Visual Discrimination Activities

- Matching complex shapes to outlines (*Perfection*)
- Dice games
- Sorting coins
- Dominoes
- “What’s Different?” Or “Find the Difference” Games
- Sort items by shape or size

Fun Visual Memory Activities

- Memory games
- What’s Missing? games
- Study the picture
- Word searches
- *Line Up*
- Concentration

Visual Spatial Relationships Activities

- Copy designs using pencils, pennies, small erasers, etc
- Geoboard patterns and designs
- *Traffic Jam* game
- How to Draw books
- Directionality games
- Proprioceptive activities (to improve body awareness)

Cool Visual Form Constancy Activities

- *Spot It*
- Jigsaw puzzles
- Tangrams
- Parquetry blocks
- Building sets
- Type spelling words using different fonts

Visual Sequential Memory Activities

- *Scrabble*
- Hangman
- Crossword puzzles
- *Sequence* game

- Copy patterns (make a pattern, cover it up and have child re-create)
- Stringing beads in a specific sequence or to spell non-sense words

Easy Visual Figure-Ground Activities

- I Spy
- Hidden Pictures
- Sensory Bins with Letters (to build words)
- Shredded paper with letters or words on other paper scraps (to build sentences)
- Crafts with small beads
- Jigsaw puzzles (also great for visual closure)

Visual Closure Activities

- Partly cover up complex shapes before matching to the outline
- Word shapes activities (match the word to the outline)
- Match pictures to incomplete pictures
- Scavenger hunts (partly hidden learning items)
- Dot-to-dots (identify picture before connecting dots)
- Erase parts of pictures or words for a guessing game

15+ Occupational Therapy Activities to Improve Visual Skills for Reading

The following visual skills activities help improve skills in kids. They improve the strength and coordination of kids' eye muscles and those fancy skills needed for reading. (Visual convergence, visual accommodation, saccadic eye movements, and visual perceptual skills.)

1. Bubbles and Oral Motor Toys
Yes, you read that correctly! The mouth muscles help strengthen the eye muscles! Amazing, right?! Certain oral motor games help the eyes converge together.
For example, mouth toys such as party blowouts, floating ball blow pipes, harmonicas, string pipes, and slide whistles (with a pleasant soft sound, of course) are good ones.
(Oral Sensory Activities and Tools are also a powerful way to increase focus and attention in kids. Click on the link to the post to learn more.) Oriental Trading is a good place to get toys.

2. Hand-Held Tomy Water Games: My favorite treatment games that I have used for years are the Tomy Waterful (dolphin, pelican) games. They're great for visual focusing and getting the eyes to converge together. And and added bonus, the buttons strengthen the thumb muscles in the hands needed for Pencil Grasp Development. Tricky Finges, card sorting and shuffling

3. I Spy Games: Playing "I Spy" is great for visually scanning the environment. I Spy card games, or games such as Find-it or Spot-It, work on back-and-forth eye movements and visual perceptual skills. Lots of game in the toy isle.

4. Visual Memory Games: Kids need to have strong visual memory skills to identify letters for reading. Try basic memory games like this challenging one. And work on visual sequential memory with games such as Guess Who? Line-up, Sequence, etc. The Simon Classic Game is also a fast-paced fun game for visual memory that also requires concentration.

5. Home-made Magnet Plate Activities: Write the alphabet letters all over a plain paper or plastic plate. Place a magnet on top of the plate. The child holds and slides a strong magnet under the plate.

This is great for letter identification, sequencing the alphabet, and spelling. An Easy Visual-Motor Activity Using Magnets.

6. Bouncing Ball Play for Visual Skills: Bounce a small to medium ball back and forth with a peer. Or, bounce the ball off of a wall and catch it. The smaller the ball, the harder it is for the child.

7. Step-by-Step Drawing Activities: There are many how to draw books such as how to draw everything or how to draw animals. Start with a motivating but simple picture. To work on visual accommodation, place the picture at a distance away for the kids so they have to look up and down / back and forth.

8. Paper Pencil Mazes: Start with wide and shorter paths for younger kids. Decrease the width and increase the length and complexity as needed. Encourage kids to "look ahead" with their eyes before finding the right path through the maze. This helps strengthen visual saccades.

9. Dot-to-Dot Visual Skills Activities: Dot-to-dot activities require scanning and visual accommodation. Here's an example of one on Amazon. There are so many others that include either letters or numbers. They can be found at dollar stores or bookstores.

10. Word Searches, Word Fill-Ins, and Cross Words: Amazon also has several activity books with word searches, fill-ins and cross word puzzles. (I like how they're organized by age ranges to help guide educators and parents.) These activities help work on visual saccades needed for reading.

11. Hidden Pictures Activities: Hidden pictures are great visual scanning and visual perceptual activities. Do you remember these from the Highlights magazines?

12. Battleship: Games such as Battleship work on perceptual skills for reading, visual focusing,

13. Tangrams and Mosaic Puzzles: Visual perceptual skills are important for reading. Tangrams and this wooden mosaic puzzle are great for improving visual perception and visual accommodation.

14. Quirkle Cubes and Multi-Matrix: Challenge individuals to fast paced visual games such love playing Qwirkle Cubes (so many ways to play) and Multi-Matrix.

15. Geoboards, Pegboards and Lighted Peg Games: For added fine motor skill and visual perceptual skill development, pegboard designs and geoboards. And you can't go wrong with a fun game like Lite-Brite or Peg Brite.

An Easy Visual Motor Activity Using Magnets

This simple visual motor skills activity is easy to use during math and language arts. It's fun for kids and it addresses several important skills needed for learning tasks!

Looking for a fun activity that addresses grasping, hand dominance, and tactile/kinesthetic awareness?

And, visual tracking, bilateral coordination, crossing midline, and shoulder stability…

Also… motor planning, grading of movements, and concentration…

Even visual focus, visual scanning, visual discrimination, and memory / sequential memory…

…all activities that are important for the brain. All skills that help kids strengthen learning pathways.

And did I mention that you can use it during language arts and math? Which is perfect, because it supports skills needed for both subjects!

I'm excited to share it – it's one of my favorites that I've adapted and used in a variety of ways for kids to support learning!

First, I'll explain where I got the idea for the activity (TracKit.) Then, I'll share ways to adapt it and how to make your own version of the activity.

TracKit by Mary Benbow – A Cool Visual Motor Activity

Mary Benbow is an occupational therapist who created TracKit. I purchased one many years ago and still have it. I love using it with students!

[You can check out the set and purchase it on Therapro.com – however, it's easy to create your own version!]

TracKit contains a large round plastic tray, 5 reversible cards and a small slider.

The large circular cards fit into the tray. They contain pictures, letters and numbers.

The slider is a plastic disc with a ball inside. Students hold the tray with two hands and tip it gently to move the slider to various targets on the cards.

TracKit requires stabilization and precise controlled movements as the slider moves around. I've found this to be difficult for most younger kids I work with. So, I use the magnet...

Adapting the Visual Motor Activity / TracKit

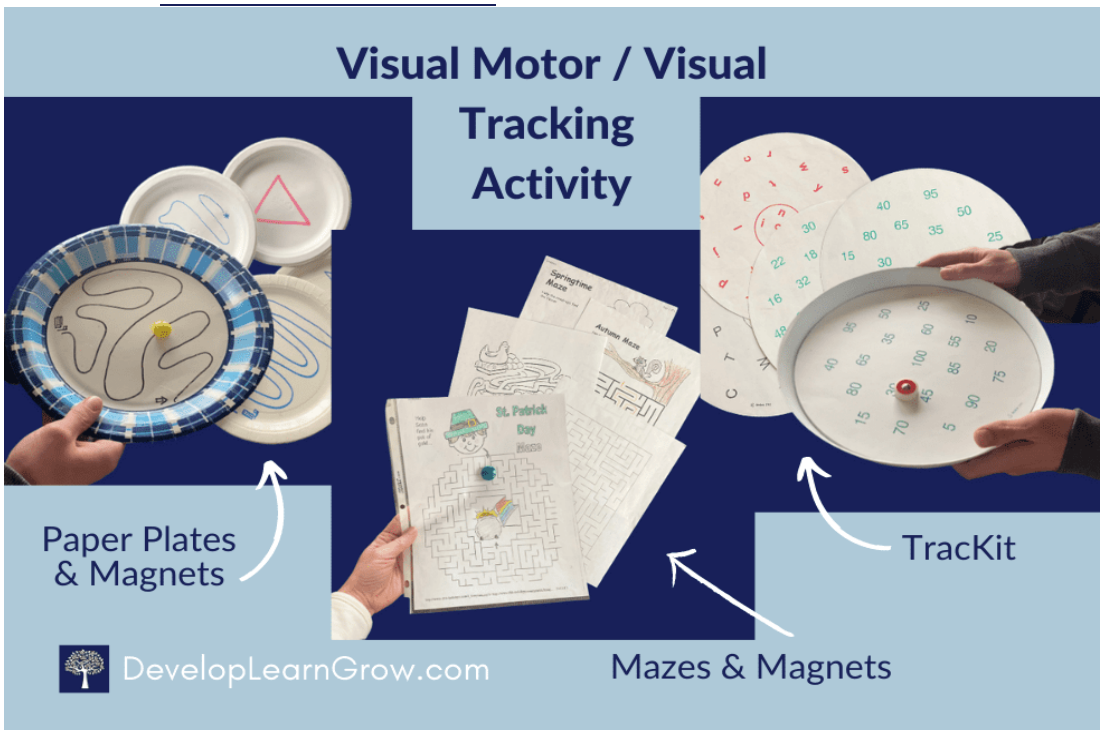
Holding the tray and carefully tipping it to stop the slider at the targets can be challenging for some students. I've found ways to adapt the activity or even better, create DIY versions of it.

If using the original TracKit tray, instead of using the slider- you can have students use two strong magnets.

Hold one magnet below the tray and slide it around to move the magnet on top.

For example, a right-handed student holds the tray with their left hand. Then, he / she grasps onto a magnet *under* the tray. As the magnet is slid under the bottom of the tray, it moves the magnet on top of the tray.

This is important for bilateral coordination.



Creating Your Own Versions of the Visual Motor Skills Tracking Activity

There are endless possibilities for making your own version of this activity. I find what I have laying around and adapt it as needed.

I've used plain white paper plates (and write or draw on them with marker or pen.)
Sheets of paper placed inside a page protector work as an easy alternative. For a warm-up before a therapy session, I'll print out a seasonal maze and place it inside the plastic cover. Laminating sheets are an easy way to protect the paper and help the magnet slide easier over the paper.
Just magnets and thick, oak tag or card stock paperwork for this activity. Plastic trays with paper placed on top (taped down if needed) also work well.
For more magnet activities, check out this article: Magnet Experiments and Activities for Kids.

How to Use the Visual Motor Magnet Activity during Math and Language Arts

I've used the TracKit cards with kids. I've also made my own papers, depending on what academic support a child needs. My favorite version is a large plastic tray… this helps kids cross midline with the magnet under the plate.
You can easily make any of these for your kiddos! It's a fun way for kids to learn… without them even realizing it!
Use this as a "warm-up" activity to get the eyes focusing and ready for other learning tasks. Or add it to one of your learning centers.
If a child needs a bit of a break, I don't challenge them with a thinking task that's too hard, I'll pick an easier one to keep it fun.
Important skills are still being addressed!
When using letter cards, the following skills can be addressed:

- Identifying letters (following directions, "find the n")
- Sequencing the alphabet
- Spelling names or words
- Identifying cursive letters (many kids can't recognize or read cursive)
- Discriminating b from d
- Peer interaction (one student says a spelling word, the other spells)

When using the number cards, you can focus on the following skills:

- Sequencing numbers to count
- Counting by 2's or 5's
- Finding answers to math problems
- Counting backwards

- Peer interaction (one student holds up or says a problem, the other moves the magnet to the answer)

Make your own cards or plates and have kids work on:

- Tracing shapes
- Proper letter formation
- Motor control through mazes
- Matching capital to lowercase
- Tracking complex crossing paths

Use these as center activities or at home for practice.

Why I LOVE this Visual Motor Magnet Activity

One, kids of all ages love it! It's fun.

Two, this activity addresses numerous skills.

It requires bilateral coordination and upper body stabilization as the non-dominant hand holds the tray or plate, while the dominant hand grasps the magnet underneath.

A small magnet size encourages grasping using only the skill fingers (thumb, index and middle fingers.) This helps strengthen and stabilize the fingers within the hand.

Kids are often so reliant on visual input during learning (as noted in the Tactile Learning Activity post.) This visual motor activity improves kinesthetic awareness as the hand below the plate finds, grasps and moves the magnet. In turn, this stimulates a different part of the brain.

A child focuses, visually scans, and visually tracks the targets and magnet during this game. Additional visual skills are also addressed depending on the learning skill. Visual discrimination: locating capitals from lowercase, b's from d's, etc. Visual sequential memory: sequencing the alphabet.

If the tray or plate is large enough, the dominant hand and eyes also cross the midline of the body. (If the child doesn't twist or turn his / her trunk or head.)

Additional Benefits of Using a Slider and a Tray during the Visual Motor Activity

Using the tray and slider requires more concentration. As the child holds the tray with two hands, it adds a motor planning and grading of movements challenge.

The shoulders stabilize the arms as smaller movements tip the tray.

In summary, this simple visual motor activity supports academic learning tasks *while also addressing* many developmental skills!!

Share this on your favorite social media network! Pass along to teachers and parents.

If you like this simple activity, be sure to check out these posts:

Easy Visual Tracking Activities Using the Infinity Loop (and Flashcards)

15+ Activities to Improve Visual Skills for Learning

Simple DIY Math Manipulatives for Tactile and Kinesthetic Learning

Hands on Learning: A Unique Tactile Learning Activity

-

Visual perceptual activities are great for a child's developing brain! These 42 visual perceptual activities support the components of visual perception… part of the foundation for learning.

What is Visual Perception?

Visual perception is the brain's ability to interpret what the eyes see.

Vision, just by itself, requires many skills and abilities:

- Focusing on objects up close
- Scanning the environment using the eye muscles
- Taking in info from all fields of vision
- Coordinating the eye muscles to work together
- Seeing and focusing on objects far away
- Adjusting to objects that are moving toward or away from the eyes
- Filtering light and adjusting to light
- Following moving objects with the eyes
- Focusing on objects while the body is moving
- Visually sustaining attention to objects and the environment

The eyes have such an important role… and so does the brain!

As the eyes constantly look, attend, and take in information, **the brain has to make sense of what it sees.**

The brain processes, perceives, and interprets what the eyes see. This is visual perception.

Visual perceptual skills rely on the brain's cognitive abilities. A child has to remember and organize previous visual info. Then, it can automatically make sense of everything seen.

Many other systems play a role in supporting the visual system and visual perception.

Various postural muscle groups and the movement / balance (vestibular) system help support visual skills.

Sensory processing helps support the attention centers needed for the visual system. In order to effectively take in info, the eyes need to focus and attend well. But, at the same time, they have to ignore unnecessary visual info.

The brain's job of actually making sense of what the eyes see (visual perception) is very complex! This post focuses on seven components of visual perception.

What Are the Components of Visual Perceptual Skills and How do They Impact Learning?

The seven components of visual perception are: visual discrimination, visual memory, spatial relationships, form constancy, sequential memory, visual figure-ground, and visual closure.

Each area is explained below. Additionally, visual perception examples are given for each area, showing how the components are part of learning.

Visual Discrimination

Visual discrimination is the ability to tell the difference between objects or the details of objects. It involves recognizing what's the same and what's different. This helps with matching and categorizing.

This skill is used when recognizing the difference between b-d, p-q, p-9, 5-s, etc. It's used when kids recognize the difference between similar looking words.

Or, it's used when telling the difference between leaves or shapes of states or countries.

Visual Memory

Visual memory is remembering an object and the characteristics of an object after it's out of sight. Kids need to retain visual information for immediate recall, or for later retrieval.

This skill is used for learning shapes, letters, numbers, sight words, fact families, maps, patterns, etc.

It's used when drawing a picture without a model. Or, when writing a descriptive story about an object or a picture.

Visual Spatial Relationships

Visual spatial relationships is the ability to recognize and understand the physical relationships between objects. It's knowing the position of an object in space.

(The development of position in space is complete between ages 7 and 9. Spatial relationships improves up to age 10.)
This is an important skill in understanding directional concepts (left, right, between, under, down, etc)
Kids need this skill during prewriting and writing. It's crucial when forming shapes, letters and numbers… especially ones with angles and curves.
Visual spatial skills are used when writing words and sentences with the correct letter size (tall, short, or hang below the line.) Additionally, the words have to be placed correctly on the writing lines.
Letter and word spacing is also necessary (proper space between words, but letters within a word are close together.) Understanding of margin sizes and space around the written work is also needed.
Kids also use spatial skills when organizing their math problems on paper (with or without lines.) They use it when figuring out maps, measurements, distance, patterns, and geometry.

Form Constancy

Form constancy is knowing that an object or form is the same no matter its size or what position it's in. This helps kids understand consistency of objects.
(This skill improves between ages 6 and 7, and continues to develop until age 9.)
The brain can look at an upside down A, and still understand that it's an A. Kids would also understand that an A is always an A, regardless of font or writing style (printed, italicized, bolded, upper/lowercase, etc.)
Children are able to form letters or words without reversing.
Additionally, form constancy involves looking at an object from a different angle but still knowing what the object is.
A picture of a world map on the wall is the same as a picture on paper in front of them. They understand that it's the same, even though the wall map is much larger, and maybe even at a different angle.

Visual Sequential Memory

Visual sequential memory is remembering the correct order, series, or sequence of items. This is extremely important for spelling, reading, and copying short text. It's useful when remembering the sequence of a visual story. Or, when following written directions to complete a multiple-step task.

As kids get older, they have to remember longer words or a series of words when copying text from a book or from the board. It's also used when remembering the correct order of equations and formulas.

Visual Figure-Ground

Visual figure-ground is the ability to visually locate an object in a busy background. It's differentiating foreground from background.

This skill continues to develop in kids between ages 6 and 7.

It's noticing an object, word, or letter with added visual input behind it. Such as on a busy worksheet.

Another example would be a child's ability to locate a blue pencil on a blue marbled carpet. Or, to find a math equation, part of an animal's life cycle, or the outline of a state in a pile of others.

Visual Closure

Visual closure is the ability to know what an object or picture is, when only presented with parts of it.

This would be recognizing part of a homework page when most of it is covered up by a notebook. It's also knowing what a picture is, if only given parts of it (a partially completed puzzle… or a dot to dot picture that's only partly finished.)

It's seeing an outline of a leaf that has been erased in many areas. Even though all of the lines of the leaf are not complete, the brain can fill in the rest of the parts to identify it.

This is important when kids start to learn to read faster. They don't have to look at every single letter of a word, or even at every single word.

Why Are Visual Perceptual Activities Important for Kids?

Visual perceptual activities support learning and cognition. They're an important building block for the brain and for many academic subjects.

The visual perception skills and examples previously listed are essential parts of math, reading, spelling, writing, science and social studies!

They're also important in staying organized and managing school materials.

If a child is having difficulty with any of the areas of visual perception, they can easily become frustrated. Frustration leads to a dislike of school, a low confidence level, potential behavior challenges, and even anxiety.

As a school based occupational therapist, I've worked with many, many kids who need support with visual perception.

I like using the Test of Visual Perceptual Skills (non-motor) to evaluate kids' visual perception. This test assesses the 7 components that I've previously mentioned. Checking all areas allows me to assess a child's visual perceptual strengths and weaknesses.

Then, I'm able to offer very specific visual perceptual activities to the child's educational team. The chosen activities address important skills to support the child's learning.

42 Easy Visual Perceptual Activities for Kids

Examples of visual perceptual activities are listed below. They're organized in each of the 7 areas previously mentioned.

I've only listed an activity once (under each category.) However, some activities and games address more areas than the one they're listed under. (I chose the most relevant component area that the activity focuses on.)

If you want to start with the basics, there are simple ways to work on the foundation for visual perception during daily routines (visual tracking, visual attention, etc.) The following list gives specific examples of games and activities that support each component of visual perception:

Visual Discrimination Activities

- Matching complex shapes to outlines (*Perfection*)
- Dice games
- Sorting coins
- Dominoes
- "What's Different?" Or "Find the Difference" Games
- Sort items by shape or size

Fun Visual Memory Activities

- Memory games
- What's Missing? games

- Study the picture
- Word searches
- *Line Up*
- Concentration

Visual Spatial Relationships Activities

- Copy designs using pencils, pennies, small erasers, etc
- Geoboard patterns and designs
- *Traffic Jam* game
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- Directionality games
- Proprioceptive activities (to improve body awareness)

Cool Visual Form Constancy Activities

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- Jigsaw puzzles
- Tangrams
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- Type spelling words using different fonts

Visual Sequential Memory Activities

- *Scrabble*
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- Copy patterns (make a pattern, cover it up and have child re-create)
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Easy Visual Figure-Ground Activities

- I Spy
- Hidden Pictures
- Sensory Bins with Letters (to build words)
- Shredded paper with letters or words on other paper scraps (to build sentences)
- Crafts with small beads
- Jigsaw puzzles (also great for visual closure)

Visual Closure Activities

- Partly cover up complex shapes before matching to the outline
- Word shapes activities (match the word to the outline)
- Match pictures to incomplete pictures
- Scavenger hunts (partly hidden learning items)

- Dot-to-dots (identify picture before connecting dots)
- Erase parts of pictures or words for a guessing game

42 Easy

Visual Perceptual Activities

DevelopLearnGrow.com

Hopefully this gives you a variety of activities to help your kiddos! Pin this on Pinterest so others can find it! Check out similar posts below.

For More Information on Visual Skills…

- How to Improve Reading with 15+ Visual Skills Activities – Support visual perception with these fun games and activities.
- Best Educational Toys and Games for Kids (Ages 5-10) – Several games and toys on this post support visual perceptual skill development.
- 17 Special Balance & Movement Activities to Improve Visual Skills – Use balance and movement activities to support and strengthen the visual system.

Did you know that there are 17 essential skills for success in reading, writing, sports, and practically all of your daily activities?

Dr. Russel Lazarus, March 19, 2020

Check out the list below to gain a better understanding of how each visual skill is necessary for functional vision.

1. **Eye Movement Control** is the ability to move both eyes together, to focus on an image, or path. Each eye has six muscles that work together to control eye movement and position.
2. **Binocular Coordination** is the ability of the two eyes to accurately work together, at the same time, as a team. If one eye is weaker than the other, the child may develop a lazy eye.
3. **Saccades** are quick, simultaneous movements of the two eyes between two or more focus points. This skill is essential for reading words and sentences across a page.
4. **Pursuits** are smooth movements of the two eyes between two focus points. This skill is required for moving between paragraphs on a page or even looking up at the teacher and then back down to the class notes.
5. **Convergence** is the ability of the two eyes to work together as a team, to turn in towards the nose and focus on a book or computer screen. This skill is essential for academic success.
6. **Accommodation Flexibility** is the ability of the eye to continuously change its focus between near and distant objects. This skill is needed for simultaneously seeing the blackboard clearly and then quickly changing focus to be able to read your class notes.
7. **Accommodation Endurance** is the ability of the eyes to maintain focus for reading and other close vision tasks over extended periods of time. This skill is required for homework and for using a computer or laptop for many hours.
8. **Visual Memory** is the ability to remember information such as words or images that have been seen in the past. Poor *short-term* visual memory can cause difficulty copying notes from the board and spelling difficulties.
9. **Visual Thinking**, also known as visual/spatial learning or picture thinking, is the ability to think and analyze what you have seen. This skill is needed for comprehension and math abilities.
10. **Central Visual Acuity** is the ability to see clearly and accurately. This skill is measured with the term 20/20 vision, the benchmark measure for “perfect” vision.
11. **Peripheral Vision (Side Vision)** is the ability to see objects around us without having to turn our heads.
12. **Depth Perception** is the ability to discern whether objects are closer or further away, in relation to one another. This skill is especially important for both academic and athletic performance.

13. **Color Perception** is the ability to discriminate between colors. This skill is important for accurate interpretation of color-coded materials (such as charts and graphs).
14. **Gross Visual-Motor** is the ability to move through space using your visual information to guide you— preventing you from bumping into things. This skill is essential for playing sports.
15. **Fine Visual-Motor** is the ability to engage in close-up activities with accuracy by using your visual information (i.e. reading, writing, sewing, texting, etc.)
16. **Visual Perception** is the awareness of your environment and what is going on around you in your visual field (what you can see). This skill measures your total width of vision.
17. **Visual Integration** is the ability to combine your vision with your other senses, to perform complex tasks (i.e. copying, reading while walking on a balance beam, threading a needle, tying shoe laces, catching or hitting a ball, etc.)

Information on Eye Development

In order to ease your understanding in the following sections, here are some brief definitions of the basic structures of the human eye:

- **CORNEA :** the transparent thin layer that covers the front portion of the eye
- **IRIS :** the colored tissue at the front of the eye
- **PUPIL :** the dark spot at the center of the eye. In bright light, the iris expands, and the pupil gets smaller, reducing the amount of light entering the eye. In low light, the iris shrinks, and the pupil gets bigger, allowing more light to enter the eye.
- **LENS :** as light enters the eye, it hits the lens, which sits behind the pupil and functions to direct light towards the back of the eye. The lens is responsible for the "focusing mechanism" of the eye, producing clear vision
- **VITREOUS :** the transparent jelly located behind the lens that fills the eyeball
- **RETINA :** the light sensitive tissue at the back of the eye that contains millions of light sensitive cells called rods and cones. Rods allow us to see in dim light and cones allow us to detect and distinguish colour.
- **MACULA :** the area of the retina that allows us to enjoy clear central vision and colour
- **OPTIC NERVE :** the structure that sends all visual messages to the brain, producing clear vision

The development of the eye in the womb

The first trimester (conception to 12 weeks)

- The eyes begin to develop during the 17th day of pregnancy. In the womb, the embryo's eyes start out as two tiny extensions from the developing brain.
- At 6 weeks of pregnancy, the embryo's eyes begin to fold inward and form 2 cup-like structures. As they grow, these structures stay connected to the brain by a stalk that eventually houses the optic nerve. The retina and lens then begin to develop.
- By 4 to 5 weeks of pregnancy, the lens becomes visible and by week 7 to 8, it grows to the size that it will be at birth. The iris (colored part of the eye) starts to develop at around week 4 to 5 and within 2 weeks, it will become fully developed.
- At 8 weeks of pregnancy, the tear duct starts to develop and will become fully formed a few weeks after birth. Tear production reaches its full potential approximately 3 months after birth, which is why infants do not shed tears when they cry.

The second trimester (12 to 24 weeks)

- At 12 weeks of pregnancy, the eyelids start to form. They protect the iris and lens and remain closed till about 27 weeks of pregnancy. After which, the eyes of the fetus open up and can blink in response to bright light from outside the womb.
- The iris starts to develop at 5 weeks of pregnancy, but the ciliary muscles that control the pupil do not develop until 5 months of pregnancy. Since the environment of the womb is dark, the constriction of the pupil in response to light is not needed and hence only develops at around the 8th month of pregnancy. Because this reflex develops later in gestation (the period of development inside the womb), babies born before 34 weeks of pregnancy need eye protection, which is why premature babies wear eye coverings until the gestation period is complete.

The third trimester (24 to 40 weeks)

- At 30 weeks of pregnancy, the pupils can react and control the amount of light that enters the eye.

- Between 28 and 30 weeks of pregnancy, the fetus also begins to develop eye movements and sleep patterns. Signals from the retina match the brain waves and a disruption to these cycles or insufficient sleep can significantly interfere with visual development.
- From 32 weeks till birth, the fetus can focus on large objects at about 20 to 25 centimeters away. Interestingly, since the colour of the uterus is red, the fetus now has enough cells to see their very first colour, red.
- Most of the development of the retina occurs between 24 weeks of pregnancy and 3 to 4 months after birth. During this time, the optic nerve also receives a coating called myelin around the nerve in a process known as myelination, which allows accurate signal transmission to take place.
- The development of the macula starts during the third trimester and matures at around 6 months after birth. As the retina and lens develop, the vitreous forms between them. Alongside it, connections between the eye and the brain also start to form, which takes about 5 months to complete.

A newborn's vision

- A newborn's vision is about the same as the vision of a fetus at 36 weeks of pregnancy. From a newborn's point of view, things are fuzzy for a while. Although the eyes can see, the brain isn't ready to process all the visual information.
- The ability to focus is still underdeveloped and visual acuity (the ability to discern shapes and details in objects) in infants is about 20/400 or 6/120. By 6 months of age, this improves to 20/25 or 6/7.5. This process is known as emmetropisation, where the length of the eyeball aims to match the power of the eye [1]. Emmetropisation completes at around 6 years of age [2]. Most infants have hypermetropia, where light rays focus beyond the retina instead of on the retina. Hypermetropia typically decreases to a low level by teenage years [2]. However, the process of emmetropisation differs among children and a disruption (a quicker lowering of hypermetropia and lengthening of the eyeball) to this process can result in an early onset of myopia, where light rays fall short (in front) of the retina.
- A newborn's eyes are approximately two-thirds of its full size. The rod cells are better developed at birth, allowing a newborn to see dark and light shades of grey. Colour recognition then begins at 3 months of age when the cone cells mature.

What does a child see as they grow?

Each child is unique and might reach certain milestones at different ages. The table below summarizes several visual milestones that take place as children grow older. It is important to note that this table is only a guideline and should not be used to replace a consultation with a trained eye health professional. Uncorrected refractive errors like myopia, hypermetropia, and astigmatism, as well as other issues, if any, may affect general and visual development.
Frequently asked questions (FAQs)

Q: When should my child have their first eye exam?
A: They should have their first comprehensive eye check at 6 months of age, even if no eye or vision problems are apparent. If there are any hereditary eye conditions, the first comprehensive eye exam could be earlier than 6 months of age or as recommended by an eye health professional.

Q: What should I take note of if my infant is premature?
A: The eyes of an infant born prematurely will be examined by a specialist soon after birth to rule out any common eye conditions like cataract, infantile glaucoma, and eye tumors.

Q: How do I know if there is something wrong with my child's eyes before 6 months of age?
A: Watch for signs of vision problems, for example, if you think your child may not be responding to their environment appropriately or if you notice that your child is not reaching an important visual developmental milestone, schedule an eye check with an eye health professional at your earliest convenience.

Q: How often should I bring my child for an eye check?
A: There are general guidelines for eye checks available that differ between countries and it is advised to check with your country's framework. The American Academy of Ophthalmology recommends:
• Once between 6 to 12 months old
• Once between 3 to 3.5 years of age
• At schooling age, once every 1 to 2 years. It should be noted that a vision test commonly done at schools is a screening tool and does not replace a comprehensive eye check.

Q: What are some common eye complications that can occur in infants/toddlers?
A:
• Excessive tearing, which may suggest blocked tear ducts
• Red or crusty lids, which may suggest an eye infection
• Constant eye turning, which may be a problem with eye muscle control and suggestive of strabismus
• Extreme sensitivity to light, which may indicate an abnormally high pressure in the eye, also known as glaucoma
• Appearance of a white pupil, which may indicate a form of eye cancer known as retinoblastoma

Q: How much screen time is recommended for young children?
A: Here are some recent screen time guidelines according to the World Health Organization
• Infants younger than 1 year old: Not recommended
• Children 1 to 2 years old: Not recommended
• Children 2 to 4 years old: Sedentary screen time should not be more than 1 hour each day
Note: For children of all ages, when sedentary, reading and storytelling with a caregiver is encouraged

Q: What can a child see at birth?
A: A newborn's vision is fuzzy. They can see dark and light shades of grey, blink in response to light, and begin

to follow moving objects. The ability to focus is still underdeveloped and visual acuity in infants is only about 20/400 or 6/120.

Q: What do I do if I notice my child has a turned eye?
A: Inform your child's doctor (pediatrician) and if necessary, they will refer your child to an eye doctor (ophthalmologist) to assess and treat the turned eye.

Q: What are the signs of poor vision in a child?
A: If one eye turns or crosses, it could mean that vision is worse in that eye. Another sign to look out for is if a child is not interested in faces or age-appropriate toys. Tilting their head and frequently squinting their eyes in an attempt to see their surroundings clearly is another sign that a child might have vision problems. Infants and children may not be able to express that they have poor vision, so it is important for parents and caregivers to look out for these signs and ensure that they have regular and timely eye checks.

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https://www.optometrists.org/childrens-vision/guide-to-visual-development
https://www.webmd.com/eye-health/eye-doctors-optometrists-ophthalmologists

Pictures
https://www.istockphoto.com/stock-videos *all photos*

YouTube Films:

https://youtu.be/7lBtlGvS1Gc Embryology of the Eye (Easy to Understand) Time: 9:54

https://youtu.be/fYwm4Ccj4Bs Anatomy of The Human Eyeball | Structure & Function | Iris | Cornea & Sclera Time 23:20

https://youtu.be/iIBOsTZRyWs Basic Structure & Function of the Eye Time 26:53

https://youtu.be/WcB6_lX3pS4 Eye Anatomy and Function - Made Easy Time: 7:19

https://youtu.be/WrRWI-grMXc Eye Animation Time 4:34

https://youtu.be/gHxLX2vQIRg Human Anatomy, Eye Model Time 26.53

https://youtu.be/iIBOsTZRyWs Basic Structure & Function of the Eye Time 26.53

https://youtu.be/AXS2LdgROnE Human Anatomy and Physiology Eye Anatomy Demonstration Time 4:26

https://youtu.be/TY1giZgddAs The Visual System: How Your Eyes Work Time 2:20

Courses:

Visual Perception and the Brain (Duke University)

https://www.coursera.org/learn/visual-perception#instructors

Learners will be introduced to the problems that vision faces, using perception as a guide. The course will consider how what we see is generated by the visual system, what the central problem for vision is, and what visual perception indicates about how the brain works. The evidence will be drawn from neuroscience, psychology, the history of vision science and what philosophy has contributed. Although the discussions will be informed by visual system anatomy and physiology, the focus is on perception. We see the physical world in a strange way, and goal is to understand why.

Visual Perception and Childhood Occupations Presented by: Jennifer Fortuna, PhD, OTR/L

https://www.medbridgeeducation.com/course-catalog/details/visual-perception-and-childhood-occupations-jennifer-fortuna-pediatric-occupational-therapy-vision/

This course addresses an important aspect of daily living, learning, and play for children: Visual perception. The course begins by defining visual perception and explaining its functional implications. It identifies and demonstrates key treatment strategies for children with visual perception problems.

Fee $ 100

Visual Perception (part of the First Principles of Computer Vision Specialization Columbia University in the City of New York

The ultimate goals of a computer vision system is to generate a detailed symbolic description of each image shown. This course focuses on the all-important problem of perception.