

SERVICE LEARNING: OPTOMETRIC CONSULTANTSHIP

by

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and

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ABSTRACT

Background: This program puts optometric service learning theory into practice and shows that it is effective in fulfilling an official requirement for the doctor of optometry curriculum. This program develops a relationship with a community organization, Cherry Street Health Services, whereby a professional consultantship provides optometric expertise in the area of optometric examination of the diabetic patient. **Methods:** Extensive literature search via pub med revealed few formal service learning programs in optometry. Consultation with senior project advisor yielded an outline for a service learning program that would meet graduation requirements. Contact of community agency was performed via telephone through a pre-existing professional relationship between the community contact person and optometry students authoring this project. The community contact person defined a problem as lack of provider resources. Through consultation with the community contact the concept of a user-friendly diabetic compendium for use and reproduction as needed was developed. Web and literature research of the American Optometric Association and American Diabetic Association standards of care provided the basis for the developed diabetic eye care manual. Professional consultation with senior project advisor, community contact person, and licensed optometrists practicing the current standards provided structure, feedback, and experiential input for the project. **Results:** Journal composition, including citations and references, of student reflection, outcomes, and measures provides organized documentation of the program. The final product is presented as "The Diabetic Eye Care Manual for Student Interns at Cherry Street Health Services". **Conclusions:** Supervisory assessment yields successful completion of requirements for the service learning

program, the senior research project, and graduation. The community liaison approves the final product as sustainable, and reports satisfaction with the quality. Student participants have new perspective on professional relationships between health care providers, more extensive knowledge of diabetic eye disease, and greater appreciation for community service.

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Service Learning Consultantsip Journal
Brian Weller
Michigan College of Optometry
Class of 2006

Week of May 1, 2005

Service learning consultantship can be defined in many ways. The overall definition includes the opportunity for students to engage in community service, providing their expertise in a manner to benefit the public. In most cases, a sustainable product is given to an organization to use at their discretion for the public well-being. Current research reveals trace to minimal optometric service learning consultantships that have been or are currently in effect. Through this consultantship, my partner, Nathan, and I will strive to impress the need and concern for optometric services needed through an organization providing services for the public.

An abstract has been written and is included within this journal. It provides the background of service learning consultantship, the methods upon which we will perform our duties, and the results we will provide for the organization in need. We have created a working timeline to keep us on track with our goals and contact deadlines. See Appendix A for the working timeline.

What I have learned thus far about service learning consultantship is that it is a part of many graduate and professional programs. It seems to be an integral part in the learning process of the student. It allows the future professional to accumulate some face-to-face time with the public and it also gives the student a chance to practice their listening skills. Without good listening skills, professionals will not be able to provide the best care possible. I believe this listening time is essential before graduating and entering a practice.

This realization of listening has affected me in a manner to induce the best possible means of attention in every conversation. This, I believe will improve my communication skills as well.

While searching for publications on service learning consultantships, I found they have mainly included nursing and their involvement with the elderly. I only found a few involving optometry.^{4,5} We know the implications of aging and the affect of it on our daily activities, but there are many other conditions, besides typical aging changes, that need the examination and treatment of a licensed optometrist. Current research reveals the baby-boomer population entering into the senior-citizen ages. The first U.S. Baby Boomers will turn 65 in 2011, inaugurating a rapid increase in the older population during the 2010 to 2030 period. The older population in 2030 is projected to be double that of 2000 growing from 35 million to 72 million. The Baby Boom cohorts' impact on the country's age structure will continue into the first half of the 21st century. By 202 the Baby Boom cohorts will be aged 56 to 74. After 2030 the Baby Boom will become the oldest old, and the country's age structure is expected to resemble a rectangle that is extremely top-heavy.¹ Within this large group comes a host of ocular diseases that can be detected, followed, and treated by an optometrist. Low-vision therapy will increase exponentially with the increasing prevalence of age-related macular degeneration (ARMD or AMD) as the older live longer. The overall prevalence of neovascular AMD and/or geographic atrophy in the US population 40 years and older is estimated to be 1.47%, with 1.75 million citizens

having AMD. The prevalence of AMD increased dramatically with age, with more than 15% of white women older than 80 years having neovascular AMD and/or geographic atrophy. More than 7 million individuals had drusen measuring 125micrometers or larger and were, therefore, at substantial risk of developing AMD. Owing to the rapidly aging population, the number of persons having AMD will increase by 50% to 2.95 million in 2020. Age-related macular degeneration was far more prevalent among white than among black persons.³ With the obesity epidemic, adult-onset diabetes will also rapidly rise. The morbidity and mortality risk from being overweight is proportional to its degree. Individuals with morbid obesity, therefore, have the highest risk for developing numerous illnesses that often reduce mobility and quality of life due to their excess weight. In particular, type 2 diabetes, gallbladder disease and osteoarthritis have been found to increase concurrently with higher body mass index.² The prevalent need for students to become involved with the public before they graduate is at our disposal.

I believe that the most valuable service I can offer to the public is the expertise that I have accrued throughout my education at The Michigan College of Optometry. I will give my best effort, with my partner, to create a sustainable product for a specific need, in a manner that is understandable for the patient and possibly for the physician if desired.

I feel that this project will help me to grow both educationally and humanely. It will better prepare me for the challenges ahead of me throughout my career. I anticipate finding an organization that works for the people and stands for the people. One who takes pride in the services it offers and with the professionals it has delivering those services.

1. U.S. Census Bureau. Retrieved May 2005 from <http://www.census.gov/prod/2006pubs/p23-209.pdf>.

2. *AOA Fact Sheets: Morbid Obesity*. Retrieved May 2005 from <http://www.obesity.org/subs/fastfacts/morbidobesity.shtml>.

3. The Eye Diseases Prevalence Research Group. Prevalence of Age-Related Macular Degeneration in the United States. *Archives of Ophthalmology* 2004; 122:564-572.

4. *Community-Campus Partnerships for Health (CCPH)*. Retrieved May 2005 from <http://depts.washington.edu/ccph/servicelearnings.html#Optometry>

5. *A Service of the National Library of Medicine and the National Institutes of Health*. Retrieved May 2005, from <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?CMD=search&DB=pubmed>

Week of June 26, 2005

This week of work included several activities. We began with choosing several organizations, preparing a working timeline, and drafting a method of contact.

We began by choosing several organizations to approach with the idea that they might serve a population with a need that we could provide. The organizations that we chose were grouped into categories. These categories included health and fitness, retirement communities, churches, schools, and health departments. We based our category decisions on what the organization stands for and who they serve. Examples included safety eyewear with sporting activities for health and fitness, ocular health and nutrition with senior citizens and vision screening guidelines with school children. This starting point was exciting while we listed the many possible facilities that we have the ability to interact with and consult. It made me realize the almost limitless circumstances that I will be involved with while in my career. So many people need basic information to properly care for their eyes, along with the correct information on ocular changes. I believe our profession is the appropriate choice to provide this care.

During this week of work, it was recommended by our supervising faculty member that we prepare a means of contact for a prospective organization. This means would be to our discretion, with recommendations of a contact letter

and/or a phone script. A contact letter was drafted with intentions of immediate responses from our prospective organization(s). Upon review of this form of contact, it was decided upon by both parties that this method was probably impractical due to our working timeline deadlines and the normal daily business of most organizations. From here, a phone script was written. This script included portions explaining our profession, the gratis service we were offering, and the expectations we were hoping to provide. The script was almost finalized when an organization approached our supervising doctor. This organization will be discussed more in detail in the next journal entry. We thought the phone script gave us the best chance at communicating effectively with a prospective organization. It was personal, professional, and allowed us to receive a probable immediate confirmation. See Appendix A for a copy of our phone script.

Our working timeline was composed in order to keep us on a permissible schedule. Deviations from the timeline were anticipated due to extracurricular activities and other assignments due. It gave us time to prepare for formats, extra ideas that may be implicated, and for delivery time to our advisor and/or organization. We allowed ourselves approximately one month in between each step of preparation of our sustainable product. We felt this to be appropriate for every party involved.

Week of September 5, 2005

During this week of our consultancy, we met with our prospective organization that approached our supervising faculty doctor. This organization is Cherry Street Health Services. It is a federally qualified health center and a not-for-profit organization that offers comprehensive health services to low-income children and families. About 98% of the patient population is 200% below the poverty line and fewer than 10% have some form of private insurance. They have roughly 1200 diabetics out of a population of around 41,000 in the surrounding communities. Their services include: Medical, Dental, Behavioral Services, Vision Care, Nutrition, Prenatal and Pregnancy support, Health Education Classes, Assistance with Health Insurance, School-Health Programs, and Prescription Assistance. They have 9 separate locations located throughout the Grand Rapids, Michigan community. Their website is: www.cherryhealth.org. We believe this organization matches our criteria for standards, service, and suitability with our profession.

The operations manager, Kathy Sather, Nathan, and I met to discuss a generalized overview of the need at Cherry Street. Ms. Sather indicated to us that she is in need of a diabetic eye exam procedure for the student interns to follow or refer to. Along with the procedure information, she would also like us to include resources for the diabetic patient. I observed the need for diabetic care at this facility during my third year off-site intern opportunity. A large majority of the patient population at Cherry Street are diabetics, who can be uncontrolled

due to lack of insurance or money to purchase the proper medication. This increased my willingness to help people. I enjoy offering services to those who cannot afford them and it drives my willingness even higher when I know that there are patients available to help. I believe this diabetic exam reference guide will produce the standard of care required for the diabetic patient. It will better prepare the students for each forthcoming diabetic exam. I also believe that the resources given to the patients, will allow them to receive even more care than what they would have ever known about.

We agreed with Ms. Sather on the topics of her need and decided to present the idea to our supervising faculty doctor. She concurred with the proposal. A rewarding idealization for this project is the people who will benefit from our service. The diabetic patient will receive the proper and thorough ocular examination that is considered to be the standard of care. I believe this service is priceless. I anticipate that it will spill over for the care needed due to other diseases and the new optometry graduates will enter the profession with an upbeat and determined attitude to provide the best care possible to *every* patient.

Thoughts and ideas of formats will be the next item on our agenda. Creating a user friendly manual/reference guide for both the intern and the patient will be challenging. I imagine that the addition of color pictures will improve the standard text outline, while at the same time, provide a visual presentation of the retinopathy that can occur with uncontrolled diabetes. Nathan and I are excited to get started.

Week of September 11, 2005

This week of consultants work consisted of Nathan and I revising our working timeline (see Appendix A for 2nd working timeline), formulating an idealistic format, contacting Ms. Sather with the report of the approval, and to set-up a phone conference that will be acceptable for our schedule. Meetings with Ms. Sather have challenged us thus far. She is in Grand Rapids, Nathan is in Muskegon, and I am in Jackson. We believe that a phone conference will still enable us to propose ideas to Ms. Sather before an arranged meeting will need to commence. Being prepared will enable all of us to proceed with a smoother schedule.

Diabetes has been discussed in prior journals, but I would like to delve further into the definition of the disease. There are two types of diabetes: Insulin Dependent (Type I), and Non-Insulin Dependent (Type II). Our pancreas will discontinue producing insulin in Type I, causing us to provide ourselves with insulin exogenously. In Type II, our cells will discontinue receiving insulin mainly due to a lifelong diet consisting over exceeding amounts of insulin being produced. Risk factors of becoming a diabetic include blood pressure averaging higher than 140/90, immediate family members with diabetes, being overweight, increased total cholesterol readings, average HDL value below 35, high (>250) average triglyceride levels, having an ethnicity of African American, Native American, Asian, Hispanic, or Pacific Islander, higher risk if you exercise < 3 times per week, and if you have had gestational diabetes or given birth to a child >9 lbs.¹ Common ocular symptoms of undiagnosed diabetes mellitus include

recent onset of blurred or fluctuating vision, or new onset diplopia. Systemic symptoms may include polyuria, polydipsia, polyphagia, unexplained weight changes, dry mouth, pruritis, leg cramps or pains, impotence, delayed healing of bruises or wounds, and recurrent infections of the skin, genitalia, or urinary tract.² If you begin to experience any or all of these symptoms, it is highly recommended that you follow up with your primary care physician to begin testing if indicated.

Blood sugar levels are measured by the physician and also by the patient. The patient will check their blood sugar levels from never to up to 5-6 times a day, depending on the physical symptoms of the patient. A good diabetic patient will log their blood sugar results, monitor their diet, and compare the two. Usually when the doctor reads the patient's blood sugar level, he will run an HbA1c lab order. This HbA1c result shows the physician what the patient's blood sugar has averaged over the past 2-3 months. The range of low to high for an HbA1c is between 4.4 and 6.4 to be considered normal or safe. As the HbA1c value gets higher, this indicates that the patient's blood sugar level has been more uncontrolled. A general rule of thumb is to multiply the HbA1c value by 20 to get a good estimate of where the patient's blood sugar has averaged (i.e. a value of 8.0 will tell the doctor that the blood sugar level has averaged around 160). Also as the HbA1c level remains above the normal range, the chance for diabetic complications increases. The Diabetes Complications and Control Trial (DCCT) compared the use of intensive therapy with conventional therapy. The intensive therapy aimed at achieving near normoglycemia thus reducing the risk of

microvascular and neurologic complications of type 1 diabetes. The DCCT concluded that controlled clinical trials involving those patients with type 1 diabetes and those with type 2 diabetes have conclusively demonstrated that intensive diabetes therapy aimed at lowering glycemic levels reduces the risk of diabetic retinopathy, nephropathy, and neuropathy.³ This trail showed that when diabetic keep their blood sugar levels at a normal range, the risk of complications are reduced.

Optometrists have a tremendous opportunity to observe the macrovascular and microvascular complications of diabetes with a non-invasive procedure. With a dilated fundus examination, we might be the first to diagnose complications associated with diabetes. Most other professions do not have this opportunity. Through my internships, I am progressing with my abilities to effectively communicate diabetes complications with my patients. I feel that this consultantship will further enhance my communication efforts, not only in the ocular portion, but with full systemic complications, lifestyle changes, diets, and medications. This will improve my individual service and my examination skills with my diabetic patient population.

Through research, there are many web sites available with information pertaining to diabetes for the patient, and for the physician. Several sites include: www.diabetes.org, www.eatright.org, and www.ndep.nih.gov. Future journals will include epidemiological research and studies.

1. Barnett, P. M.D., PhD, Braunstein, G. M.D. CECIL Essentials of Medicine. W.B. Saunders Company. Philadelphia. Fifth ed. 2001.

2. Cavallerano, J. OD, PhD. Ramachandiran, C. MD. Optometric Clinical Practice Guideline Care of the Patient with Diabetes Mellitus 3rd revision. Retrieved July 2005 from <http://www.aoa.org/documents/CPG-3.pdf>.

3. Intensive Diabetes Treatment and Cardiovascular Disease in Patients with Type 1 Diabetes. The New England Journal of Medicine December 22, 2005; 353:2643-2653.

Week of October 9, 2005

Continuing on with our consultantship, Nathan and I have begun to perform some individual research with plans to bring it together in the near future in order to see what direction we can head into with the different data available. We have not set certain criteria for each of us to research so we can gather many different ideas.

I started my research using a simple search on the internet. I was able to locate information on all aspects of the disease. It really helped me to fully understand that there is so much more to diabetes than just the ocular aspect. I am looking forward to helping patients better understand the complications from diabetes, especially with the eyes. I think that patient education on lifestyle changes, nutrition, referral sources, and importance of regular examinations are all important compliance issues that I will be able to convey to the patient in order to keep compliance high.

One of the most important pieces of data that I located was on the Diabetes Outreach Network site for Michigan, www.diabetesinmichigan.org. I found a resource guide for all aspects of diabetes including dental care, foot care, low vision help, care for seniors, transportation, and many more within this guide. I was able to pinpoint all resources to Grand Rapids, MI. I plan on listing all of the services available in Grand Rapids, MI on a handout for the patient. I believe that this will be an important part of our manual for the patients. I hope that the community will respond positively with this increased patient awareness

of their services. Another very important resource that I located was on the American Optometric Association (AOA) website, www.aoa.org, entailing the standards of procedure and care of the diabetic patient. I found this to be quite helpful for students who wish to review the completeness that it takes for true diabetic eye care. Both of these resources will be included within the consultantship manual for student and physician reference. I also discovered the American Diabetic Association website, www.diabetes.org, which also has many necessitated resources for the patient and the physician.

I feel that our consultantship is starting to take shape. This diabetic manual will be very useful for students to reference. We will also include a patient handout explaining diabetes and the importance of blood sugar control; quick references for the student and professional pertaining to ocular diabetic retinopathy classification, Early Treatment of Diabetic Retinopathy Study (ETDRS) findings, clinical care guidelines set by the American Optometric Association, easy to locate medication lists, and much more. It may seem as though the reference material should already be known by the student, but these are third year students who may not have had a lot of exposure with diabetic examinations yet. Our intention is to have a user-friendly manual accessible for the student.

Week of November 27, 2005

Nathan and I decided on choosing separate steps of the consultantship manual and creating them for our next meeting. Nathan was assigned to create the table of contents and I was assigned to create a diabetic eye examination form.

I have observed many different examination forms at different offices, so I felt as though I would have an easier time while creating a specific form. Before I started, I was reminded that students will be using this form. I was affected by knowing that students could benefit from an overly easy form to follow. I know the current primary care examination form at Cherry Street Health Services (CSHS) optometry clinic is very basic, requiring the student to fill in almost all of the examination findings with little structure to follow. I postulated that if the diabetic examination form entailed all of the structures with given results, the students would just have to circle the finding. I feel as though this would eliminate illegible hand writing, misplaced findings, or other possible mistakes. Also, I believe that only having to circle results will decrease examination time. This is important due to having less examination time at CSHS compared to the school. Trying to keep the diabetic examination form down to a single front-and-back sheet was going to be difficult due to the extent of diabetic involvement in the eyes alone.

I began to create the diabetic examination form by writing it down on paper. I included a list of the diabetic medications so the student just had to

locate it and circle it. This can be a difficult piece of information to obtain from the patient, because they do not always know what the name of their medicines are, especially if they are on several to many. After the patient history, everything seemed to flow smoothly. I made sure to insert areas of accommodation testing, binocular testing, and areas for gonioscopy, blood pressure, stereoscopic testing, and color testing to include other primary care testing. In the end, I had an acceptable prototype.

I found it challenging to sit in front of a blank sheet of paper and recall a full exam with all possibilities. I learned about myself that I could close my eyes and imagine myself giving an exam and all of the questions I ask to pertain to that patient. This was reassuring that I will be proficient and thorough with my patients.

During this week, Nathan and I decided to postpone anymore time devoted to our consultantship in order to fully concentrate on the second part of national boards. We still feel as though we are moving at an adequate pace to finish the consultantship manual in a reasonable time frame.

Week of December 25, 2005

During this week, Nathan and I compiled our data collection and set forth to put a rough draft of our consultantship manual together. This meeting was productive in both personal and professional manners. We have again revised our working timeline and this should make it the last time. See Appendix A for the 3rd working timeline.

Even though we have not been to Cherry Street Health Services (CSHS) since our meeting with Kathy Sather, I feel that we have already done so much for the diabetic patient. Since Nate and I have done eye examinations at CSHS, I can understand who this information is truly targeted at. These low-income diabetics will really benefit from the patient handout and the list of resources. This has affected me by letting me understand how important it is to relay to the patient that keeping their blood sugar levels between 80-100 will help control their diabetes as well as possible. Our handout illustrates the ocular complications due to uncontrolled blood sugar levels and will allow the patient to visually comprehend what can go wrong with easy to read instructions.

Nathan created a working table of contents for the consultantship manual. Our main categories include Patient education, Examination materials, Quick reference materials for student interns, and referral and reference resources. Our resources for epidemiological evidence include the American Diabetes Association, the American Optometric Association, the Physicians' Desk Reference, the Michigan Outreach Network, and others. The patient education

handout will explain what diabetes is, who and what can help, and pictures to illustrate the difference between the normal retina and the diabetic retinopathy retina due to uncontrolled blood sugar levels. The patient handout will include a comprehensive resource guide for the Grand Rapids, MI community for things like dental care, foot care, eye care, support groups, transportation, and care for seniors, emergency medicine services, and much more. The handout will be at or around a sixth grade reading level and will include a Spanish version. The examination will cater to everything involved with a diabetic eye examination and will also include all of the amenities on a primary care examination form. The quick reference materials for student interns and professionals will include those normative values, classifications of non-proliferative and proliferative diabetic retinopathy, and when to refer to a retinal specialist. The referral and reference resources will include the resources from which we drew our information. This consultantship manual will be helpful to all who choose to use it.

This meeting was also about working together with a friend and a cohort. Nathan and I have similar personalities and views on patient care. We work together well and efficiently. For future students, I would recommend that they also follow suit for any project. Our consultantship advisor has been very helpful in getting us started in the correct direction and has been a great resource to have.

Week of January 29, 2006

During this week, Nate and I added little details to our prototypes to further complete our rough draft. We were able to exchange our prototypes with each other via email. Nathan is finishing his last rotation in Maryland and I am in Michigan. We are unable to meet in person, but have already discussed the method of communication with Kathy Sather because of this situation. We have all agreed to communicate via e-mail.

I took the risk of sending our consultantship diabetic eye examination form to the optometrist at Cherry Street Health Services (CSHS) for her thoughts and critique. In her response, she conveyed the message of impracticality for such an exam form in everyday clinic. I thought about this message for quite some time. As a fourth year student about ready to graduate, I can fully understand her thoughts. Having different exam forms can be tedious and confusing for everyday clinic. Creating the diabetic eye examination form for our consultantship was geared towards students. As a third year student at the Michigan College of Optometry (MCO), you see patients for half of your schedule and continue with lecture for the other half. You share the patient load with 33 other students. The number of patients that you see in your third year can have a lot of variability. I feel as though having an examination form that is easy to follow and fill out, will allow the student to concentrate on the educational portion of the examination more versus filling out a non-specific examination form. CSHS allows 15-30 minutes less for an examination compared to MCO. Many times the patient is Hispanic and a translator is needed, causing even more

examination time needed. Also, if you are in private practice using a specific examination form, when you opened up a file and saw a diabetic eye examination form from the previous examination, it helps you get into the diabetic care mindset much easier. The contact lens chief at MCO has different color contact lens examination forms for different portions of the contact lens examination. When you are reviewing the file, it is very simple to know directly where to look for information with a specific examination form. Again, I understand and appreciate her suggestions and comments, but I fully support the need for specific examination forms, especially for students who are still learning. I will see if this risk will pay off in the end. See Appendix A for a copy of the diabetic examination form.

With the obesity epidemic, it is my intention to provide these patients with information on preventing complications associated with excessive weight, like diabetes. See Table 1 and 2 in Appendix A for medical conditions associated with increased body mass index for men and women. I know that there are many resources for professionals to obtain in order to educate the patient on this issue at www.obesity.org. I hope that each of us takes advantage of these resources. No matter what type of examination form is used, it is our duty to provide the best standard of care for the patient. This consultancyship has allowed me to really appreciate how many diabetics need help. It is fascinating to watch myself and my classmates continue to grow in caring for the patient and providing the very best care that we can.

Week of February 26, 2006

The rough draft for our diabetic consultantship manual has come together nicely. We have sent it off to our supervising doctor for her evaluation. We have run into problems with formatting our manual. It was our intention to convert all of our information that we have gathered and created into a PDF format, but this has proven to be too time consuming and has caused us many difficulties when we try to change something. We have chosen to reformat all of our information back into a Word document and leave the information that we originally found in PDF in the same format. One might think that sending information back and forth through email would be easy, but I caution those who wish to attempt this in the future. Email has been useful to us to send information back and forth, to communicate quickly, and to allow professionalism at an easier medium. This skill is helpful to learn first to help with future communications.

Since our manual is almost completed, I am going to educate the reader on the statistics of diabetes. I have found this data to be staggering. Recent updated research shows 20.8 million people in the United States have diabetes or 7% of the population. The number of diagnosed cases is around 14.6 million and undiagnosed around 6.2 million people. And yet, 41 million people have pre-diabetes along with 1.5 million new cases of diabetes were diagnosed in people aged 20 years or older in 2005. In ages 20 years or less, about one in every 400 to 600 children and adolescents has type 1 diabetes and two million (or 1 in 6 overweight adolescents) aged 12-19 have pre-diabetes. In ages 20-60, 20.6

million, or 9.6% of all people have diabetes. In ages 60 years or older, 10.3 million, or 20.9% of all people have diabetes. For men 20 years or older, 10.9 million have diabetes and 9.7 million women 20 years or older have diabetes. The prevalence of diabetes is at least 2-4 times higher among non-Hispanic Black, Hispanic/Latino American, American Indian, and Asian/Pacific Islander women than among non-Hispanic White women. The estimated total (direct and indirect) costs of diabetes in the United States in 2002 was \$132 billion.¹

In Kent County, Michigan, where CSHS is located, an estimated 30,220 adults (aged 18 and up) have been diagnosed with diabetes in 2002. This includes an estimated 3,530 Latinos/Hispanics (8.65%) diagnosed with diabetes. In addition, it is estimated that 430 or 0.32% persons under the age of 18 have been diagnosed with diabetes. National studies suggest that an additional 11,260 Kent County adults have diabetes but are not aware of it. Among Kent County adults, 80,650 have pre-diabetes (40.1% of adults 40-74 years of age).²

The hardest part for me to understand is why we are letting our youth become part of the obesity epidemic, exposing them to type 2 diabetes at such a younger age than normal. We have the resources and availability of teachers and parents to educate the children on healthy eating habits and exercise activities that will prevent them from this disease. I believe that if more students will take the opportunity to become involved in service learning for the communities they live in to help parents and teachers with educating our youth, we can make this country much healthier and avoid the high direct and indirect

costs that we are currently incurring. I believe that one easy step that I can take is to have handouts and brochures in my office about diabetes prevention for my patients, no matter what age. Getting the word out is half the battle and providing the public with visual aids will make it easier to comprehend the complications we are exposing our children to by not becoming more involved with their dietary and exercise habits.

1. *Total Prevalence of Diabetes & Pre-diabetes.* Retrieved January 2006 from <http://www.diabetes.org/diabetes-statistics/prevalence.jsp>.

2. *Michigan Department of Community Health: Diabetes, Kidney, and other Chronic Diseases Section: August 2004.* Retrieved January 2006 from <http://www.michigan.gov/diabetes>.

Week of March 12, 2006

This week has mainly consisted on formatting the manual into a final draft. Nathan has sent me the manual via email and there has been some formatting issues as usual that I have to re-edit. It was much easier this time because we chose to format everything that we could into Word documents. Nathan has done almost all of the computer work at his residence in Maryland. His dedication and devoted thoroughness has really made this manual what it is. He has been a great colleague to work with.

I wish that it would have worked out that Nathan and I were closer to our agency for our consultantship. We have both only been there once for the initial meeting with Kathy Sather. I think that we would have been done with the manual a lot sooner if we would have been closer. Our fourth year of optometry school is the mos fun and in my mind, the most important. You are away from the school at different extern sites, learning first hand what optometry is really about. I would suggest to future students that you can find a partner that is able to do this. Nathan and I have worked well together being states away from each other, but we have had to hurdle some tough obstacles through emailing and have compiled quite a few minutes on our cell phones. All in all, I am very happy where we are with this project.

I believe there are two essential portions of our manual: the patient education hand-out and the AOA reference guide for the diabetic eye exam. The hand-out explains diabetes very well and gives pictures of diabetic retinopathy

and what your vision might be if you had it. Pictures do mean a thousand words sometimes and I believe these do. I have heard many of my patients say that they think vision is the most important sense. What better way to demonstrate how important controlling your blood sugar really is than with pictures. The reference guide will allow the student to quickly access the means of definitions for each classification of diabetic retinopathy and also for when to refer and when to observe. I remember seeing diabetic retinopathy for my first time, and I have to admit that I was more fascinated by the appearance of the fundus and was not concentrating on whether or not I should be sending the patient out for further treatment. Again, pictures can say a thousand words. I was inexperienced back then and feel much more comfortable now on handling my diabetic patients. What a year of examinations can do for you.

I have learned that there is much more than selling glasses in this profession. Taking on the responsibility of my patients eye care is my number one priority.

Concluding Journal

This consultantship reminds me of the end of a semester. I started out with a plan, or a syllabus (per say). This plan had goals: to expand our knowledge base for our future career and to provide a service for our community.

I started out with a simple plan of making a manual for the diabetic patient and examination. Along the way, I have gathered information, some that I remember from lectures, and some that I have learned for the first time. Even though my statistical and classification information has already been tabulated, organizing a full manual has been challenging. Ideas that have worked and kept me on track included the working timeline and the table of contents. I believe these were key items in making my gathering and organizational procedures move smoother and more efficiently. As the research process mounted, I was able to know what steps should come next and concentrate on one step at a time.

This consultantship will help me to provide more proficient care to my diabetic patient. I will be able to explain the disease process more easily and pass on the importance of annual dilated eye exams. This learning process will spill over into other areas of health concern, like ARMD, glaucoma, and inflammatory conditions, allowing me to already have a method of educating the patient in a comprehensive and understandable manner. Avoiding confusing explanations will help the patient to understand what is happening to them more

easily and may even spark an interest in them to research their disease, making it a full treatment plan.

This consultantship has helped me to grow into a more compassionate professional. I feel as though I am putting myself into the patient's shoes and trying to understand their view points and the questions that they will have. I will try to give the patient what they need to hear in a way that will heal them and not maim them. Every patient needs compassion and the security that they will be receiving the best treatment.

Throughout this consultantship, I have learned more about the Grand Rapids, Michigan community. I grew up under 40 miles from Grand Rapids, but I have only recently come to realize the diversity that the city has within its population. Interning at Cherry Street Health Services during my third year of Optometry gave me the first hand knowledge of what this great organization stood for. It has opened its doors to the whole community and given it the love and nurture that it needs. It supplies the people with essential health care. I am proud to be a part of that. I can only hope that students continue to grow with this organization. I hope that they will not only use our manual, but will expand it or branch off of it to increase the number of people helping the community that they live in.

This consultantship has been one of the most rewarding experiences of my life. I challenge everyone to give back to their community.

Appendix A

Table 5

Co-morbid Conditions of Obesity	
Before Surgery	Improved After Surgery
Cardiovascular System	
<ul style="list-style-type: none"> • Chronic Venous Insufficiency • Hypertension • Hyperlipidemia • Atherosclerosis • Deep Vein Thrombosis • Peripheral Vascular Disease 	<ul style="list-style-type: none"> • Chronic Venous Insufficiency • Hypertension • Hyperlipidemia
Digestive System	
<ul style="list-style-type: none"> • Gastroesophageal Reflux Disease • Gallbladder Disease • Nonalcoholic Steatohepatitis 	<ul style="list-style-type: none"> • Gastroesophageal Reflux Disease
Endocrine System	
<ul style="list-style-type: none"> • Diabetes (Type 2) • Pancreatitis 	<ul style="list-style-type: none"> • Diabetes (Type 2)
Musculoskeletal System	
<ul style="list-style-type: none"> • Osteoarthritis • Rheumatoid Arthritis • Sever's Disease • Vertebral Disk Herniation 	<ul style="list-style-type: none"> • Degenerative Joint Disease Pains • Hiatal Hernia • Low Back Pain
Nervous System	
<ul style="list-style-type: none"> • Pseudotumor Cerebri • Carpal Tunnel Syndrome • Stroke 	<ul style="list-style-type: none"> • Pseudotumor Cerebri
Reproductive System	
<ul style="list-style-type: none"> • Infertility • Menstrual Abnormalities • Pregnancy Abnormalities • Hirsutism • Impotence • Polycystic Ovarian Disease 	<ul style="list-style-type: none"> • Infertility • Menstrual Abnormalities • Pregnancy Abnormalities

<ul style="list-style-type: none"> • Neural Tube Birth Defects 	
Respiratory System	
<ul style="list-style-type: none"> • Asthma • Obesity Hypoventilation Syndrome • Sleep Apnea • Pulmonary Hypertension 	<ul style="list-style-type: none"> • Asthma • Obesity Hypoventilation Syndrome • Sleep Apnea
Urinary System	
<ul style="list-style-type: none"> • Urinary Stress Incontinence • Gout • Renal Disease 	<ul style="list-style-type: none"> • Urinary Stress Incontinence • Levels of Uric Acid
Dermatology System (Skin)	
<ul style="list-style-type: none"> • Cellulitis • Fungal Skin Infections • Panniculitis 	
Immune System	
<ul style="list-style-type: none"> • Cancers (Breast, Prostate and Colon) • Poor Healing of Wounds and Infection 	

AOA Fact Sheets: Morbid Obesity- Table 5 Co-morbid Conditions of Obesity. Retrieved May 2005 from <http://www.obesity.org/subs/fastfacts/morbidobesity.shtml>.

Table 1. Prevalence of Medical Conditions by Body Mass Index (BMI) for Men				
Medical Condition	Body Mass Index			
	18.5 to 24.9	25 to 29.9	30 to 34.9	≥ 40
	Prevalence Ratio (%)			
Type 2 Diabetes	2.03	4.93	10.10	10.65
Coronary Heart Disease	8.84	9.60	16.01	13.97
High Blood Pressure	23.47	34.16	48.95	64.53
Osteoarthritis	2.59	4.55	4.66	10.04
Source: NHANES III, 1988 - 1994.				

Table 2. Prevalence of Medical Conditions by Body Mass Index (BMI) for Women				
Medical Condition	Body Mass Index			
	18.5 to 24.9	25 to 29.9	30 to 34.9	≥ 40
	Prevalence Ratio (%)			
Type 2 Diabetes	2.38	7.12	7.24	19.89
Coronary Heart Disease	6.87	11.13	12.56	19.22
High Blood Pressure	23.26	38.77	47.95	63.16
Osteoarthritis	5.22	8.51	9.94	17.19
Source: NHANES III, 1988 - 1994.				

AOA Fact Sheets: Health Effects of Obesity- Table 1 Prevalence of Medical Conditions by Body Mass Index (BMI) for Men. Retrieved May 2005 from <http://www.obesity.org/subs/fastfacts/morbidobesity.shtml>.

AOA Fact Sheets: Health Effects of Obesity- Table 2 Prevalence of Medical Conditions by Body Mass Index (BMI) for Women. Retrieved May 2005 from <http://www.obesity.org/subs/fastfacts/morbidobesity.shtml>.

Good afternoon,

My name is Nathan Johnson/Brian Weller, I am a fourth year optometry student at the Michigan College of Optometry. We are offering gratis optometric consulting services as part of our doctoral curriculum. Is there someone available for me to speak with regarding our mission and services?

I would like to take just a minute of your time to educate you on our mission and service.

As you may be aware, optometry provides our health care with vision and ocular health services, and optometrists are specialists in every aspect of vision care. We understand and have extensive knowledge of environmental vision, safety issues and eye ware, and ocular disease prevention and treatment.

We selected your organization based upon the particular population you serve and special services you provide. Our extensive knowledge of vision and eye care needs is at your disposal.

We would like the opportunity to meet with you and discuss any problem or need related to vision and your organization.

I'll tell you how it works. Once your specific need is established, we will conduct epidemiological research to clearly define the problem. Optometric solutions will then be proposed to you. Finally, we will present you with a sustainable product for your future benefit.

We will meet with you to discuss your need/problem. We will research the possible product solutions and present them to you. We will produce and present to you a sustainable product that meets your need. We will provide you with feed back throughout the process via phone calls, email, and personal meetings when appropriate.

To reiterate, all of our services are offered to you gratis, we are doing this as a community service project and service learning experience. We are very passionate about eye care and would love the opportunity to work with your respected organization.

Do you have any questions?

You can reach us as (269) 274-4110 / (231)349-1923 or via email at nathandjohnsonod@yahoo.com or blweller@yahoo.com.

We will follow up with you in a few days with a letter. Please do not hesitate to contact us with any concerns or questions. We are very excited to work with you.

Thank you for your time. Have a great day!

Working Timeline Edition 1

Establish initial contact with organizations via letter by June 18, 2005. Anticipate receiving a response by July 2, 2005. Meeting cycle will begin within one week of matching with an organization.

Meeting:

1. Establish problem/need by July 16, 2005.
2. Present research and data collection within one month of the first meeting or by August 16, 2005.
3. Present initial optometric solution within one month of second meeting or by September 16, 2005.
4. Present sustainable product within two weeks of third meeting or by September 29, 2005.

Working Timeline Edition 2

Student Diabetic Exam Manual

1. Contact established with Cherry Street Health Services Kathy Sather by August 29, 2005.
2. Approval of diabetic exam manual and Cherry Street Health Services by supervisor Rene Mika on September 6, 2005.
3. Confirmation letter sent to contact Kathy Sather. Set up date to meet with her or conduct a phone conference to discuss further specifics, format, and outline of diabetic exam manual by September 16, 2005.
4. Present research and data collection by October 14, 2005.
5. Present initial optometric solution/rough draft of manual by November 18, 2005.
6. Present final sustainable product by December 23, 2005.

Working Timeline Edition 3

Student Diabetic Exam Manual

1. Contact established with Cherry Street Health Services Kathy Sather on August 29, 2005.
2. Approval of diabetic exam manual and Cherry Street Health Services by supervisor Rene Mika on September 6, 2005.

3. Confirmation letter sent to contact Kathy Sather. Set up date to meet with her or conduct a phone conference to discuss further specifics, format, and outline of diabetic exam manual by September 16, 2005.
4. Delay project due to boards on October 14, 2005.
5. Present updated research and development including table of contents to Kathy Sather by December 2005.
6. Present initial optometric solution/rough draft of manual to Dr. Mika Kathy Sather by January 31, 2006.
7. Present final sustainable product in February 2006.

SERVICE LEARNING: OPTOMETRIC CONSULTANTSHIP JOURNAL

by

Nathan D. Johnson

**This paper is submitted in partial fulfillment of the requirements for the degree of
Doctor of Optometry**

**Ferris State University
Michigan College of Optometry**

March, 2006

Entry #1: May 5, 2005

Abstract

Service learning can be defined in many ways depending on the program and educational level involved. Service-learning is a structured learning experience that combines community service with preparation and reflection. Students engaged in service-learning provide community service in response to community-identified concerns and learn about the context in which service is provided, the connection between their service and their academic coursework, and their roles as citizens.

Service-learning differs from traditional clinical education in the health professions in that:

- Service-learning strives to achieve a balance between service and learning objectives - in service-learning, partners must negotiate the differences in their needs and expectations.
- Service-learning places an emphasis on addressing community concerns and broad determinants of health
- In service-learning, there is the integral involvement of community partners - service-learning involves a principle-centered partnership between communities and health professions schools.
- Service-learning emphasizes reciprocal learning - In service-learning, traditional definitions of "faculty," "teacher" and "learner" are intentionally blurred. We all learn from each other.
- Service-learning emphasizes reflective practice - In service-learning, reflection facilitates the connection between practice and theory and fosters critical thinking.

- Service-learning places an emphasis on developing citizenship skills and achieving social change - many factors influence health and quality of life. The provision of health services is not often the most important factor. In service-learning, students place their roles as health professionals and citizens in a larger societal context. ¹

In researching service learning programs in health professions curriculums it becomes very obvious that optometry is lagging behind other professions. Numerous programs exist in nursing, occupational therapy, pharmacy, and physical therapy for example. The Community Campus Partnerships for Health web site demonstrates optometry's lack in service learning programs. A simple pub-med search for "service learning optometry" yields only four citations. ^{2,3,4}

The first order of business for our project is solidifying our program in the form of an abstract. Writing the abstract allows us to put our goals and mission into words and document what we intend to accomplish. We will to define service learning in terms of optometry, not only for the structure of this project or those who will read it, but for our selves as well.

Writing the abstract is not as easy as first thought. Several drafts are needed before we submit the final abstract to our supervisor. We now know more in depth what we are supposed to accomplish through a program like this. There is a structure that must be followed in order to convey our experience in a productive, comprehensible, and meaningful way. Through the development of the abstract we compose the structure of the program. In the future we will be able to look to the abstract for guidance and as a

check to be sure we are accomplishing what we set out to.

One main issue is who the author of this program needs to be. We are fulfilling a requirement for our doctoral program through the completion of this program. At the same time, we are working with our supervisor to set an example for future optometric doctoral students, that service learning can and should be an integral part of our education. As we see it, we the optometric doctoral students are the authors of this program. We should be the authors of each and every aspect of the final sustainable product. That being said, we will still need guidance and experienced editing to make our program and the product it yields as professional as possible.

Although our initial experience and assignments have been frustrating at times, I am excited to see where this program will lead us. There are unlimited possibilities as to what type of organization we will work with, and what the final product will be. We will likely decide more details at our next meeting.

1. Seifer SD. (1998). "Service-learning: Community-campus partnerships for health professions education." *Academic Medicine*, 73(3):273-277.
2. Coroneos R. (2005). "National Resources for Service-Learning and Community-Campus Partnerships". *Community-Campus Partnerships for Health (CCPH)*. http://depts.washington.edu/ccph/pdf_files/slresources-aacp.pdf (accessed May 2005).
3. (2005). *Community-Campus Partnerships for Health (CCPH)*. <http://depts.washington.edu/ccph/servicelearningres.html#Optometry> (accessed May 2005).
4. (2005). *www.pubmed.gov A Service of The National Library of Medicine and the National Institutes of Health* <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?CMD=search&DB=pubmed> (accessed May 2005).

Entry #2: June 29, 2005

Initial Timeline

Our most recent meeting sets the tone for our program timeline. The past several weeks are dedicated to contemplating and researching community organizations that have potential for our program. Several criteria determined the eligibility of an organization. This is a service learning program, so we feel it necessary that the group we are serving also serve a portion of the community at large. The organization must serve a specific community group. Any organization could potentially have optometric needs. We attempt to narrow the field to those with higher probability of optometric needs. Seven community agencies to initially contact are currently identified. They included Champion Fitness, an athletic club and community center; Holland Home, a senior community center; YMCA of Grand Rapids, a community and fitness center; Mars Hill, a local religious organization; Kent County Health Department, the county health department; Ferris State University Technical School, and Cherry Street Health Services, a not for profit community health organization.

An equal amount of time is committed to determining our initial timeline. We consider each of our schedules, as well as, the amount of time we predict it will take to complete each aspect of the program as basis for the timeline. The timeline consists of four intervals. First we will contact the community agencies and then set up a meeting schedule with them. Next we will identify the organizations need for our service. It should take us about one month to research and collect data on the identified need. Our goal is to present an initial optometric solution within one month of data collection. Finally give ourselves two weeks to present the final product following initial

presentation. Although it is unlikely that we will actually stick to this exact time line, it has given us the integrals of time that we will attempt to meet in accomplishing each stage of the program.

We are also composing an initial phone script for first contact with each agency. Several drafts are gone over to determine the final script. We want to present ourselves as health professionals and specialists out to provide our services free of cost. At the same time we want to be viewed as valuable and worthy of any work we do. The script gives us a standard presentation and allows us to communicate easily upon first contact.

This step of our program has given us experience in time management and planning. Also, we are learning to make educated decisions and actions to increase the probability of a successful program. We are gaining great experience in professional communication. Teamwork and communication are going to be of great importance if this program is to go smoothly.

Entry #3: September 6, 2005

Cherry Street Health Services Initial Contact

This week we met with Ms. Sather of Cherry Street Health Services (CSHS). Although we are not contacting all of the agencies, we will not pass up an opportunity of direct contact. Brian and Ms. Sather's conversation did not fully utilize the phone script, as Ms. Sather is familiar with our project because she works with our project supervisor Dr. Mika of The Michigan College of Optometry. Brian and I both worked with CSHS for a semester one day per week as optometric interns this past year. Ms. Sather is working with Dr. Mika on a grant related to diabetic health care. Dr. Mika mentioned our program to Ms. Sather and she thinks we may be able to assist her in developing a protocol for diabetic eye care at CSHS. Cherry Street Health Services consists of multiple facilities, each providing care to those without insurance or financially able to pay. The optometry clinic is located in the main facility on Cherry Street in Grand Rapids. The web site for CSHS is <http://www.cherryhealth.org/>. Their mission is: "Cherry Street Health Services is committed to providing the highest quality and most effective primary health care services to people of all economic levels, with a special sensitivity to the needs of economically disadvantaged people of diverse cultural backgrounds. Our holistic care will meet the physical and behavioral health needs of those we serve by removing barriers to healthcare and promoting prevention, personal responsibility, interdisciplinary treatment, health education and collaboration with other community partners."¹

We are fourth year optometry students and must complete three semester long

externships. We work forty hours per week, so finding time to meet with each other and with the agencies is a challenge. Much of our communication is over the phone and via email now, and that seems to be working well thus far. We are able to meet with Ms. Sather on a Monday afternoon during our week break from rotations. Our initial meeting with Ms. Sather defines our program and what we are attempting to accomplish for her. We use our abstract as a guide in presenting our goals and mission to her. Next we listen to Kathy explain what she needs.

According to Ms. Sather Cherry Street Health Services optometry clinic provides care to many patients with systemic diseases. Diabetes is very prevalent among the patient population at CSHS. The optometric interns that perform eye examinations are students, and are therefore learning and inexperienced. Ms. Sather would like to produce a manual for the interns on diabetic examination and care. The manual will provide educational resources for the intern and the patient, patient care examination protocol and standard of care for diabetic patients, referral sources for the diabetic patient, and numerous references for the intern.

Brian and I agree that we will take on the task of developing a diabetic eye care manual for the CSHS. The agency and need both meet the criterion necessary for us to complete our program. We will develop a sustainable product in the form of a diabetic eye exam manual. We are pleased to work with this agency and form a productive relationship. Upon presentation of this option to our supervisor Dr. Mika, she gives us approval to move forward.

The next topic of this entry defines our program more specifically. The identified need for CSHS community agency is a “Diabetic Eye Care Manual for student interns”. We offer expertise in the optometric management of diabetic eye disease. According to Ms. Sather Diabetic eye disease is prevalent in the population served by CSHS. Our personal experience as optometric interns, specifically at CSHS, allows us to produce a usable and efficient manual for other student interns.

Our Mission Statement:

“Perform role as primary eye care provider consultants and provide expertise to a community agency in eye care. Specifically, create a sustainable diabetic eye care manual for student interns specific to the Cherry Street Health Services optometry clinic protocol and patient base.”

Healthy people 2010 provides epidemiological evidence of the diabetic and diabetic eye health problems in multiple sub groups of the population. Ms. Sather points out that CSHS provides health care to sub groups of the population that match with the epidemiologic data indicating a problem of epidemic proportion. Of specific concern are the Hispanic Americans and African American populations.

Diabetic research that supports the need for this project includes the following. Healthy People 2010 Vision, Health Vision 2010 objective 28-5 addresses diabetic eye disease. This objective lists major resources and references for diabetic eye care practitioners. We will continue to review each of these sources for input into our project. Again, this