12-1-2004

The need and application of the Brueckner screening by pediatric primary health care providers

Brian Murray
Pacific University

Recommended Citation
Murray, Brian, "The need and application of the Brueckner screening by pediatric primary health care providers" (2004). College of Optometry. 1481.
https://commons.pacificu.edu/opt/1481

This Thesis is brought to you for free and open access by the Theses, Dissertations and Capstone Projects at CommonKnowledge. It has been accepted for inclusion in College of Optometry by an authorized administrator of CommonKnowledge. For more information, please contact CommonKnowledge@pacificu.edu.
The need and application of the Brueckner screening by pediatric primary health care providers

Abstract
The prevalence of visual disorders among children is significant. Amblyopia is a significant cause of vision loss in children and is best treated or prevented during the first five years of childhood. There is a need for a quick, objective and accurate screening tool to identify visually impairing conditions that are not typically found during elementary school vision screenings. The Brueckner method along with refractive screening with the direct ophthalmoscope are efficient means of identifying children that may have amblyopia or have visual conditions that place them at risk for amblyopia. With some practice, this technique can be mastered by health care providers in primary care settings. There is an excellent opportunity to apply this screening during well-child checks without a significant time impact to the office visit. Since all pediatric care settings are equipped with an ophthalmoscope, there is no additional cost associated with using this technique. The relatively high sensitivity of this technique when performed by a practiced observer means that fewer kids will be missed who may be at risk. The high specificity of this test means that there will be fewer false positive referrals. A training curriculum has been prepared to train pediatric health professionals in the Brueckner method. Learning and employing the Brueckner screening tool will facilitate primary health care providers in helping to meet the goal of improving children's vision.

Degree Type
Thesis

Rights
Terms of use for work posted in CommonKnowledge.

This thesis is available at CommonKnowledge: https://commons.pacificu.edu/opt/1481
Copyright and terms of use

If you have downloaded this document directly from the web or from CommonKnowledge, see the “Rights” section on the previous page for the terms of use.

If you have received this document through an interlibrary loan/document delivery service, the following terms of use apply:

Copyright in this work is held by the author(s). You may download or print any portion of this document for personal use only, or for any use that is allowed by fair use (Title 17, §107 U.S.C.). Except for personal or fair use, you or your borrowing library may not reproduce, remix, republish, post, transmit, or distribute this document, or any portion thereof, without the permission of the copyright owner. [Note: If this document is licensed under a Creative Commons license (see “Rights” on the previous page) which allows broader usage rights, your use is governed by the terms of that license.]

Inquiries regarding further use of these materials should be addressed to: CommonKnowledge Rights, Pacific University Library, 2043 College Way, Forest Grove, OR 97116, (503) 352-7209. Email inquiries may be directed to: copyright@pacificu.edu

This thesis is available at CommonKnowledge: https://commons.pacificu.edu/opt/1481
THE NEED AND APPLICATION OF THE BRUECKNER SCREENING
BY PEDIATRIC PRIMARY HEALTH CARE PROVIDERS

By

BRIAN MURRAY

A thesis submitted to the faculty of the
College of Optometry
Pacific University
Forest Grove, Oregon
for the degree of
Doctor of Optometry
December, 2004

Advisor:

J. P. LOWERY, OD, MEd
Biography

Brian Murray graduated in 1984 from Brigham Young University with a Bachelors degree in Manufacturing Engineering Technology. He worked as a Project Engineer and Design Engineer for McDonnell Douglas/Boeing Corporation for 14 years. While preparing to enter Optometry school, he earned an Associate degree in Medical Assisting and is currently a Certified Medical Assistant. He is currently completing a Doctor of Optometry degree at Pacific University and plans to enter that field upon his graduation in May of 2005.
Acknowledgments

Thanks to my advisor, J P Lowery OD, MEd for his excellent support. Thanks also to my wife, Mary for her ongoing encouragement and help.
Abstract

The prevalence of visual disorders among children is significant. Amblyopia is a significant cause of vision loss in children and is best treated or prevented during the first five years of childhood. There is a need for a quick, objective and accurate screening tool to identify visually impairing conditions that are not typically found during elementary school vision screenings. The Brueckner method along with refractive screening with the direct ophthalmoscope are efficient means of identifying children that may have amblyopia or have visual conditions that place them at risk for amblyopia.

With some practice, this technique can be mastered by health care providers in primary care settings. There is an excellent opportunity to apply this screening during well-child checks without a significant time impact to the office visit. Since all pediatric care settings are equipped with an ophthalmoscope, there is no additional cost associated with using this technique.

The relatively high sensitivity of this technique when performed by a practiced observer means that fewer kids will be missed who may be at risk. The high specificity of this test means that there will be fewer false positive referrals. A training curriculum has been prepared to train pediatric health professionals in the Brueckner method. Learning and employing the Brueckner screening tool will facilitate primary health care providers in helping to meet the goal of improving children’s vision.
Introduction ................................................................................................................. 2
Prevalence of Visual Disorders Among Children ......................................................... 3
Proposed Solutions ........................................................................................................ 3
The Brueckner Screening ............................................................................................... 5
Efficacy of the Brueckner Method ................................................................................ 7
Training Program ........................................................................................................... 8
Summary ......................................................................................................................... 8
Introduction

The most dynamic period of human development occurs during the first few years of life. The major systems of the human body undergo remarkable growth and change during this time. The visual system is no exception. Children's visual development is rapid and critical during these years. As vision care practitioners well know, this is the time to identify and treat anomalies that may affect a child's normal visual function.

The U.S. Department of Health and Human Services has published several goals as part of the Healthy People 2010: National Health and Disease Prevention Program. This 10-year plan includes 10 objectives for eye and vision conditions. Two of these in particular address children's vision. One of these is to increase the proportion of preschool children aged 5 years and under who receive vision screening. The other is to reduce blindness & visual impairment in children aged 17 & under.

At their website, the American Academy of Ophthalmology give the following policy on vision screening for children: "The American Academy of Ophthalmology and the American Association for Pediatric Ophthalmology and Strabismus recommend timely screening for the early detection and treatment of eye and vision problems in America's children. This includes institution of rigorous vision screening during the preschool years. Early detection of treatable eye disease in infancy and childhood can have far reaching implications for vision and, in some cases, for general health."

Also at the American Academy of Ophthalmology website, the following background is provided: "Good vision is essential for proper physical development and educational progress in growing children. The visual system in the young child is not fully mature. Equal input from both eyes is required for proper development of the visual centers in the brain. If a growing child's eye does not provide a clear focused image to the developing brain, then permanent irreversible loss of vision may result. Early detection provides the best opportunity for effective, inexpensive treatment. The American Association for Pediatric Ophthalmology and Strabismus, the American Academy of Ophthalmology, the American Academy of Pediatrics, the American Academy of Family Physicians and the American Association of Certified Orthoptists recommend early vision screening."
Prevalence of Visual Disorders Among Children

Vision disorders are the fourth most common disability in U.S. and the leading cause of handicapping conditions in children. The most prevalent of these is amblyopia. Prior to age 45, amblyopia causes more vision loss than all disease and trauma combined.²

Amblyopia is a unilateral or bilateral reduction of best-corrected visual acuity that cannot be attributed directly to the effect of any structural abnormality of the eye or the posterior visual pathway.³ Studies indicate that approximately 2-3% of children have amblyopia and an additional 3-4% of children have strabismus which can cause amblyopia. Further, 5-15% of children have other amblyogenic factors, such as significant refractive error, that could lead to amblyopia. In addition, amblyogenic factors can lead to visual impairment that can cause developmental and learning delays. Seventy-five thousand three-year-olds develop amblyopia every year. Treatment before age five is critical, yet half of these children are diagnosed after the age of five.

According to Moore,⁴ high refractive errors are also more often associated with both structural and functional abnormalities of the eye and visual system. The prevalence of high refractive error is uncertain but may be 5-10% of the pediatric population. Beyond the risk of amblyopia, uncorrected refractive errors may cause other developmental difficulties. Reduced visual acuity or eye strain from uncorrected refractive error can certainly impact learning.⁵

Proposed Solutions

A number of solutions have been proposed to address this problem, from elementary school vision screenings to mandated comprehensive eye exams for all preschoolers. Unfortunately, existing vision screening methods often provided in private or public schools cannot be depended upon to successfully identify pre-school children in need of vision care. In fact, these screenings may actually be an obstacle to the timely diagnosis of vision problems in many children. These programs can generate a false sense of security for those children who “pass” the screening, but who actually have a vision problem. Also, these screenings are subjective and require input (usually verbal) from the examinee. These screening procedures cannot be performed on preschool patients that are unable to provide reliable subjective feedback.
On the other hand, while a laudable undertaking, providing full eye exams for every preschooler would be difficult and time consuming to execute. The logistics of such a task are staggering, and a significant percentage of children in need of eye care could be missed. This would be the most thorough solution, but the actual widespread implementation of this plan is not immediately feasible due to the lack of available eye care professionals with pediatric expertise.

A practical alternative is a quick and effective visual screening tool that can be performed by primary health care practitioners during well-child checks. Such a screening tool would quickly and easily identify those children who have amblyogenic factors or other visual conditions requiring more comprehensive examination and treatment. This screening tool would help identify those children who are at risk, and insure that they get the care they need, when they need it.

In order to be effective, a visual screening tool should be able to detect the visual conditions that are amblyogenic or disabling. These conditions include:

- Opacities in the visual media such as congenital or trauma-induced cataracts;
- Retinal pathologies such as retinoblastoma;
- Temporary or constant misalignment of one or both eyes (strabismus);
- A significant difference in refractive power between each eye (anisometropia);
- High, uncorrected hyperopia, myopia, or astigmatism.

Any of these conditions can lead to amblyopia or disability if left untreated or uncorrected. Also, timely treatment is critical. Earlier detection and treatment yields greater opportunity for success. Therefore, this screening method must be an objective tool that can be applied deftly and successfully on younger, non-verbal patients.

The Brueckner Screening is a tool that meets the required criteria. This method is an effective way to spot media opacities, some retinal pathologies, strabismus, anisometropia, or, high refractive error. The only instrument required is a hand-held ophthalmoscope. While this method is not as accurate in determining refractive error as retinoscopy or autorefraction, it is sufficiently accurate for visual screening. In addition, this method is relatively easy to learn and can be performed quickly during a well-child check. It is an objective method and no verbal response from the patient is necessary. With practice and experience, health care practitioners can gain proficiency with this method and employ it quickly and accurately during an exam.
The Brueckner Screening

The Brueckner Test was introduced in 1962 by R. Brueckner to detect small angle strabismus and anisometropia. The method first appeared in 1981 in the English literature, when Cibis Tongue et al. described the procedure of the “Durchleuchtungstest”. This method is an effective tool for very young and/or uncooperative patients, because it only requires the child to fix their eyes on the light emitted by the direct ophthalmoscope in a darkened room. Younger and non-verbal patients are typically fascinated by the light source, as it is the primary item of interest provided during the screening.

There is one important disclaimer to the Brueckner Screening. This test is only effective on patients older than six months. Most newborns show no dimming of the fundus reflex as shown by Archer in 1988. Children between the ages of 2 to 8 months are likely to present an asymmetrical reflex as a normal stage of development and not as a pathologic finding.

The Brueckner test requires the use of the hand-held ophthalmoscope. The test is performed by dimming the room illumination to encourage larger pupil size and discourage accommodation. The examiner is stationed about 75 centimeters away from the patient. If the patient can understand the instruction, the examiner instructs the patient to look into the ophthalmoscope light. If the patient is non-verbal or too young to understand this instruction, the examiner shines the light toward the patient’s eyes and the child will usually look into the light.

The examiner then views the patient’s eyes through the peephole of the direct ophthalmoscope and focuses the lens to the power for the working distance. The red reflex of the fundus that appears due to the illumination by the ophthalmoscope light is observed and compared between the two eyes. The first thing the examiner looks for is an asymmetry in the brightness of the red reflexes between the two eyes. Asymmetry in the fundus reflex may indicate any of the following amblyogenic factors or pathologies:

- Anisometropia (a difference in refractive power between the two eyes);
- A media opacity (the opacity will be in the eye with the dimmer reflex);
- Strabismus (the eye with the brighter reflex will be the one that is misaligned);
- A retinal pathology (this reflex will appear unusual and dimmer in the affected eye).

If a child presents with an obvious asymmetry in the fundus reflexes, he or she should be referred to an eye care professional for further evaluation and a comprehensive eye exam.
The examiner then looks at the size and orientation of the crescent-shaped fundus reflexes that appear in each eye. These refractive crescents indicate the type and magnitude of the subject’s refractive error. For this portion of the test, it is important to note the position of the direct ophthalmoscope in the examiner’s hand. Ideally, the test should begin with the ophthalmoscope oriented vertically – as shown in the schematic diagram in figure 1. Crescents oriented toward the head of the ophthalmoscope indicate hyperopia. Crescents oriented toward the handle of the ophthalmoscope indicate myopia. (See figures 2 and 3)

Figure 1
Schematic diagram of direct ophthalmoscope

Figure 2 – photograph showing hyperopic crescent fundus reflexes. Note the orientation toward the ophthalmoscope head. Photo taken by J.P. Lowery, O.D., at Pacific University College of Optometry.

Figure 3 – photograph showing myopic crescent fundus reflexes. Note the orientation toward the ophthalmoscope handle. Photo taken by J.P. Lowery, O.D., at Pacific University College of Optometry.
The magnitude of the refractive error can be estimated by the size of the crescents. Crescents that fill 50% or more of the pupil are significant and indicate more than 2 Diopters of hyperopia or more than 1.50 Diopters of myopia. Also, the ophthalmoscope may be rotated 90 degrees to observe the crescents in the horizontal meridian of the eye and see if there is any change in the size or orientation of the crescents. A difference in size of more than 25% between the two meridians; or a change in the orientation of the crescents between the two meridians indicates that significant astigmatism is present in the observed eye. Patients that fit any of the above criteria have refractive error significant enough to warrant referral for a full eye exam.

There are some factors that can interfere with the successful application of this test. First, the patient may not be fixating on the light. This is important to insure the proper appearance of the fundus reflex. Second, the patient's pupils may be too small to give a good fundus reflex. This can be addressed by darkening the room further or oscillating the ophthalmoscope rheostat to try to catch larger pupils. Third, if patients have refractive errors greater than 6 diopters of either hyperopia or myopia, the crescents may not be visible. This would give the impression that they have little or no refractive error. In this case, the visual impairment will give rise to other signs or symptoms that should be evident from other visual tests. These patients should also be referred for a comprehensive eye exam.

**Efficacy of Refractive Screening with the Direct Ophthalmoscope.**

A study done at Pacific University College of Optometry compared the efficacy of the Brueckner screening with wet retinoscopy. Wet retinoscopy is the standard, preferred method for determining refractive error in children and non-verbal patients. In this study sixty-nine pediatric subjects were examined by experienced and inexperienced observers employing the Brueckner method. The failure criteria for patients screened with the Brueckner method was any meridian showing a crescent greater than 50%, or a difference of more than 25% between the crescents in the 90 degree and 180 degree meridians for any one eye. The failure criteria for Wet retinoscopy were hyperopia greater than 2.5 diopters, myopia greater than 2 diopters, and astigmatism greater than 1 diopter.

Comparing the results from these two methods showed a sensitivity of 93.8%, and a specificity of 86.5%. This study concluded that the Brueckner screening was an effective tool for accurately identifying significant refractive error without generating excessive false positives.
Training Program

In an effort to facilitate health care providers to in applying the Brueckner screening, a training program has been created that instructs the potential examiner in the proper procedure for performing the Brueckner screening. This training program is in the form of a PowerPoint presentation on a CD Rom. It is geared toward health care professionals in a primary care setting. The program is self-paced and can be completed in 20-30 minutes. It includes examples and a short quiz. The curriculum also includes a survey for feedback on areas that could be improved. Preparation of this curriculum is the first phase of this project. The next phase will be the distribution of the curriculum and compilation of the participants' feedback. The training program CD Rom accompanies this paper.

Summary

The prevalence of visual disorders among children is significant. Amblyopia is a significant cause of vision loss in children and is best treated or prevented during the first five years of childhood. Some visual conditions are amblyogenic and early treatment of these can prevent the onset of amblyopia. Visual disorders can lead to other problems such as developmental delays in social interaction and learning.

There is a need for a quick, objective and accurate screening tool to identify visually impairing conditions that are not typically found during elementary school vision screenings. The Brueckner method along with refractive screening with the direct ophthalmoscope are efficient means of identifying children that may have amblyopia or have visual conditions that place them at risk for amblyopia. It is also an effective tool to estimate a child's or non-verbal patient's refractive error and make referral to eye care practitioners, where appropriate.

With some practice, this technique can be mastered by health care providers in primary care settings. There is an excellent opportunity to apply this screening during well-child checks without a significant time impact to the office visit. Since all pediatric care settings are equipped with an ophthalmoscope, there is no additional cost associated with using this technique. The relatively high sensitivity of this technique when performed by a practiced observer means that fewer kids will be missed who may be at risk. The high specificity of this test means that there will be fewer false positive referrals. A training curriculum has been prepared to train pediatric health professionals in the Brueckner method. Learning and employing the Brueckner screening
tool will facilitate primary health care providers in helping to meet the goal of improving children’s vision.

References

1 Website: http://www.aao.org/aao/member/policy/upload/Vision-Screening-for-Infants-and-Children.pdf


6 “Refractive Screening with the Direct Ophthalmoscope” an unpublished thesis – Marlena Wankmueller, Pacific University College of Optometry, Aug. 2002


SAMPLE LETTER

Joe Smith, M.D.
1235 Highview Dr, Suite 12
Arlington, WA 98223

Dear Dr Smith,

Hello! Enclosed in this packet is a CD ROM with a power point presentation of a visual screening method that can be used on verbal or non-verbal patients to get an estimate of high refractive error and other amblyogenic conditions. This can be a very useful tool for spotting visual conditions that could lead to amblyopia. As you well know, the prognosis for successful treatment of amblyopia greatly improves with early detection and treatment. I believe that you will find this technique easy and useful.

The presentation requires Microsoft PowerPoint. To start the program, insert the CD into your CD drive on your computer. Double click the PowerPoint presentation entitled “Brueckner Screening”. When PowerPoint opens, go to “slide show” on the top menu bar and select “view show” from the drop-down menu. The presentation will start in slide show mode and will advance with a mouse click.

Also enclosed you will find a survey for your opinion about the presentation. Please mark it, add any comments you may have, and return it in the stamped, self addressed envelope provided. I truly need and appreciate your feedback.

Also, you will find supplementary material enclosed that discusses this method in detail and gives several additional references. Please review this material at your convenience after you have evaluated the PowerPoint presentation.

Thank you very much for taking the time to review this presentation. It is my hope that you will find it useful and informative.

Sincerely,

Brian Murray
Optometric Intern
Pacific University – College of Optometry
The Brueckner Screening

A quick and easy method to assess children's eyes using your ophthalmoscope to evaluate the fundus reflex

Amblyogenic Factors

- Media opacities such as congenital cataracts in one or both eyes
- A significant difference in the refractive power between the two eyes (anisometropia)
- An eye misalignment (strabismus)
- High uncorrected refractive error (either hyperopia or myopia)

Screening Children Using the Direct Ophthalmoscope

Ophthalmoscope schematic diagram
(Used throughout this presentation)

Important Note:
Only perform this screening on children over 6 months of age.
This technique is not effective at age 6 months or younger.

Procedural Set-Up

- Dim or dark room illumination
  - Encourage larger pupil size, disfavor accommodation
- Test distance 75 cm
- Patient must fixate ophthalmoscope light

Brueckner Test - what to look for

- Asymmetry in the fundus reflexes from the two eyes
- The size and orientation of crescents that may be visible in the retinal reflexes (examples will be shown later on)
What asymmetry may indicate

- Anisometropia - with the larger refractive error in the brighter eye
- Strabismus in the brighter eye
- Media opacity in dimmer eye
- Retinoblastoma in brighter eye

Brueckner Example 1

Note the asymmetry between the reflexes of these two eyes. In this case, there is a significant difference in power between the two eyes (anisometropia).

Brueckner Example 2

Note the asymmetry between the reflexes of these two eyes. In this case, an eye misalignment is also evident upon closer inspection - this is an example of strabismus.

Brueckner Example 3

Note the asymmetry between the reflexes of these two eyes. Also note the unusual appearance of the reflex in the right eye. Upon further examination, this was found to be a retinoblastoma.

High uncorrected refractive errors may also be amblyogenic

- High uncorrected refractive errors can lead to unilateral or bilateral amblyopia. These are defined as:
  - Hyperopia (farsightedness) greater than 2 diopters
  - Myopia (nearsightedness) greater than 1.5 diopters
  - Astigmatism (non-spherical cornea) requiring cylindrical correction greater than 1 diopter

Refractive Error Estimation

- Refractive error can be estimated by the size and orientation of refractive crescents.
- Observe retinal reflex of each eye with your ophthalmoscope in the upright position to estimate refractive error in the 90 degree meridian
- Then turn your ophthalmoscope horizontal and estimate the refractive error in the 180 degree meridian
Type of refractive error in each meridian is determined by position of crescents
- Hyperopic crescents will be oriented toward the head of your Ophthalmoscope.
- Myopic crescents toward the handle

Amount of Refractive Error can be estimated by the size of the crescents
- Crescents that fill 50% or more of the pupil are significant: (>2D hyperopia or >1.50D myopia)
- Differing crescents by 25% or more between meridians indicates significant astigmatism (>1D)

Example one: Brueckner reflex showing significant hyperopia in both eyes

Example two: equal Brueckner reflexes with no obvious crescents - this patient is emmetropic (no refractive error)
Example three: Brueckner reflexes showing low myopia @ 090, significant myopia @ 180
Significant astigmatism in both eyes

Example four:
Brighter left eye due to significant myopia
This is significant anisometropia:
emmetropic right eye and a myopic left eye

Example five: Brueckner reflex showing significant astigmatism in both eyes

What is your diagnosis?
(click for answer)

What is your diagnosis?
(click for answer)

The reflex is asymmetric and there is a significant difference in the power between the two eyes. This patient has anisometropia.
Study done at Pacific University College of Optometry

- 69 pediatric subjects, experienced observers
- Failed for any meridian of 50% or greater crescent, 25% difference for astigmatism
- Compared to Wet Retinoscopy using failure criteria:
  - Hyperopia ≥ 2.5 D
  - Myopia ≥ 2 D
  - Astigmatism ≥ 1 D
- Sensitivity = 93.8%, Specificity = 86.5%

Factors that decrease detection:
- Poor fixation
  - Instruct patient to fixate on your light
- Small pupils
  - Darken room
  - Try oscillating rheostat to catch larger pupils
- High refractive errors +/-6 D or more can look like emmetropes
  - Will usually see thin crescents along pupil margin with emmetropes
  - If not sure, retinoscopy by an eye care professional may be indicated

Summary
- Brueckner method is an easy and quick way to identify patients that may be at risk for amblyopia
- Routinely scheduled well-child checks provide an excellent opportunity to perform this screening
- With some practice, this technique can be mastered by health care providers in primary care settings
- High sensitivity from experienced observers means fewer kids missed who may be at risk
- High specificity from experienced observers means fewer false positive referrals
- Early referral of kids at risk for amblyopia will yield greater success from preventive care and early treatment
End presentation – Thank You

• Please take a moment and complete the enclosed survey and return it in the self addressed, stamped envelope provided – Thank You

• Prepared by:
  – Brian L. Murray – Optometric Intern

• Under the direction of:
  – John P. Lowery, O.D., M.Ed
    • Chief of Pediatrics, Pacific University College of Optometry
Presentation Survey

Please take a few minutes to respond to the questions below. Place an "X" in the box that corresponds to your opinion. At the bottom, please provide any additional comments that you would like to make.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found this presentation easy to follow and understand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The presentation clearly demonstrated the technique.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The slides in the presentation were easy to follow and well organized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This is a useful technique.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will be applying this screening technique in my practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The presentation was engaging and held my attention.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The supplement material provided is useful and relevant to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The examples used in the presentation were clear.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The narration in the presentation was helpful and understandable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall, I found this presentation to be informative and helpful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________