المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Textile Artwork Based Onon Braille And Ergonomic Considerations Abstract

Researcher

Dr. Hala Abdullah Al-Qahtani

University of Hafr Al-Batin

Assistant Professor - Design and Arts (Textile Art)

This research examines the challenges blind individuals face when learning and practising textile arts, particularly hand weaving. It addresses the misconception that blindness leads to enhanced other senses, arguing instead that the heightened sensitivity in their remaining senses is a result of increased reliance and training. The study emphasizes the importance of using multiple senses in learning, particularly in retaining information and improving memory recall, primarily through Braille. The main focus of the research is to propose ergonomic considerations to make hand-weaving arts more accessible for blind learners. It explores how incorporating Braille and ergonomic principles into the design of tools and teaching methods can help blind individuals learn textile techniques like design and fabric structures. This approach aims to create a more inclusive and effective learning environment for blind students in the field of fine arts. The research uses a descriptive and analytical approach to explore how Braille-based handlooms can be designed to suit the physical and cognitive needs of blind learners. It highlights how ergonomic considerations in art education can enhance the learning experience, enabling blind students to engage with and create textile art. The findings suggest that Braille and ergonomic principles can significantly improve the ability of blind individuals

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

to participate in textile art creation. The study recommends further research and development in integrating these considerations into educational curricula to support blind learners in the arts and other creative fields.

Keywords: Blind individuals, Textile arts, Hand weaving, Sensory enhancement, Braille

ﬅ╥╥×╩ŏ╤ň ҭ

Blind people rely on their remaining senses to perceive the environment in which they live. Still, there is a widespread belief that the effect of blindness works to develop some of their other abilities, and this compensates them for what they have lost. This remained prevalent until most studies proved that sensory compensation does not exist and that the noticeable increase in the sharpness of their senses is due to their better use of their senses, as they depend on them ultimately. Many studies have confirmed that the percentage of what a blind person remembers of what they have previously learned varies depending on the senses through which the message is entered. Furthermore, the more senses are involved, the more successful and effective the teaching will be, leading to better quality learning and a higher percentage of recall, depending on the use of Braille.

Given that blind learners face many difficulties, especially in the field of teaching fine arts, especially hand-weaving arts, this is what made the current research put forward a proposal to solve this problem by arriving at the most critical considerations of ergonomics. Ergonomics facilitates the learning of hand-weaving for blind people, enabling them to learn hand-weaving skills such as design and textile structures using Braille.

- ¾╡¾Ï╤ρŃş ╩¾╡╤ň ҭ

***RQ:** What is the possibility of developing a proposal that would help us implement textile artworks using Braille and ergonomic considerations to serve the blind?*

المجلة الإلكترونية الشاملة متعددة التخصصات

Electronic Interdisciplinary Miscellaneous Journal (EIMJ)

العدد الثالث والتسعون - شهر (3) 2026

Issue 93, (3) 2026

ISSN: 2617-958X

• ¾╪¾Ï ╗ðŃá ¦ ú⅟ð╗¤¾╪

- To focus on the blind from a technical perspective by developing a proposal that would assist them in implementing textile artwork.
- To identify the most essential ergonomic considerations consistent with the capabilities of blind people in implementing textile artworks.
- To link ergonomic considerations to Braille in designing textile artworks.

±Ń¾₄ŏ ╓╤╥Ϊ τ ð¾₄Ě ¾╪¾Ï ╗ðŃ

To open the way for researchers and those interested in how to support different groups in society interested in the visual arts, such as those with total and partial disabilities and blind people. They should also develop proposals that would benefit the field of textile art and other artistic fields, integrating ergonomic considerations into the teaching of art courses and other courses that require human engineering to suit the work environment, including art laboratories, photography studios, studios, and other settings. Blind people enjoy and appreciate visual art.

• ¾╪¾Ï ╗ðŃé ♣╓╤Ń¾╪ň

***H:** A proposed work that demonstrates how to create textile artworks based on Braille and ergonomic considerations for blind people.*

• ¾╪¾Ï ╗ðŃǩŏ ň╤

- Objective Boundaries: Hand weaving, Textile structures, Looms used in weaving, Blind people, Ergonomic considerations, Braille, and Some artworks by famous artists in various fields in Braille.
- Spatial Boundaries: Kingdom of Saudi Arabia (Eastern Province)Time Frame: 2024 AD.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

- Research Methodology: Descriptive and analytical approach.

- ¾┪¾Ï ╤ðŃǁ╬¾Ï ╧╨¾

c Ï τ×Ѽ ¾Ï ◘ťτ ě

Hand weaving is one of the arts that has taken the forefront of the skill practices that history has known from the beginning of the early ages to the present time in order to provide each element with what it needs in a new functional and aesthetic form (Ishaq, 1999 AD). Hand weaving is one of the fields of art education and one of the essential axes for developing innovation and diverse skills to gain experience due to the breadth of its formative potential through which it is possible to work within an experimental framework that works to create many variables in the field of weaving (Kawafha & Abdel Aziz, 2010).

Types Of Surface Formations for Fabric

There are a variety of methods and theories for shaping woven surfaces, covering various human needs and business fields. Fabric is produced and shaped as follows theoretically:

- The length threads intersect with the width threads at a right angle, and this is called plain fabric.
- Creating stitches manually or mechanically with a single continuous thread, which is called a B Tricot
- Wrapping the warp threads and tying them with knots of tiny threads in a specific area. This is what is called carpeting.
- Thermal pressure for hairs or fibbers is chemically bonded to a specific thickness, and this is called non-woven fabric.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

- The vast and acquired artistic formations, with manual skills, included ornamental and decorative formations (Al-Hadidi, 2004).

c Ïτ×Õ¾Ï ◘ťěÏτ×f╧ك╥ň╤õ╡ň¾Γ×╛

Textile work is considered a fertile field for research and experimentation in art education. Still, it needs innovative and skilled methods as well as more attention to the search for new materials for their aesthetic effects in textile formation, as textile work is based on three essential elements (material, method of performance, textile composition, design), as the material is considered a means of formation and expresses a subject through performance methods represented in textile compositions and techniques (Mustafa, 2010).

Textile Structures

It is the way in which the weft threads interlock with the warp threads during the weaving process. Fabric structures are divided into basic structures and structures derived from these basic structures. There are three essential structures: plain weave, twill weave, and satin weave.

Plain Weave Construction

Plain weave is the simplest type of weaving, in which the weft thread interlocks with the warp thread so that each weft thread passes over a warp thread and under the following warp thread. This arrangement is reversed with the following weft thread, as the warp threads that were below the previous weft thread are raised, and the warp threads that were above the previous weft thread are lowered. This remains the case.

The pattern extends to the entire width of the fabric or the portion containing the plain weave. Plain weave requires only two threads to complete. The following image shows a plain weave made of 5/3 unbleached cotton yarn, showing the interlocking method mentioned above (Sha'araf, 2019).

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

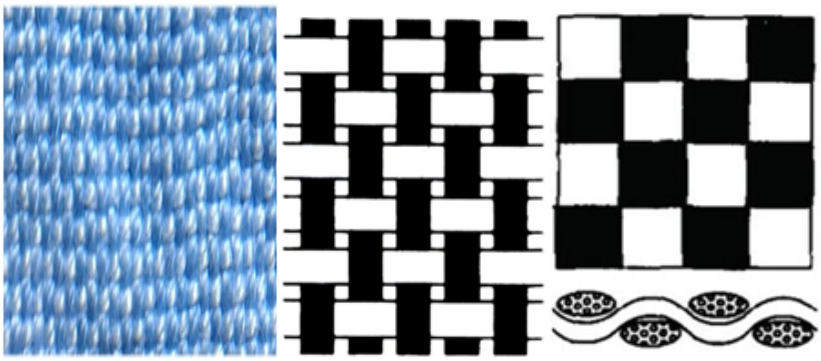

Figure 1. Plain Weave Showing the Methods of Interlocking

Twill Weave Installation

It is a weaving structure that, in its simplest form, consists of passing a weft thread over two warp threads and under the following warp thread. This pattern is repeated with each interlacing of the weft threads with the warp threads. The weaving structure is formed by interlacing the weft threads with the thread following the warp threads. If we assume that the first weft thread is over the first and second warp threads and under the third, then the second weft thread will be over the second and third and under the fourth, and the third weft thread will be the third and fourth warps and under the fifth. This pattern is repeated along the width of the fabric or the length of the desired terrycloth weave. Terrycloth fabrics are characterized by the appearance of oblique threads, and the most famous of these are jeans, gabardines, and others.

Terrycloth fabrics require at least three threads to form. The picture shows terrycloth weave in its simplest form but with the weft thread passing over and under two warp threads (2/2 terrycloth). The diagram below shows the interlacing pattern and how to draw it on checkered paper for terrycloth weave in its simplest form (Sha'araf, 2019).

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

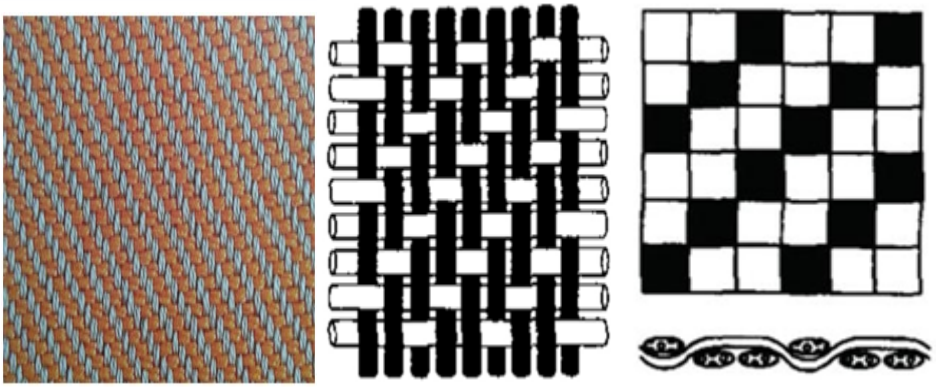

Figure 2. Interlacing Pattern

Satin Weave Installation

The warp threads that have more than one weft thread passing over or under them are called warp-twisting, and vice versa for weft. If the weft passes over four warp threads, this means that the twist is four threads long, and the visible thread is the twisted thread (here, the weft thread). Thus, this property was taken, and the atlas fabric was built upon it, as it works to show the weft or warp thread more on one side of the fabric than the other. This is done in its simplest form, which is the weft thread passing over three warp threads in the first weft. In the second weft, it passes in the same way, but the three warp threads that it passes over are chosen so that a twill fabric is not formed, as if the warps were chosen consecutively, a twill fabric would be formed, as previously explained. The atlas fabric is distinguished by its use in fabrics that show a shine on one or both sides. There is a satin weave, a sateen weave, and a combination of both. The satin weave requires at least four threads to form. The picture shows the shape of the weave structure. Note that the areas where the weft appears are very few compared to the warp, which is primarily visible in the picture. The diagram shows the shape of the satin weave if the weft passes over seven warps (Sha'araf, 2019).

.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

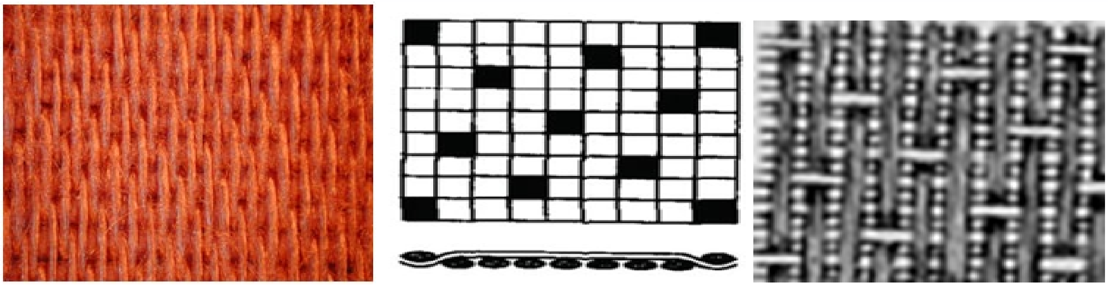

Figure 3. Shape of Satin Weave

Derivations Of Basic Tissue Structures

Each basic tissue structure provides specific characteristics related to appearance, texture, and function, in addition to its physical properties, such as weight, thickness, etc. There are several ways to change some of these characteristics while maintaining the same tissue structure, including:

- Different counts in the same fabric
- Use different tools for both warp and weft.
- Using coloured threads in different arrangements for the warp and weft or both.
- Use of different types of threads in weaving
- In the case of twill and satin weaving, a different number of warp threads are used to pass over and under it (Sha'araf, 2019).

x→ϭ ╡♣╔¾╡╡τ ×╡Ń⁄ã╔╡ ╔╔ŏÏ ╤ñ ╤ϐ╡

There are two types of looms:

- Simple hand looms.
- Automatic looms

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

To learn about the looms used in weaving and how to employ them with an aesthetic vision in life, you must know the following:

Loom is the machine used by the weaver to produce woven fabric. The shape, size and components of the loom vary depending on the size and specifications of the product. Through this research, we will mention the automatic looms used for textile artwork, including:

Simple And Automatic Hand Looms

The floor loom is an enlarged version of the table loom, except that it uses treadles to move the shafts in four different ways. Floor looms can be divided into four different types based on the method of raising the shafts: jack loom, counterbalance loom, countermarch loom, and dobby loom. All of these are shaft looms and share a standard construction; the only difference is the method of moving the shafts, as will be explained.

Essential elements of floor looms.

- Warp cylinder.
- Fabric roller.
- Slack system and warp brake.
- Fabric folding system.
- Comb suspended from above or attached to an axis below.
- A weaving shuttle is either hand-held or mounted on a comb to push the weft into itself.
- A treadle strap is used to attach the shields to the pedals.
- Shield movement system (Sha'araf, 2019).

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

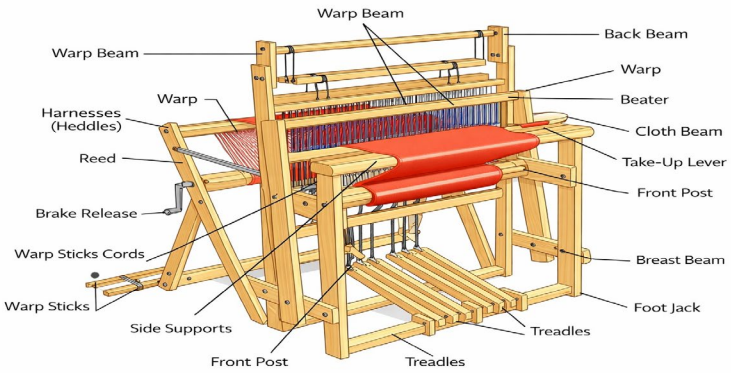

Figure 4. Basic Elements of Loom

Jack Loom

The movement of the shafts in a jack loom depends on the use of treadles and a set of levers to raise or lower the set of shafts on the loom. In the loom shown in the picture, when the foot is pressed on one of the treadles, which is connected to a set of levers via a treadle strap, depending on the design to be executed, the set of shafts connected to this treadle descends downwards, forming the required treadle. In this case, the treadle is open downwards.

Figure 5. Loom Cranes

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

The features include:

- The designs that can be implemented are theoretically unlimited, depending on the number of shields.
- The design of the hoist loom is simple.
- The process of tying the tread is easy.
- Easy to maintain and install.
- Adding and removing a shield is easy.

The following are the disadvantages:

- Since some of the warp threads are raised or lowered, they are stressed more than the rest of the threads, and this negatively affects them.
- The rear ribs should be raised further or lowered further to achieve a clear breath.
- Some designs use only specific warps most of the time, which negatively affects the warp threads (Sha'araf, 2019).

Counterbalance Loom

Every two shafts in this loom are connected using a pulley. If one shaft is pulled down, the other is pulled up, so the resulting weave is even and open both up and down. Four shafts can be used, with each pair connected in the same way, and then each set of two is connected, as shown in the following diagram:

The following image shows a type of baccarat loom that uses the same method as the one previously explained:

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Figure 6. Four Shaft Loom

The features include:

- The formed soul is very pure.
- The power exerted by pressing the pedals is low.
- It is best used in rug weaving.
- The tread pattern is straightforward.
- Even tension on all warp threads at a stage of weaving.
- Cheap.

The following are the disadvantages:

- It is definite to the number of four degrees, as the higher the number, the more difficult it is to control.
- If one dharm is used instead of three, the breath will be unclear (Sha'araf, 2019).

T- Countermarch Loom

In this loom, each shaft is connected to two sets of levers, one to raise the shaft and the other to pull it down. The treadles are connected so that each set of shafts is connected by the raising and lowering levers according to the desired design. Thus, by pressing the treadles, one

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

set of shafts is raised, and the other is lowered. This loom is used in all textiles.

Figure 7. Regular Tension Loom

The features include:

- The resulting loom is very clear for any arrangement of warps.
- A large number of shields can be used.
- The tension on the warp is uniform throughout the weaving process.

The following are the disadvantages:

- The connection structure for the two crane systems is large, making them complex to connect.
- All shields need to be connected to both the lever systems as well as the pedals.
- The more shields there are, the greater the load on the foot (Sha'araf, 2019).

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

[illegible]

The term disability is generally less objective in terms of measurability than impairment and disability. It is a term that refers to the effect that a disability results from during the personality changes and the different social and cultural. The state of disability does not necessarily mean a state of handicap. (Al-Khatib and others, 2009 AD).

[illegible]

It is a weakness in the sense of sight that limits a person's ability to use it effectively, which negatively affects his performance and development. Visual impairment is a weakness in any of the five visual functions: central vision, binocular vision, visual accommodation, peripheral vision, and colour vision (Kawafha & Abdel Aziz, 2010).

[illegible]

Visually impaired people are classified into two main categories:

- The category of blind people is one of the categories to which the legal and educational definition of visual impairment applies, and they are called (Braille Readers) as they use their fingers to read.
- The partially sighted category, where this category can read using a magnifying device or eyeglasses, and the visual acuity of this category ranges between 20/70 to 20/200 feet in the stronger eye, even with the use of eyeglasses. This category is called (Large-Type Readers): They are the ones who use their eyes to read while magnifying the words (Kawafha & Abdel Aziz, 2010).

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Causes Of Visual Impairment

Many causes lead to visual impairment, including:

- Prenatal: This includes genetic and environmental factors, as well as specific diseases in the pregnant mother.
- During birth: These include genetic factors, and their effects often appear from birth. When this happens, they are called congenital factors, and they include lack of oxygen and premature birth.
- Postnatal: Non-genetic factors that cause visual impairment are known as acquired factors and include increased oxygen levels in incubators, eye diseases, and injuries resulting from accidents (Al-Hadidi, 2004).

E[illegible]

The science is founded on the evaluation, acquisition, processing and presentation of data related to the human body and its relationship to product design, working conditions and environments. It is defined as the amount of information about human capabilities, movement constraints and other human characteristics related to design (Mustafa, 2010).

Ergonomic considerations must be taken into account in the design, which are as follows:

Physical Ergonomics

It is concerned with studying the physical aspects of the human being, such as (the structural and functional dimensions and measurements of the body and the range of movement of the body - its parts): the force that can be exerted and estimates of the energy requirements of physical work.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Biomechanical capabilities and limitations The physiology of the body's organs is concerned with the physical capabilities and limits of human beings. It deals with the aspect of anthropometry. Human body measurements and physical dimensions are of great value in determining the appropriate dimensions that achieve maximum compatibility between individuals, products, and the user environment.

It deals with the physiological aspect, which is the science that is concerned with studying the functions of the various organs and systems of the body, such as studying the vital body systems involved in the interaction between the human being and the product, the sensory and cognitive functions of the work and function of the muscles (Mustafa, 2010).

Cognitive Ergonomics

The cognitive aspect of work conditions is studied so that human and system performance is at its best. The study of sensory perception and the mental, intellectual, and psychological processes involved in receiving, processing, perceiving, understanding, remembering, and making decisions. The study of human performance theory is concerned with studying the mental and cognitive capabilities and limits of humans. It aims to enhance cognitive tasks through multiple means and interventions (Mustafa, 2010)

Macro Ergonomics

Interested in research, design, development and application of technology-facing organization–mechanization (Mustafa, 2010).

Learn Braille:

The Braille method is based on one basic template called the “cell.” This cell consists of many Arabic and English letters, numbers, diacritics, and punctuation marks.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

The cell consists of six points arranged in two adjacent columns, which are:

1. The left column contains points (1), (2), (3)

2. The right column contains points (4), (5), and (6), as shown in Figure.

How To Read

Words and numbers are read from left to right, which is different from the way regular handwriting is read. Every reader has a reading style in terms of using fingers and hands, and this matter is available to what suits the learner. Some read with the index and middle fingers of the right hand, and there are those who read with the index fingers of both hands. As we mentioned, this matter is up to the learner (Al-Fulaij, 1419 AH).

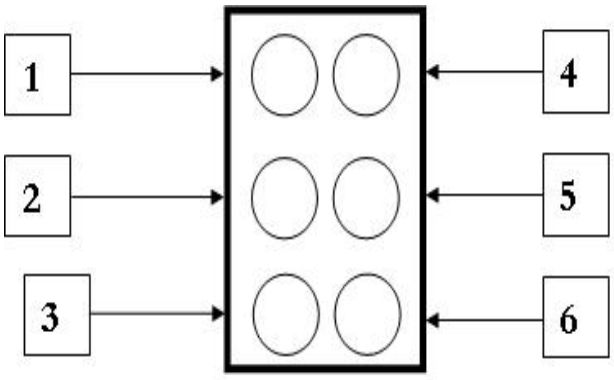

Figure 8. Contemporary Artwork in Braille (Source: Al-Fulaij, 1419 AH)

Fine art is considered one of the universal means of expressing the artist's spirit, and most importantly, it should be an art that sends a message to all groups, including blind people, and every artist must give part of his art to reach the spirit of the blind by touching the surface of the artwork. We find that international museums have issued tangible artworks for this group that explain and interpret the painting or contemporary artwork for the blind.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Some contemporary artworks

Kotara

Kotara is a work of fine art that relies on the technique of relief painting, which restores the importance of sensory contact (based on the sense of touch) for blind people to enjoy and appreciate visual art.

Textile artworks based on Braille and the textile considerations that serve the blind. The implementation method is included in the proposal stages. This process is done in three stages:

- Capture a traditional 2D image of the artwork and then convert it into 3D data.
- It is sent to a machine that converts this data into a solid sculpture with length, width, thickness and texture.
- In the 3D printing machine, to obtain terrain that matches the artwork.

Figure 9. Textile Artwork in Braille

Add artwork in various fields based on Braille, with references or links, entry times, work descriptions, and complete work data.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Learn about the threads used in terms of thread thickness and thread type. The method of installing the fabric followed by the fabric panel is Artistic. Methods used to understand textile painting In Braille. Textile artworks based on Braille and ergonomic considerations to serve the blind.

Andrew Myers

Andrew Myers is a contemporary artist known for his three-dimensional screw art that integrates Braille elements to create a tactile experience for the blind. His work focuses on bridging the gap between visual and tactile art, allowing both sighted and visually impaired individuals to appreciate his pieces in unique ways. One of his well-known works featuring Braille elements is "Please Touch the Art", a collection of portraits designed to be experienced through touch rather than sight. Each piece features raised textures and hidden messages in

Braille, making it a truly inclusive form of fine art.

- Myers creates his artwork by embedding thousands of screws into a surface at varying depths, forming a textured image.
- Once the screws are positioned, they are painted, bringing out depth and shadow that enhances the visual effect for sighted viewers.
- To make his work accessible to blind people, Myers embeds Braille phrases or words directly onto the artwork, ensuring that visually impaired individuals can "read" and interpret the meaning behind the piece through touch.
- His works are often interactive, encouraging people to engage with them by feeling the texture and deciphering the embedded messages.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Figure 10. Please Touch the Art.

Ann Cunningham

Ann Cunningham is a tactile artist who creates artworks designed to be experienced through touch, making them accessible to both visually impaired and sighted individuals. Her pieces often incorporate raised textures and Braille, allowing for a multi-sensory engagement with the art. The innovative methods have influenced museums and educational centres to rethink accessibility, promoting inclusivity in art galleries and public spaces.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Figure 11. Tactile Interpretation of Portrait of Fise.

±Ń¾©ěĕ³⁄₄╪¾×ـ╣ ňŗ ňŗ ĕ€╗Ĭĭ τ╬ ـŃ¾ـ╤ĚÕ ³⁄₄Ĭ ◘ŗ ĕ╬ ـ╣ ňĬ³⁄₄

Target Group

- The blind and visually impaired.
- Those interested in sensory and textile arts.
- Workers in the education of the visually impaired.

General Information About the Course

- Course duration: 6 weeks (3 days a week - 2 hours a day)
- Course type: Practical applied training
- Number of participants: from 6 to 10 trainees
- Place of implementation: equipped textile workshop - or a centre for the blind

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

- Final output: A single woven textile panel with a Braille design created by the trainee.

General Objectives of The Course

- Training participants on basic and advanced hand weaving techniques.
- Enabling blind people to understand and apply Braille in tangible artwork.
- Enhance the participants' fine sensory and tactile abilities.
- Integrating art with special needs to create a new expressive language.

Course Content (Divided into Weeks)

- Week 1: Getting to know weaving tools and threads (skills: sorting threads, setting up the loom)
- Week 2: Plain weave 1/1 using a frame loom (skills: warp construction, weft passing)
- Week 3: Implementing complex textile structures (Skills: Designing raised textiles)
- Week 4: Introduction to Technical Braille (Skills: Learning Technical Braille symbols)
- Week 5: Implementing a textile design in Braille (Skills: Incorporating Braille symbols into the fabric)
- Week 6: Artwork production and review (skills: evaluating dimensions and texture)

Necessary Tools and Equipment

- Handlooms (frame + table)
- Threads of various thicknesses and materials
- Braille training strips
- Tactile drawing boards
- Sewing and embroidery tools
- Talking and tactile tools
- Security tools

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

Ergonomic Considerations

- Adjustable height loom
- Tools arranged in a linear manner
- Tactile marks on tools
- Regular rest breaks
- Audio signals to guide the trainee

Evaluation Method

- Manual dexterity: direct observation
- Artistic Creativity: Design Review
- Braille Accuracy: Peer Reading Test
- Commitment to the steps: Daily trainee log
- Interaction: Trainer's Notes

Useful References and Links

- https://www.perkins.org
- https://www.tactilevisiongraphics.com
- https://www.brailleauthority.org

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

- ¾╬╨╤╛ك τ×ﻠ ¾ô–σ σ ¾ɪ×Ï╤ň ɪ╛
- ¾╬╨╤

- The study successfully identified three important ergonomic levels, physical, organizational, and cognitive, that influence the effectiveness of textile education for the visually impaired.
- The incorporation of ergonomic considerations in the design of Braille-based handlooms has efficiently enhanced the accessibility specifically for blind individuals in textile arts.
- A multi-sensory learning approach is facilitated by the utilization of Braille in textile art, enhancing the execution and comprehension of weaving techniques for blind learners.
- The incorporation of ergonomic principles in the learning environment not only decreases the strain but also increases efficiency, which ultimately allows blind individuals to establish textile skills with greater ease.
- The results have indicated that the potential for innovation in weaving structures can further improve the tactile experience for blind users.
- Lastly, the research highlights the importance of integrating Braille into textile education curricula to increase inclusivity in the arts.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

• ¾ð–σ σ ¾ɫ×Ï╤ň ɐ┤

- Technology Integration: The exploration of assistive and digital technologies, including 3D-printed tactile designs, must be encouraged to complement traditional hand-weaving methods for blind learners.
- Adaptive Weaving Techniques: Further research needs to be conducted on refining Braille-integrated weaving structures to improve the tactile experience of textile artworks.
- Braille-based handlooms can be further established by the utilization of distinct weaving structures that improve tactile experiences for blind individuals.
- Policy Implementation and Collaboration: Policymakers and Institutions must support initiatives that integrate Braille-based and ergonomic designs into art education programs for visually impaired individuals.
- Curriculum Development: Ergonomic principles should be incorporated into Braille-based textile and applied arts curricula to create a more inclusive and practical learning experience for blind students.
- Ergonomic Training: Educators and trainers working with visually impaired students should receive specialized training in ergonomic considerations to optimize the teaching of textile arts.
- Innovative Loom Design: The establishment of adaptive handlooms that incorporate varied materials and weaving structures should be prioritized to provide a higher sensory experience.

المجلة الإلكترونية الشاملة متعددة التخصصات
Electronic Interdisciplinary Miscellaneous Journal (EIMJ)
العدد الثالث والتسعون - شهر (3) 2026
Issue 93, (3) 2026
ISSN: 2617-958X

- ¾Ě¾╗¼ð¾╣

Al-Fulaij, A. A. (1419 AH). Principles of Braille (1st ed.).

Al-Hadidi, M. S. (2004). Introduction to visual impairment (1st ed.). Dar Al-Fikr.

Al-Khatib, J. M., & Al-Hadidi, M. S. (2009). *Introduction to special soil* (1st ed.). Dar Al-Fikr Press.

Behance. (2023.). Tactile picture book for blind children. Retrieved September 2, 2023, from https://www.behance.net/gallery/30101433/Tactile-Picture-Book-for-Blind-Children

Kawafha, T. M., & Abdel Aziz, O. F. (2010). Introduction to special education (4th ed.). Dar Al-Masirah for Publishing and Distribution.

Mustafa, A. W. (2010). Ergonomics in design for human comfort and well-being.

Sha'araf. (2019). Textile structures - Part 1. Sha'araf. Retrieved July 7, 2023, from https://shaaraf.com/ar/2019/05/15/textile-structures-

Sisalem, K. S. (1988). The visually impaired: Their characteristics and methods (1st ed.). Golden Pages Library

Slave, S. D. (2007). Foundations and principles of textile structures. House Books Egyptian.