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Ceramic Workshop Adapted with 3D Technologies to Improve the Self-Esteem of People with Disabilities

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Abstract: This paper describes a process to adapt tools in an artistic ceramic workshop in which custom molds are created using low-cost digital manufacturing technologies. The digitalization of busts by a 3D scanner and their transformation into 3D printed molds is a simple technique that only requires basic digital tools. These molds were used in the artistic ceramic workshop of the Psychopedagogical Center of the Order of San Juan de Dios in Tenerife, where the authors worked with people with intellectual disabilities to make ceramic pieces. These people, in most cases, do not have the necessary skills for detail modeling; however, with the help of digital manufacturing technologies, they can produce molds of their own faces and create personalized figures autonomously. In this way, they increase their self-esteem and autonomy and discover new possibilities for making products; as a result, they feel fulfilled and confirm that they can be part of the creation process. To obtain an evaluation of the activity, a qualitative study was carried out, and observation data were collected. The attitudes of the users were compared with observations made during a similar activity without using molds or technologies. It was observed that the attitude of the participants significantly improved when they obtained more satisfactory results with the use of molds.

Keywords: molds; 3D printing; low-cost technologies; fine psychomotor skills; special education

1. Introduction

The hand modeling of busts is a complicated technique that requires training and certain skills. The need for fine psychomotor skills is increased for modeling small busts. The smaller the bust, the more difficult the modeling can be. In this paper, we present a practical study in which small (2–3 cm) busts were created using 3D-printed molds from a three-dimensional scan of a person. Generic molds of the rest of the body parts were also created to generate complete human figures.

Modeling is a form of sculptural production that uses soft materials such as clay, plasticine, and wax. The sculpture of the rounded bulges of busts requires the combination of different elements, as has been described from different points of view [1]. Modeling with clay or a similar medium implies the need to have the specific materials, spaces, and tools to do so [2]. Modeling or sculpting a realistic bust requires technical skills, time, and an available model to take measurements of throughout the process. It is a common technique in courses associated with careers and degrees related to the fine arts and is also part of the curriculum of plastic, visual, and audiovisual subjects in secondary education [3]. Self-portraits are used in the field of disability to promote self-knowledge and improve self-esteem [4]. However, the realistic modeling of faces or other parts of the body is a technique that is not usually contemplated because it requires more advanced knowledge and fine psychomotor skills. These skills include the ability to use small muscles, especially those that move our hands and fingers [5].

This research follows a process in which digital technologies facilitate the construction of three-dimensional details [3]. Photogrammetry or 3D scanning techniques make it possible to obtain a three-dimensional model or a mold of it in digital format in a short time and without effort. Similarly, 3D printers or milling techniques make it possible to manufacture parts at a low cost and without advanced knowledge of technology.

This study demonstrates the creation of human figures by participants in a special education center. For this purpose, a low-cost 3D scanner was used to digitize the faces of the users. The digital file was then transformed through simple operations with a 3D modeling program to obtain a negative or mold. These molds, printed in 3D, could be used by participants autonomously and without assistance to create reproductions. In this way, they were able to make copies of their faces without the need for special skills, thereby promoting their autonomy and self-esteem; as a result, they felt fulfilled and confirmed that they could be part of the creation process. To complete the figures, molds were also made from 3D models of hands and feet downloaded from Thingiverse.com. In addition, the free online program Cookiecaster was used to create cutting molds with which the schematic shape of the body was made.

These figures were made to be part of a nativity scene that is built according to Spanish traditions. Nativity scenes, or the construction of nativity scenes, include various types and models of plastic representations of the birth of Jesus Christ, along with different biblical scenes and native customs. This tradition is strongly rooted in most of the centers of the Hospitaller Order of San Juan de Dios and has been developed for many years by the members of the order themselves and by volunteers. In the psycho-pedagogical center located in Tenerife, some of the users of the center have also been able to participate in this development. Since the inauguration of the artistic ceramic workshop in 2015, different activities and exercises have been carried out that focused on the creation of figures and architectures that, later on, could be incorporated in the annual assembly of the nativity scenes. This year, using printed and personalized molds, users can autonomously create each of the parts of the human figures, mount them with their own techniques using ceramics, decorate them, and finally incorporate them in the nativity scene at the center. In this way, the need to buy mass-produced pieces and figures is increasingly diminished.

Initially, exercises to construct human figures were performed through clay modeling (Figure 1) without the use of molds; only traditional tools such as modeling sticks were used. However, the results obtained were not optimal, and the level of satisfaction of the users with this type of exercise was very low, resulting in frustration with or rejection of the activity. For this reason, a comparison was made between the execution of the exercise using traditional means and the execution of the same exercise using personalized tools such as 3D-printed molds.

Figure 1. Exercise performed by hand with traditional tools.

For the data collection, scientific observation was used in a systematic and conscientious approach: the results of the observation were recorded, an attempt was made to interpret and capture their meaning, and the data obtained from the manual task were compared with the data resulting from the task using the 3D-printed molds.

2. Background

2.1. Molds

A mold consists of a set of different materials that delimit a print destined to receive a substance that, after solidifying or hardening, adopts the form of that print and reproduces the empty part of the mold [6]. Traditionally, in order to obtain a mold, it is first necessary to have an existing model or one that has been previously modeled, manufactured, or built. The model is then coated with a material that serves as a mold, and the original is removed and filled with the final material. The molds can be used once (single-use) or several times depending on the material, the complexity of the model, and the number of reproductions to be made.

The molds are created through a process that has been used in various sectors. In artistic creation, the use and fabrication of molds are among the most extensively used techniques in most traditional sculpture and artistic production studios. In art, unlike industry, molds are usually made by hand through a long and complex process [7,8]. In this manual process, clay, sand, plaster, etc., are usually used, which are materials that mainly allow the realization of single-use molds, but with the appearance of new materials such as flexible silicone or alginate, reusable molds of great detail can be obtained, offering new possibilities and facilitating multiple reproductions. Recently, digital manufacturing technologies such as 3D scanning have been added to these techniques and materials, as well as 3D modeling and printing, allowing the creation of molds or models by means of computerized tools [9]. Digital processes save time; allow effortless changes of scale; and improve the detail, complexity, and accuracy of models [10].

The use of molds to create sculptural work or reproductions is a technique that can be used by people with psychomotor difficulties, since it allows them to create or reproduce an object or figure without the need for fine psychomotor skills, although they do work with sculptural techniques. In the School of Arts of Cuenca, an experiment was carried out with disabled students to make a copy of their hand using molds. In this way, it was possible to introduce visual and manipulative experiences in which the users discovered new mechanisms of expression [11].

2.2. Psychomotor Skills and Art

The concept of psychomotricity was born at the beginning of the 20th century to highlight the close relationship between the psychological aspect (psycho) and the way that it manifests itself (motricity). The development of psychomotricity is directly related to the level of ability of each individual [12], although it also depends on the supports provided and the conditions of the environment. Psychomotor skills involve body movements [13], and fine motor skills are the ability to use small muscles to perform very specific movements, such as wrinkling the forehead, closing the eyes, winking, tightening the lips and performing any movement that requires the involvement of the hands and fingers [5]. These muscles are the most used when modeling a sculpture, as well as in many other artistic works.

The development of psychomotor skills in disabled people is an important task. To develop psychomotor skills, games; manual work; and, in many cases, artistic creations are used. Artistic workshops, creative works, or art therapy are resources that are widely used for the development of disabled people [14–16]. Artistic work has the capacity to deliver, welcome, and free the psyche, and it is a psychosocial tool that manages to modify behaviors and enables understanding from the creative experience [17]. Jiménez et al. [18], in his research, “Art for All: Research and Creation Project with People with Diverse Abilities”, observed that, through artistic work, people with disabilities experienced greatly increased self-esteem. In his project “Art Therapy, Cerebral Palsy and

Resilience", González-Mohíno Barbero [19] demonstrated this relationship between self-esteem and artistic methodologies since, after the development of the sessions, the participants with disabilities exhibited high motivation, good socialization, and high self-esteem. It is also common that people with special needs can enjoy ceramic workshops, either as work, as an occupational activity, for enjoyment, or as therapy [20,21].

In another study [22], the authors stressed the importance of the reactions of people who enjoy artistic creations made by users with disabilities. These reactions feed back to the artists, stimulating an increase in their level of self-esteem so that they realize the use of internal resources, discover themselves, appreciate their possibilities, and feel that their value as a person is enhanced in the social environment.

In this sense, the involvement of people with disabilities in the creation of a nativity scene that is exposed to the public and personalized, in which the different characters have been made from their own faces, gives them a high value of feedback and improves their self-esteem. In addition, by using tools to facilitate the creation, such as 3D-printed molds, the experience of success is ensured. One of the best ways to increase self-efficacy expectations, according to Bandura [23,24], is to experience success. To ensure this, it is important that the tasks assigned to them are within their capabilities but, at the same time, present a certain challenge so that users can feel really proud of their achievements.

2.3. New Technologies for People with Disabilities

According to the International Convention on the Rights of Persons with Disabilities, which was adopted by consensus at the United Nations General Assembly on 13 December 2006 [25], access to information and communication systems and technologies must be ensured for persons with disabilities on an equal basis to others. Technologies can make life easier and their implementation is often attempted; however, the technologies of modeling, scanning, and 3D printing are excluded from these rights, as they are not specifically written down. In addition, 3D printing leads to conscious and sustainable manufacturing outside of mass production. Three-dimensional creation technologies are not yet commonly introduced in special education settings, although initial tests are being conducted with positive results.

In the SHIVA project (Sculpture for Health-care: Interaction and Virtual Art in 3D), a graphic interface was developed that provides virtual sculpture tools to young people with complex disabilities, allowing them to participate in artistic and creative activities that they would otherwise never be able to access. Their creations were physically constructed using 3D printing [26]. Researchers from Chile [27] designed audio-based educational software for visually impaired children. The audioVida software allows them to navigate and interact in a 3D maze to develop spatial navigation skills. Additionally, in the year 2000, a program was created to play Space Invaders through audio.

In a project previously developed in the Psychopedagogical Center of San Juan de Dios, the results of the incorporation of new 3D technologies as a support element in the learning process of disabled people were presented. Cognitive abilities such as memory, creativity, concentration, and psychomotor capacity were stimulated in a playful approach through the use of digital Android applications in devices with large-format touch screens and tablets [28].

3. Materials and Methods

In this project, technology was used to increase the possibilities of creation for disabled users of the artistic ceramic workshop of the Psychopedagogical Center. Among the activity program of the ceramics workshop, there are exercises dedicated to the creation of all types of objects in ceramics, as well as the construction of figures of nativity scenes.

3.1. Participants

This experience was carried out with six students from the center with different degrees of intellectual disability and behavioral disorders as well as neurodevelopmental disorders. The students were between 20 and 57 years old; four were permanent residents in the center, and two came to the day center. The people who participated in the ceramics workshop had a high degree of disability, so they could not be included in a public workshop. However, they had the right to enjoy and participate in social events such as the creation of a nativity scene. All were users of the artistic ceramic workshop that was taught within the project "Discovering Artists: Art and New Technologies", developed at the center and funded by the social work of La Caixa.

3.2. Measurement Tools

In the case of people with disabilities, it is difficult to obtain quantitative data and collect information through questionnaires. Therefore, a qualitative study was carried out in which observation data were collected as a measurement tool. Documented observations included participants' behaviors during the activity, their emotional responses to their results, and their interest in the activity.

To conduct this study, first, users were asked to make a copy of a human figure on a small scale. This copy had to be made by hand and with traditional modeling tools. During the exercise, their technique and capacity to carry out the activity were assessed. In addition, data on their attitudes and behaviors during the workshop hours were recorded. The observations made during the activity are reflected in Table 1.

Table 1. Observations of behaviors during the activity of copying a human figure by hand with traditional modeling tools.

User	Attitude to the Activity	Motivation	Results	Observations
User 1	Regular	Low	He made a very elementary figure, without form or defined features.	He was not satisfied with the result obtained. He asked for help frequently to know if he was doing it correctly.
User 2	Good	Normal	He made a figure with its parts well defined and tried to define facial features, but he did not achieve this.	He seemed to enjoy the activity and concentrated and worked autonomously without needing help.
User 3	Bad	Low	She tried to compose the figure, but found it very complicated. She followed a very basic approach, but it was out of scale.	From the first moment, she said that she did not want to do the activity because she thought that it would not work out. She participated but needed constant support because of her insecurity.
User 4	Good	High	He made a poorly executed technical approximation and did not pay attention to the model.	He made an initial effort and put a lot of energy into quickly performing the exercise without paying attention to the technique.
User 5	Bad	Low	He did not complete the exercise.	He did not show any interest in performing the exercise, and it was necessary to continuously encourage him to complete it.
User 6	Good	Normal	He did not complete the exercise.	He showed interest, but his ability made it extremely complicated for him to perform some of the necessary steps for the construction of the figure.

After verifying the different capacities of the users; the different answers to the exercise; and the results obtained, such as insecurity, disinterest, and constant need of support, it was decided to use technological means—that is, molds—for the creation of the details of the human figure. These technologies make it possible to provide the participants with the tools that, on the one hand, allow them to achieve results with which they feel satisfied, and, on the other hand, to see themselves represented in their own work, thus generating a greater interest in the exercise. The observations of this exercise are found in the results section.

3.3. Hardware and Software

For the preparation of the 3D-printed molds, a 3D scanner from 3DSense was used with its corresponding application to digitize the workshop users in 3D. It is a low-cost scanner that at the time cost about 300 euros. The tool is very easy to use and scans an object for between 30 s and one minute. Currently, some of the latest smartphones incorporate 3D scanner technology [29].

Then, the free program Meshmixer was used. This program is part of the Autodesk company's suite of tools and is a good option for combining various 3D objects and making simple edits, such as in the creation of molds. This process was carried out by the workshop teacher, as the users did not have the knowledge to perform this task. Another program that was used is an online application called Cookiecaster, which allows users to make cutting molds that are used to make cookies to easily produce the basic shapes of ceramic plates. In the program, users only need to draw the shape that they want to cut out, and it automatically transforms the drawing into a downloadable and printable mold.

Finally, the Cura program was used to transform the molds into information that is readable by the XYZ Davinci Pro 3D printer, which printed the molds that were then used in the workshop. This printer uses PLA material, which is commonly used in low-cost machines. It is a biodegradable and non-toxic but durable material, ideal for these workshops. Finally, the workshop users used the 3D-printed molds to create the nativity scene figures with ceramics.

4. Workshop Steps

The session was carried out during the 2018/2019 school year at a rate of two weekly workshops of three hours each over a total period of six weeks.

The development of the activities of this workshop included the creation of portraits and self-portraits. This was performed for two fundamental purposes; besides acquiring and polishing techniques used in an artistic ceramic workshop, this exercise also pursues the psycho-pedagogical goals of empathy and the improvement of self-perception. With this purpose, and after evaluating the results obtained in the first phases of the workshop, in which the users made figures with portraits by hand with traditional tools, it was decided to implement the use of new technologies, such as 3D-printed molds, which could support the users in achieving results that were satisfactory to them.

4.1. First Part: Creating Molds

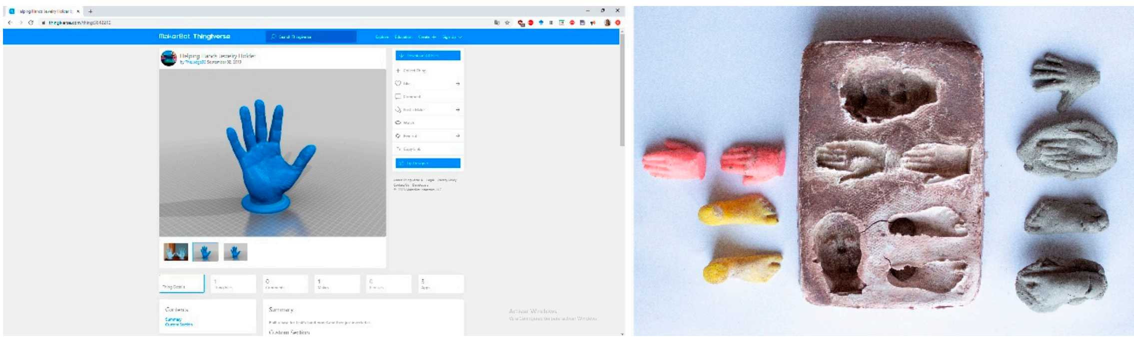
The first part of the exercise consisted of capturing the students' busts using the 3D Sense scanner. This scanner is simple and intuitive to use, is connected to a computer via USB, and allows users to choose between scanning an object or a person. It has a capture range of 10–250 cm. The scanner software itself creates a digital model in standard format (STL or OBJ) ready for 3D printing if desired. Some basic tools are available to clean or fix the scanned model and can be exported to more advanced 3D editing programs for further processing.

The obtained files were then edited and transformed into molds using the Meshmixer tool. The process of creating a digital mold using this tool is simple and allows the necessary files for printing to be obtained quickly. After importing and scaling the desired bust or figure, a cube from Meshmixer's gallery of objects was imported into the same scene. After adjusting the cube's measurements to those of the head, the 3D bust was inserted into the cube. Selecting both figures, we applied the Boolean difference, and we managed to subtract the figure's volume from the cube's volume, thus obtaining a negative or mold of the figure (Figure 2a). Then, the cube with the negative of the head inside was divided into two individual halves with which to make the clay busts. Finally, the mold was printed by a 3D printer (Figure 2b). This mold can be pressure-filled with clay to obtain a clay replica (Figure 2c).

(**a**) (**b**) (**c**)

Figure 2. (**a**) Free Meshmixer program for simple editing and creating digital molds. (**b**) 3D printing of the molds. (**c**) 3D Polylactic Acid (PLA) filament mold and clay result.

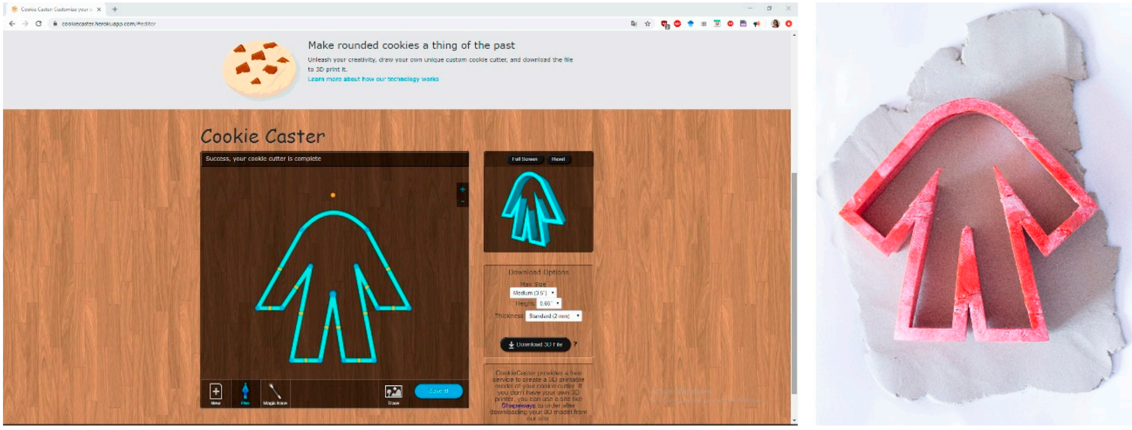
In addition, generic hand and foot molds were made because they are also visible parts in the nativity figures and thus complete the appearance of the characters. The hand and foot figures were obtained from free online 3D galleries such as Thingiverse.com (Figure 3a). However, in this case, the 3D mold was not printed, but the feet and hands were obtained as individual pieces. A silicone mold was then made for these pieces, since this technique is easier for parts with small sizes (Figure 3b).



(**a**) (**b**)

Figure 3. (**a**) Hand figure from the free online 3D gallery Thingiverse.com. (**b**) 3D-printed hands and feet, silicone mold, and clay results.

Finally, the online program Cookiecaster was used to create some basic molds to cut out the shapes of the bodies of the human figures (Figure 4a). This structure or body is not visible, since the figures are later dressed with fabrics; however, it is necessary given its importance as an internal structure. To make the bodies, it is only necessary to draw the basic shape in the program, which automatically provides a mold file that is ready for printing in 3D (Figure 4b).



(**a**) (**b**)

Figure 4. (**a**) Online program Cookiecaster was used to create basic molds to cut the shapes of the bodies of the figures. (**b**) 3D-printed cutting mold on the clay.

The digital process and the 3D printing were carried out by the artistic workshop teacher, as the steps were too complex for the users of the workshop. However, they were able to be part of the scanning process and observe all the steps until they witnessed how the 3D printer made the molds.

4.2. Second Part: Creating Ceramic Figures

During the second part of the activity, the users of the workshop used the previously made molds to create all the pieces that make up the nativity figures: their personalized busts, hands, feet, and bodies of the figures. The process was as follows: a portion of clay was rounded off to twice the volume of the mold capacity. The material was pressed against the mold, exerting enough pressure for it to penetrate the entire cavity of the mold. The excess clay that overflowed from the mold was moved slightly in order to loosen the material that remained inside the mold. The reproduction is removed and retouched. This process of reproduction with clay takes approximately fifteen minutes, depending, in many cases, on the degree of humidity of the material and the skill of the participants. This process is repeated with different constructed molds, thus obtaining replicas of the participants' own faces and those of their companions. They also obtained reproductions of hands and feet that were later incorporated into their own figures (Figure 5a). The use of molds at the beginning was difficult for the users because it was the first time that they worked with this method. As the sessions went on, they improved, and it became easier and simpler for them to create reproductions with the molds. In the last sessions, they required less assistance, and their willingness to work improved.

Finally, once the necessary pieces were obtained, the users mounted the figures in different positions using the material that they had at their disposal (Figure 5b). Next, the pieces of the body of the figures were formed. For this purpose, two-centimeter-thick clay plates were created, to which molds were applied by cutting out the pieces. After the assembly of the figures, they were left to dry in the air and were baked in the ceramic oven at a temperature of 900 °C to solidify the clay and turn it into ceramic.

(**a**) (**b**)

Figure 5. (**a**) Parts made with the 3D-printed molds. (**b**) Assembly of the figures using the different parts.

4.3. Third Part: Finishing the Figures

Once the assembly of the figures was finished, we proceeded to dress them with the glued fabric technique; that is, pieces of fabric were cut out with the silhouette of the shirt, pants, skirt, etc., and they were wetted in glue and adhered directly to the clay figure. To finish the figures, the clothes were painted, and the hair and eyes were colored (Figure 6a). Finally, the personalized figures were placed in the nativity scene in the center (Figure 6b). This nativity scene is traditionally made every year, and the users of the Psychopedagogical Center are involved, to the extent possible, in its development. This year, one of the novelties was the personalized figures.

(**a**) (**b**)

Figure 6. (**a**) Finished figure in the ceramics workshop. (**b**) Finished Bethlehem of the San Juan de Dios Center.

5. Results

The objective of creating personalized figures with self-portraits of the artistic ceramic workshop participants was achieved. It was possible to introduce activities using new technologies of digital creation to a special education center while also helping to offer an alternative method of creation in a conventional environment, as in the case of a ceramic workshop.

According to the observations (detailed in Table 1) made during the exercise in which human figures were made with traditional techniques, most of the users did not complete the figure, or the execution was not very faithful to the original model and lacked defined features. It was observed that the participants were not satisfied with the result, did not want to participate in the exercise, did not show interest, and experienced complications in making the figure due to their psychomotor skills.

Table 2 shows the data collected during the execution of the exercise using the 3D-printed molds. The users' attitudes towards the activity improved, and their motivation also increased. In this case, four users were able to create several complete figures without major difficulty. Others were able to make several reproductions of body parts, although they did not manage to assemble the complete figure. It was observed that they were able to perform the exercise autonomously without needing much support. They also seemed to enjoy the activity and were happy with the results obtained. However, there were also users who continued to need support or continuous instructions and had difficulty in performing the exercise.

Table 2. Observations of behaviors during the activity of creating a human figure using 3D-printed molds.

User	Attitude towards the Activity	Motivation	Results	Observations
User 1	Good	High	He made three complete figures using the molds made with 3D technology.	He worked almost autonomously after the explanation of the steps to follow. He was happy with the results obtained.
User 2	Good	Normal	He made five complete figures with their parts and well-defined features.	He seemed to enjoy the activity and concentrated and worked autonomously without needing help.
User 3	Good	Normal	She strove and managed to make a complete figure and reproduced several parts of others to finish them in future sessions.	Initially, she did not want to participate in the activity because she thought that it would not work out, but after explaining the necessary steps and giving her the necessary support, she managed to do it properly.
User 4	Good	High	He made several reproductions of different parts of the figure, but he could not concentrate on assembling the figures and needed intermittent support.	He made an initial effort and put a lot of energy into the activity but needed intermittent support to maintain a steady pace and not rush through the activity.
User 5	Good	Normal	He made a complete figure and several reproductions of different parts of the figure.	He did not show much interest in doing the exercise initially, but when observing the results of his companions, he got involved in the activity, although it was necessary to continuously encouragement him to complete it.
User 6	Good	Normal	He made some pieces of the figure with support, but he did not have time to finish the whole exercise.	He tried to make the reproductions autonomously, but he needed continuous support to perform the exercise.

6. Conclusions

Through the use of 3D-printed molds, a greater involvement of users and a greater interest in the proposed activities were achieved. Similarly, the participants themselves showed greater satisfaction with the results of their work, which contributes to their self-esteem and fosters companionship. Using the personalized molds, the users felt happy, proud, and motivated, as they were able to reproduce their faces or those of their colleagues and work from them. In addition, the figures were part of a nativity scene that is open to the public, which contributed greatly to the empowerment of the workshop participants, as they were able to exhibit their work and receive praise and congratulations from all those who had the opportunity to visit the facility.

Before this technological implementation, the workshop used traditional means and techniques for working with ceramic material, and works of great quality both at the construction and artistic levels were obtained. However, when it came to making pieces with details that require greater psychomotor control or skill, we observed that the results were significantly poorer and also produced dissatisfaction among participants in the form of disinterest with, frustration at, or rejection of the activity.

New-generation techniques and materials were implemented in a mainly artisan environment with optimal acceptance and results. If we add to this the fact that it was implemented in a specific workshop with people with different degrees of intellectual disability, these results could be considered highly relevant as therapeutic possibilities for working with people with disabilities.

This fact highlights that technologies such as 3D printing and three-dimensional figure reproduction can be used as vehicles to create new customized materials that can serve as supports or tools for other creative tasks. The use of this technique for the creation of printed molds allows for the adaptation and reproduction of models at low cost and with ease, and it is sustainable because almost no waste is generated and no contribution is made to the use of mass production molds. Being aware of the possibilities offered by new technologies, we opted for a reinvention of these more complex exercises, making them accessible to participants with different capacities.

It must be taken into account that, although both exercises are similar since both aim to create figures, the use of 3D-printed molds occurred for the first time in this workshop. For this reason, the users were initially somewhat unsure about how to use them. In later sessions, in which these activities were repeated with the same users, their willingness to work with these materials was much more fluid, resulting in an increase in the number and quality of the figures made by each one. Moreover, from the periodic use of this activity, it was possible to learn the necessary steps in such a way that the supports became unnecessary in most cases.

The use of new technologies such as 3D-printed molds to create personalized figures can be implemented in any work environment where there are people with some limitations, such as small children and elderly people or those limited by illness, or it can be used in different workshops where the aim is to experiment with molds to create several reproductions or incorporate digital tools.

One of our lines of research is the use of molds in educational environments. In the future, we plan to carry out similar exercises with primary school students (6–12 years old) to improve inclusive education and assess the impact on them. In this case, we also intend to involve them in the creation of the molds, both in 3D scanning and editing with programs as well as 3D printing.

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