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<b>ABSTRACT (maximum 150 words)</b>	
<p>This project was to contribute in an already existing project at Mzuzu University in Malawi. The optometry school at Mzuzu University is a collaboration between the International Centre of Eyecare Education (ICEE), Optometry Giving Sight (OGS), Sightsavers, Mzuzu University and Malawi College of Health Sciences. There is a dire need of optometrists in Malawi, and this makes the optometry education here worth the effort. We participated in the practical teaching at Mzuzu University, with the main intention to help teach the students in clinical procedures.</p> <p>There are two main aspects with a humanitarian project like this. A great amount of time has to be spent on preparations and fund raising. Still, the part with preparing lectures and teaching is just as important. This is not a project with immediate, measurable results, but hopefully it will play a part in improving the eye health situation in Malawi in the long run.</p>	
<b>KEYWORDS (maximum 5 words)</b>	
Malawi, education, optometrists, collaboration	
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**HØGSKOLEN I BUSKERUD  
AVDELING FOR OPTOMETRI OG SYNSVITENSKAP**

**HOVEDPROSJEKT 2009/2010**

<b>OPPGAVE TITTEL</b> Optometri i Malawi – Utdanning og Utvikling	<b>ANTALL SIDER</b> 45
<b>UTFØRT AV</b> Lovise Rimstad Brynhild Bu Gjernes Victoria Stöhlmacher Kirsti Berget Therese Andersen	<b>KLASSE</b> O3A O3C O3C O3C O3B
<b>VEILEDER</b> Elin Silje Helen Jensen	
<b>EKSTERN OPPDRAGSGIVER</b> The Mzuzu University	
<b>SAMMENDRAG (maks 150 ord)</b> <p>Formålet med dette prosjektet var å delta i et allerede eksisterende prosjekt ved Mzuzu University i Malawi. Optometrilinjen ved Mzuzu University er et samarbeid mellom International Centre of Eyecare Education (ICEE), Optometry Giving Sight (OGS), Sightsavers, Mzuzu University og Malawi College of Health Sciences. Det er et stort behov for optikere i Malawi, og dette gjør optometriutdanningen her viktig. Vi deltok i den praktiske undervisningen av optometristudentene ved Mzuzu University, med hovedvekt på å lære dem kliniske prosedyrer.</p> <p>Det er to sider ved et humanitært prosjekt som dette. Mye tid er blitt brukt på forberedelser og pengeinnsamling. Likevel er arbeidet med å forberede undervisningen og sette opp timer like viktig. Dette er ikke et prosjekt med umiddelbare og målbare resultater, men forhåpentligvis vil arbeidet bidra til en forbedret øyehelsesituasjon i Malawi på lang sikt.</p>	
<b>EMNEORD (maks 5 ord)</b> Malawi, utdanning, optometrister, samarbeid	
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# Optometry in Malawi – Education and Development

By:

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A main project written in accordance with the  
requirements for the Bachelor in Optometry

Buskerud University College, Kongsberg  
Department of Optometry and Visual Science  
Supervisor: Elin Silje Helen Jensen

## **1 Abstract (maksimalt 150 ord)**

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This project was to contribute in an already existing project at Mzuzu University in Malawi. The optometry school at Mzuzu University is a collaboration between the International Centre of Eyecare Education (ICEE), Optometry Giving Sight (OGS), Sightsavers, Mzuzu University and Malawi College of Health Sciences. There is a dire need of optometrists in Malawi, and this makes the optometry education here worth the effort. We participated in the practical teaching at Mzuzu University, with the main intention to help teach the students in clinical procedures.

There are two main aspects with a humanitarian project like this. A great amount of time has to be spent on preparations and fund raising. Still, the part with preparing lectures and teaching is just as important. This is not a project with immediate, measurable results, but hopefully it will play a part in improving the eye health situation in Malawi in the long run.

**Keywords:** Malawi, Education, Optometrists, Collaboration

**Number of words:** 4689

**Number of illustrations:** 7

## 2 Declaration of participation

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To be able to recognize each student's contribution to the main project, this statement should be read through and signed by all students in each group.

*An author is usually considered to be one with a significant intellectual contribution.*

*To qualify as an author one should: 1) have contributed significantly to the initiation and design of the project (protocol) and/or data collection, and/or analysis and interpretation of collected data; 2) have been involved in the design of the project report, or critically revised the intellectual content of the report; 3) have given consent to the delivery of the final report. Each student should have contributed enough to be responsible for the different parts of the report. The provision of financial support, data collection and project management alone does not give rights to being an author of the project report.*

We confirm that every member of the group has contributed to the main project in an equal and sufficient amount, so that each qualifies in being responsible co-writers of the project report.

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## 5 Introduction

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"Only through education can we build local capacity, thereby creating sustainable solutions for addressing avoidable and preventable blindness".  
(International Center of Eyecare Education, ICEE) <sup>1</sup>

The optometry school in Mzuzu is a collaboration between ICEE, Optometry Giving Sight, Sightsavers, Mzuzu University and Malawi College of Health Sciences.

Twelve students started their optometry education at the University in 2008, and in February 2010 we spent a month at the University to teach the remaining eight students preliminary tests and objective and subjective refraction.

The intention with our project was to participate in the already existing project at the university. Our job was to set up lectures and teach the students the different clinical procedures. The students had not seen much optometric equipment before. It was therefore hard to tell how much time they would need to learn the tests. In Norway we are introduced to the equipment already in the beginning of the first semester, so this was unfamiliar to us.

The students studied hard; they were given homework every day, and they were given both theoretical and practical tests. At the end of the period, they were also given an evaluation form, where they were asked to give feedback and share their experiences.

A great amount of this project has been preparations. Especially the raising of funds has been a time consuming part. The work we have done will not give immediate, measurable results. On the other hand, we hope our project has made a difference.



*Malawi*



## 5.1 Motivation

There is a huge proportion of unnecessary blindness in Africa. Some of the reasons for this are little knowledge about optics and vision, little resources and a lack of educated health personnel. This makes the education of optometrists important.

A pair of spectacles is all that is needed to make the life quality of some inhabitants significantly improved. With the right refractive correction the inhabitants will not be inhibited by their lack of, or improved as education, with regard to work and daily life. For a majority of people in Africa, eye care services are not available at all, so there is no doubt that more optometrists and available eye care is needed. The possibility with helping students in Malawi with their education is a great opportunity. It is also an opportunity for us to make use of what we have learnt previously, and see problems from another point of view.

The motivation for doing this project was to do an effort in changing the situation regarding eye health in Africa.



*Group picture*

## 5.2 Health service and eye health in Malawi

Malawi is a republic situated in East-Africa, and borders to Tanzania, Mosambique and Zambia. Malawi has a population of about 15 million people, and an areal of 118 484 km<sup>2</sup>. Malawi is well-known as "The warm heart of Africa", which stems from the enormous hospitality of the Malawians. This does not change that the country is listed on FN's rank of living index as country number 162 of 179, and is one of the world's poorest countries.

The health situation for the inhabitants of Malawi is alarming. Estimated life expectancy is less than 40 years, nearly half of the children are chronically malnourished, and diseases like bilharzia, malaria and tuberculosis are major public health problems. Malawi has very little health personnel to solve these problems, also compared to other African countries. Calculations from the World Health Organization showed that while South-Africa in 2004 had 69,2 doctors and 388 nurses, Botswana 28,7 doctors and 241 nurses, Zambia 6,9 doctors and 113 nurses per 100 000 inhabitants, Malawi had only 1,1 doctors and 25,5 nurses per 100 000 inhabitants.

In 2007 the number of doctors in Malawi is estimated to be about 2 doctors per 100 000 inhabitants.

Little resources for the health sector and a lack of focus on education of health personnel have led to today's critical situation. A large and increasing sickness burden, amongst others as a result of the HIV-epidemic, are other strong contributing factors, together with the population growth and migration of health personnel.<sup>2</sup>

There is a general lack of educated health personnel in Malawi, also regarding to eye care. Many people are blind or visually impaired just because they do not have access to an eye examination or a pair of glasses. This is because there is a lack of eye care personnel and proper infrastructure to cater for this.

There is between 6 and 7 eye doctors in total in Malawi. The 23rd of October 2007, *Lions Aid Norway Sight First Eye Hospital* at Mzuzu Central Hospital in Malawi was officially open. It was then the northern part of Malawi, with nearly 2 million citizens, who had finally received an eye care service. Over 50 patients were operated daily for the first two weeks. <sup>3</sup>

### **5.3 Consortium members**

#### International Centre of Eyecare and Education (ICEE) in Malawi

The goal for this project is to educate optometrists and optometric technicians for the southern African Region. The consortium wants the students to learn refraction and make spectacles available in rural areas.

ICEE was founded in 1998 in Australia. Their main goal is to develop long term goal to secure eye-care all over the world. They want to do this with investing in education, professional education, appropriate service delivery systems and research. They want to develop human resources, build sustainable systems and ensure affordability.

To accomplish this they train and educate; Community Eye Care Personnel, Mid-level Eye Care Personnel and professional Eye Care Personnel.

In Mzuzu ICEE contributes with equipment, faculty recruitment, academic support of faculty, and teaching.<sup>1</sup>

#### Optometry Giving Sight (OGS)

Optometry Giving Sight supports programs which help to get easier access to spectacles, whether through eye exams, spectacles or infrastructure. The project in Malawi was established to create career opportunities for graduates, and also to expand the health sector in Southern Africa. The organization hopes that within a seven year period 30 optometrists will have the education to be able to contribute in bettering the health system in Southern Africa.

They help the project with the financial aspect and facilitate classrooms and rooms.<sup>4</sup>

#### Sightsavers

Sightsavers work to prevent unnecessary blindness and eye disease, and they believe one of the reasons for this is the lack of eye care personnel. They therefore want to educate mid-level eye care personnel, for instance nurses. They also co-operate so that the program at Mzuzu University is functioning.

Sightsavers are contributing to the project with funding and facilitating.<sup>5</sup>

## **6 Methods**

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### **6.1 Preparations**

#### **Background**

When in the process of choosing main projects, we wanted to do a humanitarian project, there were no humanitarian projects available. After sending a request, the response from Buskerud University College/Høgskolen I Buskerud (HiBu) was that this option was not available this year. Our group was motivated for a humanitarian project, and we were not quite willing to give up. We started sending out e-mails to different organizations all around the world. Contact was made with Vision for All, who were finalizing their work in Eritrea, and Elin Silje Jensen, who was working with an NGO in Malawi. HiBu was then contacted and presented with the two possibilities. To make it fair for all the groups who wanted to go abroad, all the groups were given an equal opportunity to apply for the two projects. Each member of each group was to write a motivational letter with their reasons for wanting the project. After establishing contact, and doing a lot of research for it, we applied for the Malawi project, hoping our efforts would be to our benefit. It was a relief when we finally got it.

#### **Vaccination and travel insurance**

Many precautions have to be made before leaving to a country so different from our own. One of these is of course vaccinations, which is needed to produce immunity to a disease. Some African countries have actual entry requirements and will not let you in unless you can prove that you have been vaccinated against a specific disease. We were vaccinated for hepatitis A+B, yellow fever, polio/tetanus/whooping cough/diphtheria, typhoid and meningococcal meningitis. There is also a considerable risk of malaria and prophylaxis is strongly recommended. Prophylaxis with a drug is primarily used. Since no prophylactic drug is entirely effective, protection against mosquito bites is necessary to reduce the risk further. Mosquito repellents, mosquito nets, and head nets were therefore bought in addition to the medication. An oral vaccine was also taken, whereas it functions as a protection against cholera and ETEC-diarrhea.

Travel insurance is also strongly recommended, and it was made sure that everyone had insurance suitable for travelling in development countries before leaving.

### **Raffle on HiBu and Stortorvet Kongsberg**

In January we had to make some more efforts in raising funds. We then set up raffles in Kongsberg. We spent the days in advance visiting nearly every shop in town, to see if they wanted to support us with some items or gifts we could use as prizes, and a lot of them wanted to support us. We divided the group in two; two of us had a lottery at HiBu one day, while the other three spent the next day at Stortorvet, selling tickets. The response was good, both amongst students, teachers and the general public.

### **Preparation for travel**

This was a very expensive project, so a lot of the preparations were financially related. We wanted to make it as affordable as possible. We checked daily for airplane tickets and gathered information about the country Malawi, and the city Mzuzu.

We signed up for everything HiBu needed students to help for. In October we helped the "Forskningsbuss", a bus which travelled to different schools in Buskerud County. The purpose with the "Forskningsbuss" is to give information about optometry and to increase the interest for science and education amongst high school students. We brought different equipment with us, to show what an optometrist does in his profession. Nurses and engineering students were also represented.

We also visited Vestby high school to give a presentation about Buskerud University College (HiBu), and the students there were challenged to ask questions.

In January we represented HiBu at an exhibition in Lillestrøm. Here different national and international universities and colleges are represented. The visitors were given brochures and information about courses, facilities and student activities.

### **Preparations to the practical teaching**

Since the training material for the students in optometry school at Mzuzu University is confidential, we could not have as much information about the students as we wanted. This made it harder to know how we could prepare ourselves before leaving. Although we know the basics of what we would be doing, refraction and preliminary tests, and also that we would not use phoropters. We did not need to bring with us any equipment since they already had received what they need, but there were not enough small

equipment like covers and pd-rulers for each of the students. We contacted different organizations in Norway, and some were positive to donate cover and pd-rulers; one set for each of the students.

Since we are not that used to do refraction with a trial frame, we practiced on this before leaving for Malawi. We spent a lot of time on the clinic and practiced objective and subjective refraction. We went through the best vision sphere, and the modified Humphriss (monocular fogging balance). We also went through the theoretical explanation, including the preliminary tests, and practiced on teaching in English to other students at Buskerud University College.

One of the first things we did at Mzuzu University was to make a schedule with the subject we were going to teach in. We spent the afternoons going through the teaching program and made sure that we all explained the procedures in the same way. Since the students where not that experienced, we had to start with the preliminary tests. We also spent a lot of our time making tests; both practical and theoretical.



*Exhibitions, raffles and vaccination*

## 6.2 Economy and finances

The financial aspect has been an important part of the project, and we have done a lot of work to accomplish it. As well as raffles, different jobs and our private funds, we also were lucky to get sponsors.

Creating a budget was the first thing that was done after the project started. In total, the budget was on about 145 800NOK (22725 USD). To be able to accomplish it, the external support was essential. Not just financial support, but also donations of equipment, gifts and prizes for the different lotteries. To get sponsors we sent letters (Appendix 3) to potential sponsors explaining our project, together with a budget. The potential sponsors were companies in Kongsberg, other companies from the optic line and from our hometowns. We also got an article in the newspapers *Laagendalsposten*, *Lindesnes avis*, *Avisa Hordaland*, *Varden*, *Avisa Romsdal* and *Altaposten* (Appendix 8).

The financing of the project was not only about getting different sponsors, it has also been about getting jobs. We were lucky to get the job at Buskerud University College, and for this work we earned 10 000NOK (1558,6 USD). We also got the opportunity to participate on “Forskningbussen”, and that raised 13 000NOK (2026,3 USD) to the project.

The estimations of the budget was a bit more than the total amount of money spent. Some of the cost calculations were correct, but others were far from what we estimated. An example of that is the rent for the apartment at campus at Mzuzu University. We budgeted with 30 000 NOK (4676 USD), and the total amount of money spent on the rent was only 4221 NOK (658 USD). It was hard to obtain realistic quotes, and we therefore overestimated in order to avoid running short of funds. The financial statement shows that we in total have spent 97104 NOK (14667,5 USD).

## 6.3 Practical methods

### Equipment used in the practical teaching:

- PD-ruler
- cover
- fixation stick
- penlight
- distance VA chart, Sloan and Thumbling E

- near VA chart
- retinoscope
- trial frame
- trial case
- trial lenses
- hand held Jackson Cross Cylinder (JCC), +/- 0,25 DC

**Methods/procedures used in the practical teaching:**

- objective refraction:
  - static retinoscopy
- subjective refraction:
  - modified Humphriss (monocular fogging balance)
  - best vision sphere determination, the plus/minus technique
  - Jackson Crosscylinder

Since the students did not have lot of practice with the preliminary tests, we started by going through those. We spent a lot of time practicing and helping them with the different methods. The students were then tested in the preliminary tests with a practical and a theoretical test on the subject.

The students were introduced to the subject “objective refraction” with a DVD presentation of an optometrist’s complete work. They then had a demonstration of the equipment. They got to see and hold a retinoscope and they were also shown the schematic eyes, on which they later could practice retinoscopy.

Then the objective refraction lessons started. After several sessions of practice, the students were given a theoretical test on the subject, to see what they had learnt. They had also been given homework with chapters to read for each day. Subjective refraction was the next step, where they learnt best sphere, Jackson Cross-Cylinder and modified Humphriss (monocular fogging balance).

**Rafiki Foundation**

Rafiki Foundation is a non-profit organization from USA, who has several villages for orphans in different parts of Africa. The students spent the last week we were there, at Rafiki, practicing the different methods they had learnt from us. The students were screening and doing refraction on children from the age of five to sixteen years old.





*Screening at Rafiki*

The last day at Mzuzu University, we organized “Optometry Olympics” for the students. The students were tested in everything they had learnt; preliminary tests and refraction. We set up different stations where they were tested in cover test, motility, retinoscopy, theoretical principles and pd-measurement. They were timed, since we had been training on doing the tests as fast as possible. At the end we had a medal ceremony, where the winners got prizes, and everyone got medals. We ended the Optometry Olympics with the national anthems of Malawi, South Africa and Norway. This was a great way of ending the weeks of a great collaboration, where all of us had got new impressions, motivation and an incredible experience.



*Optometry Olympics*

## 7 Results

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“You girls made our day memorable and we wish that, this kind of thing will be repeated in the near future, Since it served as an eye opener to the optometry class”

Student, Mzuzu University

This kind of project will not show any immediate, measurable results. Still, we hope our project will have an impact on the eye health situation in Malawi in the long run. In addition it had a noticeable immediate effect on the students at the University. Both their optometric skills and their motivation were significantly improved during these weeks. Our own skills were also improved during the stay. In retrospect, we see that our understanding of and skills in performing the clinical procedures are improved as well. It was important for us during our stay that we worked together with a common understanding of the different test, and the students seemed to appreciate this. They all gave us good feedback.

The students agreed with us that if we had theoretical tests they would show up to classes more prepared, and the results on the test we gave them showed that they had been studying well.

We divided the class into two groups so they could get a more intensive follow up by us. The students appreciated this because then they could ask questions more freely and they could also be more closely supervised. After we left Malawi, the students had a practical examination in clinical optometry, which all of the students passed. The exact results from the University are confidential, and hence not referred to in this report.

The work at Rafiki Foundation was appreciated, and they have now made a MoU (Memorandum of Understanding) with Mzuzu University to continue the collaboration for three more years. This will secure patient access and the opportunity to practice clinical procedures for the students.

The students were asked to write an anonymous evaluation report. These reports were used in our and the optometry departments evaluation of the project.

### **Quotes from evaluation reports by the students:**

“The way you conducted the practicals and the way you tested us on the theory was the best.”

Student, Mzuzu University

“The theory test was good because they help us prepare more for a class”

Student, Mzuzu University

“Dividing the class into two was the greatest magic that has worked for the benefit of the students acquiring of knowledge”

Student, Mzuzu University

“It would have been better if you had stayed here for 6-8 weeks.”

Student, Mzuzu University

“The Norwegian students influenced the way we conducted the pracs in such a way that they were always there when we were practicing and they could direct us where we were going wrong”

Student, Mzuzu University

“I have higher motivation to become an optometrist after collaborating with the Norwegian students because they had shown us how important we will be to the nation and the role we will play in the field.”

Student, Mzuzu University

“During February, the arrival of Norwegian Optometry students indicated a milestone to our program and we had a brilliant time to learn more from them about objective and subjective refraction. We were able to ask them about the progress of optometry program of their country, and their humble answers were very encouraging and more convincing. When we accompanied them to Rafiki village, we had a tough time to put our theory into practice. It was very interesting to practice on children on areas of chief complaint, Visual acuity, NPC, PD, motility, saccades, colour test and refraction. We learnt also how to refer patients with certain conditions. The residents were warmly welcomed us and our lecturers together with Norwegian students explained well to us about certain conditions and corrected all our errors”.

Student, Mzuzu University

”The visitation of the Norwegian Optometry students helped us a lot in both theoretical and practical areas, they helped us understand on how to take case history, how to perform refraction and they also helped us on how to perform other preliminary tests. We were able to work in groups with them freely because they were students as well. We hope to receive another group next year”.

Student, Mzuzu University

## 8 Discussion

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When we started the teaching at Mzuzu University, we realized very quickly that it was a great difference between theory and practical teaching. The optometric equipment had just arrived to the university, so one of our jobs was to introduce the different equipment to the students. Before we came, the students had not seen or used almost any of the equipment that we were about to teach them. Since they did not have any personal equipment of their own, they were very glad and proud, when they got PD rulers, covers and torches that we brought.

The students surprised us with good problem-solving skills when they did not have the appropriate equipment. Books were used as covers, and a special “paper-ruler-combination” was used to measure the near point of convergence. This is impressive and thought-provoking for us, who have easy access to all of the equipment. We learned that you should not just skip the test just because you do not have the fancy equipment. There are different ways of measuring accommodation, and the students used ways that were just as good as how we usually measure it with the RAF-ruler. With simpler equipments and a bit of improvisation you can get the same result. To understand the principle and know the theoretical background is probably one of the most important parts, which we learned these weeks.

We soon realized that even though the students had been through lectures about the different tests, it was a whole other world to start practicing them. The students had never seen a retinoscope in real life, so both the theory and the actual practical part were difficult to connect together. We therefore took copies of different articles on the subjects, and gave them homework so they would come prepared for class, with the theory fresh in mind. Even though we found that practical work has the best effect on learning, the practical work has to build on the principles they have read. One of the things that we had prepared for, was the difference in how different cultures read a text. While we in Norway are taught to read a text for understanding, some other cultures read a text to remember it. They learn by heart. We therefore had several theoretical tests, to give them extra “motivation” to read at home so they would not just learn by heart, but also understand the principles. The tests were built up by questions that we expected them to know, and also questions that made them understand that they needed more practice. “Which object should the patient be looking at when you do the objective refraction?” and “What is the difference between a tropia and a phoria when you do a cover test?” are examples of questions they got on theoretical tests. These tests show the importance of knowing the theoretical facts when they performed an eye exam. For us as teachers, it helped us understand the academic

background of the students. This was very important so we could prepare the classes to each student's individual level.

We tried to motivate the students while they were doing the tests; both the theoretical and practical tests. The principle of encouraging, is for a teacher to motivate, give positive feedbacks, convince, and to offer help to the students so they can structure themselves and plan ahead. When students get encouraged by others, this will contribute to the feeling of wanting to succeed, and this creates better learning conditions, and the motivation will increase. <sup>6</sup> We experienced this with our students, who actually performed better, and made fewer mistakes when they got positive feedbacks. We also encouraged the students to give compliments to each other, help each other when they had problems, and also to discuss optometry cases.

The students are the first optometrists to be trained in Malawi, and they do not have the same professional environment as we do in Norway. Because of this, they need to develop their own. We also know that work ethics play an important role at the basic training at the university.



*Supervising*

When we practiced at the different tests, we switched between who was testing who. Sometimes the students took the tests on us, while another student was observing and contributing. Piaget meant that teaching would be the most advantageous, if the teaching is done together with people at the same educational level, as for example a co-student. Interaction between the students at about the same level is the best, because this in many cases creates theoretical discussions, which motivates a change in each student. They have the same background, and will therefore be the best to challenge each other. Vygotsky, on the other hand, meant that interaction between people with more knowledge and education is the best way to improve the students' teaching. <sup>6</sup> We experienced that both of these methods worked, and you have to adapt each method which each individual will benefit from. Discussions with their co-students were often the problem solver when they did not understand the theory we taught them. Likewise, sometimes more teaching and knowledge from us, helped them to understand when their co-students confused them. Even though we were more educated than the students, we were somehow co-students and worked as a combination of co-students and teachers. We think that it sometimes can be easier to discuss with someone who recently learned the same subjects. This was also a great way for us to learn the different methods better, because we needed to know exactly "how" and "what" we should teach the students. To be able to explain the test as correctly as possible, we had to use a lot of time preparing for the different lessons. This also helped us in our own understanding of the different tests.

### **Conclusion:**

Our main goal was to introduce clinical procedures and equipment to the students and take part in the practical teaching. This was to be considered a pilot project. The students showed progress, and they all passed their clinical exam which they had two weeks after our stay.

The purpose was to improve the eye health situation in Malawi in the long run. The project has no immediate, measurable results, but the feedback from the students and the knowledge we gained from this project shows that both institutions benefited from the pilot project and that the collaboration between HiBu and Mzuzu University should continue.



*The Malawian and Norwegian optometry students*

### **Post script**

A project like this is dependent on support from many holds – especially financially. Several individuals and companies have contributed in making this project happen, and we are forever grateful. We would also like to take this opportunity to thank our supervisor, our family and friends for helping and supporting us on the way.

We would like to thank everyone who has contributed in making this project possible, especially our supervisor Elin Silje Jensen.

### **Thank you for your financial support:**

FMC, Brillehuset Molde, Brillehjørnet Molde, Vikomar, BM Overflateteknikk, Team Takst Hordaland, Alf Opheim Synsam, Synsenteret Voss AS, Pro Cornea, Rodenstock Norge AS (Appendix 1)

We would also like to thank our parents, family and friends for supporting us with donations and buying lottery tickets.



**Thank you for giving us prizes for our lottery:**

Frisør Raffinette , Sølv frisørsalong, Match, Amica , Godsaker, Naturlivis, Klart Svar, Esthetique, Kongsberg Kino and Jonas B. Gundersen.

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## Appendix 1 Sponsors

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# FMC Technologies

Din optiker i Molde

Brillehuset Myrabakken 10-12



Brillehjørnet Storgata 26

[www.brillehuset.com](http://www.brillehuset.com)



## VIKOMAR



DAMSGÅRDSVEIEN 72, 5058 BERGEN  
TLF: 55 34 86 86 FAKS: 55 34 86 89  
▶▶ [WWW.TAKSTHORDALAND.NO](http://WWW.TAKSTHORDALAND.NO)

# ALF OPHEIM OPTIKK

## SYNSEENTERET VOSS



## **Appendix 2 Project protocol (Norwegian)**

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### **PROSJEKTPROTOKOLL**

#### **Tittel**

Optometri i Malawi – Utdanning og Utvikling  
Optometry in Malawi – Education and Development

#### **Bakgrunn**

Malawi er en republikk som ligger i Øst-Afrika og grenser til Tanzania, Mosambik og Zambia. I senter av landet ligger Lake Malawi, som er en av Afrikas største og dypeste innsjøer. Både på grunn av innsjøens beliggenhet og gjestfriheten til landets innbyggere omtales Malawi ofte som "The warm heart of Afrika". På tross av dette er Malawi listet på FNs levekårsrangering som land nr 162 av 179. Dette står i stor kontrast til Norge som er rangert som det beste landet å leve i.

På verdensbasis er 670 millioner mennesker blinde eller synshemmede fordi de ikke har tilgang til øyekonsultasjoner og refraktiv korreksjon. ICEE er en organisasjon som jobber for å eliminere ukorrigerte refraktive feil, gjennom blant annet å utdanne optikere i land hvor øyehelsepersonell ikke er tilgjengelig. I Malawi har ICEE, med støtte fra Optometry Giving Sight, startet "The Malawi School of Optometry". Her utdannes optikere og optoteknikere til den sørlige delen av Afrika.

Arbeidet ICEE utfører er en viktig del av å utvikle en bedre øyehelse i u-land som Malawi. Tilbud som vi i Norge tar for gitt er ikke en selvfølge i disse landene. Vi ser derfor på muligheten til å bidra med dette prosjektet, med stort engasjement og iver.

#### **Formål og problemstilling**

Prosjektet vårt går ut på å bidra i det arbeidet som ICEE utfører i Malawi. Vi skal delta i utdanningen av optometristudentene ved "The Malawi School of Optometry". Studentene er i gang med sitt andre år og har til nå bare hatt teoretisk undervisning. De forventer å få optometrisk utstyr rett før vi kommer, og vi vil derfor delta i opplæringen i bruken av instrumentene.

### **Våre arbeidsoppgaver**

Hovedoppgaven vår vil bli å delta i den praktiske undervisningen av de åtte optometristudentene på skolen. I dette inngår blant annet grunnleggende refraksjon og innledende tester. I prosjektet inngår også et community work program, som vår veileder planlegger å sette i gang.

### **Prosjektorganisasjon**

Arbeidsoppgavene er fordelt på følgende måte:

Veileder: Elin Jensen

Prosjektleder: Kirsti Berget

- Sette opp tidsplan og ukeplan.
- Passe på at alt blir gjort og at alt blir gjort i tide!

Økonomiansvarlig: Therese Andersen

- Sette opp budsjett, og styre økonomien.

Sekretær: Victoria Stöhlmacher

- Journalføre og dokumentere.

Administrativ leder: Lovise Rimstad

- Planlegge reise, og koordinere mail.

Produksjonsansvarlig: Brynhild Gjernes

- Ansvarlig for EndNote og for prosjektproduksjonen.
- Økonomisekretær

### **Personell, utstyr, ressurser**

For at et slikt prosjekt skal kunne gjennomføres er vi avhengig av økonomiske midler. Dette håper vi å skaffe gjennom sponsorer og dugnadsarbeid. Dette er en stor del av forberedelsene, og vi er villige til å bruke mye tid og innsats for å komme i balanse.

**Kostnader og finansieringsplan****BUDSJETT:**

5 personer

POST				totalt pr.pers	DEBET	KREDIT
1	<b>Reise</b>			9600		48000
	-tog kongsberg-oslo	300	1500			
	-fly oslo-london	1000	5000			
	-overnatting heathrow	500	2500			
	-fly london-lilongwe	3000	15000			
	-fly lilongwe-london	3000	15000			
	-overnatting heathrow	500	2500			
	-fly london-osl	1000	5000			
	- tog osl-kb	300	1500			
2	<b>Vaksinasjon</b>			5000		25000
	-Hepatitt A+B, tyfoid, gulfeber kolera/drikkevaksine, difteri/tetanus/polio	2700	13500			
	- malariatabletter	1500	7500			
	- myggnetting	500	2500			
	- div. myggmidler/solkrem	300	1500			
3	<b>Kopiering</b>		2000	400		2000
4	<b>Utstyr</b>		3000	600		3000
5	<b>Porto</b>		600	120		600
6	<b>Poster</b>		700	140		700
7	<b>Litteratur</b>		1000	200		1000
8	<b>Diverse</b>	600	3000	600		3000
9	<b>Husleie</b>	6000	30000	6000		30000
10	<b>Kost (29dager)</b>	6000	30000	6000		30000
11	<b>Reiseforsikring</b>	500	2500	500		2500
12	<b>Sponsorinntekter</b>				80 000	
13	<b>Egeninntekter</b>				40 000	
14	<b>Egeninnsats</b>				25800	
	<b>BALANSE</b>			29160	<b>145 800</b>	<b>145800</b>

**Tidsplan**

UKE	PROGRESJON	Egeninnsats:
39	Tildeling av prosjekt	Forskningsbussen (Hønefoss og Gol)
40	HØSTFERIE / åpning av bankkonto	
41	Organisering av prosjektittel, gruppeleder, økonomiansvarlig og sekretær	
42	Innlevering av prosjektittel/ bestille flybilletter	
43	Innlevering prosjektprotokoll/ VAKSINER 21/10	Kakesalg
44	Utarbeide brev om økonomisk støtte. Sende brev.	Lotteri
45		Kakesalg
46		
47	PÅFYLL AV VAKSINER	Kakesalg
48		
49-51	EKSAMENSUKER	
52-53	JULEFERIE	
1	SKOLESTART	
2-4	Forberede reisen	
5	Avreise til Malawi fredag	
6-9	MALAWI	
10-12	OPPGAVESKRIVING	
13-14	PÅSKEFERIE	
15-18	EKSAMENSUKER (ikke fastsatte datoer)	
19	OPPGAVESKRIVING	
20	PRODUSERE POSTER	
21	KOPIERE UTGIVELSEN	
22	OPPGAVESKRIVING	
JUNI	Fremføring av prosjekt	

### **Publisering**

Vi skal lage en poster, og i tillegg vil vi gi ut en skriftlig publikasjon på engelsk. Det vil også bli holdt en muntlig presentasjon av prosjektet i juni 2010. For å skaffe publisitet, planlegger vi også å kontakte lokalavisene på våre respektive hjemsteder, for å høre om de vil skrive en artikkel om prosjektet.

### **Etikk**

Under vårt opphold er det viktig at vi respekterer andre lokale skikker, kulturer og religioner. Gjennom hele prosjektperioden skal vi legge vekt på å ikke være dømmende, og vi vil prøve å ha et åpent sinn. Alle økonomiske midler vi får inn, vil bli brukt ene og alene til utføring av prosjektet. Ved et eventuelt overskudd vil pengene tilbakeføres til sponsorene.



## Appendix 3 Letter to potential sponsors

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Kongsberg, 04/12-09

### Utdanning av optikere i Malawi

På verdensbasis er 670 millioner mennesker blinde eller synshemmede fordi de ikke har tilgang til øyehelsetjenester og briller. Denne situasjonen preger befolkningen i Malawi. I februar reiser fem HiBu-studenter til Malawi for å delta i utdanning av optikere. Nå søker vi sponsorstøtte.

Jeg heter Kirsti Berget og er en jente fra Skien, som studerer optometri ved Høgskolen i Buskerud, avd. Kongsberg. I år er jeg avgangsstudent, og skal dermed ha et hovedprosjekt. I den forbindelse skal jeg sammen med fire medstudenter reise til Malawi i februar. Der skal vi delta i utdanningen av åtte optikerstudenter ved "The Malawi School of Optometry" i Mzuzu. Ved denne skolen utdannes optikere og optoteknikere til den sørlige delen av Afrika.

Skolen i Mzuzu er akkurat kommet på bena, og studentene har kun hatt teoretisk undervisning. Vår oppgave vil bli å delta i den praktiske undervisningen.

For å gjennomføre prosjektet trenger vi økonomisk støtte. Siden høgskolen ikke bidrar med noen finansiell støtte, må vi skaffe alle midler selv. Vi har allerede startet arbeidet med å tjene inn penger ved å delta på Forskningsdagene, og ved diverse lotteri. I tillegg har vi skaffet oss jobb under utdanningsmesser rundt om på Østlandet. Dette er likevel ikke nok til å få finansiert hele prosjektet som har et budsjett på 145 800 kr (se vedlegg).

Ved å hjelpe oss kan vi tilby:

- Profilering i det skriftlige produktet
- Bedriftens logo i reisebloggen
- Informasjonsbrev etter prosjektperioden

Kontonummer: 1503.12.75684

For spørsmål, ta kontakt med Kirsti Berget: 41 61 63 68. E-post: [prosjektsebra@gmail.com](mailto:prosjektsebra@gmail.com)

Alle monner drar!

Vennlig hilsen  
Optikerjentene

Therese Andersen, Kirsti Berget, Brynhild Bu Gjernes, Lovise Rimstad og Victoria Stöhlmacher.

Sted/ dato: \_\_\_\_\_ Gruppeleder: \_\_\_\_\_

Sted/ dato: \_\_\_\_\_ Reiseprosjektkoordinator: \_\_\_\_\_



## Appendix 4 Budget

### BUDGET

5 persons

			Total pr. person	DEBET	CREDIT
1	<b>Travel</b>		9600		48000
	-Transport Kongsberg-Oslo	1500			
	-Plane tickets Oslo-London	5000			
	-Hotel Heathrow	2500			
	-Plane tickets London-Lilongwe	15000			
	-Plane tickets Lilongwe-London	15000			
	-Hotel Heathrow	2500			
	-Plane tickets London-Oslo	5000			
	- Transport Oslo-Kongsberg	1500			
2	<b>Vaccinations</b>		5000		25000
	-Hepatitis A+B,typhoid, yellow fever cholera/oral vaccine, whooping cough diphtheria/tetanus/polio/meningitis	13500			
	- Malarone	7500			
	- Mosquito nets	2500			
	- Mosquito repellent/sunscreen	1500			
3	<b>Printing/copy</b>	2000	400		2000
4	<b>Equipment</b>	3000	600		3000
5	<b>Postage</b>	600	120		600
6	<b>Poster</b>	700	140		700
7	<b>Literature</b>	1000	200		1000
8	<b>Other</b>	3000	600		3000
9	<b>Rent, Mzuzu</b>	30000	6000		30000
10	<b>Meals (29days)</b>	30000	6000		30000
11	<b>Travel insurance</b>	2500	500		2500
12	<b>Financial support</b>			80 000	
13	<b>Income</b>			40 000	
14	<b>Private funds</b>			25800	
	<b>BALANCE</b>		29160 (4545USD)	<b>145 800NOK</b> <b>(22725USD)</b>	<b>145800NOK</b> <b>(22725USD)</b>

## Appendix 5 Financial statement

	DEBET	CREDIT
<b>INCOME</b>		
Cake sale, school	165	
Forskningsbuss/presentation	23000	
Raffle, Molde	5000	
Raffle, Alta	1200	
Raffle, Voss	500	
Raffle, Skien	500	
Raffle, Mandal	500	
Raffle, Hibu	2332	
Raffle, Stortorvet	3820,5	
Sum financial support (see following table)	48500	
Private funds	11586,5	
<b>EXPENSES</b>		
Travel expenses		
Transport Kongsberg-Gardermoen		
Plane tickets, return London-Lilongwe		37923
Plane tickets, return Oslo-London		10200
Transport Gardermoen-Kongsberg		388
Rent, Guesthouse 5, Mzuzu Uni.		4221
Hotel Sunbird, Lilongwe		2720
Other expenses on the trip		2270,5
Meals + transport, Mzuzu		12543
Vaccination		13000
Malarone/Duchoral		7532
Immodium/mosquito repellent/antibac		2060
Mosquito nets		545
Postage		466,5
Expenses, raffles		118
Equipment and charity		1629,5
Internet		274,5
Poster/printing		650
Other		563
	<b>97104</b>	<b>97104</b>

**Financial support:**

FMC	20 000NOK
Brillehuset AS	5000NOK
Brillehjørnet Molde AS	5000NOK
BM Overflateteknikk	5000NOK
Vikomar	5000NOK
Takst Team Hordaland	3000NOK
Alf Opheim Synsam	2000NOK
Synsenteret Voss As	1000NOK
Procornea	500NOK
Rodenstock Norge AS	500NOK
Donations to Rafiki	500NOK
Mamma Stöhlmacher	200NOK
Mamma Rimstad	200NOK
Pappa Rimstad	200NOK
Mamma Andersen	200NOK
Mamma Berget	200NOK

## Appendix 6 Methods

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### REFRACTION USING TRIAL FRAME

Equipment:

- retinoscope
- trial frame
- trial case with trial lenses
- handheld Jackson Cross-Cylinder

### OBJECTIVE REFRACTION

Static retinoscopy

The first thing to do is to set the patient's distance PD in the trial frame, and place the trial frame on the patient. Make sure it sits comfortably on the patient. Place working distance lenses in the trial frame; a +1,50 DS lens should be used for a 67cm working distance, and a +2,00 DS for 50cm.

Instruct the patient to look at a large letter on the VA chart, or preferably a non-accommodative target, for example a green object. Dim the room lights and make sure that you see an against-movement in the left eye. Start examining the patient's right eye. Stand on the patient's right side, and use the right hand to hold the retinoscope when checking the right eye. Position the streak vertically, and sweep the retinoscope streak across the patient's pupil horizontally. Then do the same for the other meridians; 90, 45 and 135 degrees.<sup>2</sup>

Use trial lenses and neutralize the movement. A with movement of the reflex (the reflex moves in the same direction as the movement of the direction of the streak) indicates hyperopia. An against-movement (the reflex moves in the opposite direction as the streak) indicates myopia. Start neutralizing the meridian with the slowest with-movement or the fastest and brightest against-movement. If you see a with-movement add plus lenses, and add minus lenses if you see an against-movement. Add lenses until flash; this is when no movement is seen.

When one meridian is neutralized, the other meridian must show an against-movement to be neutralized with minus cylinder; this is an astigmatic error.

Add minus cylinder with the cylinder axis aligned with the orientation of the streak, until the meridian is neutralized. The least myopic or most

hyperopic meridian is neutralized with sphere, and the most myopic or least hyperopic is neutralized with cylinder in addition to the sphere.<sup>1</sup>

Repeat the procedure for the left eye.

## SUBJECTIVE REFRACTION

Best sphere and Jackson Cross-Cylinder using Humphriss method

When doing subjective refraction you can either choose to occlude one eye while testing the non-occluded eye, or you can fog one eye while testing the other. The last method is called modified Humphriss (monocular fogging balance), and this is what will be described in the following procedure.

Method:

Here you start with the results you found during retinoscopy in the trial frame.

Fog the patient's left eye with +0,75-+1,00DS. Make sure the patient sees two lines above his best VA. If not, add some more plus until he/she does. Start on the right eye with best vision sphere. First add plus lenses and ask if it is better with +0,25DS more. Use hand held lenses or a lens rack. If it is better, add more plus. If it is worse, try with a -0,25 lens and ask if this is better. By using this method, determine the patient's best sphere. Then perform a Jackson Cross Cylinder (JCC) using a hand held Jackson Cross Cylinder. Refine the cylinder axis found on retinoscopy by flipping the JCC in front of the trial frame with the axis of the cross cylinders 45° away from the correcting cylinder axis. This is usually when the handle of the JCC is aligned with the cylinder axis. Use dots or circles as objects, and ask the patient to report when the dots are rounder and clearer. Flip the JCC, and move towards the red dots. Rotate the lens in the trial frame to change the axis, until the patient reports that the dots are equally round and clear in both options.

Then use the JCC to refine the cylinder power. If it is clearer and sharper in the position of the red dots, add more minus cylinder. If it is clearer and sharper in the position of the white dots, remove the cylinder power in 0,25 steps. Add +0,25 D to the sphere for each -0,50 DC you add to the cylinder power.

Then do best sphere again to make the final adjustments on the spherical component. Now record what you have found on the right eye and measure the patient's VA again with this result.

Now remove the fogging from the left eye, and add plus to the right eye, until the patient sees two lines above his best VA with this eye. Then repeat the best sphere and the Jackson Cross Cylinder on the left eye. Measure the VA and record what you have found. Remove the added plus lenses on the right eye and measure the patient's binocular VA. <sup>1</sup>

## References

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1. Carlson, N.B, Kurts, D. (2004) *CLINICAL PROCEDURES FOR OCULAR EXAMINATION, third edition*, McGraw-Hill, p121-125
2. Elliot D.B, (2007) *Clinical Procedures in PRIMARY EYE CARE, third ed*, Elsevier, p.97-104

## **Appendix 7      Motivational letters**

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### **Statement of purpose I**

I would like to start right off by expressing my motivation and engagement for the projects abroad. I am now in my third and last year of optometry studies, and I see the abroad projects as a great opportunity for me to use my knowledge in eye care and to gain new insight and learn even more.

We as optometrists know how important vision is, and to get to travel to a country which is less fortunate than ours and then being able to contribute in helping others, is something which I would really love to do.

The last couple of weeks my group and I have been working intensely to get the two current projects up and running, especially the one in Malawi. If I get the opportunity to continue working with one of these projects I will work hard, both planning and executing it.

The health care sector in Africa is showing great improvement, - but still it cannot be compared to what we are so lucky to have here in Norway. For a majority of people in Africa, eye care services are not available at all, so there is no doubt that more optometrists and available eye care is needed. To be able to share some of my knowledge and maybe be a small part in changing someone's life, would really mean a lot to me. Previously I have spent two years studying English at Agder University. This would therefore also be a great way of challenging myself, experiencing a new culture and practicing my English skills. To sum it up; my motivation is as high as can be, and I know that by getting this opportunity I will gain experience and learn lessons that will follow me for the rest of my life.

### **Statement of purpose II**

I have a really high motivation and engagement to abroad projects. Since I applied at the optometry study, i have been looking forward to travel to a place in the world where my dexterities and knowledge is needed. To help other people who do not have the same opportunity as we in the wealthier parts of the world have, I do see as challenging, educational and inspiring for further work as an optometrist.

I think that it is important that optometrists can contribute so that people in poorer countries can exert their vision to the maximum. Contribute to prevent that their sight inhibit them in their daily life; at school or at work. For many people it is not needed more than a pair of spectacles to make the life quality significantly improved. It is therefore central that it is educated optometrists in these countries, so that they can enhance vision among the inhabitants. This will contribute to the countries self-help.

I feel a special engagement to go to Malawi, and have in the past weeks showed great initiative and worked hard so that the projects to Malawi and Eritrea could become a reality. Because one can not know what to expect



in a different country, I think it is very important with engagement, motivation and go-ahead spirit. I absolutely think I have these qualities. I have not given up, even though it has been challenging, and this states that I really want this project. I will not be stopped even though I meet challenges here, or in Malawi in the project period. I am looking forward to meet new people, a new school, use my knowledge and to get new knowledge, and also work closely with my group who inspires me and I really enjoy being with.

### **Statement of purpose III**

I have now been studying optometry for two years, and these years have made me more interested in my education. I have known from the start that this is the direction that I want to go. I have always been interested in helping other people and it is important for me to make a difference. From the start of my study in Kongsberg, I have been looking forward to the abroad project.

These last two weeks my group and I have worked a lot to accomplish two abroad projects, so this subject could be an alternative this year as well. We as a group have not given up, and we can make things happen.

Especially I have the biggest motivation for the project in Malawi. I know how it is a huge proportion of unnecessary blindness in Africa because of too little knowledge about optics and vision, and the big lack of optometrists.

I want to help, in the optometry school in Malawi, to learn the people in Africa to be an optometrist. I want to contribute with my knowledge and I want to learn more my self. I find it interesting and a unique opportunity to help and make a difference.

So, what makes me so motivated for these abroad projects?

First of all, I have been a part of these alternatives, and made them come true to be an opportunity for my classes.

From this I have shown my initiative, engagement, willingness and huge motivation.

I am a person that works with a purpose, and I have a lot of positive thoughts about this project. I want to see and experience a developing land in Africa, and I am ready for a challenge and new impulses that this will give me.

#### **Statement of purpose IV**

This last two years I have studied optometry, which is a subject that I have taken interest in my whole life. Mainly because I don't see much without my glasses, but also because I love that it is technical, sales-orientated and that health care is a big part of it. So I'm well aware of the importance of good vision

These last weeks my group and I have been working to get a project abroad. Because we think that it is important to help people who don't have the fortune of living in a country with a well built health section. The fact that we did not give up, even though we had obstacles shows that we are a group that do not give up. And that our motivation is high for helping others. I have always taken interest in helping others, either through different organizations or directly. Since we have been working on these two projects, I have done research on the health situation in Malawi, and this have made me especially curious and motivated for the project in Malawi.

I think that the possibility in Malawi with helping students with their educational study is a great way to challenge myself with what I have learnt so far, and maybe see problems from another point of view. After two years of studying optometry, I think that this is a great opportunity to unfold my knowledge and gain knowledge. It will be a big challenge, which I'm looking forward to deal with with my enthusiastic group members.

I know the project is a lot of work, and that's why I think working with something that we made ourselves and really care about makes the project a lot more interesting. I think the abroad project can make a difference in people lives, and I want to be a part of making it happened. I want to make a difference.

#### **Statement of purpose V**

For me as a third year optometry student, I look at an abroad project as very interesting, challenging and educational. I know it will be a lot of hard work and that I will face several various challenges. But at the same time, it is a unique opportunity to use my knowledge, get new knowledge, and get outstanding experience which I can use in my practice as an optometrist in Norway.

I have a special motivation for the project in Malawi. The main reason is that we in Malawi have the opportunity to help teaching Malawian optometry students. Then I can use my knowledge, as well as I learn a lot, both academic and about myself. I know the importance of good vision, and also the need for opticians in countries like Malawi. Helping educating

opticians is very important, so that they in the future can give other inhabitants better vision and eye care.

During the preparation for this project, my project group and I have done a lot of researching and hard work. I think the fact that we have not given up shows our genuine interest for the projects. It has at the same time showed that we cooperate well, and are a well-functioning group.

Since I started my optometry education, I have been envious at the students having abroad project. I have been looking forward to it, and now it can be a reality! I believe a project like this helps me being more aware the utility of being an optician and health worker, and inspire me and give me the connections I need to work in developing countries in the future. At the same time I am convinced that the project will change me as a person and give me another perspective of life.

## Appendix 8 Newspaper articles

16 REPORTASJE

16. november 2010

REPORTASJE 17



**AV TORILL M. WIGGEN**

**FAKTA**  
**Internasjonale optikerstudenter** er på vei til Afrika for å hjelpe med å bekjempe blindhet. De kommer fra Norge, Danmark, Sverige og andre land. De skal hjelpe med å utdanne optikere i Afrika, og de skal hjelpe med å utdanne optikere i Afrika.

Therese Andersen (23) er full av eventyrlighet og gleder seg til å hjelpe med å bekjempe blindhet. Hun har sagt å gjennomføre bachelorkandidatutdanningen sin i optikk og optikk i Afrika, og hun har sagt å gjennomføre bachelorkandidatutdanningen sin i optikk og optikk i Afrika.

Therese fra Ålesund ble hentet til Busoniuniversitetet i Malawi, et av de mest moderne universitetene i Afrika. Hun skal hjelpe med å utdanne optikere i Afrika, og hun skal hjelpe med å utdanne optikere i Afrika.

Skulle hun bli blind, ville hun ikke ha noe problem med å finne seg til rette i verden. Hun har sagt å gjennomføre bachelorkandidatutdanningen sin i optikk og optikk i Afrika, og hun har sagt å gjennomføre bachelorkandidatutdanningen sin i optikk og optikk i Afrika.

Therese er en av de mange som kommer til Afrika for å hjelpe med å bekjempe blindhet. Hun har sagt å gjennomføre bachelorkandidatutdanningen sin i optikk og optikk i Afrika, og hun har sagt å gjennomføre bachelorkandidatutdanningen sin i optikk og optikk i Afrika.



Malawi, et av verdens minst 48 land som er rammet av blindhet. Det er en av de mest alvorlige helseproblemer i Afrika, og det er en av de mest alvorlige helseproblemer i Afrika.

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Therese og medstudenter må lære seg å bruke optiske instrumenter som de bruker på jobben. De skal hjelpe med å utdanne optikere i Afrika, og de skal hjelpe med å utdanne optikere i Afrika.

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# Fire veker til Malawi

**Brynhild Bu Gjernes (23) fra Voss står framfor ei oppleving ho nok aldri vil glemme. I februar dreg ho til Malawi, eit av dei fattigaste landa i verda. Der skal ho vera med å utdanna nye optikarar.**

Brynhild går siste året på optikarutdanninga ved Høgskolen i Buskerud, og har nok å henga fingrane i. Saman med fire andre studenter har ho valt å gjennomføre hovudprosjektet i Malawi. Det er eit land med stor mangel på optikarar og kunnskap om augehelse, og behovet for hjelp er stort.

– Eg gler meg veldig til å reisa, og ser fram til å møte ein ny kultur og gjera ein innsats for noko eg brenn for. Eg veit kor viktig det er med eit godt augehelsetilbod, og det er stor mangel på utdanna augehelsepersonell i Afrika. 670 millionar menneske i verda er synshemma fordi dei ikkje har tilgang til synsundersøkingar og briller. Det er heilt uunnskleg, seier Brynhild.

No vil ho ta kontakt med næringslivet heime, for å sjå om det er mogeleg å henta støtte til prosjektet. Jentene har alt samla inn pengar gjennom dugnadsarbeid, lotteri og messer, og dei brukar av egne oppsparte midlar. Prosjektet har eit budsjett på rundt 145.000 kroner.

– Dette vert ei stor utfordring,

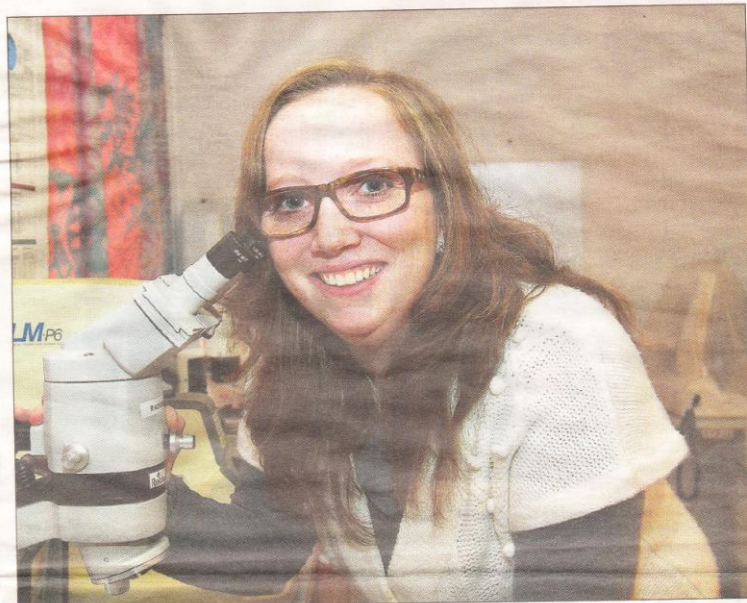


**VIL HJELPA:** Optikarstudent Brynhild Bu Gjernes reiser i februar til Malawi for å hjelpe til med utdanning av optometristudenter i landet.  
 FOTO: OLE ANDRÉ ENDRESEN

men samtidig ei oppleving for livet, seier Brynhild.

**FAKTA | ICEE**  
 International Centre for Eyecare Education (ICEE) <http://www.icee.org/index.asp> er ein organisasjon som jobbar for betre augehelse, gjennom mellom anna å utdanna optikarar i land der augehelsepersonell ikkje er tilgjengeleg. I Malawi har ICEE, med støtte frå Optometry Giving Sight, starta

«The Malawi School of Optometry». Her utdanner ein optikarar og optometristudenter til den sørlige delen av Afrika. Jentene sitt prosjekt går ut på å bidra i det arbeidet som ICEE utfører i Malawi. Dei skal delta i utdanninga av optometristudentane ved «The Malawi School of Optometry».



**OPTIKER I MALAWI:** Kirsti Berget (23) fra Skien skal hjelpe til med utdanning av nye optikere i Malawi. FOTO: OLE ANDRE ENDRESEN

## Blir synshjelper i Malawi

**Kirsti Berget (23) fra Skien står foran en opplevelse hun nok aldri vil glemme.**

**SKIEN** I februar reiser hun til Malawi, et av verdens fattigste land. Der skal hun bidra til utdanningen av nye optikere.

Kirsti går siste året på optikerutdannelsen ved Høgskolen i Buskerud, og har nok å henge fingrene i. Sammen med fire andre studenter har hun valgt å gjennomføre hovedprosjektet i Malawi. Det er et land med stor mangel på

optikere og kunnskap om øyehelse, og behovet for hjelp er stort.

### Håper på støtte

– Jeg gleder meg veldig til å reise, og ser frem til å møte en ny kultur og gjøre en innsats for noe jeg brenner for, sier. Jeg vet hvor viktig det er med et godt øyehelsetilbud, og det er stor mangel på utdannet øyehelsepersonell i Afrika. 670 millioner mennesker i verden er synshemmet fordi de ikke har tilgang til synsundersøkelser og briller. Det er helt unødvendig, sier Kirsti.

Nå vil hun ta kontakt

med næringslivet hjemme, for å se om det er mulig å hente støtte til prosjektet. Jentene har allerede samlet inn penger gjennom dugnadsarbeid, lotteri og messer, og de bruker av egne oppsparte midler. Prosjektet har et budsjett på rundt 145.000 kroner.

– Dette blir en stor utfordring, men samtidig en opplevelse for livet, sier Kirsti.

### Om prosjektet

International Centre for Eyecare Education (ICEE) er en organisasjon som jobber bedre øyehelse,

gjennom blant annet å utdanne optikere i land hvor øyehelsepersonell ikke er tilgjengelig.

I Malawi har ICEE, med støtte fra Optometry Giving Sight, startet The Malawi School of Optometry. Her utdannes optikere og optoteknikere til den sørlige delen av Afrika.

Jentenes prosjekt går ut på å bidra i det arbeidet som ICEE utfører i Malawi. De skal delta i utdanningen av optometristudentene ved The Malawi School of Optometry.



*Spesiell tur: I februar reiser Victoria Stöhlmacher (24) til Malawi, et av verdens fattigste land. Der skal hun bidra til utdanningen av nye optikere. Foto: Ole Andre Endresen*

## Opplevelse av de sjeldne

Victoria Stöhlmacher (24) fra Mandal står foran en opplevelse hun nok aldri vil glemme.

### Av Jan-Henrik Kulberg

I februar reiser hun til Malawi, et av verdens fattigste land. Der skal hun bidra til utdanningen av nye optikere.

Victoria går siste året på optikerutdannelsen ved Høgskolen i Buskerud, og har nok å henge fingrene i. Sammen med fire andre studenter har hun valgt å gjennomføre hovedprosjektet i Malawi. Det er et land med stor mangel på optikere og kunnskap om øyehelse, og behovet for hjelp er stort.

- Jeg gleder meg veldig til å reise, og ser fram til å møte en ny kultur og gjøre en innsats for noe jeg brenner for, sier. Jeg vet hvor viktig det er med et godt øyehelse tilbud, og det er stor mangel på utdannet øyehelsepersonell i Afrika. 670 millioner mennesker i verden er synshemmet fordi de ikke har tilgang til synsundersøkelser og briller. Det er helt nødvendig, sier Victoria

Nå vil hun ta kontakt med næringslivet hjemme, for å se om det er mulig å hente støtte til prosjektet. Jentene har allerede samlet inn penger gjennom dugnadsarbeid, lotteri og messer, og de bruker av egne oppsparte midler. Prosjektet har et budsjett på rundt 145.000 kroner.

- Dette blir en stor utfordring, men samtidig en opplevelse for livet, sier Victoria.

### FAKTA

#### *Om prosjektet*

- International Centre for Eyecare Education (ICEE) <http://www.icee.org/index.asp> er en organisasjon som jobber bedre øyehelse, gjennom blant annet å utdanne optikere i land hvor øyehelsepersonell ikke er tilgjengelig.
- I Malawi har ICEE, med støtte fra Optometry Giving Sight, startet «The Malawi School of Optometry». Her utdannes optikere og optoteknikere til den sørlige delen av Afrika.
- Jentenes prosjekt går ut på å bidra i det arbeidet som ICEE utfører i Malawi. De skal delta i utdanningen av optometristudentene ved «The Malawi School of Optometry»

## Klager på gaupejakt

Naturvernforbundets fylkeslag i Midt-Norge mener Rovvitnemndas gaupevote for 2010 er for høy og klager den inn for Miljøverndepartementet. Kvota for Møre og Romsdal og Trøndelagsfylkene er på tilsammen 55 gauper, derav 29 voksne humngauper med en reservelovte på inntil ti dyr.

Naturvernforbundet mener kvota er for høy og at rovvitnemnda driver politisk forvaltning og ikke en biologisk og faglig forvaltning, he-



ter det i ei pressemelding fra Naturvernforbundet. De iverner nemndas vedtak bryter med flere paragrafer i Naturmangfoldloven.

## Åpner «nyskolen» på Skjevika

Fredag 18. desember er det offisiell åpning av nye Skjevik barn- og ungdomsskole. Skolen, som har gjennomgått en kraftig renovering og delvis nybygging, ble tatt i bruk for fullt allerede forrige uke.

Oppgraderingen og nyåpningen innebærer blant annet bedre plass til både lærere og elever, garderobertil alle og ny tilgang til spesialrom og bibliotek (Ljøn).

Tidligere i høst ble også den nye kunstgressbanen ved siden av skolen åpnet for bruk.



Det blir ny innflyttingsfest fredag. Her fra markeringen desember 2008 da bygg 1 sto klar til bruk. Foto: Skjevik barn- og ungdomsskole.

# Fire uker til Malawi

Lovise Rimstad (23) fra Molde står foran en opplevelse hun nok aldri vil glemme. I februar reiser hun til Malawi, et av verdens fattigste land. Der skal hun bidra til utdanningen av nye optikere.

Av Jan Henrik Kulberg

Lovise Rimstad går siste året på optikerutdannelsen ved Høgskolen i Buskerud, avdeling Kongsberg, og har nok å henge fingrene i. Sammen med fire andre studenter har hun valgt å gjennomføre hovedprosjektet i Malawi. Det er et land med stor mangel på optikere og kunnskap om øyehelse, og behovet for hjelp er stort.

### Ber om støtte

– Jeg gleder meg veldig til å reise, og ser frem til å møte en ny kultur og gjøre en innsats for noe jeg brenner for, sier Lovise Rimstad.

– Jeg vet hvor viktig det er med et godt øyehelseutbud, og det er stor mangel på utdannet øyehelsepersonell i Afrika. 670 millioner mennesker i verden er synshemmet fordi de ikke har tilgang til synsundersøkelser og briller. Det er helt uønskelig.

Nå vil hun ta kontakt med næringslivet hjemme i Romsdalsregionen, for å se om det er mulig å hente støtte til prosjektet. Jentene har allerede samlet inn penger gjennom dugnadsarbeid, lotteri og messer, og de bruker av egne oppsparte midler. Prosjektet har et budsjett på rundt 145.000 kroner.

– Dette blir en stor utfordring, men samtidig en opplevelse for



I februar reiser Moldejenten og optikerstudenten Lovise Rimstad til Malawi for å hjelpe til med utdanningen av optikere i den sørlige delen av Afrika. Foto: Ole Andre Endresen

**”Jeg ser frem til å møte en ny kultur og gjøre en innsats for noe jeg brenner for**

livet, sier optikerstudenten fra Molde.

### Viktig arbeid

Prosjektet har som mål å utdanne flere optikere til den sørlige delen av Afrika.

– Når vi som optikere vet at

det er så lite som skal til for å bedre livskvaliteten betraktelig, for eksempel et par briller, er dette en situasjon det er svært viktig å ta del i, understreker Rimstad. International Centre for Eyecare Education er en organisasjon som jobber for å gi de som tren-

ger det bedre øyehelse, gjennom blant annet å utdanne optikere i land hvor øyehelsepersonell ikke er tilgjengelig. I Malawi har ICEE, med støtte fra Optometry Giving Sight, startet The Malawi School of Optometry. Her utdannes optikere og optikere til

den sørlige delen av Afrika. Lovise Rimstad og de fire andre jentenes prosjekt går ut på å bidra i det arbeidet som ICEE utfører i Malawi. De skal delta i utdanningen av optikerstudentene ved The Malawi School of Optometry.

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