, and the ability to work together in teams ranks high in the list of what businesses look for in graduates.”

To learn teamwork skills, you constantly need to develop yourself and your team. Attention to team processes must become part of the team’s day-to-day work. In this way, they can become more effective.

The key to the team’s development is that the team members start by observing themselves and reflect on how the team deals with its tasks. In this way, they can learn from their mistakes and successes. Observation of the team can take place in several different ways and at different levels. For a new and untrained team, the simplest approach would be to invite a person outside the team to observe the team members as they work and share specific observations with them along the way.

My experience is that a team achieves its goals much faster if it invests time in the teamwork process. The team may risk a hard landing if the members do not spend time on this.

Monica Rolfsen
Dean of the Faculty of Economics at NTNU

“I have gained a lot from the team’s reflections. In EiT, we had the opportunity to think about things that had happened, to raise issues and discuss problems and challenges. We also had the chance to give feedback to each other.”

Julie Huseby
Student in architecture

In Experts in Teamwork, external facilitators observe the teams and share their observations with the team members



Illustrative photo: Liliann Eidem

Innovative facilitation practice

EiT has pioneered the development of an effective practice for facilitation of student teams. In each village, two facilitators observe the collaboration process and communication in the student teams. The facilitators then share their observations with the teams. The aim is to encourage the students to reflect on what is taking place in the team, increasing their awareness of their own behaviour and the dynamics of the team. Their reflections give the team members an opportunity to change or maintain the dynamics in the team.

Sven Veine
Assistant Professor, EiT

Facilitation sparks reflection in the student teams

On the second day of the village, the facilitator offers an observation to a team: “I hear some voices more often than others in the team. What do you think about that?”.

Bente and Leah think that the comment hits home. Leah explains that she does not feel comfortable about speaking in group situations. That’s why she does not say very much. She felt afraid of being regarded as passive and wanted to challenge herself in this area.

Stine starts worrying that she has been taking up too much space in the team. She has not thought about this herself, but her experience from previous teamwork suggests that this can happen.

Morten’s first reaction is that unevenly distributed participation is a natural dynamic in most groups, but that the team must also think about giving those who say the least a chance to contribute in a natural way.

Nora and Adam find the comment surprising. In addition, Adam perceives the facilitator as interrupting them. He had not seen this imbalance in the group dynamics and was left with a feeling that the group had worked very well, with contributions from everyone. In the discussion that follows, he realises that several of the team members have experienced this imbalance.

The situation and the reflections are from one of the teams in the village “*Roten til alt ondt*” on the theme of inflammation and illnesses linked with it.

Students take action to develop their teamwork

On the second village day, one of the groups in the village received a sociogram from the facilitator. The sociogram sparked a discussion about our different skill levels in English. The sociogram showed that two group members hardly participated in the discussion at all, because of the language barrier. The team agreed to introduce measures that would include everyone: check that everyone was involved in the discussion and ask clarifying questions along the way. The result was that everyone had a stronger sense of being included.



Facilitation using sociograms: The facilitator observes a student team as they work and draws a sociogram that illustrates the verbal communication in the group. The learning assistant shows the sociogram to the group, and then walks away to let the students reflect on the implications for their teamwork. *Illustrative photo: Liliann Eidem*

The situation and the reflections are from one of the groups in the village *Energy in Japan: Moving Beyond Nuclear Power*

“At the interview, we take the opportunity to meet individuals and find out how they would work in our projects. For NTNU students, their role in Experts in Teamwork is an important part of the interview with me. Discussion about the issues involved, who did what, attitudes to the others... I feel these aspects tell me a lot about the candidate.”

Iain Vartun
Section Manager,
Norwegian National Rail
Administration
(Development)

Teamwork skills are important



Illustrative photo: Liliann Eidem

Teamwork is important to ensure quality

In a knowledge-based company such as DNV GL, with a high level of specialization and complexity in the services we offer, teamwork is essential to ensure the quality of what we deliver to our customers. We tailor project teams in which the members' knowledge and skills enrich and complement each other, so that we can solve our customers' challenges in the best possible way.

So we want to hire graduates who not only have formal competence in the discipline, but who also have strong skills in cooperation and teamwork. In my experience, recent graduates who have worked across subject boundaries in Experts in Teamwork often reflect on their own contributions to the team and the challenges involved in interaction with others, which is valuable experience in the transition to the working world.

Inger-Marie Sannerud
Director, Human Resources and Organization, DNV GL

EiT gives students extra skills in working together

NTNU has led the field in the higher education sector with its Experts in Teamwork programme. Through EiT, students develop good interpersonal skills that can help to create new ideas and innovative solutions – both in the workplace and in major social challenges. EiT thus gives students with different academic backgrounds extra skills in working together, and this is very important in the workplace. LO [the Norwegian Confederation of Trade Unions] regards cooperation as the core of the Norwegian/Nordic model, and teamwork between employees with diverse skills and backgrounds is essential for future value creation.

Arvid Ellingsen
Special Adviser in the
Norwegian Confederation of
Trade Unions (LO)

EiT is an opportunity to develop cooperative skills

After many years in industry, including Kvaerner Engineering and FMC Technologies, and now as technical coordinator in SFI SUBPRO, I have found that being able to work together with other people is very important. Whether you work in business or in academia, you will usually be part of a team – you seldom operate all on your own. Through Experts in Teamwork, students gain the opportunity to master tools that they can take with them into the workplace. During the course, they learn to reflect on their own behaviour as well as the behaviour of others, and they practice taking up difficult topics. EiT gives students a unique opportunity to develop their own teamwork skills.

Gro Mogseth
Technical coordinator at the Centre for
Research-based Innovation (SFI) SUBPRO

“EiT students bring new skills into the business”

In the last few years, we have employed 3-4 master’s students who have completed the Experts in Teamwork course. They are highly talented colleagues who bring good skills in working together to our knowledge-based business. In our company, it is important for our staff to have expertise in collaborative skills, because the tasks to be accomplished often consist of cooperation with both colleagues and customers.

Gunnar Andreas Aarvold
Head of Operations
and Maintenance, MainTech

“We put together interdisciplinary teams in Kantega, and invite customers in together with us. Teamwork skills and the ability to see and use the strengths of other people’s professional expertise are important for creating solutions that give users ‘wow!’ experiences.”

Marit Collin
CEO of Kantega



Illustrative photo: Liliann Eidem



Illustrative photo:
Liliann Eidem

Looking for graduates with relational skills

The Norwegian Public Roads Administration wants to hire people who are good at working together, and teamwork is one of the strong focus points in our organization.

You generally get sound knowledge of the subject area when you hire new graduates, but insight into interaction and cooperation is often inadequate.

In the workplace, you are dependent on using your own skills in cooperation with others. Often you are assigned to projects with different people, who may have different agendas, and then it is vital to be able to work together in a good way.

Tore Hoven
Head of the Centre for Road and Traffic Competence,
Norwegian Public Roads Administration

“Through EiT, I have been able to develop my personal characteristics to a far greater extent than I had expected at the start of the project. I have gained greater insight into my positive aspects. At the same time, I have had the opportunity to work with things that used to be difficult for me. To give feedback and to receive it in a good way has been challenging. Through the exercises and the group interaction we’ve been through, we gained experience with this, and I emphasize this experience as the most positive thing that EiT has given me.”

Magnus Domben
Student in social economics

Cooperation with external partners

Many student teams in EiT work together with external partners. One example is a team in the village *Urban Agriculture- Rooftop Gardens in Trondheim?* They worked together with the Månebakken housing cooperative. The students worked on the design of the cooperative's roof terrace by developing a flexible modular solution. The aim was to enable a new structure on the roof, creating opportunities for city gardening and for the people living in the cooperative to get together socially.

“For us, it was motivating that we had a real recipient of our project, and it was inspiring to work with a project that was actually useful to someone,” the students commented.

The team comprised students from the sport sciences, art, civil and environmental engineering, real estate development and management, and architecture. The sport sciences student contributed the theoretical basis for the project: motivation theory focusing on self-determination theory. The art student helped to develop the project



Proposal for the design of the rooftop terrace. Illustration: Knut Magnus Hexeberg Henriksen

by constantly challenging the mindset and the method of the rest of the team, and by encouraging the team to see things from different perspectives. She also contributed ideas, drawings, layouts, graphics and illustrations. The student from civil and environmental engineering contributed knowledge about construction technology for the development of the module, as well as with writing reports. A focus on keeping the project realistic – bearing in mind the feasibility factors and the financial resources

available – was the contribution of the student from real estate development and facilities management. The architecture students helped with input on the concept, plan, drawing and design, as well as visualization of the team's ideas.

Students in the team: *Thea Meinert (art), Emilie Lime Lund Baglo (sport sciences), Maren Underhaug Pedersen (architecture), Jon Haga Grov (real estate development and facilities management), Knut Magnus Hexeberg Henriksen (architecture) and Øystein Haug (civil and environmental engineering)*

Granted funding for urban agriculture after EiT cooperation

Not only is growing food in the city an advantage for the climate and the environment; it can also improve individuals' quality of life and strengthen bonds in housing communities. The municipality of Trondheim wants to pave the way for urban cultivation of food, and associations and organizations can apply for funding. Our collaboration with EiT helped us to get funding from the municipality to carry out our project, so we have everything we need to get started. The gardening group in the housing cooperative has received many good ideas from the student team and is looking forward to working on them. We already have a trial garden in progress, and we are planning to extend it later.

Bjørn Inge Melås
Chair of the Board of Månebakken housing cooperative [borettslag]

“What the students gave back was beyond our dreams”

The Norwegian Labour and Welfare Organization (NAV) worked together with some of the teams in the village *Communication*. We presented some of our challenges to the students, and they were free to decide what they wanted to work with within the scope of these challenges. The students chose exciting and relevant projects, and we received useful input.

We were impressed by the students' expertise in their disciplines, which included medicine, art, industrial economics, and educational theory and practice.

“Their feedback was closer to the mark and more useful than what we think a consulting firm could have given us.”

To see our challenges through fresh young eyes led to results that will become part of NAV's future development.

Hilde Merete Bygland
Head of NAV Midtbyen (the Norwegian Labour and Welfare Administration in Central Trondheim)



Illustrative photo: Liliann Eidem

Interdisciplinary projects

In EiT, interdisciplinary teams of students work on a project that the team has chosen. One objective is that the students will apply the team's combined academic competence and that they will gain greater insight into their own skills through the encounter with students from other academic backgrounds.



Students mapping the skills in the team. Illustrative photo: Liliann Eidem

“EiT has been useful to me, studying for a master's degree in political science. In my studies so far, there has been no form of teamwork and no practical training or assignments with a practical focus. So as a student I have found it challenging to see what role I would have in the workplace. EiT has helped me to see my role as a political scientist more clearly in the meeting with other fields. It's been clear that in the team I was the member who was most concerned about the broader context and an overarching societal perspective. During our work together, I have learned to take on a clearer role with greater confidence as a professional in my field. And I can also see how my subject area can be applied in practice.”

Runa Matre
Student in political science



Excerpt from the booklet. Design: The team

STUDENT PROJECT

Left-handed – higher intelligence?

The vision of a student team in the village *The Living Human Brain* was to arouse Norwegians' interest in the natural sciences. For this reason, they chose to publish their findings about possible associations between various characteristics and left- or right-handedness in a popular-science booklet. The students had conflicting results when they investigated whether left-handers had higher intelligence than right-handers, and they thus disproved this assertion.

Students in the team: Amalie Solberg (nanotechnology), Elise Midtbust (biotechnology), Kine Alexandra J. Wien (entrepreneurship, innovation and society), Kristoffer Larsen (history) and Vilde Yuli Stenberg (molecular medicine).

STUDENT PROJECT

Murder mystery evening

A student group in the village *Culture and Business* developed a concept for the Trondheim Chamber Music Festival, which they have called MysterieKammer (“Mystery Chamber”). The concept was a “murder mystery evening” in which dinner was served accompanied by an interactive mystery theatre, in which music was a major part of the performance. After the village was finished, the project was realized at the Chamber Music Festival. From the student team, Marita Røstad was the music director and Aimée Kaspersen was responsible for the actors in the performance.

Students in the team: Aimée Kaspersen (drama and theatre), Bjørnar Aaseng (literature), Hege Kristine Heyerdahl (economics), Marita Røstad (jazz vocals) and Ole Kristian Korssjæen (history).

STUDENT PROJECT

Soundscaping of the lleelva stream

A student group in the village *Soundscaping – Sound Design in Public Space* – developed the concept of “Lydelven”, or river of sound. The concept involved soundscaping parts of the lleelva stream with the help of a waterwheel and two shishi-odoshi fountains, and the aim was to create appealing sounds for walkers of all ages.

Students in the team: Hijratullah Niazi (civil and environmental engineering), Mary Paula Cruz (electronics), Viggo Tellefsen Wivestad (cybernetics), Sondre Utmo Vikøren (civil and environmental engineering) and Solveig Løken (psychology).



Illustration: Viggo Tellefsen Wivestad

Benefit to society

Illustrative photo: Liliann Eidem



Relevant problem areas from the community and working life form the starting point for teamwork in EiT, and the projects accomplished by student teams are often valuable to society. An example is a team in the international village *Improving Quality of Life through the Focus on Silence in the City*, which worked together with Kirkens Bymisjon – the Church City Mission in Trondheim – to strengthen the integration of refugees in Trondheim.

The team members came up with the idea of a community garden run by Kirkens Bymisjon. The team created a project plan for how to develop a community garden in Møllenberg. The aim of this community garden is to increase interaction between refugees and other groups in Trondheim to reduce prejudice. In addition, the team points out that a number of studies conclude that being part of a community garden improves the quality of life both for the individual and for the community.

Students in the team: *Andrea R. Hansen (architecture), Ashley Gilbreath (biology), Markins Badu (neuroscience), Max Hammarbeck (philosophy) and Samah Elsaadi (molecular medicine)*

“Inspiring to work together with the EiT students”

Our cooperation with Experts in Teamwork has been a positive experience. The student teams’ projects give us an opportunity to gain fresh impulses and think from a different perspective, making us more aware of our own operations. We appreciate being in touch and developing a good relationship with NTNU as an important participant in our city. We think it is inspiring to participate in a teamwork process with enthusiastic and talented students. It is wonderful to see their commitment to their work for Kirkens Bymisjon. Even though not all the projects can be carried out, the collaboration has given us new ideas and perspectives. We want to carry on working together with EiT.

Ole Oxhøvd Svalesen

Project Manager Mot og Mestring [Courage and Mastery], the Church City Mission, Trondheim

STUDENT PROJECT

Help people with visual impairments to find their way around airports

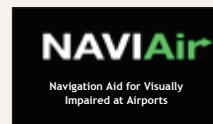


Illustration: The team

A team in the village *Biomaterials: Body Parts of the Future* developed a product that enables independent navigation for blind and visually impaired people at airports using their mobile phone. The team’s solutions imposed demanding requirements for the members’ interdisciplinary skills. They developed an app to make this possible using beacon positioning. Today, blind and visually impaired people depend on assistance, a companion or guide dog to find their way around airports.

“Avinor showed great interest in the project, and reported it to an innovation forum in Avinor at Oslo Airport. Afterwards, Avinor expressed their interest in conducting a pilot project.”

Students in the team: *Tone Hanstad (human movement science), Mads Kjærvik Jøsok (mechanical engineering), Hege Gran Lundeby (cybernetics and robotics), Christian Lauritsen (industrial chemistry and biotechnology), Christina Elén Nordstrand (biotechnology), and David Wiken (programme of professional study in psychology).*

STUDENT PROJECT

Water purification method that provides cleaner water in developing countries



Demonstration of water purification method. Photo: Magnus Domben

A student team in the village *Clean Water* developed a simple water purification method that is easy to achieve using local resources. The method involved filling a bamboo tube with charcoal and sand, which functions as a filter to purify water by removing a wide range of contaminants. The students believe that this method could be used by the local population in countries with little access to clean water. Dirty water and poor sanitation are associated with 80 % of illness in developing countries, and the students hope that their method can help to reduce such illness.

Students in the team: *Hanne Schistad Robak (medicine), Magnus Domben (social economics), Magnus Kvisvik Larsen (medicine), Ole-Martin Hveem (human movement science), Runa Kvamme Ekrem (biology) and Stine Østerhus (molecular medicine).*



“Through many exercises and reflections in EiT, the other team members have functioned as a mirror, so that I get a glimpse of how I am seen by other people in a group. I regard this as valuable insight that will be useful to me in different situations.”

Anders Riise Mæhlum
Student in computer science

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