Parent Education: Eye Care for Children

An Interactive Qualifying Project Report submitted to

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fulfillment of the requirements for the Degree of

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EyeCare Project

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Abstract

The Armenian EyeCare Project's (AECP) goal is to teach rural communities about the importance of eye health and eliminate preventable blindness in Armenia. Through interviews, surveys, and case studies, we collected and analyzed data that were useful to compile recommendations for AECP to develop more effective workshops on common eye diseases and traumas in children to help educate parents and encourage seeking professional help from ophthalmologists. Furthermore, we provided ideas for future workshops that incorporated more active learning activities.

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Abstract	Amy Ngo	Taylor Wood
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Executive Summary	Diana Sargsyan, Amy Ngo	Amy Ngo
Introduction	Sarah Percifull	Amy Ngo
Background		
pages 15-16	Diana Sargsyan	Amy Ngo
pages 16-20	Taylor Wood	Taylor Wood, Sarah Percifull, Amy Ngo
pages 20-21	Amy Ngo	Diana Sargsyan
pages 21-22	Diana Sargsyan	Amy Ngo
pages 22-23	Taylor Wood	Amy Ngo, Taylor Wood
Methods		
pages 24-25	Diana Sargsyan, Taylor Wood	Amy Ngo, Taylor Wood, Diana Sargsyan
pages 25-29	Taylor Wood	Sarah Percifull, Taylor Wood
pages 29-31	Sarah Percifull	Taylor Wood
pages 31-33	Amy Ngo	Sarah Percifull
pages 33-36	Taylor Wood	Sarah Percifull, Taylor Wood, Amy Ngo
Results		
pages 37-43	Taylor Wood	Sarah Percifull, Amy Ngo, Taylor

		Wood
pages 43-45	Diana Sargsyan	Amy Ngo
page 46	Taylor Wood	Amy Ngo, Taylor Wood
pages 46-52	Amy Ngo	Diana Sargsyan, Taylor Wood
Recommendations	Sarah Percifull, Taylor Wood	Taylor Wood, Amy Ngo
Conclusion	Taylor Wood, Sarah Percifull	Taylor Wood
Appendix A	Taylor Wood	All
Appendix B	Taylor Wood, Amy Ngo	All
Appendix C		
Instruct. Case Study 1	Taylor Wood	All
Instruct. Case Study 2	Taylor Wood	All
Instruct. Case Study 3	Sarah Percifull	All
Instruct. Case Study 4	Diana Sargsyan, Amy Ngo	All
Appendix D	Taylor Wood	All
Appendix E	Taylor Wood	All

Table of Contents

List of Figures

Executive Summary

Since eye care is not a subject that has been a popular point of discussion among the general public in Armenia, families often don't realize the implications of an ongoing, untreated eye problem. Children are considered a uniquely affected population due to the lack of effective eye health and eye care. If proper medical attention is not easily accessible due to location, parents would refer to homemade treatments and advice from non-professional community members. However, not receiving medical attention for eye diseases in these affected children increases the risk of future traumas and blindness that cannot be treated.

Poor eye health may create negative consequences for children in more ways than just visual impairments. Problems with eye care can also affect children in school, limiting their abilities to read and comprehend at the same rate as their peers (Alvarez-Peregrina, 2020). Headaches and sore eyes are common side effects brought on by constant straining in attempts to combat visual blurriness. Such problems can further hinder the child's social development and academic motivation. Knowledge of eye care among parents and family members is important in order to acknowledge the potential of a problem as well as take the proper steps for treatment.

The Armenian Eye Care Project (AECP) was founded in 1992 to address the issue of bringing awareness to the importance of eye care in Armenia. This nonprofit organization is committed to offering Armenians access to high-quality eye care and seeks to eradicate preventable blindness in Armenia. Through working with the AECP, our goal is to continue their work alongside them by conducting ongoing research and gathering input from those affected by eye problems. Using workshops as an early intervention and prevention method, we will work

towards educating Armenian families about the importance of eye care and consulting medical professionals.

The aim of our project was to create effective workshops for the AECP to teach community members about eye care and diseases in children. Our project had four objectives:

1. Understand how previous countries and programs have conducted workshops and their efficacy.

2. Understand how parents think about the doctors and how to effectively communicate the importance of eye care.

3. Be able to create new workshops using feedback from existing ones, that are occurring while we are in Armenia.

4. Develop plans for future implementation and efficacy of workshops.

By achieving these objectives, we hope to increase the number of parents who prioritize their children's eye health and provide them with a better understanding of how to prevent eye traumas. With more knowledge about the effects of eye diseases, we hope that parents will be more inclined to make visits to the ophthalmologist when necessary.

To create effective workshops to be used by the AECP, we conducted surveys, interviews, and case studies. Surveys allowed us to collect various types of information from parents, such as how to effectively engage and inform workshop participants. Interviews were conducted with ophthalmologists, teachers, nurses, and parents to gather background information from different populations. Additionally, case studies were used to determine effective strategies used in previous workshops to be adapted and applied to future efforts.

The surveys were used to collect data on participants' knowledge of eye care and trauma and to understand workshop satisfaction and feedback. The surveys were conducted both before and after the workshops. The key points in creating a trustworthy and analytical survey included having a purpose, statistical importance of data, audience understanding, audience attention, and economic impact. Pre-workshop surveys were used to collect significant data before the participants attended the workshop and post-workshop surveys were used to collect data related to how the workshop impacted the participants. The surveys were administered in two categories, those who attended the workshops and those who received the information on Facebook. The data collected from the surveys were used to tailor lessons in certain regions to correspond with the knowledge level of that region.

Interviews were crucial for obtaining information not easily accessible elsewhere, particularly from locals in the community. The interviewees emphasized factors to consider when conducting successful workshops, such as clearly expressing the purpose of the workshop, asking straightforward and easy-to-answer questions, asking follow-up questions, adapting questions based on the group, and being aware of sensitive topics. Overall, the information gathered from interviews helped guide us toward our goal of improving workshops. By interviewing professionals with the necessary expertise, we were able to obtain a large amount of valuable information to use in presenting an effective workshop and ensuring that the audience retained the information.

We used case studies in two ways: for research and to create instructional case studies for use in workshops. The research approach using case studies allowed for a deep examination of alternative solutions and finding the most effective framework for evaluation. In addition, the

instructional case studies provided background information about eye concerns and engaged the parents in a discussion of the problem and recommended actions. The overall aim of the project was to promote group discussions, identify common questions, and provide new activities for future workshops. The use of case studies in this project related to achieving objectives one, two, and four, and provided a valuable resource for understanding past efforts and developing plans for future implementation.

　　　After conducting surveys, interviews, and case studies, we analyzed their results to provide recommendations for creating effective workshops for the AECP. Our first recommendation was to increase audience engagement throughout the workshop to ensure they were paying attention. We suggested using tactics such as photos to discuss topics instead of plain text on the slideshow presentation and asking questions throughout the workshop to create an environment where the audience feels more comfortable answering questions. Our second recommendation was to continue using surveys in the workshops. We found that surveys were a good method of observing the number of audience members who showed an improvement in the post-workshop survey result. A Facebook survey was also created for the AECP to post as a means of gaining more information about individuals who are unable to attend workshops. The posted survey aimed to collect information about what other communities were concerned about in terms of children's eye care. This was also helpful in maintaining the effectiveness of these workshops. Our third recommendation was to change the AECP video names. We recommended renaming the videos on YouTube to a title that relates to the video itself and providing the links as a resource for more detailed information after the workshop is concluded. Our fourth recommendation was to integrate more active learning into the workshop. This included possibly

editing the extensive video down to only include the most important information and trying to

remain under a five-minute period to avoid disinterest. The application of the information learned

and further understanding could be promoted through an active learning activity. For this, we

suggested activities such as instructional case studies, picture prompts, role-playing, and room

quizzes. These recommendations can significantly improve the effectiveness of the AECP's

workshops and ultimately lead to a better understanding of eye health and disease prevention.

Introduction

Eye care in Armenia is one of the most important, yet oftentimes overlooked, aspects of the country's healthcare system. Despite being a developing country, Armenia has a wide array of medical professionals, including ophthalmologists, within Armenia's hospitals and clinics. However, the need for eye care within Armenia has been increasing over the last several years, as more people become aware of the importance of eye care. This increase likely takes a toll on many of these healthcare professionals. The prevalence of eye problems throughout the country and the more frequent access to healthcare professionals have made it easier for Armenian families to better understand the importance of eye care.

Many people, especially children, around the world are affected by either visual impairments or blindness. In Armenian culture, parents are often less likely to seek a doctor for their children, as they are more accustomed to homemade remedies and treatments. This is one reason why children could be considered a uniquely affected population in terms of healthcare. Another aspect of the lack of eye care among children is the location of many medical professionals. Quite a large number of the doctors, facilities, and medical equipment in Armenia are located in Yerevan, causing families in other parts of the country to have a harder time gaining access to the same type of care. In addition, eye care is not a subject that has been a popular point of discussion among the public in Armenia, meaning that families often don't realize the implications of an ongoing, untreated eye problem. Due to this, many organizations, such as the Armenian Eye Care Project, have been created in order to encourage eye care within the country.

The Armenian EyeCare Project, a nonprofit organization, has a goal to bring awareness to the importance of eye care in Armenia. By partnering with the AECP, our goal is to help them with their work by conducting ongoing research and gathering input from local communities about their knowledge of common eye problems. In addition, we will work towards developing new workshop structures with which to better educate Armenian families about the importance of eye care.

Background

The Armenian Eye Care Project (AECP) was founded in 1992 by Roger V. Ohanesian, M.D., an ophthalmologist with a practice in Orange County, California (Armenian EyeCare Project, 2018). The AECP is a nonprofit organization committed to offering Armenians access to high-quality eye care. After Armenia's Minister of Health asked for support from the world community in late 1991 to combat a "rising wave of blindness in Armenia" and to address the nation's dire health problems, the AECP was established (Armenian EyeCare Project, 2018). Currently, they have regional eye centers in the Shirak, Lori, Tavush, Vayots Dzor, and Syunik regions.

The goal of the AECP is to make high-quality eye care available to everyone in Armenia and reduce preventable blindness (Armenian EyeCare Project, 2021). The AECP introduced the "Bringing Sight to Armenian Eyes" initiative in 2002 with the goal of eradicating preventive blindness in Armenia. A robust, comprehensive program concentrating on "direct patient care, medical education and training, public education, research, and capacity building" (Armenian EyeCare Project, 2018) is being used to carry out the "Bringing Sight to Armenian Eyes" project.

The AECP provides eye care and informs Armenians about the value of healthy eyesight. Their public education campaign, which focuses on prevention and early intervention, involves disseminating information on recognizing infantile and pediatric eye problems that need urgent treatment. The AECP has organized local community events, including visits to more than 400 educational institutions, and distributed more than 800,000 books, booklets, brochures, and other learning materials (Armenian EyeCare Project, 2018). They have also produced TV and radio public service announcements for Armenia's general population. The AECP also wrote and

published "Desunik's Game of Sight," a children's activity book on eye health, in 2017 (Armenian EyeCare Project, 2018). The book was developed to provide schoolchildren with an elementary knowledge of the anatomy of the eye, how it functions, and what potential eye diseases and traumas exist.

The ability to see comes from the capability of the eyes to focus on reflected light and process it. It allows a person to see shapes, colors, and intensity of light all in three dimensions. Various parts of the eye contribute to vision. As seen in Figure 1, the cornea, seen at the very top of the image, is a clear coating on the front of the eye. The role of the cornea is to help protect the sensitive parts of the eye and, with the help of the lens behind it, focuses the light into the retina (Sisson, 2018). The retina is on the inner circumference of the eye leading to the optic nerve and consists of many photosensitive cells that can create an image when light is projected onto them. This image is then received by many different nerves behind the retina and then transferred through the optic nerve to the brain (Sisson, 2018). The brain then processes the image and allows a person to react to what they are seeing.
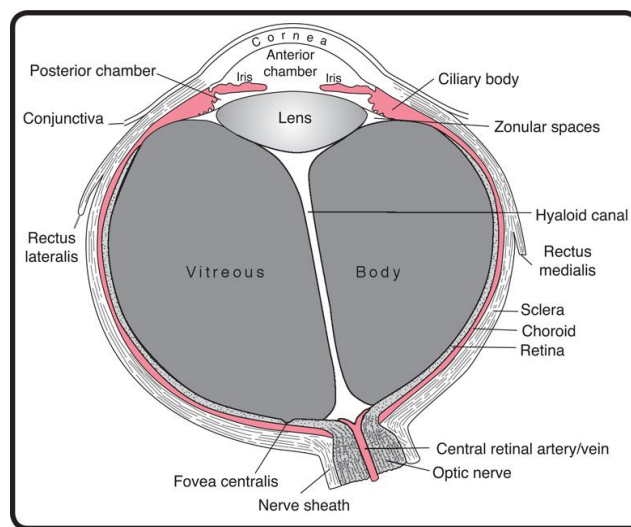

Figure 1 Anatomy of Eye (Sisson, 2018)

Eyesight can be tested in many ways. The ability to see fine details, typically referred to as sharpness of vision, is most commonly tested through the Snellen Chart (Armenian EyeCare Project, 2017). The Snellen Chart in Figure 2 is a poster placed approximately six meters (~20 feet) away from a patient. The chart has lines of varying letters starting very large on the top of the chart and becoming smaller with each line. The patient is then asked to read the letters from each line until they can no longer read or incorrectly identify them. The lowest line that the patient can correctly read correlates to the measure of vision the patient has. The first line corresponds to the numerical vision value 20/200, which is the level of vision that represents being legally blind. The visual value of 20/200 means that what one can see at 20 feet, a person with average vision can see at 200 ft. Towards the bottom of the chart, there is a row that corresponds to 20/20 vision (i.e. normal vision). Most charts have even smaller letters that correspond to measures of visions better than 20/20 (Stevens, 2007).
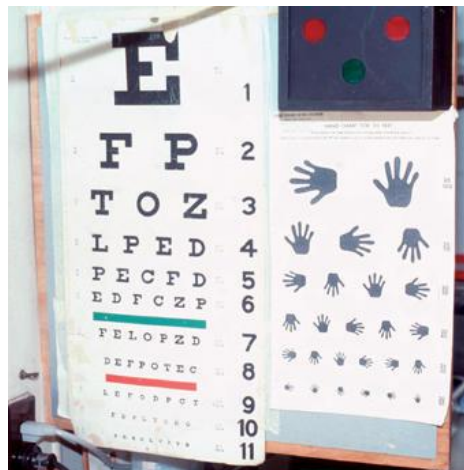

Figure 2 Snellen Chart (Stevens, 2007)

Eyesight can also be tested for the ability to see color. The ability to see color comes from a type of photosensitive cell in the retina called a cone. The eye has red, green, and blue cones.

The sensitivity of these cones to light correlates to the ability to see certain colors (Armenian EyeCare Project, 2017). A common method to test for color blindness is using the Ishihara Color Test. This test is done by an ophthalmologist showing the patient a circle composed of different dots – usually on a computer. These dots are different sizes and different colors, and when one looks at the full circle, it forms a number. If the patient has color blindness, it will be very difficult to see the numbers. However, if they are not color blind, it is very easy to detect the number (Choi, 2009). Figure 3 demonstrates the difference between what a color-seeing person (left) and a colorblind person (right) might see when observing an Ishihara test plate.
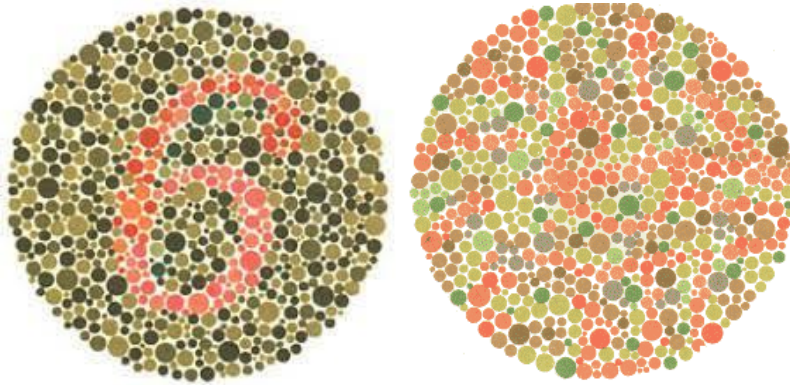
Figure 3 Ishihara Test (Colblinder, n.d.)

Overall, there are many different ways to test disease in the eye and detect what anatomy is affected by said diseases. Common diseases found in children are related to low vision. This includes refractive disorders like myopia, hyperopia, and astigmatism. The most common diagnoses in Armenian children are refractive disorders. These occur because of irregularities in the shape of the cornea, Figure 4. This causes light to be incorrectly focused on the retina (Armenian EyeCare Project 2017). There are three types of refractive disorders: myopia,

astigmatism, and hyperopia occurring in 60%, 33.7%, and 29.5% of children in Armenia,

respectively (Jrbashyan et al., 2022).
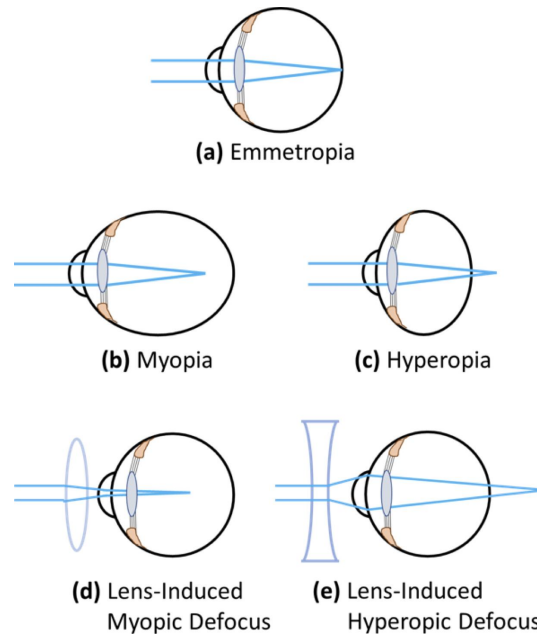
Figure 4 Refractive Disorders (Carr, 2017).

Myopia, or near-sightedness, is when distant objects appear to be blurry due to the

cornea being overly curved or due to large eye lengths from front to back (Carr, 2017).

Symptoms of myopia commonly appear in childhood and are typically in the form of headaches,

eyestrain, and squinting (Armenian EyeCare Project, 2017). Myopia can be corrected by glasses,

contacts, or refractive surgery using lasers (Armenian EyeCare Project, 2017).

Hyperopia, or far-sightedness, is where distant objects are seen clearly but objects close

to the eye appear blurry. This occurs due to an eye that is too short from the front to back (Carr,

2017). Farsightedness symptoms may include headaches, eyestrain, and squinting while

performing work up close (Armenian EyeCare Project 2017). This vision problem can be

corrected by glasses or contact lenses when performing work up close, such as while reading.

Astigmatism is when the cornea is shaped flatter and can be caused by genetics, injury, some eye surgeries, or a disease like keratoconus, which causes the cornea of the eye to bulge outward (Read, 2006). Both children and adults can have astigmatism, but it is estimated that over 25% or more of children may have undiagnosed astigmatism but are not aware (Armenian EyeCare Project, 2017).

Researchers have found that poor eyesight can have a negative impact on children's academic performance. Poor visual health poses a huge problem as it limits the ability of children to read and comprehend. In a study conducted in Spain on elementary school children, it was observed that students faced difficulties in seeing the chalkboards at schools and had trouble following along with the information displayed during class, resulting in lower levels of comprehension of the topics (Alvarez-Peregrina, 2020). On a similar note, children with poorer visual health suffered from headaches and sore eyes due to the constant strain that was put on their eyes. The additional strain on their eyes to decipher the blurry text and the need to constantly follow along with their fingers created lower aspirations than their peers (Alvarez-Peregrina, 2020). Poor visual health may also impact the social development of children. Students faced problems with their confidence as a result of poor vision, concentration, and performance (Dudovitz, 2016). The extra effort that had to be taken by these students in order to cope with not being able to see and comprehend as quickly as their classmates created a tendency to disengage with peers and a lack of interest to create connections.

Similar to the "Bring Sight to Armenian Eyes" initiative of the AECP, we concentrate on the children of Armenia and the importance of eye health in our project. Although the initiative is still fairly new, placing importance on improving the knowledge and health of the next

generation is a necessary step toward succeeding in the mission of the AECP. As a form of early intervention and prevention of eye diseases in children, workshops could be utilized to present important information to parents about identifying common eye diseases and the help that medical professionals can provide.

To conduct a workshop, it is crucial to understand how to educate and promote "safe eyes" awareness (Seimon, 2005). It is important to ensure that all children, beginning in early childhood, receive education about situations and behaviors that could result in eye injury. Training the mother, who provides most home healthcare, is essential to realize the previous point (Seimon, 2005). After instructing the mother and the young children, it is time to provide other individuals and groups with eye-care education. Discussing eye injuries during one-on-one contact raises awareness of potential hazards to the eyes and how to respond in case of injury. For example, reporters, educators, coaches, activists, and healthcare professionals might be invited to educate groups on eye trauma (Seimon, 2005). Another way to increase public awareness of eye injury prevention and treatment is by using relevant mass media, including print, electronic, and non-electronic (Seimon, 2005). Moreover, the last step in promoting awareness is pushing authorities and decision-makers to develop and enforce rules that will help prevent blindness from accidents, such as workplace health and safety requirements.

When creating a health education workshop, the first step is to consider the objectives of the workshop (Bronx Partners For Healthy Communities, n.d). What are the workshop's goals and what will the audience be able to do once they complete the workshop? In terms of medical content, a key goal is typically to foster an informed community and notify the people of the community about the resources that are available to them.

Another key factor in creating a health education workshop is to understand the intended audience. Their expectations, background knowledge, and needs are important in creating an effective workshop. If the workshop is to be effective the audience must be engaged and motivated. It is helpful if the presenters of the workshop "think of themselves as potentially being one of the participants" (Christodoulou, 2014). This can help put the complex medical content into an understandable and interesting workshop. It is important to note that most audiences don't expect the content of the workshop to be an "in-depth coverage of their expertise" (Christodoulou, 2014). Instead, in-depth information can be provided through references, brochures, websites, graphs, or other forms of media for those who would like to have a more in-depth understanding of the content.

It is important to understand not only who the audience of the workshop is, but to anticipate their needs as well. The amount of content that is required to achieve the goal of the workshop is important, especially for a group with a limited understanding of the medical content. The goal is to inform the audience, but not talk above their understanding or bore them. The needs of the audience can also be applied to the location of the workshop. When organizing the workshop, using information including the accessibility of location, type, and size of the room, and room arrangement is important to ensure that the audience can get to the workshop and that they are in an environment where learning can occur (Bronx Partners For Healthy Communities, n.d).

Finding ways to evaluate the workshop is also an important part to consider. Learning the effectiveness of a recurring workshop can allow for the improvement of the workshop over time. It is not only important to pick out a relevant form of evaluation but also to think of the economic

impact of the evaluation. Some forms of evaluation, such as surveying a population to identify a potential decrease in preventable diseases, are expensive and depend on the population to fill them out. Instead, comparing the rate of appointments, follow-up appointments, physicals, and screenings at local eye centers (or for more rural areas, at the AECP's Mobile Eye Hospital) from before and after the workshop took place is less expensive and can provide more insight to the impact on the community.

Methods

The goal of the project was to develop more effective workshops to be used by the AECP that teach community members about eye care and eye diseases in children. These workshops aimed to increase the number of parents who were more inclined to take their children to the ophthalmologist at the signs of risk.

There were four objectives necessary for the completion of this project:

1) Understand how previous countries and programs have conducted workshops and their efficacy.

2) Understand how parents think about the doctors and how to effectively communicate the importance of eye care.

3) Be able to develop more effective workshops using feedback from existing ones, that are occurring while we are in Armenia

4) Develop plans for future implementation and efficacy of workshops.

Our first objective was to understand past attempts and projects in other countries. Not only did this objective provide access to highly researched information, but it also set a good foundation for our workshops. In the context of understanding past attempts and projects in other countries, case studies allowed us to examine specific examples of initiatives that were implemented in the past. This allowed us to get a step closer to our second objective, which is understanding the attitudes of Armenians towards childcare and specifically eye care for children.

Our second objective centered on investigating medical care through the lens of Armenian parents. Many parents opt for traditional means of treating their child's eyesight issues, such as trusting the advice of community elders or using homemade remedies to take care

of their child's health. Additionally, we needed to get a good grasp of Armenian parents' mindsets and the generic picture that they hold around children's healthcare. By doing so, we came a step closer to communicating with parents more effectively and rendering them open to new horizons which our project sought to set forth.

Our third objective entailed receiving immediate feedback on workshops from AECP and the target audience and in turn, modifying our ideas to meet the newly set expectations. By trial and error, our goal was to improve on the current efforts of the AECP's workshops to promote an increase in the number of parents who take their children to the ophthalmologist.

With our last objective, we aimed to perpetuate the organization of these educational workshops after our project has ended. We strived to deliver a structure for future workshops that would be effective, instructional, and sustainable.

The methods that were utilized to obtain the project goal were surveys, interviews, case studies, and observations. The surveys were used to collect different types of information from parents including how to effectively engage and inform workshop participants. Interviews were conducted with ophthalmologists, teachers, nurses, and parents in order to obtain background information from various populations. Case studies were used to understand strategies in previous workshops in order to determine which plan would be most effective in improving the workshops. Finally, observations were used to collect qualitative data measuring the amount of engagement from the audience through overtly watching and analyzing the audience's behavior.

Surveys were used to assist us in achieving objectives two and three. They are a way of collecting information from a group of people through the participants' responses to questions, which can be further analyzed and interpreted. Surveys that are incorrectly done can be biased.

However, it is possible to create an effective survey that provides important statistical and qualitative data. Surveys were used both before and after the workshops. They provided us with information about how the workshop influenced parents' knowledge of eye care/trauma.

There are five key points that helped us create a trustworthy and analytical survey: having a purpose, statistical importance of data, audience understanding, audience attention, and economic impact. As mentioned previously, the purpose of the survey was to collect useful information about the participants' prior knowledge of eye care, workshop satisfaction, workshop feedback, etc. in order to complete the project goal.

Acquiring statistically significant data from the survey is the most significant aspect of the survey. It is critical to not include any double-barreled questions (questions that ask about multiple topics with only one answer available) in the surveys. Response scales were also used to ensure that the response options are specific. This is because there is a universally understandable consistency maintained either by a numerical scale or unbiased qualitative response options. Qualitative response options in surveys must have the same number of negative and positive terms at varying intensities with the inclusion of one neutral option. This way the reader is not biased in choosing an option based on the number of options. Ensuring the relevance and statistical importance of data is important in building a survey.

The next key point of the surveys was audience understanding. This required the survey to be simple, readable, and easy to understand. To achieve this the survey was composed of direct questions in plain language. These types of questions allow for clear and concise understanding with little to no re-reading.

Without the attention of the audience, one cannot assume that a survey will be completed. We used various ways to keep the audience attentive including putting easier questions at the beginning of the survey, limiting the number of questions, and adding a progress bar for the surveys taking place on Facebook.

The economic component was an important factor to consider. Due to the repetitive nature of the survey, it must be inexpensive to repeat. This was accomplished by using Google Forms and paper surveys. Another key component to maintaining low economic impact was to test the surveys before putting them to use. This allowed the survey to be thoroughly tested for any interpretive error, misunderstandings, length of the survey, etc. before being put into circulation. Thus, it would minimize the cost spent on including ineffective and inefficient surveys in the workshops.

There are two different types of surveys that were administered: pre-workshop surveys and post-workshop surveys. Pre-workshop surveys were used to collect significant data before the participants were able to attend the workshop and post-workshop surveys were used to collect data related to how the workshop impacted the participants.

Pre-workshop surveys exist in two categories: those who completed the survey in person and those who completed the survey on Facebook. For those that attended the workshop, the survey was administered to the participants via pen and paper.

The Facebook survey was used to gain insight from a broader group of participants. This survey includes three questions on the demographic of the participant: age and province of residence. This was collected to understand the general prior knowledge of Armenians in different regions. For example, if one region scored exceptionally high on certain questions

AECP can plan the workshop based on the sample population's understanding of eye care and health. Age is also important in planning because it gives AECP a basic idea of the age range of parents interested in the content. This can help determine how to structure the workshop because different age groups can respond differently to certain activities and workshop structures. There was also a question on the confidence level of the participant regarding how much they know about eye care and health in school-aged children. The last five questions included in the survey were all derived from the main topics AECP wanted to teach parents about eye care and health: ways to correct preventable blindness, the frequency with which one should visit the ophthalmologist, common dangers to the eyes, and the risks of home remedies. The questions asked in this survey can be found in Appendix A. The last five questions of the Facebook survey are the same as the questions used in the pre and post-workshop surveys. This survey was posted on the AECP Facebook page and thus allowed us to collect information on how the demographic of people in Armenia corresponds to prior knowledge of eye care and health. These surveys also were used to raise awareness of eye care and health in children. This was done by allowing the participants to test their own knowledge of eye care and providing them with the correct answers. The survey also included links to the AECP website and educational videos to learn more about the topics.

For the parents who attended the workshop, the content of the pre-workshop surveys included questions testing prior knowledge of eye care and health topics. As mentioned before, the last five questions of the Facebook survey were used for the pre and post-workshop surveys. The goal was to test the prior knowledge of the parents on school-age children's eye care and health.

Post-workshop surveys were only administered to parents who attended the workshop and were the same as the pre-workshop survey. Due to the same questions being asked before and after the workshop, we were able to compare the scores. With the data collected from these surveys, we were able to calculate the percentage of the people whose knowledge of eye care and health improved, which helped us to test different workshop activities. This was done by introducing a new activity (instructional case studies) and then comparing the percentage of people who improved their scores to other activities. The AECP notified us that different regions will most likely respond to different learning styles. Thus, these surveys were developed to enable us to determine the structure with which that region learns best. This feedback provided information on how to improve workshops through the understanding of how different regions prefer to learn and which activities helped the audience learn the content the best.

Surveys ultimately helped achieve the project goal to create effective workshops that teach community members about eye care and eye diseases in children. They were an important tool used in creating the most effective communication of the importance of eye care obtained by parent feedback. It also helped focus the scope of the project by understanding which eye diseases and trauma types were most beneficial to include in the workshops. Surveys can assist in the creation of future workshops and aid in long-term effectiveness, however, they do not provide us with qualitative data. Interviews were used to be able to collect this kind of data.

Interviews were used for objectives two, three, and four. Interviews are often an integral part of the research, as they enable researchers to collect a wide array of information from interviewees. The data collected in interviews, such as experiences, beliefs, and perspectives, are able to be analyzed and understood easily. These data are also valuable in understanding a

community and how a project's implementations could be useful. Interviews are also a good way to gather information due to being able to personalize the questions based on the interviewee. Throughout our project, we conducted several interviews. Our first interview was with the Dean of General Education at the American University of Armenia, Dr. Sharistan Melkonian. Through this interview, we were able to gain valuable information, particularly regarding various forms of teaching styles and how to better engage an audience. These topics are essential aspects of a workshop, and what we learned from this interview was invaluable. Another interview we conducted was with Brent Anders, a professor and the Director of the Office of Institutional Research and Assessment in the Center of Teaching and Learning at the American University of Armenia. Dr. Anders, aside from his role as professor and Director of the Office of Institutional Research and Assessment, has also published articles about learning and ways in which to improve educational discussions. This made him a natural choice as an interviewee for our project. Through this interview, we learned much more about how to integrate yourself into a learning audience to promote increased levels of discussion among the group. Another main purpose of an interview is being able to obtain information that may not be easily accessible elsewhere. This is particularly true for projects such as ours, which relies on input and cooperation from the locals in the community. A third interview that we held was with Susan Gottberg, a senior curriculum developer. This interview largely focused on what the key takeaways from the workshop should be, and what the audience should learn from it. Conducting this interview also provided us with some helpful tips for workshops in the future, such as encouraging discussion in the audience, rather than talking directly at them, as well as finding more ways to make it fun, such as through games. By interviewing different groups of specialists,

such as teachers and other professionals, we were able to obtain a variety of information on various topics, which significantly helped us in our goal of improving workshops. Examples of our interview questions can be found in Appendix B.

Case studies were used in two ways within the project to achieve objectives one, two, and four. Initially, case studies were used for research for the workshops. Once in the field, instructional case studies were created and used as an active learning activity application within the workshops.

Case studies, as a research approach, were significant since they are in-depth studies that can be generalized for a better understanding of a topic. Validity has already been established within the analyses due to being heavily researched, examined, and reviewed by others. Furthermore, the real-life context of the given case studies can be applied to other issues. Exploring applicable case studies allowed for a deep examination of alternative solutions and finding the most effective framework for evaluation. Looking at past studies, more efficient workshops were developed for sharing information.

Researching and applying case studies followed a similar timeline to typical research. First, the case was defined within the project so that the search pool for applicable studies could be narrowed down to ones that targeted similar audiences or followed similar scopes. For the purpose of this project, we used research databases such as Google Scholar and the WPI Gordon Library Databases to search for articles that contained keywords relevant to our scope. We looked for case studies in which medical information was presented to the general public. Since eye care in Armenian children was quite specific and yielded few results, we broadened our focus to different subsections of the full scope. One case study was found that focused on presenting

information to caregivers, which parallels the project's scope of presenting information to parents. Another search yielded a case study of research done on eye diseases in children and childhood blindness in India. Although the setting is different, the focus of the case study is similar and the information of the research may still be significantly related. The methodology of the case studies was researched to determine the most successful and unsuccessful approaches to conducting workshops. Researching and identifying the most effective methods for presenting information, as opposed to cycles of trials and re-evaluation, allowed for quicker implementation of plans and results. Using case studies in this way allowed us to achieve objectives one and four. By researching past efforts, we were able to understand how other countries and programs have conducted workshops as well as the efficacy of their methods. The current climate of eye disease in children in Armenia was compared to that of other countries for more understanding and for the development of future workshops.

Overall, the application of case studies aimed to assist in promoting group discussions so that common questions could be identified and answered. The implementation of this method is related to objectives two and four. When applying case studies as a way of teaching information, instructional case studies were used in the workshops. Active learning activities were targeted as a method to increase audience engagement during the workshop. We researched different techniques that have been used for active learning and chose various activities based on necessary materials and preparation. Workshops performed by the AECP occur at various schools and family centers; so oftentimes, electronic access is limited. Instructional case studies provided information about eye diseases and dangers in a more engaging format to the parents. Presented in a real-life scenario format, instructional case studies provided background

information about a given eye concern and the possible symptoms to be aware of. A brief overview of a situation was followed by questions to guide a discussion of the problem and recommended actions. Through surveys and observations of other workshops given to parents, we identified topics that the audience was most confused and concerned with. We identified that parents were primarily concerned with the effects of electronics on their children's eye health, and which home remedies were safe. Based on these concerns, we produced scenarios that placed the parent in the position of having to determine a sample problem and discuss their next steps for dealing with the situation. The instructional case studies targeted a predetermined problem while making the situation hypothetically more personal to the parents in order to establish the importance of understanding eye diseases and proper eye health.

Observations were used to assist us in achieving objectives two, three, and four. It is a way of collecting information by watching behaviors and events. We chose to do overt observations meaning that everyone in the audience knew that they were being observed. This was chosen over using covert observation, hiding from the audience that they were being observed, to allow for a better chance to get people to engage and fill out the surveys. AECP told us that when people were watching the workshop there was an added pressure for them to engage. This is similar to when a photographer was present at the workshops.

In order to bring structure to the method we used an observation template. This template listed all the information we hoped to get out of the workshop observations. It also provided us with a guide that can standardize our data and make it easier to compare observations between multiple workshops.

There were five sections that made up the observation template. The first section was the general knowledge section. This provided a space to list the date of the workshop as well as the number of participants (children and adults) and location. This was important to note because there was an ideal number of participants for each active learning activity. Thus, noting how many adults attended was valuable when we assessed the effectiveness of the activity used in the workshop. The number of children present was important to note for future planning of the workshops. Being able to predict how many games, books, or other child-friendly activities were required helped with planning out the workshop. Furthermore, the location was important because it provided valuable data on how certain demographics respond to different types of active learning activities.

The next section of the observation template was the workshop structure. Here the general structure of the workshop was described. There were two structures of the workshop that were adjusted from AECP's original structure. Structure One started with a general introduction of the staff and the AECP presenters. The pre-workshop survey was then passed out and a slideshow on AECP's work began. A ten-minute video played and following the end of the video a Q&A with an ophthalmologist started. The workshop ended with a game of trivia about eye care and the post-survey was completed. As the participants left the surveys were collected and brochures containing additional info were passed out. Structure Two eliminated the AECP slideshow presentation, video, and trivia. After the general introduction of the staff and AECP presenters, the pre-workshop survey was passed out. Once completed, the audience was divided into four groups and each was given a different instructional case study. The groups discussed their real-life scenarios and answered the guided questions about eye diseases and traumas. The

audience then returned their attention to the ophthalmologist who guided them in sharing their findings and also provided additional points of information. This full group discussion continued into all general questions that parents had for the ophthalmologist. These structures can be found in Figure 5.

Structure 1	Structure 2
Introduction of AECP and Staff	Introduction of AECP and Staff
Pre-survey Completed	Pre-survey Completed
Slideshow on AECP's work	Separation into Groups
Video	Instructional Case Studies
Q&A w/ Ophthalmologist	Share Out of Discussions
Trivia on Eye Care Topics w/ prize	Q&A w/ Ophthalmologist
Post-Survey Completed & Brochure Handout	Post-Survey Completed & Brochure Handout

Figure 5 Workshop Structures Tested

The third section was the behavior section. This was the most important section of the observation guide because this was the main section filled in during the workshop. Usually leading up to workshops there was a rough idea of how many participants there would be and the workshop structure was already decided. In this section, the time and any observations are noted down. This included the times of any large events such as the start and end of the workshop or activities as well as the times of any behavioral observations. These observations included common signs of boredom such as phone usage, shifting in seat, yawning, or if anyone had fallen

asleep. These notes were crucial when comparing workshop structures especially to determine the level of audience engagement.

The fourth section was a list of questions asked during the workshop. This section was primarily used during the Q&A session with the ophthalmologist. This was important for gauging how informative the workshop was. For example, if people asked questions about something covered in the workshop then it is known that there should be more emphasis on that subject. Also, if many questions were asked about something not covered in the workshop it could be added to the information given in the workshop. Gathering these questions allowed us to understand more information about what the parents found confusing or additional topics of interest to parents.

The final section of the workshop template was the "Other Notes" section. This section was included for any information relevant to our research that doesn't fit in other sections. The other notes section can also be used to emphasize or further explain events or behaviors that occurred during the workshop. The full workshop template can be found in Appendix B.

Observations helped us achieve the project goal by assisting us in understanding what parents want to know about eye care and how to effectively communicate its importance. It also helped us achieve the goal by providing us with feedback from ongoing workshops using qualitative data in addition to the qualitative data provided by surveys. This feedback can then be used in the creation of future workshops.

Results

This section of the report will discuss all of our major findings, categorized by method type. Each method, throughout the span of this project, provided us with valuable information that was used to help improve the workshops.

Surveys ultimately helped us achieve objectives two, three, and three. It is important to note that these objectives were completed simultaneously. With the two workshops we were able to attend, we were able to test the effectiveness of varying workshop structures and content. The surveys used were Facebook surveys conducted online, pre-workshop surveys conducted on paper, and post-workshop surveys conducted on paper.

Facebook surveys were key in providing information about the correlation between demographic information and prior knowledge of eye care. The Facebook Survey was live for ~72 hours and during that time there were 32 participants. Of those participants seven people (22%) identified as 15-30 years old, 15 people (47%) identified as 30-45 years old, and ten people (31%) identified as 45+ years old. The scores of each age range were pretty similar with the average scores being 80% for 15-30 year olds, 60% for 30-45 year olds, and 60% for 45+ year olds.

As for the locations, there was only one participant for many regions including Aragatsotn, Ararat, Armavir, Kotayk, Lori, and Shirak. There were two participants for both Gegharkunik and Tavush, three participants for Syunik, and 19 participants for Yerevan. Unfortunately, none of the participants identified as being from Vayots Dzor. The average scores from each region are illustrated in Figure 7. The average score of participants from Aragatsotn was 40%, from Ararat it was 80%, from Armavir it was 80%, from Gegharkunik it was 80%,

from Kotayk it was 40%, from Lori it was 60%, from Shirak it was 80%, from Syunik it was 53%, from Tavush it was 60%, from Yerevan it was 60%, and there was no data collected from Vayots Dzor.
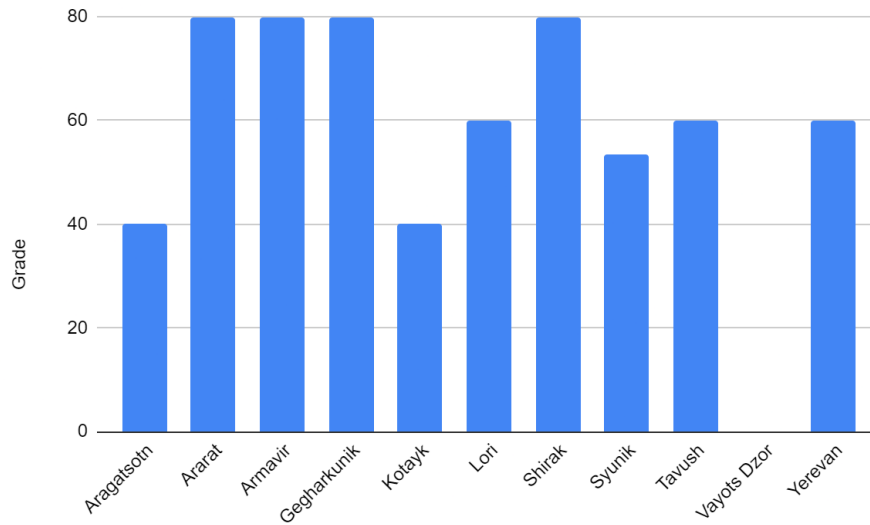

Figure 6 Average Grade on Facebook Survey Based on Armenian Region

Due to these low numbers of participants from many of the regions it is difficult to draw significant connections between demographic and prior knowledge. Given more time the data would be more helpful in drawing information from it.

From the overall scores on certain questions, conclusions can be drawn about the general understanding of Armenians on certain topics. For the questions, one and five participants scored well with 75% and 100% of participants answering correctly. Participants answered correctly only 31.3% of the time for question two, 65.6% of the time for question three, and 43.8% of the time for question four. From this information, it can be assumed that these questions may require more attention in workshops in order to educate people on topics that they do not have prior knowledge on.

As discussed in the method's chapter, two workshop structures were tested. Structure One first introduced AECP and staff then completed the pre-survey. Structure Two was a complete redesign of the original structure. The structures tested can be found in Figure 5 in the method's section.

After completing a workshop using Structure One, which contained our pre and post-workshop surveys and the AECP's ten-minute video, there was an improvement among 19 out of 29 people's survey scores (68%). Eight of the participants' scores stayed the same (29%) and one participant's score decreased (3%). Figure 7 shows the participants' change in score in the form of proportions (percentage ÷ 100). This plot shows the data in quartiles where 25% of the data is found. The first quartile is between 0% and -60% change in score, the second quartile is between 0% and 20% change in score, the third quartile is between 20% and 40% change in score, and the final quartile is between 40% and 60% change in score. The average change in score was an increase of 20%. Of the participants who scored higher on the post-test, the scores increased by an average of 29%. Of the participants who scored lower in the post-test, the scores decreased by an average of 40%.
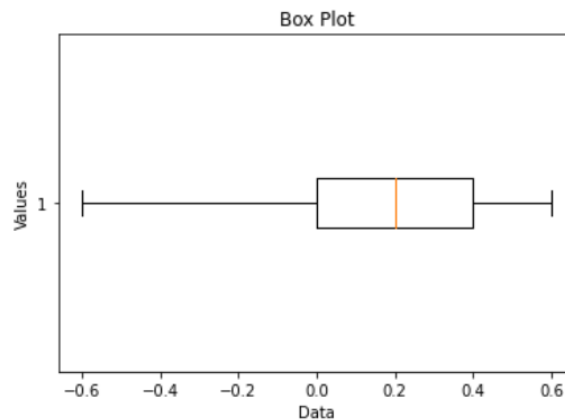

Figure 7 Change in Scores of Participants of Workshop Structure One

It can be seen in Figure 8 that participants improved their scores in relation to questions one, three, and four. Question one referred to ways to treat preventable blindness including glasses and contacts, question three referred to common dangers to the eyes of children (perfume, time on electronics, and utensils), and question four referred to what you should do if something blows into your eyes. However, the participants did the same on question two and did worse on question five. Question two referred to how often a child should be brought to the ophthalmologist and question five refers to what you should do if your child is showing signs of myopia.
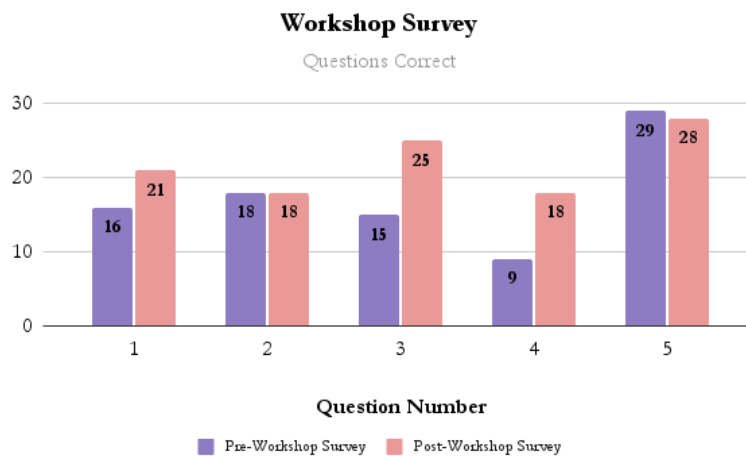
Figure 8 Questions Answered Correctly by Participants of Workshop Structure One

A statistical test was done on the data to verify the statistical significance of the results. This test was called a right-tailed paired t-test. This test calculated a p-value of 0.00034. The p-value indicates that the chance of rejecting a correct hypothesis is very small, specifically 0.034%. Thus the smaller the p-value the more it supports the hypothesis that after the workshop was completed is statistically greater than before the population's average. Although this

workshop structure is not the best at maintaining audience attention and promoting engagement, it does increase the level of understanding of the participants by a statistically significant amount.

In workshops using Structure Two, there was an improvement among 6 of the 19 participants' survey scores (32%). Eleven of the participants' scores stayed the same (58%) and 2 participants did worse (10%). Figure 9 shows the distribution of scores for this workshop structure. This plot is different from the first box plot shown in Structure One because it has the two highest changes in score, 80% and 100%, marked as outliers. This is because these data points were substantially higher than the rest of the data collected. The average change in score overall was 12%. Of the participants who scored higher on the post-test, their scores increased by an average of 43%. Of the participants who scored lower on the post-test, their scores decreased by an average of 20%.

Figure 9 Change in Scores of Participants of Workshop Structure Two

Overall the participants' scores stayed the same for question two and improved on questions one, three, four, and five. Figure 10 illustrates the number of participants who answered correctly for each question in the pre-survey and post-survey.
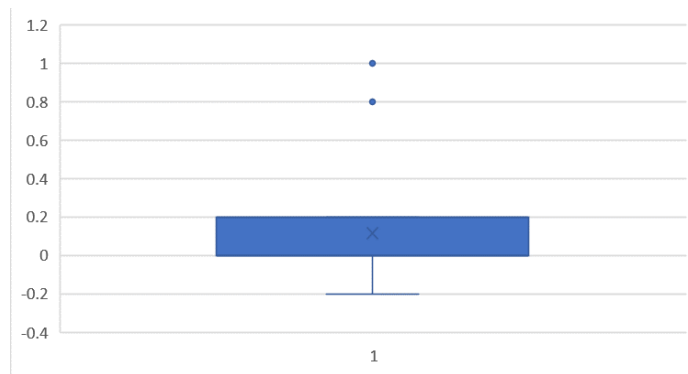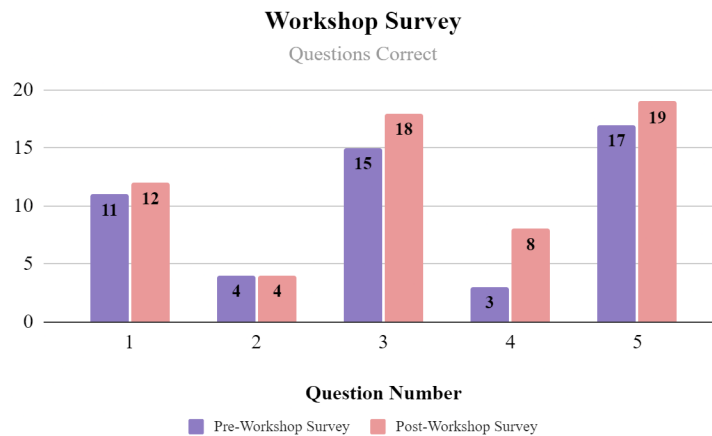
Figure 10 Questions Answered Correctly by Participants of Workshop Structure Two

We once again completed a right-tailed paired t-test on the data we found that the p-value was 0.055. This means that there is a 5.5% chance that the correct null hypothesis will be rejected. This chance is too high meaning the null hypothesis cannot be rejected and that there is no significant difference between the scores before and after the workshop. A left-tailed paired t-test was also conducted on the data to test if the scores had gotten worse due to the workshops being completed. The p-value for this test was found to be 0.95 meaning there is a 95% chance that the correct null hypothesis will be rejected. Therefore, it can be concluded that the use of case studies in the workshop created no significant change in participants' scores.

Through the use of surveys, we found that Structure One was the most effective because it produced a statistically significant increase between the pre-workshop and post-workshop survey scores. Structure Two had ten fewer participants and was only put into practice twice while Structure One had been used for over two months. Due to this, we believe that with more use the presenters will be more acquainted with the teaching style and thus improve the

effectiveness. However, since we do not have the results to prove this hypothesis, Structure One performed the best when using surveys as a measurement of effectiveness.

Interviews allowed us to achieve objectives two, three, and four. Through a series of interviews, we have had the opportunity to speak with individuals who have shared their thoughts, opinions, and experiences on conducting workshops. Our interviewees included Dr. Sharistan Melkonian, who is the Dean of General Education at AUA, Dr. Brent Anders, who is the Director of the Office of Institutional Research and Assessment at AUA, and Ms. Susan Gottberg, who is a Senior Curriculum Developer at the Pure Storage company.

All three interviewees highlighted the importance of keeping the audience engaged throughout the workshop, and varying engagement techniques to maintain interest. They emphasized the importance of considering adult learning principles, such as active participation, collaborative learning, self-directed learning, and immediate application. It is also important to consider adapting teaching strategies accordingly to meet the needs of the audience. Adapting teaching strategies can involve varying the pace or level of detail of the presentation, incorporating more interactive exercises, or providing additional resources or guidance based on feedback and questions from the audience. Additionally, using interactive activities and case studies to connect with the audience was seen as an effective way to improve learning outcomes. A clear set of objectives and goals for the workshop was also identified as crucial, along with assessing the audience's needs and adapting teaching strategies accordingly.

During the interview with Dr. Anders, several key takeaways were discussed on how to effectively teach and present information. Firstly, personalized stories and emotional connections, such as including storytelling or information that would appeal to their values, should be used to

make the material more relatable and engaging for the audience. In addition, it was recommended to use different types of activities to accommodate different learning styles. Some examples of activities that can be used are hands-on activities, group discussions, and visual aids such as diagrams or charts. Dr. Anders also suggested limiting video time to a maximum of five minutes. Keeping the video short and to the point can help to maintain the attention of the audience and ensure that they are able to retain the information presented. Additionally, he noted that the video should be opened with clear goals and objectives so that the audience has a scope of what to expect and what they will gain from watching the video. To keep the audience engaged, it is essential to pose questions, promote discussions, and use different techniques to avoid low engagement. The format for teaching guides should be kept as short as possible, and the initial emotional response of not wanting to participate should be considered. Lastly, when teaching adults, it's important to consider the relevance, motivation, and assessment of the material. The age of the audience and their different responsibilities should also be taken into account when planning and delivering the material.

During the interview with Dr. Melkonian, one of the most noteworthy suggestions was to start at the end and work backward. This entails defining the ultimate objective of the course, workshop, or presentation and then breaking it down into smaller, more manageable pieces. This approach ensures that the content is organized, relevant, and focused on achieving the desired outcomes, creating a clear roadmap for the audience. However, it's important to adjust the approach to suit the audience and their learning style. Another key takeaway was to break down content into 10-15 minute sections because dividing a larger piece of content, such as a lecture or a video, into smaller, more manageable sections allows learners to process information in more

focused pieces, which can improve understanding. Dr. Melkonian also recommended active learning techniques as useful tools, which we ended up applying in the form of instructional case studies. To keep the audience engaged, it's important to vary strategies and avoid back-to-back less engaging activities. When using a video in a workshop, it's important to go over the main concepts explained in the video, such as the importance of regular eye exams and strategies for preventing eye injuries, and provide additional information, rather than relying solely on the video to convey the topics.

During the interview with Ms. Susan Gottberg, the main goal of conducting a workshop was discussed. Ms. Gottberg recommended focusing on what the audience should walk away with, and she suggested that workshops should be an engagement with discussions rather than just talking at the audience. To achieve this, Ms. Gottberg advised breaking into smaller groups and then bringing them together into a bigger group at the end. This would allow each group to explain their discussion and provide different perspectives. Furthermore, Ms. Gottberg emphasized the importance of encouraging the audience to talk amongst themselves and "force" answers from them to avoid filling in the audience's silence. She suggested using trivia-like games such as Kahoot for workshop questions to make the learning experience more enjoyable and engaging. It was also mentioned that workshops should have clear goals and expectations that are outlined in a slide, such as muting cell phones, engaging when necessary, and asking questions when needed. Additionally, Ms. Gottberg suggested creating answer guides with possible solutions rather than providing the correct answer to allow for flexibility and encourage creativity. Lastly, skits were discussed as an effective tool for interactive learning, but it was crucial to have answer slides and avoid notes as it can make the experience less interesting.

Observing the workshops helped us achieve objectives two, three, and four. Observations allowed us to understand which activities were the most successful in conveying the content of the workshop which allowed us to create plans that can be used in future workshops.

After observing a workshop with Structure One format it was clear that there was originally a lot of interest and engagement. The presentation caused some members of the group to start showing signs of boredom such as phone checking and becoming easily distracted by other things in the room. When the ten-minute video began everyone was looking but at the two-minute mark, we observed that roughly a fourth of the audience showed signs of disinterest. After four minutes we saw many people shifting in their seats. The interest decreased exponentially as the video progressed. When the video came to an end and the question and answer session with the ophthalmologist began, engagement immediately increased. Nearly everyone in the room asked questions or participated in internal conversations among other participants. It is approximately that 33.33% of the audience participated in the trivia at the end of the workshop.

When we attended our next workshops, we implemented Structure Two, which was different from what was previously carried out by the AECP. To foster more engagement through discussions, we implemented our instructional case studies in replacement of the slideshow and video. After the pre-workshop survey was handed out and completed, the presenter handed out different instructional case studies to each group and explained the instructions for how to complete the activity. We observed that individuals within each group remained attentive during the discussions and equally contributed their thoughts. After the groups answered all the guided questions, the focus was brought back to the ophthalmologist to recap the main points of the

instructional case studies and to fill in any missing pieces. Attention remained strong throughout this portion as well, as individuals were focused on their peers and more notes from the ophthalmologist.

In the end, Structure two which implemented an active learning activity, such as instructional case studies, was a better format for increasing the engagement of the audience throughout the learning process. As opposed to a long video and slideshow presentation, this group discussion encouraged the parents to continue asking questions about any topics they had concerns about. This ensured that the parents were paying attention to the information presented, which was not as easily measured through the video presentation. The real-life scenarios presented in the instructional case studies also helped to create a personal connection between the parents and the information about eye care. Placing the parents in the scenario helped to make them more aware of how possible and serious the situation may be. The impact of this personal connection was not likely achieved through a lecture format. Additionally, the increase of questions from the audience allowed the ophthalmologist to have a better understanding of what the parents wanted to learn more about and adapt his explanations to satisfy their concerns.

Case studies ultimately allowed us to achieve objectives one, two, and four. Different types of case studies were used, one being research and the other instructional. Research case studies provided information on previously conducted studies that have been analyzed and validated. Instructional case studies were a method of active learning in which real-life scenarios were given to the audience for interpretation and understanding.

We used the research case studies to gain information about previous workshops given to various audiences and different approaches used by researchers to convey information. They

were adapted and applied to our project for similar effectiveness to complete objective one. We also used research case studies to understand the results of previous workshops, which allowed us to understand how to develop plans for future workshops and maintain a successful continuation of the workshop efforts, as part of objective four.

The specific research case studies were intended to provide information on different types of workshops and the effectiveness of presenting information in each type. A case study about a workshop presented to the caregivers of individuals with autism spectrum disorder emphasized the efficacy of group-based discussions. In 2020, Christian D. Clesi investigated the efficacy of a workshop directed toward the caregivers of individuals with autism spectrum disorder (ASD). Clesi noticed a lack of services available to those facing ASD, since the general population was inexperienced about this issue (Clesi, 2020). A psychotherapy program was then developed for the caregivers and providers of individuals with ASD. The psychotherapy, also known as talk therapy, route of the workshop encouraged group discussions with a licensed health professional with the aim of identifying mutual problems and solutions. The parallels between the case study's workshops and the workshops we were developing were used to work towards objective one, taking the psychotherapy approach of one workshop and applying the same method to others. The case study also assisted in achieving objective four. Following the workshops, positive feedback helped the researchers gain confidence in the success of increasing knowledge. Additionally, feedback helped indicate that the group layouts of the psychotherapy workshops promoted individual confidence and social support. Such findings were also indicative that following a similar format of group-based discussions may also be successful on a larger scale replication, such as presenting information to a large community (Clesi, 2020). The

psychotherapy approach allowed the audience to speak with other individuals in the same position which promoted community support. This method also allowed the audience to ask questions to a medical professional. This case study was significant in having the same scope as this project which was presenting medical information to a large audience and ensuring that the audience gained the necessary knowledge.

Another case study that was researched was about workshops in India focusing on quantitative data through participant questionnaires. This specific case study was the methodology of a workshop designed by the Department of Ophthalmology at the Christian Medical College in India. Researching the success of using surveys to plan workshops accordingly supported the method of implementing surveys in future efforts. Professors and postgraduate students aimed to raise awareness of eye diseases in children and the challenges of childhood blindness (Singh, et al, 2019). These workshops were mainly directed at schoolteachers in the area of Ludhiana as teachers are typically the first to be able to identify symptoms in a child. The format of these workshops included interviews following a predesigned questionnaire, with data collected and analyzed through software for results (Singh, et al, 2019). By following this individual format, researchers were able to collect very concise data and create supportive statistics for further use. Using questionnaires was significant in identifying the prior knowledge of the individual and determining the topics that may be of more interest or confusion. The benchmark also allowed researchers to gauge how effective the workshop was. The premise of this study paralleled this project in trying to raise awareness about eye diseases in children. Through researching this workshop, we deduced the approach of using benchmark surveys to gauge what the audience understood before and after.

Another case study that was explored was about utilizing school-based health centers to target communities where access to primary care providers was limited. This study was relevant to our project since certain villages in Armenia have limited access to ophthalmologists. The approach of this research was the impact of seeking the assistance of teachers and school nurses to spread information about health care. School-based health centers (SBHC) have emerged as an important method of health care delivery since students are in school for many hours of their lives. When in collaboration with other medical professionals, SBHC are able to effectively address health needs and communicate to the community the importance of many medical topics (Barnett & Allison, 2012). SBHC also work to increase health care to those within the school district who may not have full access to a primary care provider. Since those in these school centers are available every day to the children, they may be among the first to be able to deal with any problems that occur. When services such as preventative measures are presented by SBHC, visits to primary care providers and emergency departments decreased, because the caregiver of the children were also notified and knowledgeable of the situation (Barnett & Allison, 2012). While workshops should be given to the parents in order to present information on visual health, shifting the focus over to teachers and school nurses may also prove to be beneficial. Children are in school for the majority of their days and by making more adult figures aware of eye care, the chances of such eye diseases may be prevented. The research of case studies provided sufficient information about the approaches that have been beneficial in past workshops, which we were able to adapt and apply to workshops with the AECP.

The goal of applying instructional case studies was to provide the audience with information about eye care and to raise awareness about common eye dangers and diseases in a

more engaging way. The instructional case studies created for the workshops were listed in Appendix C of this report. The first case study scenario presented to the audience was focused on electronics and how to prevent them from damaging eye health. The second case study was about common dangers to children's eyes, both chemical and physical, and how to prevent them. The third case study discussed common symptoms and diseases in the eye aimed towards having the audience recognize the symptoms and identify when to contact an ophthalmologist. The fourth case study highlighted the dangers of at-home treatments and emphasized the importance of learning proper eye first aid.

Through the application of instructional case studies in AECP, we observed that the audience remained more attentive when the information was presented in an active learning manner. As opposed to watching a lengthy video, the guiding questions of the instructional case studies encouraged group discussion about common eye diseases and dangers. This format allowed individuals to work through real-life scenarios with other members of the community. The real-life scenarios also presented the information in a more personal format which helped to emphasize the high possibility of such dangers in everyday life. Discussions both in the groups as well as with the ophthalmologist provided parents with the ability to learn about common misconceptions when treating eye traumas, and what was recommended by medical professionals instead. The improvement in the parents' engagement was also measured by the increased number of questions asked throughout the activity. Asking questions was indicative that the audience comprehended the topics of the instructional case studies and wanted to know more information. Additionally, the observation of topics parents had more questions about was beneficial to the AECP staff as they were able to identify points of major concern and confusion for future workshops. The increase in specific questions from the parents made it easier for the

ophthalmologist to understand what the audience had concerns about. Positive feedback about

the instructional case studies promoting personal connections and emphasizing the importance of

professional medicine in common eye diseases was provided by the ophthalmologist after the

workshop.

The results acquired from each method were significant in the completion of our project.

Each result we obtained allowed us to be able to create and incorporate certain changes to better

the workshops.

Recommendations

Our first recommendation was to increase audience engagement during the presentation portion of the workshop; as it was shown in our research that this increased the audience's focus on the topics being discussed. We suggested using tactics such as using photos to discuss topics instead of bullet points. If bullet points are necessary, we recommended decreasing the word count to ~15-30 words per slide. This shifted the audience's focus to the presentation to receive the information instead of reading off of a slide. Another way we recommended to increase audience engagement was to ask questions throughout the presentation. Questions in the presentation could be about the audience's experience with AECP, content previously discussed to clarify sticking points, and information that will be discussed later in the workshop to gauge the audience's prior knowledge. By asking questions to the audience they were more likely to pay attention because there was an added pressure that they could be called on. In order to prevent the audience from not answering the questions, we recommended letting the audience know there will be a question. This could be done by saying something like "*I would like to ask a question*" or "*I have a question*". By doing this the audience would not be caught off guard by the questions. Also starting with easier questions, such as "*Has anyone seen the Mobile Eye Hospital in the town before?*" or "*Has anyone heard of AECP before?*", may create an environment where the audience feels more comfortable answering questions. If, despite all efforts, no one in the audience answers the questions, we advised that the presenter wait at least 30 seconds, briefly answer the question, and return to the presentation.

Our second recommendation was to continue the use of surveys in the workshops. During our project, surveys were completed before and after the workshop. We found that surveys were

a good method of observing the number of audience members who showed an improvement in the post-workshop survey result. This was also helpful to maintain the effectiveness of these workshops. If the audience does not improve their scores between the two surveys then the presenter knows that something needs to change in the workshop, and these surveys might identify some of the improvements that would need to be made.

A third recommendation was to change the AECP video names. The current names of the videos are not easily searchable. For example, one of the videos is named "Podcast 15 min". This not only makes it very hard to find online but also does not give any sort of context into what the video contains. We recommended renaming the videos on YouTube to something that relates to the video itself and providing the links as a resource for more detailed information after the workshop is concluded. Alternatively, the ten-minute video could be revised or replaced with an active learning activity. If the video were to be included we recommended editing it to include only the most important information. Editing the video to reorder the material covered could also help to improve the quality and spread of information to the audience. The information seemed more random rather than organized, which could have made it more difficult for the audience to follow along and retain the information. Although the video was very informative, it was not engaging and included too much information to be fully understood within ten minutes. For the video, we also recommended that a success story of the AECP should be included to emphasize the impact that can be made. Attending the workshop was typically the first time that parents learned about the AECP and their efforts towards helping children's eye care and eliminating preventable blindness. Although the programs hosted by the AECP are mentioned in the

workshops, sharing evidence of how they have made a change in an individual's life can help to show parents the help they can provide.

Our fourth recommendation was to integrate more active learning techniques into the workshop. Activities that we recommended included instructional case studies, picture prompts, role-playing, and room quizzes. Instructional case study activities were done by first forming groups of 4-5 people. Next, a case study was given to each group. Each case study included an informational paragraph about the topic, a scenario, and a list of questions about the scenario. The group then read the case study and discussed the questions. At the end of the allotted time, 15-20 minutes, the teams chose a group spokesperson to briefly summarize their topic and discussion. The topics of case studies included how electronics impacted eye health, common dangers to the eye, common eye disease symptoms, and the dangers of at-home remedies. Case studies can be found in Appendix C. This activity was recommended for audiences between 16 and 24 people. Picture prompt activities would be done by first displaying a picture on the screen. The picture would be related to certain key points including eye disease symptoms, dangers to the eye, eye trauma, and first aid for the eye. Pictures and sample discussion topics can be found in Appendix E. The presenter would then ask the audience to identify or explain the picture. After a few people discussed the picture the presenter would follow up with more information relevant to the picture. This can be repeated to include many pictures in the activity. Role-playing activities could be done in two ways. The first structure for role-playing activities uses the audience as the actors. A group of people selected from the audience is given a prompt or script to act out. The themes of these role-playing activities would be eye diseases and trauma in children. The audience then discusses what went wrong in that scenario and what could have

been done to treat or prevent the injury or disease. This activity was recommended for any size audience as it doesn't require movement or group work. Finally, room quizzes are done by putting a piece of paper on different corners of the room w/ varying answers (ex. 1, 2, or 3; agree, neutral, or disagree; yes, no, or maybe). A question is then put on the screen and the audience members are then asked to move to the side of the room that has the correct answer. A representative of each side of the room would then share why they believe that their answer is correct. The presenter then reveals the correct answer and provides information as to why. This can be continued for multiple questions on different topics including how electronics impact eye health, common dangers to the eye, and common eye disease symptoms. Sample questions can be found in Appendix E. This activity was recommended for smaller groups (<20 people). These activities were recommended because they do not require any additional equipment or an internet connection.

Our fifth suggestion was to create structure when doing trivia at the end of the workshop. The trivia part of the workshop was very chaotic as everyone in the audience would talk over each other and attempt to be the loudest in the room. This was encouraged by the moderators but we believe that this could be done in a more beneficial way. Incorporating a structured game into the trivia section, such as Jeopardy, would allow each member of the audience to have a chance to participate and be more entertaining overall. Jeopardy would be done by slightly revised traditional Jeopardy rules. The audience would be split into teams and the first team to answer the question on the board goes first. Other teams would go in sequential order after the winning team. The winning team then picks a category and amount. Someone in the team must answer the question in 10 seconds. If the team answers correctly they keep going and if they answer

incorrectly the next team gets the chance to steal the point. If the other team wins the point they choose the next category and amount. This would continue until the board is empty. The team with the most points gets the prize. Who Wants to Be a Millionaire would use the general principle of the original Who Wants to Be a Millionaire game. A question is put on the board and whoever answers correctly is the first contestant. The next question is shown on the board and the contestant has 10 seconds to answer. If they do not answer the question in time the question can be stolen by another member of the audience. If the stolen question is answered correctly they are the new contestant. The game continues for however many questions are included. We recommend 5 questions to keep the game shorter. Whoever answers the last question correctly is the winner.

Our sixth recommendation was to continue having an ophthalmologist present during the workshops. We have found that the audience feels more comfortable asking questions to the ophthalmologist than the presenter. It also makes the presentation more credible when a doctor is present giving educated advice to the audience.

Our final recommendation was to create a checklist of items necessary for the workshop activities. The AECP could use this checklist to ensure that each location has what it needs to conduct the workshop activities. The checklist could include information such as the expected number of attendees, wireless internet availability as well as the items needed for the activities, which could assist AECP in arranging workshop logistics.

Conclusion

With the assistance of our deliverables, the AECP will be capable of conducting workshops that would engage and raise awareness among over 2,000 parents on caring for their children's eyes. These workshops will increase the number of children brought to the ophthalmologist and lower the cases of preventable blindness in Armenia.

The model and structure of the workshops were imperative in making the workshops effective. The use of resources such as brochures, active learning activities, and discussions allowed for the workshop to be interactive and informative. Meanwhile, the information gathered from surveys and interviews provided us with insight into the prior knowledge of the workshop participants as well as how much information was retained from these workshops.

Once the community is educated on children's eye care, diseases, and trauma, there will be an increased level of know-how in keeping their children's eyes safe. The community will have resources that they can trust for educated advice regarding eye care instead of relying on tradition. If AECP decides to share these workshop models with its peers, other organizations would have the ability to educate the broader community.

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APPENDIX A

Survey Questions

1. Facebook Survey

"How old are you?"
   A. 0 - 15 years old
   B. 15 - 30 years old
   C. 30 - 45 years old
   D. 45+
   E. Prefer not to say

"What Province are you from?"
   A. Yerevan
   B. Aragatsotn
   C. Ararat
   D. Armavir
   E. Gegharkunik
   F. Lori
   G. Kotayk
   H. Shirak
   I. Syunik
   J. Tavush
   K. Vayots Dzor

"How much do you know about eye care and eye trauma in children?"
   A. Nothing
   B. Very little
   C. Some
   D. A lot

"The next set of questions will test your knowledge of eye care and health in children."
(answers highlighted are correct)*

"To correct fuzzy vision, many people wear:"
   a. Glasses
   b. Contacts
   c. Either

"How often should the child see the ophthalmologist?"
   a. 1 time a year

    b. <mark>2 times a year</mark>

    c. Whenever a health concern arrives

"Which of the following may damage a child's eye?"
    a. Perfume
    b. Too much time watching TV
    c. Utensils like forks and knives
    d. <mark>All of the above</mark>

"You are outside on a windy day and something blows into your eyes. What do you do?"
    a. Rub eye until it comes out
    b. <mark>Cover eye and go to ophthalmologist</mark>
    c. Use liquid to get particle out

"What would you do in this situation? Your child comes home from school and is complaining of a headache. They say they can't see what the teacher is writing on the chalkboard from their seat."
    A. Ask neighbor whose grandmother was a doctor
    B. Use a home remedy
    C. <mark>Schedule an appointment with the Ophthalmologists</mark>

"To correct fuzzy vision, many people wear:"
    d. Glasses
    e. Contacts
    <mark>f. Either</mark>

"How often should the child see the ophthalmologist?"
    d. 1 time a year
    <mark>e. 2 times a year</mark>
    f. Whenever a health concern arrives

"Which of the following may damage a child's eye?"
    e. Perfume
    f. Too much time watching TV
    g. Utensils like forks and knives
    <mark>h. All of the above</mark>

"You are outside on a windy day and something blows into your eyes. What do you do?"
    d. Rub eye until it comes out
    <mark>e. Cover eye and go to ophthalmologist</mark>
    f. Use liquid to get particle out

"What would you do in this situation? Your child comes home from school and is complaining of a headache. They say they can't see what the teacher is writing on the chalkboard from their seat."
    D. Ask neighbor whose grandmother was a doctor
    E. Use a home remedy
    <mark>F. Schedule an appointment with the Ophthalmologists</mark>

APPENDIX B

Interview Questions

Workshop Presenters and Professors at AUA

Do you follow a typical format when teaching/presenting information?

Does this format change depending on different topics or different audiences? How?

What are your opinions on the 5e instructional model? (Engage, Explore, Explain, Extend/Elaborate, and Evaluate)

Have you ever used instructional case studies in your workshops? If yes, how do you format them?

How do you format a teaching guide for a workshop?

How do you keep an audience engaged?

What limit would you put on a video used in a workshop?

Would the audience react better to a PowerPoint presentation or recording of a PowerPoint presentation?

Instructional Case Studies (translated to Armenian for AECP workshops)

Instructional Case Study 1: How Electronics Affect Eye Health

Objective:
- Understand how to prevent electronics like phones, computers, and televisions from damaging eye health

Background:
Most people use electronics almost every day, but did you know that considerable use of electronics could lead to eye disease? The eye is not fully developed until a person reaches their early twenties. It is very important to protect the eye as it is developing. Using electronics like a computer can lead to eye fatigue, blurred vision, eye dryness, headaches, and general discomfort. This is especially true when considering video games. Many studies have shown that children between one and thirteen years old have an increased risk of headaches, dizziness, and eye strain if they play video games for more than 30 minutes almost every day. Video games can also increase the risk of children developing nearsightedness and eyelid tics. When children play outside it significantly reduces the risk of developing nearsightedness. This is because the intensity of light outside reduces the risk of the eye changing shape and causing nearsightedness.

Story:
Your son Davit has not been playing outside a lot since he hurt his leg. Due to this, he has started playing video games instead. He usually plays around an hour after school every day and even more during the weekend. His leg has recently healed and he is able to move about as normal, but he still prefers to play video games. You noticed that his grades have been dropping and decided to talk with him about why. Davit complained that he was having trouble seeing the board from his seat and has been having headaches a lot more during school. You are concerned something might be going on.

Discussion Questions:
1. What is concerning about Davit's behavior?
2. What health problems can such behavior cause?
3. What actions would you take to fix the situation?

Sources:
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Instructional Case Study 2: Common Dangers to Children's Eye Health

Objective:
- Understand what the common dangers are to children's eyes and how to prevent them

Background:
There are many things that can be dangerous to the eyes. These can be separated into two categories: chemical and physical. Chemical dangers include bleach, laundry detergent, drain cleaner, oven cleaner, pesticides, and perfumes. These items should be stored in their original containers and remain closed and out of your child's reach. It is important that you do not mix cleaning agents and never use sprays near your child's face. After you finish using chemicals make sure you also clean your hands. It is important to note that if any chemical gets in your child's eye, use only water to wash the eye for at least 15 minutes. Physical dangers to the eye include sand, scissors, rubber bands, sharp utensils, and pencils. Some toys may also be dangerous to your child's eyes. This is why it is important to only allow children to play with age-appropriate toys. If your child plays high-impact sports, helmets and wire face masks are important to protect the eye from trauma. Overall, it is important that when a child is using something that can endanger their eyes that they are under close supervision.

Story:
You are outside your house watching your son play. Suddenly you hear your young daughter Sofi crying behind you and when you look she is covering both her eyes. You rush over to her and ask her what is wrong. She said that she was trying to help you clean the house. You go inside with her to find a bucket half full of water and bleach spilled on the floor. Sofi says that she touched her eyes and now they feel like they are burning. You also notice a cut on her forehead and she says that she ran into the table when she was trying to find you.

Discussion Questions:
1. What is the problem with this situation?
2. What would you do in this situation?
3. What would you do in the future to prevent this from happening again?

Sources:
Preventing eye injuries in children - Health encyclopedia - University of Rochester Medical Center. (n.d.). Welcome
to URMC - Rochester, NY - University of Rochester Medical
Center.https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=90&contentid=P02792

Instructional Case Study 3: Common Symptoms and Diseases of the Eye

Objective:
- Recognize the common symptoms of eye disease
- Identify when it is important to go to the ophthalmologist

Background:

Eye diseases are some of the most serious, yet oftentimes overlooked, types of diseases. While most eye problems may not start out as dangerous, they can often lead to different forms of eye damage, and possible eventual blindness, if not taken care of. Some of the most common eye problems seen today are known as refractive disorders. These disorders prevent light from reaching the eye's retina, which ultimately results in blurry vision. The three forms of refractive disorders, particularly among children and young adults. Nearsightedness causes objects at a far distance to become blurry and out of focus. Farsightedness is the opposite, in which nearby objects are blurred. The third common form of refractive disorder is known as astigmatism, and can blur objects that are both near and far. Many eye diseases have very similar symptoms. The most common of these include redness, swelling, excess tears, discharge from one or both eyes, eye pain, problems with focusing, muscle spasms of eye or eyelid, headache, changes in vision, as well as tired, aching or heavy eyelids. The sooner a symptom is realized, the sooner it can be treated by a medical professional, decreasing the overall amount of damage done.

Story:

Your son Hayk loves to play soccer. At one of his games, a soccer ball hits him in the eye. When you go to check on him, his eye is swollen and bruised. Later, his eye appears to be even more bruised, and he complains of eye pain and discomfort.

Discussion Questions:

1. How severe of a problem do you think this is?
2. What are your biggest concerns about Hayk's eye health, considering his complaints?
3. At what point would you bring him to the doctor?

Sources:
Preventing eye injuries in children - Health encyclopedia - University of Rochester Medical Center. (n.d.). Welcome
      to URMC - Rochester, NY - University of Rochester Medical
      Center.https://www.urmc.rochester.edu/encyclopedia/content.aspx?contenttypeid=90&contentid=P02792

Instructional Case Study 4: The Dangers of At Home Treatment Options and Proper Eye

First Aid

Objective:
- Understand how common home remedies can be dangerous to the eyes
- Learn modern first aid on the eyes

Background:
Although the use of holistic home remedies have been around for centuries, it is still emphasized by the medical field that a trained professional should be consulted when a risk occurs. Using home remedies as a treatment method for unknown problems poses a risk to the individual, and could possibly lead to worsening results. In the case of eye care, ophthalmologists are licensed doctors who are able to diagnose, treat, and prevent eye diseases. Rather than using advice from online forums and untrained individuals, an eye doctor should always be consulted to reduce the risk of further damage. It is highly recommended to ONLY flush the eye out with clean water or sterile eye drops. Expired or unapproved products should be avoided as it may irritate the eye further. A decrease or loss of vision, changes in the field of vision, changes in vision color, and physical changes to the eye are examples of eye trauma symptoms that should be consulted with an ophthalmologist as soon as possible.

Story:
Maria, who had an itchy and painful sensation in her eyes ignored it for a few days, but desperate for a solution turned to an online forum where she read about a home remedy that involved using a mixture of honey and water to soothe the irritation. Maria, without thinking twice, mixed the honey and water and applied it to her eyes. Initially, she felt a slight relief from the discomfort, but that relief quickly turned into severe pain. Her eyes became swollen, red and irritated, and she couldn't see properly.

Discussion Questions:
1) What actions would you take, before trying a home remedy for an eye problem?
2) In your opinion, what was the reason that this home remedy worsened the situation?
3) How would you have reacted differently than Maria did after experiencing pain and discomfort from the home remedy?
4) How would you change your approach to self-treating common health problems like eye irritations after hearing this story?

Sources:
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Observation Template

Observations Notes *date here*:

Location:
Adult Attendees #:
Children Attendees #:

Workshop Structure:

Example:
1. *Introduction of AECP: who they are & what they do (~ time here)*
2. *Introduction of Staff: Who was present listed here (~ time here)*
3. *Survey passed out (~ time here)*
4. *Slideshow: Description of slideshow here (~ time here)*
   a. *Topics can be added here*
5. *Video (10 min)*
6. *Ask Questions to ophthalmologist (~ time here)*
   a. *Questions asked could be added here*
7. *Questionnaire for Prize (~ time here)*
   a. *# of questions here*
8. *Brochures passed out*

Behavior:

Example:
3:48   workshop starts
3:53   survey handed out
3:55   everyone finished survey
*   Some boredom observed w/ presentation*
*   Lots of people checking their phone*
*   Easily distracted*
4:09   Video starts
4:10   Everyone paying attention
*   Interest in frequency of doctor's visits*
4:12   Shifting in sleep
*   People begin to look at phone again*
4:15   Someone has fallen asleep
4:19   Video ends
*   People begin to regain engagement*
4:20   Questions w/ Ophthalmologist begins *

Lots of participations in questions
Lots of internal conversations
4:30   Questionnaire w/ Prize starts
   ~ ⅓ of audience answered
   Brochures passed out and survey forms collected
4:43   workshop ended

Questions Asked*:

Example:
1. *How long are you allowed to use your phone so as not to damage their eye?*
   a. *Is it like 2hr that is allowed?*
   b. *Much interest in phone effect****
2. *What if there is no concern, how often can you make appointments?*
3. *Is lazy eye cause of phone use?*
   a. *Audience member uses personal experience with daughter having lazy eye surgery*
4. *If you don't have a concern is there a need for additional protection and treatment of eyes at home? (what they can do from their side to protect eyes)*
5. *Exercises they can do to increase their health and lessen the stress put on all the optic nerves? (A: no need)*
6. *Why do you get crusty eyes when you wake up? (A: conjunctivitis is a common cause for school age children)*
   a. *What is first aid for conjunctivitis?*
   b. *Is it allowed to wash your eyes with black tea? (home remedies) (A: no home remedies except for water)*
7. *What AECP offers: can only children use AECP? (A: this term project is only for children, depends on problem and where they live)*
8. *If a parent has myopia should you take your child to an appointment?*
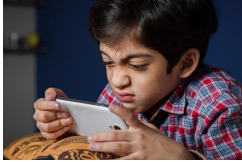
Other notes:

Any other notes can be written here

* Note that example information used is the real information from first workshop observed

APPENDIX E

Miscellaneous Active Learning Activity Resources

1. Picture Prompt Activity

Topic: *How Electronics Affect Eye Health*			
Talking Points: - Age - Close to screen - Tablet **Additional Info:** - Time allowed on screens - Proximity to screens in use	**Talking Points:** - Rubbing eyes - Heavy eyelids - phone **Additional Info:** - symptoms of excess tech use - Time allowed on screens	**Talking Points:** - Close to phone - Squinting eyes - Phone **Additional Info:** - Time allowed on screens - Proximity to screens in use	**Talking Points:** - Age - Poor lighting - Television **Additional Info:** - Time allowed on screens - Proximity to screens in use - symptoms of excess tech use - effect of lighting on eye health

Topic: *Common Dangers to Children's Eye Health*			
Talking Points: - sharp utensils - easy access	**Talking Points:** - chemicals - easy access	**Talking Points:** - perfume - supervision	**Talking Points:** - hot stove - easy access
Additional Info: - dangers of Silverware (forks, & knives) - if child is to use, do so under close supervision	**Additional Info:** - dangers of Chemicals - keep in original containers - lock up	**Additional Info:** - dangers of chemicals - keep out of reach - if child is to use, do so under close supervision	**Additional Info:** - dangers of hot liquids - keep out of reach - if child is to help cook, do so under close supervision

Topic: *Common Symptoms and Diseases of the Eye*		

Talking Points:
 - squinting
 - hand on eye
 - reading book
 	
Additional Info:
 - symptoms of eye
   disease
 - glasses/contacts
	Talking Points:
	 - redness
	 - swelling
	
	Additional Info:
	  - symptoms of eye
	   disease
	 - first aid for eye
		Talking Points:
		 - redness
		 - discharge
		
		Additional Info:
		  - symptoms of eye
		   disease
		 - first aid for eye

2. Room Quiz Activity

Signs on walls: agree, neutral, disagree

Q1: Meri's son has been playing video games all day. He told her that his eyes hurt. Meri read on a blog that a mixture of honey and water will help her son. She decides to use the home remedy. Do you agree, disagree, or feel neutral with Meri's actions?

> **Potential Answer:** Disagree. At home remedies can cause more harm than good as they can be a common allergy. The only thing that should be used to wash the eyes is water.

Q2: After learning that at home remedies may cause more harm than good Meri decides to limit the amount of time that he plays video games. Do you agree, disagree, or feel neutral with Meri's actions?

> **Potential Answer:** Agree. Exposure to screens for long times can damage a child's eyes. Limiting the amount of screen time is a great way to reduce the risk of damage to the eyes. Increasing the amount of time spent outdoors can also help reduce the risk of long term damage to the eyes.

Q3: Meri's son is still complaining of headaches even after limited time playing video games. You notice his grades have been dropping in school and the teacher says that he has been squinting a lot in class. Meri decides to do nothing about it and see if it goes away with time. Do you agree, disagree, or feel neutral with Meri's actions?

> **Potential Answer:** Disagree. If something is wrong with her son's eyes then waiting allows for any disease to progress. Waiting too long could allow for permanent damage to her son's eyes. Meri should have taken her son to the ophthalmologist so he can be screened for any potential diseases.

Q4: After a couple days of waiting Meri starts to notice that her son is bruising around his eye. He says that he was playing soccer with his friends and the ball hit him in his eye. Meri told him that he had to be more careful playing sports and made him wear protective equipment when playing. Do you agree, disagree, or feel neutral with Meri's actions?

> **Potential Answer:** Agree. When playing sports that can damage the eye proper protective equipment should be used. Parents should also prevent children from playing with dangerous household items such as cleaning chemicals, sharp utensils, and perfumes.