A suggested distance training by Utilizing Innovative Information Technologies for learning the manufacturing of women's classic trousers as a start-up for a small garment project to improve individuals' income and face rising unemployment

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مجلة البحوث في مجالات التربية النوعية

Abstract

Distance learning using the Internet is currently one of the most significant E-learning strategies and one of the most prominent technological innovations that have imposed itself globally. It inspired the researcher to develop training utilizing video recordings published on the free YouTube platform to acquire knowledge and skills of the manufacturing technology of women's classic trousers in Metric method to be used as a basis for small garment project. The production of women's trousers as ready-to-wear garments is an example of a small project suitable for Egypt's economic circumstances because it does not require large capital to start up and achieve profits quickly. In the twenty-first century, no woman's wardrobe is complete without various trousers designs, giving a promising sign for the success of the small project suggested. The results of the tests indicate that the distance training was successful in gaining students the Knowledge, Understanding, and skills required to produce the classic women trouser. Also, a questionnaire sheet was designed to measure the effectiveness of *teaching methods, contents, and the effective use of innovative information technologies* among the trainees towards the suggested distance training. The trainees' responses ranged between 88.3% and 98.3% for all questionnaire topics demonstrating the effectiveness of the distance learning approach. The results also showed that applying innovative information technologies provides easier and more accessible learning of the study material, acquiring more knowledge in a short time, developing the students' visual thinking and self-education abilities, and the trainees' applications typically illustrate the achievement of training objectives.

Keywords: women's classic trousers, distance learning, small garment project, Improve individuals' income, trousers Manufacturing

Introduction

In the following, introduces the importance of small-scale business and entrepreneurship in Egypt, especially in garments, followed by a concise overview of why choosing the classic women's trousers to start a small business and why choosing Metric classic trouser block for Egyptian women. Then, the study presents the effectiveness of distance training using innovative information technologies. lastly, a simple classification for trousers blocks and the features of drawing the classic tailored trouser block in Metric method.

Small-scale business and garment manufacturing entrepreneurship can be considered an economic growth factor. Unemployment is the biggest

problem of any country's economy, and its rate is increasing daily, especially during the covid-19 pandemic, the recent war, and the lack of supply chains. This can be treated by encouraging youth to start small businesses in garment manufacturing as it provides many jobs, besides offering good opportunities to entrepreneurs.

According to the Global Entrepreneurship Monitor (GEM, 2022), Egypt's total early-stage entrepreneurial activity (TEA) rate was 11.3 percent in 2020; TEA is the primary statistic used by GEM to quantify and compare the level of entrepreneurial activity among nations. Indicating that 11.3 percent of Egypt's adult population (aged 18-64) is either actively starting a new business or has already launched a less than 3.5 years old business. Also, entrepreneurship is perceived as a good career choice by 71.5% of Egyptians. In general, perceptions of entrepreneurship in Egypt remain positive and rank higher than globally (Ayman, et al., 2021).

Recently The third phase of the Presidential Initiative "*Industrial Egypt*" comes in line with the state's policy and vision for sustainable development in 2030 to encourage a new generation of skilled in all trades to open new work areas for young people and help them obtain new job opportunities and establish small and micro-projects that improve the quality of life for citizens by improving per individual income, raising national income and creating new markets.

Knowledge is the key to success. An entrepreneur should possess complete knowledge of his niche or industry. Only through knowledge can a difficulty be solved, or a crisis is tackled. Entrepreneurs and small business owners need more than space, funding, and friendly networks. They need knowledge and strategic thinking; These abilities will guide the business in the right direction and help with the proper difficulties (Candidate, 2019). For any business, there are four sources of competitive advantage and innovation breakout to give new value to the market. These four sources are cost, organization structure, relationship, and knowledge. Successful business innovation is based on knowledge. Figure (1) shows that there are three areas of knowledge, one is the technological knowledge related to the effective development and production of the product (Wickham, 2006).

The key to entrepreneurial success in the fashion and garment industry is integrating design, business, and manufacturing expertise and students should be able to study the most recent innovations in their chosen sector as part of their academic education to understand how to apply them in future businesses (Rao & Joshi, 2004). Small businesses are an excellent way for people to pursue their entrepreneurial aspirations (Carree & Thurik, 2010). Entrepreneurship-related reports point out that it is more crucial than ever to introduce the concept of entrepreneurship and fashion businesses to classrooms very early (Fernandes, 2019).
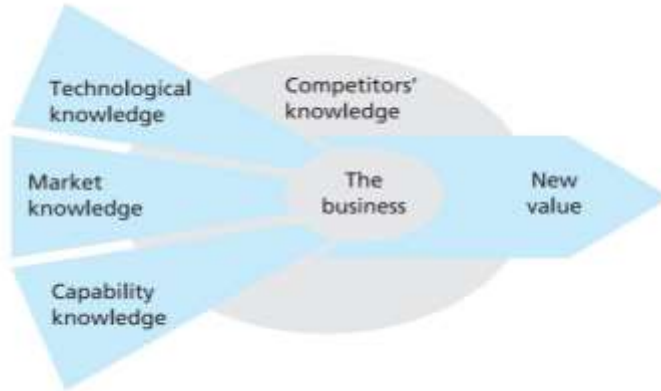
Figure 1: Innovation breakout (Wickham, 2006)

Many researchers are interested in studying garment manufacturing for establishing small projects, such as the Home Economics Department at the Faculty of Women at Ain Shams University, Egypt. A study about innovative training development to assist new female entrepreneurs in their business in the garment and textile industries. The two phases of this training program's delivery were "Train the Trainers" and "Start a Business." (Abdel-Hamed, 2014). Another study used the different topics taught through the academic years in the Department of Home Economics to establish a training course named "All in One" consisting of 13 topics plus the final project. Each student made her go-to-market product. These products were functional designs suitable for multi-use clothes (Abdel-Hamed & AlOkdah, 2014)

Searching for previous studies that dealt with small projects in the field of garment manufacturing, whose aim was to give sufficient training for the start of the private project, it was found some studies, such as a study (Asem, 2020) which deals with the technology of designing and producing the sports cap as a model for small projects that meet the needs of the labor market. In another study by (Abou Hashish, 2017), ladies were taught to crochet; they could also price their products and acquire marketing skills to start their small profitable project.

Why Metric Classic Trouser Block for Egyptian Women's Body
Many studies were concerned with studying the good fit of the trousers pattern drawn using Metric method. For example, in a comparative study of trousers pattern making methods by (Lim & Cassidy, 2017) , the Aldrich method and other trousers patterning methods were examined, with a focus

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on fit consideration through application to a human subject's evaluation test for appearance and fit evaluation in this study the result of upright posture examination by experts shows that Aldrich method was found as the most suitable at the back, and for the front and side; it got results that are very close to the pattern that got the best results. When experts analyzed the movement, the Aldrich method received the highest response for 3 of 5 movements.

(Mohamed, Selim, & Mahran, 2019) compared three methods of making and fitting for women's trousers Pattern, namely (the Winifred Aldrich method, Helen Armstrong method, and Dennic Lo Chunman method, to find the most suitable in the garment industry, which led to a product with the best fitting. The results of the comparison between the three methods in terms of fit showed the distinction between the method of Winfried Aldrich on the other two methods in suitability for Egyptian women's bodies.

(Mohamed I. S., 2019) proposed a curriculum for pattern drawing in Egypt's industrial secondary schools that specializes "ready-made clothes" three-year system; this curriculum is based on Winfred Aldrich pattern methods. In this study, 81% of the students responded positively to applying Aldrich methods in pattern drawing. The significance of this study is that it was conducted on people with a middle-school education, and its success demonstrates how simple it is to acquire this pattern.

Using innovative information technologies in education

 Distance learning is preferred worldwide in today's world, where the majority of processes are carried out online Due to the benefits it offers in terms of finances, time, space, equality of opportunity, supporting individual education, and providing people of all ages with the chance to improve themselves (Tonbuloğlu & Gürol , 2016). Innovative technologies such as document cameras and recorded videos were evaluated in fashion design education. It makes it simpler and easier for students to learn their course material, allows them to learn more quickly, fosters creativity, develops critical thinking and design skills, and, in general, can improve the quality of education (Kazlacheva, Stoykova, Georgieva, & Ilieva, 2018)

Features of Drawing the Classic Tailored Trouser Block in Metric Method

As shown in Figure (2) the classic tailored trouser block, the very close-fitting trouser/jeans block, the easy-fitting trouser block, and the simple trouser block are the four basic blocks in Metric method. Each block has its adaptation to give it a special style. By combining different fabrics with these styles, fashion designers can create many distinct types of trousers. Aldrich's method logically displays the required dimensions and stages,

allowing the user to follow the numbers and obtain the final pattern without confusion. The Aldrich method uses the Metric system and draws the back from the front, making learning simpler than in other ways. When drawing, the classic tailored trouser pattern is made up of numbers from 0 to 32, and by reaching point 32, the pattern is complete, and the sequence of numbers helps the person who draws the pattern to make sure that the steps are correct (Aldrich, 2009). The clarity of the measurements on which the trouser pattern depends, and these sizes are of six sizes: the waist rotation, the hip rotation, the length of waist to hip, body rise, waist to floor, and finally, the trouser bottom width.

The classic tailored trouser block with Metric method was chosen because it can be modified for multiple models, and these models can be produced with simple production lines and basic sewing machines (a basic stitch sewing machine & 301 and a three or four overlock machine).
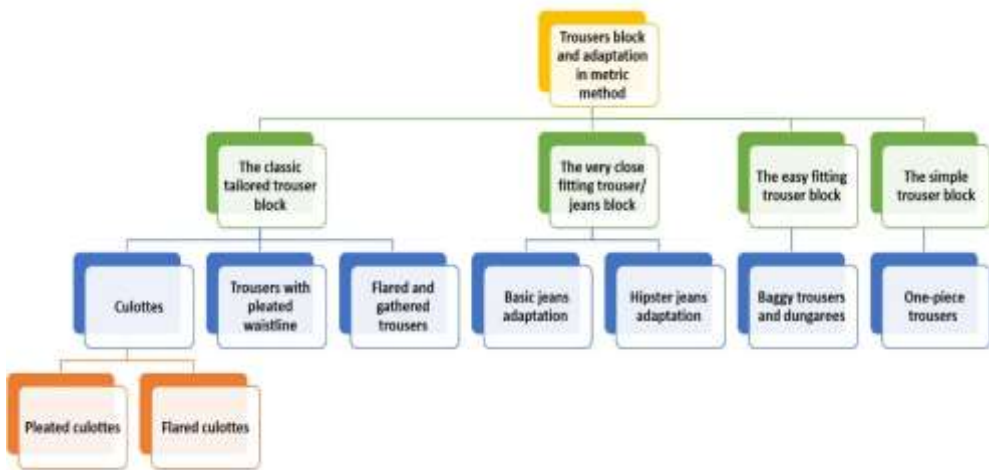

Figure 2: Trousers blocks and their adaptations in Metric method (Aldrich, 2009)

Aim of the work

The main aim of this study is to Get expert help to advance in any business. Getting help from experts does not mean spending much money on the information they provide, as many institutions and non-profit companies provide their services for free.

This study will be a step in developing more flexible and customizable distance training, which will provide the trainees with the knowledge, skills, and experience required to start a small garment manufacturing project; this project specializes in the production of women's classic trousers in Egyptian

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standard measurements. Another aim of this research is to bring the concept of small business to the early stages of education.

The distance training is appropriate for those looking to advance their professional skills for a career, for those interested in learning how to make classic trousers for their personal use, as well as for use by colleges and institutes to supplement their curriculum and provide students or trainees with easier alternative study methods. Individuals who need to advance in a small project not limited to experiences gained in their educational institutions are also target trainees of this study.

Methodology

This research follows the descriptive analytical method for studying knowledge and skills included in the suggested distance training. and the quasi-experimental approach in the experimental research study (one experimental group), with the aim of identifying the effect of the independent variable (the distance training) on the dependent variable (knowledge and skill levels).

The training aims to help the trainees to learn using distance mode how to implement a classic woman trouser with side closure (invisible zipper) and faced waistband using Metric method for woven fabrics, as shown in figure (3). All of this was possible with the use of videos and internet technology. The entire lectures have been recorded in videos and became available to students through an online platform, and links have been added to the training description. Trainees can access these videos anytime, from any internet-connected device, as many times as necessary, depending on their needs. The method and illustration of Metric classic trousers training have been explained in Arabic for ease of understanding for Egyptian trainees, especially those who cannot read English.

First: the information technology used in the distance learning process
A YouTube channel has been created (Elzean, 2020), Training videos have been collected in playlist named **" women's classic trouser as a small garment project "** (Elzean, 2023)
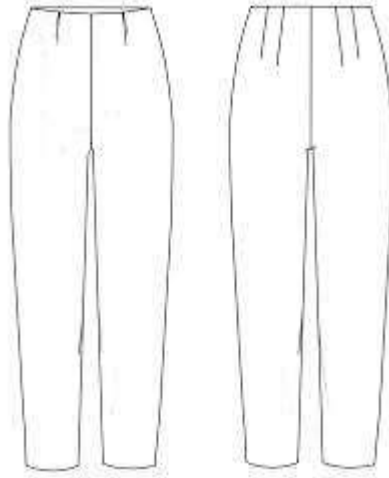 Also, a group was created on *WhatsApp* to receive pictures of the women's classic trousers produced by the trainees.

Figure 3: The outward appearance of women's classic trousers in Metric method

 Second: limitation of research
Twenty students of the second level of the Home Economics Department (Textile & Clothing), aged 18 to 20 years old, have been taught to implement the basic classic women's trousers with Metric method through training videos on YouTube.
 Table (1) listed the results of the questionnaire used to measure the readiness of the trainees for the distance training, both on the psychological level and in terms of possessing the technical and technological skills that enable them to perform distance learning.
The distance training was tested on students on this level of education because they all still have no experience in trouser pattern making, as shown in Table [1]. Also, it was noticed that some of them could not watch videos on YouTube, so the training videos were available on CDs. Metric method for drawing classic women's trousers in PDF was also available. It was considered that some of the trainees were not aware of some skills, such as sewing the invisible zipper, hemming, and having information about Egyptian women's standard sizes These topics were explained sufficiently in the videos.

Table 1: Results of the questionnaire used to measure the psychological level, technical and technological skills of the trainees.

	Question	yes		no	
		No	%	No	%
1	Can you read and write Arabic well?	20	100%		
2	Do you have a smartphone?	20	100%		
3	Do you have a computer or laptop?	17	85%	3	15%
4	Do you have the ability to watch videos on YouTube via the Internet?	19	95%	1	5%
5	Do you have previous sewing experience?	17	85%	3	15%
6	Can you set up and operate the sewing machine?	19	95%	1	5%
7	Can you use a sewing machine to make straight lines, squares, and circles?	19	95%	1	5%
8	**Do you have previous experience in drawing Metric classic women's trouser patterns?**			**20**	**100%**
9	**Do you have previous experience in sewing Metric classic women's trousers?**			**20**	**100%**
10	Can you sew an invisible zipper?	13	65%	7	35%
11	Can you set up and operate the over machine?	19	95%	1	5%
12	Can you do the following hemming?				
	- blind hemming	16	80%	4	20%
	- Overlock hemming	18	90%	2	10%
13	Do you have information about Egyptian women's standard sizes (standard measurements like 42,44,46)?	13	65%	7	35%
14	Are you interested in participating in the distance training (classic trousers as a small garment project)?	20	100%		
15	Is this your first time participating in a distance training?	8	40%	12	60%
16	Do you think you are the right person to join the distance training?	20	100%		
17	Have you given adequate notice of the nature and type of the distance training?	20	100%		
18	Are you interested in starting your own business or being an employee?	6	30%	14	70 %

Third: creating digital educational content and various sources of educational materials for the distance training named "Women's classic trouser as a small garment project."

  The lecturer prepared the curriculum videos to be suitable for beginners, with no background in trousers implementation. They learned all stages in 3.3 hours (197.97 minutes) divided into 7 videos, as shown in Table [2]. At

the end of this distance training, they could carry out and finish a classic woman's trousers professionally.

Table [2] describes the whole 7 videos of the distance training for the women's classic trousers in Metric method and skills that should be learned with different levels, from beginner to experienced levels. In each video, learning outcomes have been clarified to emphasize what is being explained and training on different skills. The video thumbnail, duration and YouTube link for each video were added too.

Table 2: Videos description for the distance training "Women's Classic Trouser as small garment project"

Video (1) title:	Women's Classic Trousers as a small garment project (introduction)
	البنطلون كمشروع ملابس صغير - الفيديو الأول البنطلون كمشروع صغير 468 views · 11 months ago 22:25 **Figure 4: Video (1) Thumbnail on YouTube**
Description	43 PowerPoint slides converted into a video with voice over
Learning outcomes	By the end of this video, the trainees will know the following: - Definition of small projects - Characteristics of small projects - The importance of small projects to the national economy - The importance of trousers in women's wardrobe. - The main 4 methods of drawing trousers available in the English Metric method - Previous work and Why Metric classic trouser block For Egyptian women's body - The difference between the body dimensions of Egyptian women and English women - Features of drawing the classic tailored trouser block in Metric method - Measurements are required to draft the classic trouser block in Metric method. - Dimension of Egyptian human body part 2: for girls and ladies of medium height 150-165cm (Egyptian standards:, 2007) with suggested body rise - Features of sewing machines - Features of overlock machines. - Videos that will be available in the distance training
Link	https://youtu.be/ciYApeNb1gE

Duration	22.25 minutes
Video (2) title:	**Basic Sewing Techniques: Sewing machine**

Figure 5: Video (2) Thumbnail on YouTube

Description	How to use sewing machine with an exercise for sewing straight, rectangular, and circular lines.
Learning outcomes	By the end of this video, the trainees will be able to: - Identifying the parts of the sewing machine. - Using a sewing machine to create a sewn line (straight, rectangular, circular lines).
Link	https://youtu.be/z4WcOcEifgk
Duration	20.47 minutes
Video (3) title:	**Method of drawing classic tailored trousers using standard measurements size 44 in Metric method**

Figure 6: Video (3) Thumbnail on YouTube

Learning outcomes	By the end of this video, the trainees will be able to: - Identifying pattern drafting basic tools and supplies with function. - Drawing classic trouser patterns in standard or personal measurements by Metric method.
Link	https://youtu.be/pHGEcoaQrVY
Duration	51 minutes
Video (4) title:	**Faced waistband and bottom leg hem patterns**

الفيديو الرابع سجاف الأمام والخلف مع ثانية الدبل على الباترون • 251 views • 11 months ago 12:47	

Figure 7: Video (4) Thumbnail on YouTube

Description	Method for drawing the pattern for faced waistband (front and back) and bottom leg hem.
Learning outcomes	By the end of this video, the trainees will be able to: - Drawing a faced waistband pattern for the front and back of the trousers' waistline - Drawing the hem allowance attached to the trouser back and front pattern.
Link	https://youtu.be/x1OpyYWS_bk
Duration	12.47 minutes
Video (5) title:	**How to transfer the classic women's trouser pattern onto duplex paper**

<p style="text-align:right">الفيديو الخامس طريقة نقل باترون البنطلون الحريمي الكلاسيك على ورق دوبلكس</p>

<p>• 204 views • 11 months ago</p>

<p>28:23</p>

Figure 8: Video (5) Thumbnail on YouTube

Description	Transferring the classic women's trouser pattern drawn on transparent dressmaking paper to duplex paper in three Egyptian standard measurements to be ready for use in mass production.
Learning outcomes	By the end of this video, the trainees will be able to: - Using duplex paper properly to produce all trousers pattern pieces, which are front and back with attached hem allowance, and faced waistband for each size. - Drawing three basic trousers blocks in Metric method with Egyptian standards measurements 44, 48, 52 using duplex paper. With seam allowance included to be ready to be used in mass production.
Link	https://youtu.be/TxNkHOG35c8
Duration	28.23 minutes
Video (6) title:	**Laying, cutting, sewing, and finishing classic women's trousers**

الفيديو السادس تعشيق وقص وخياطة وتشطيب البنطلون الحريمى الكلاسيك

• 385 views • 11 months ago

38:01

Figure 9: Video (6) Thumbnail on YouTube

Description	Learning to lay patterns on fabric, cutting, sewing, and finishing techniques.
Learning outcomes	By the end of this video, the trainees will be able to: - Lay the block pattern on fabric for cutting one piece of trousers with all its parts. - Lay three standard sizes of trouser pattern with all parts on fabric (manually marker making). - Know how to clean all the edges of the trousers using the overlock machine. - holding the trouser parts together. - Using straight lockstitch 301 for sewing an invisible zipper designed to be hidden beneath the tape when the zipper is closed. - Sewing faced waistband using straight lockstitch 301. - finishing the leg bottom with an overlock hem. - Giving good pressing using the right equipment.
Link	https://youtu.be/9C90W1zh5jw
Duration	38.01 minutes
Video (7) title:	**Basic Sewing Techniques: Hemming**

sewing / تقنيات الخياطة الحلقه الثالثة(تثبيت الذيل /الجزء الأول)/

• 3.5K views • 4 years ago

25:54

Figure 10: Video (7) Thumbnail on YouTube

Description	Some of the basic ways for hemming
Learning outcomes	By the end of this video, the trainees will be able to: - Sewing double fold hem .5 cm * 1 cm - Sewing double fold hem .5 cm * 2.5 cm - Sewing blind hem

	- Sewing zigzag or overlocked hem - Sewing Narrow rolled hem using a rolled hem foot
Link	https://youtu.be/j4xeBJ7V7o4
Duration	25.54 minutes

Fourth: Designing measurement tools
The researcher prepared various evaluation methods, which included the following:

1- Knowledge and understanding measurement test (before& after): appendix (1)
In Appendix 1, the researcher has developed an assessment test to gauge the degree of knowledge and information obtained from the distance training. Twenty-five questions altogether, divided into two categories for the test. Fifteen short essay questions were in the first. While ten true or false questions were in the second section, the test has a 50-point total score, with two points awarded for each correct answer.

2- Practical and professional skills measurement test (before& after): appendix (2 &3)
To assess and gauge the efficiency of the recommended distance training in improving trainees' skill performance in applying the classic women's trouser in standard Egyptian measurements using the metric method, the researcher employed **the practical and professional skills measurement test** (Appendix 2). The test included one question on drawing classic women's trousers in standard measurements that were as close as possible to personal size. **The observation checklist** (Appendix 3) was designed to assess and gauge each trainee's performance of the different skills as they were being performed, as it is impossible to gauge the performance of a skill after it has been implemented. the test has a 75-point total score.
The knowledge and understanding measurement test, the practical and professional skills measurement test, and the observation checklist were presented to a group of arbitrators in the fields of clothing and textiles and curricula and teaching methods to ensure the validity of the tests and the content of the checklist according to what it aims to measure.
Their opinions were sought regarding the validity of the tests and the observation checklist. The proportion of agreement amongst the arbitrators after the researcher made the changes ranged from 90 to 95%, a high percentage that is considered an indication of the validity of the tests and their applicability.

3-Measurement method for the trainees' attitude toward the distance training named "Women's Classic Trousers as a small garment project": appendix (4)

Measures of participant reactions and *the accomplishment of training objectives* are the two levels of distance training evaluation that most frequently seem to provide meaningful information (Clark, 2000).

The clarity and interest of the training material, the teaching methodology, and the careful selection of information sources all substantially impact the quality of distance learning courses (Vinogradova & Kliukas, 2015) .

A questionnaire with three axes was developed in this study to assess the distance training quality and participant reactions as seen in appendix (4). The axes of the questionnaire were to measure *first*: The teaching evaluation; *second*: The training contents evaluation; and *finally,* the Effective use of innovative information technologies.

To verify the validity of the questionnaire, a group of specialists in the apparel and textile field were shown the form, they all agreed on the validity of the form to measure the trainees' attitude towards the distance training, with some simple modifications such as rephrasing some phrases. The reliability coefficient was also calculated using Cronbach's alpha test (Alpha Cronbach), and the results were 0.97. This value is considered high due to its closeness to the correct one, which confirms the reliability of the questionnaire.

RESULTS AND DISCUSSION

The significance of the trainees' scores in the knowledge and understanding measurement test

A paired-samples t-test was conducted to compare the trainees' arithmetic mean achievement scores on the Knowledge and Understanding test before and after studying the content of the suggested distance training as shown in table (3). There was a significant difference in the scores for test before training (M=6.4, SD=4.18) and test after training (M=37.8, SD=4.71) conditions; t (19) =-35.53, p = 0.000. These results indicate that the distance training was successful in gaining students the Knowledge and Understanding needed for drawing the women's classic trouser using metric method."

Table (3) The significance of the trainees' scores in the knowledge and understanding measurement test

	Mean	Standard deviation	N	df	T test	Sig(2-tailed) $\alpha = 0.05$
Before	6.4	4.18	20	19	-35.53	0.000 For after
After	37.8	4.71				

The significance of the trainees' scores in the practical and professional skills measurement test and the checklist

A paired-samples t-test was conducted to compare the trainees' arithmetic mean achievement scores on the practical and professional skills test before and after studying the content of the suggested distance training as shown in table (4). There was a significant difference in the scores for test before training (M=0.000, SD=0.000) and test after training (M=57.3, SD=6.17) conditions; t (19) =-41.50, p = 0.000. These results indicate that the distance training was successful in gaining students the practical and professional skills needed for drawing the women's classic trouser using metric method."

Table (4) The significance of the trainees' scores in the practical and professional skills measurement test

	Mean	Standard deviation	N	df	T test	Sig(2-tailed) α = 0.05
Before	.000	.000	20	19	-41.50	0.000
After	57.3	6.17				For after

The significance of the trainees' attitude toward the distance training named "Women's Classic Trousers as a small garment project."

The frequencies and percentages between acceptance and rejection were calculated for each of the questionnaire statements according to the trainees' opinions about the distance training "Women's Classic Trousers as a Small Garment Project", the results are shown in figure (11) and Tables [5,6,7].
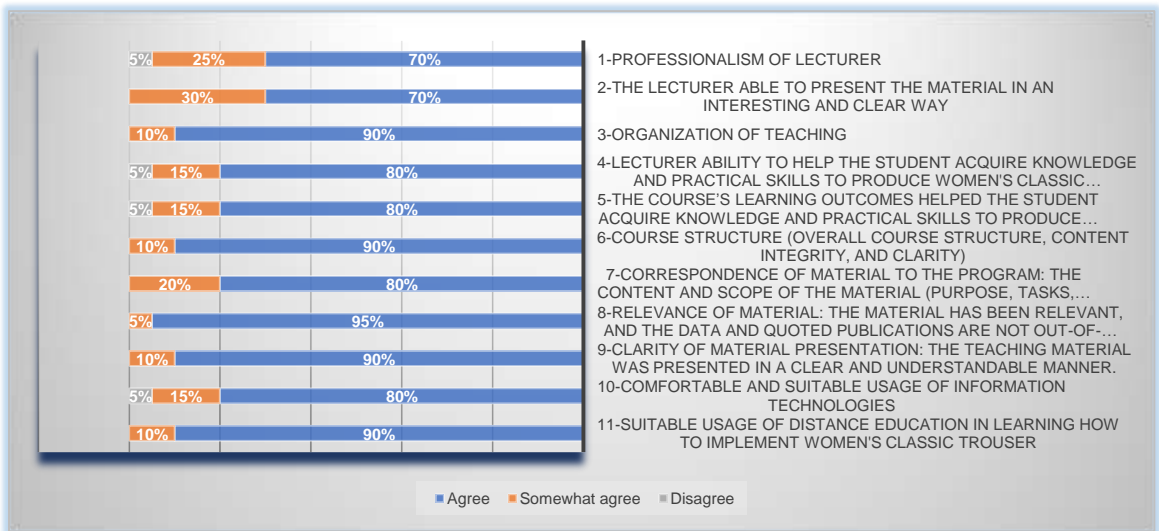

Figure 11: The percentages of the three axes of the questionnaire topics according to the trainee's responses

Table 5 : The percentages of the three axes of the questionnaire topics according to the trainees' responses

axis			Topic	Agree (No)	%	somewhat agree (No)	%	Disagree (No)	%
First: Teaching evaluation		1	professionalism of lecturer	14	70%	5	25%	1	5%
		2	The lecturer able to present the material in an interesting and clear way	14	70%	6	30%	-	
		3	Organization of teaching	18	90%	2	20%	-	
		4	Lecturer's ability to help the student acquire knowledge and practical skills to produce women's classic trousers	16	80%	3	15%	1	5%
Second: Training content evaluation		5	The training learning outcomes helped the student acquire knowledge and practical skills to produce women's classic trousers.	16	80%	3	15%	1	5%
		6	Distance Training structure (overall structure, content integrity, and clarity)	18	90%	2	10%	-	
		7	Correspondence of material to the program: the content and scope of the material (purpose, tasks, number of hours) correspond to the subject taught.	16	80%	4	20%	-	
		8	Relevance of material: the material has been relevant, and the data and quoted publications are not out-of-date.	19	95%	1	5%	-	
		9	Clarity of videos presentation: The teaching videos was presented clearly and understandably.	18	90%	2	10%	-	
Third: Effective use of innovative information technologies		10	The proposed distance training encourages the trainee to develop his skills and abilities in producing classic women's trousers using information technologies such as YouTube, computers, and smart phones.	16	80%	3	15%	1	5%
		11	suitable usage of distance learning in learning how to implement women's classic trousers	18	90%	2	10%		
		12	Are you interested in starting your own business or being an employee?	14	70%			6	30%

Table 6: Overall evaluation of the suggested distance training according to the trainees' responses

Axis		Topic	Mean	Standard Deviation	Percentage	significance	Rank
First: Teaching evaluation	1	professionalism of lecturer	2.65	0.57	88.3 %	**Agree**	**6**
	2	The lecturer able to present the material in an interesting and clear way	2.7	0.46	90 %	**Agree**	**5**
	3	Organization of teaching	2.9	0.3	96.6 %	Agree	**2**
	4	Lecturer's ability to help the student acquire knowledge and practical skills to produce women's classic trousers	2.75	0.54	91.6 %	Agree	**3**
Second: Training content evaluation	5	The training learning outcomes helped the student acquire knowledge and practical skills to produce women's classic trousers.	2.75	0.54	91.6 %	Agree	**3**
	6	Distance Training structure (overall structure, content integrity, and clarity)	2.9	0.3	96.6 %	Agree	**2**
	7	Correspondence of material to the program: the content and scope of the material (purpose, tasks, number of hours) correspond to the subject taught.	2.8	0.4	93.3 %	**Agree**	**4**
	8	Relevance of material: the material has been relevant, and the data and quoted publications are updated.	2.95	0.22	98.3 %	**Agree**	**1**
	9	Clarity of videos presentation: The teaching videos was presented clearly and understandably.	2.9	0.3	96.6 %	**Agree**	**2**
Third: Effective use of innovative information technologies	10	The proposed distance training encourages the trainee to develop his skills and abilities in producing classic women's trousers using information technologies such as YouTube, computers, and smart phones.	2.75	0.54	91.6 %	**Agree**	**3**
	11	suitable usage of distance learning in learning how to implement women's classic trousers	2.9	0.3	96.6 %	**Agree**	**2**
	12	Are you interested in starting your own business or being an employee?			70 %	**Agree**	

The percentage of trainees who have positive opinions, as seen in Table [6] and Figure (11) is Highly statistically significant. Table [6] shows that 98.3% of the trainees confirmed the relevance of the material and that the data and quoted publications are relevant and updated. With a percent of 96.6%, the

trainees agree on the clarity of videos presentations, the organization of teaching, and the distance training structure. 91.6% of the trainees believe that the proposed distance training encourages them to develop their skills and abilities in producing classic women's trousers using information technologies such as YouTube, computers, and smart phones. The trainee's responses ranged between 88.3% and 98.3% for all questionnaire topics demonstrating the effectiveness of the distance training approach to implement women's classic trousers.

It was also found that students are developing a positive attitude toward starting small projects, and their responses to the question "Are you interested in starting your own business or being an employee?" demonstrate this. That question was asked twice, once before the training and once after, 30% of them responded "yes" before the training, and this percentage increased to 70% after finishing the training.

The overall evaluation average for the three axes was calculated for the mean, standard deviation, and percentage averages to detect the excelent significance of the sugested training, as shown in Table 7. it can be concluded with the percent 92.7% that the training teaching, the training content, and use of innovative information technologies provides easier and more accessible learning of the study material, acquiring more knowledge in a short time, and developing the students' visual thinking and self-education ability.

Table 7: Overall evaluation of the suggested distance training according to the total axes

Axis	Mean	Standard Deviation	Percentage (%)	significance
First axis **Teaching evaluation**	2.75	0.49	91.67%	**Agree**
Second axis **Training content evaluation**	2.86	0.37	95.33%	**Agree**
Third axes **Effective use of innovative information technologies**	2.82	0.44	94%	**Agree**
Overall training evaluation	2.78	0.51	92.7%	**Agree**

The trainees' applications typically illustrate the achievement of training objectives, as shown in Figure (12).
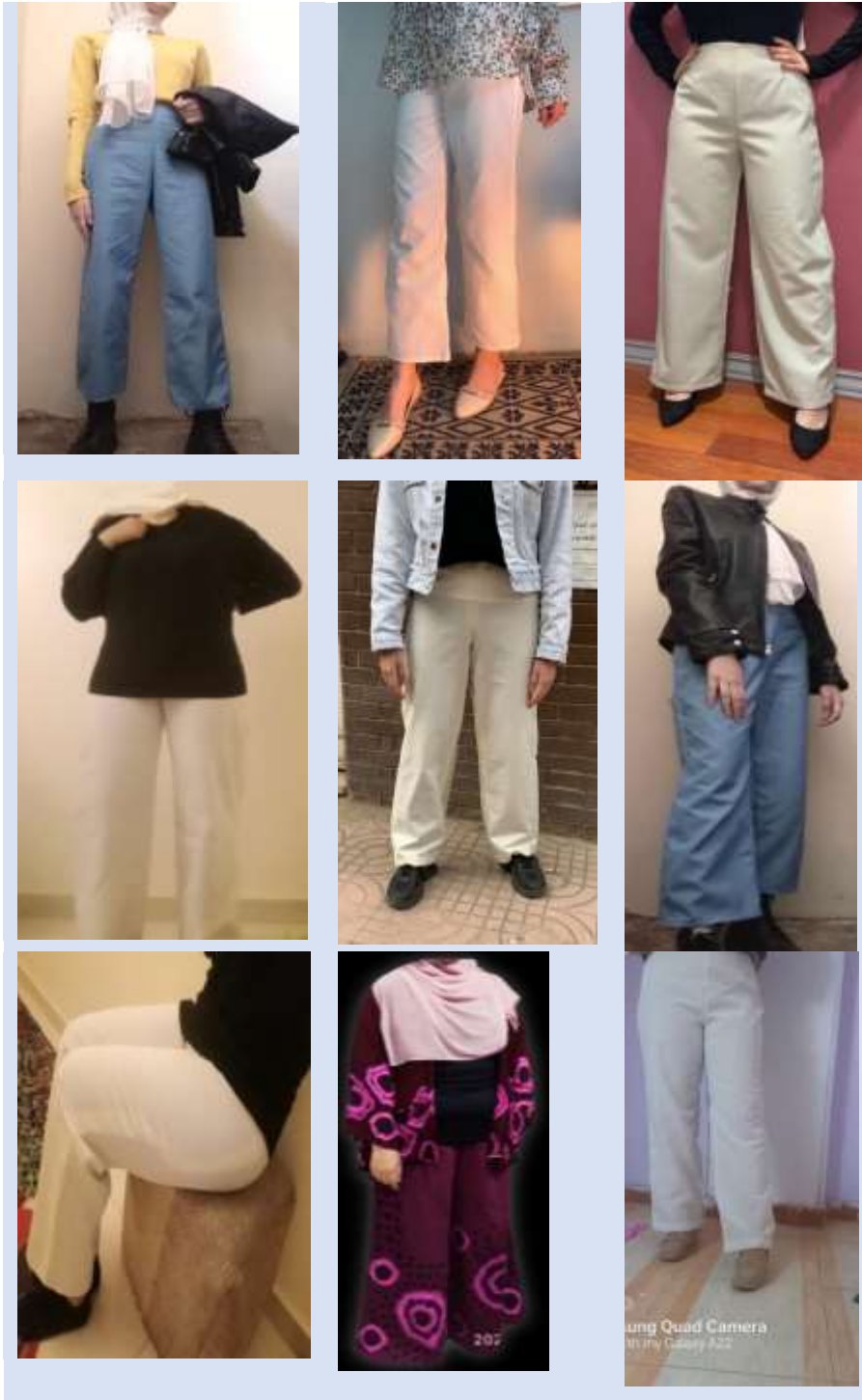
Figure 12: Some of the trainee's applications for classic trousers in Metric method
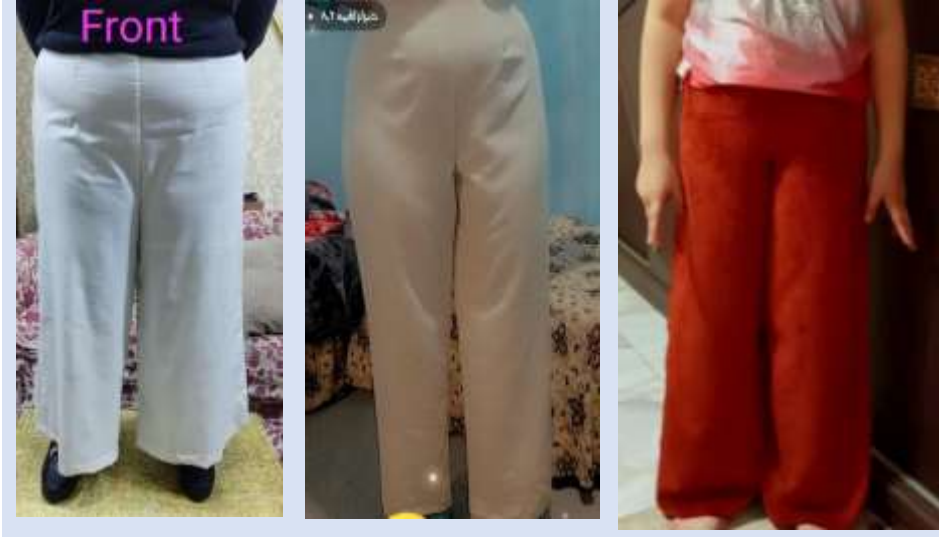
Figure 12 continue: Some of the trainees' applications for classic trouser in Metric method.

Conclusion

Since women's classic trousers are widely accepted in local and international markets, this research is developed to educate production through distance learning as a foundation for small garment projects. Such businesses are simple to set up for anyone familiar with cutting and sewing techniques. Our study shows a successful example of using innovative information technology such as YouTube and video recording to teach the technical knowledge and skills to start small projects in garment fields using a Self-education strategy which enhances the learner's self-confidence. An important part of this study resided in comprehending how young students in clothing and textile departments can be encouraged towards establishing their own small projects Since they have the knowledge and skills required through their studies. The researcher suggests adding more online clothing-related training courses that can serve as the foundation for small projects.

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الملخص العربي

تدريب مقترح عن بعد باستخدام تقنيات المعلومات المبتكرة لتعلم صناعة البنطلون النسائي الكلاسيكي كبداية لمشروع ملابس صغير لتحسين دخل الأفراد ومواجهة ارتفاع معدلات البطالة

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يعد التعلم عن بعد باستخدام الإنترنت حالياً أحد أهم استراتيجيات التعلم الإلكتروني وأحد أبرز الابتكارات التكنولوجية التي فرضت نفسها عالمياً. وقد قامت الباحثة بإعداد تدريب عن بعد عن طريق تسجيل فيديوهات تم نشرها على منصة يوتيوب المجانية لاكتساب المعرفة والمهارات الخاصة بتكنولوجيا تصنيع السراويل النسائية الكلاسيكية بالطريقة المترية لاستخدامها كأساس لمشروع ملابس صغير. يعد إنتاج السراويل النسائية كملابس جاهزة مثالاً لمشروع صغير يناسب ظروف مصر الاقتصادية لأنه لا يحتاج إلى رأس مال كبير للبدء فيه وتحقيق الأرباح بسرعة خاصة انه في القرن الحادي والعشرين لا تكتمل خزانة ملابس أي امرأة بدون مجموعة متنوعة من تصاميم البنطلونات المختلفة، مما يعطي إشارة مبشرة لنجاح مشروع الملابس الصغير المقترح. ولقياس فعالية التدريب المقترح للتعلم عن بعد ومدى رضا المتدربين، تم تصميم اختبار معرفي واختبار اخر مهاري مع بطاقة ملاحظة وكذلك ورقة استبانة لقياس كفاءة المدرب القائم على تدريس المقرر، وكذلك تقييم محتوى التدريب المقترح، والاستخدام الفعال لتقنيات المعلومات المبتكرة. دلت نتائج الاختبارات على مدى فاعلية البرنامج التدريبي على اكساب المتدربين المعارف والمهارات اللازمة لتصنيع البنطلون النساء الكلاسيكي. كما تراوحت إجابات المتدربين بين88.3% و98.3% لجميع موضوعات الاستبانة التي يستدل منها على كفاءة القائم بالتدريس ومحتوى البرنامج التدريبي. وأظهرت النتائج ايضا أن تطبيق تقنيات المعلومات المبتكرة يوفر تعلمًا أسهل وأكثر سهولة لمواد التدريب، واكتساب المزيد من المعرفة في وقت قصير، وتطوير التفكير البصري لدى الطلاب وقدراتهم على التعلم الذاتي. كما توضح تطبيقات المتدربين لإنتاج البنطلون النسائي الكلاسيكي بشكل نموذجي مدى تحقق أهداف التدريب عن بعد.

Appendix (1)
The Knowledge and understanding measurement test (50 degrees)

First: answer the following questions

1. Mention the importance of small projects for national economic?
2. List the measurements required to draw the classic women's trouser in metric method?
3. What is Hip line?
4. What are the main methods for measuring the crotch length?
5. How many steps in making the classic women's trouser in metric method?
6. What is the measurement that is from the waist down to the desired length, this measurement is taken at the side with a tape measure?
7. What is Pattern Grading?
8. Why is the pattern grading method used?
9. What is Marking?
10. What is the main objective of a marker?
11. What are the methods of marker making used in this training?
12. What is Allowance?
13. What is seam Allowance?
14. What are Standard Measurements?
15. What are Notches?

Second: true or false

1. The grain line of pattern must be parallel to the warp direction in a woven fabric.
2. Fabric width and length must be larger than the marker width and length.
3. The less the fabric wastage, the higher the marker efficiency
4. The more the marker length, the higher the marker efficiency
5. The method used for drawing the trousers block pattern is profile method.
6. small projects usually have more than 50 employers
7. small projects are ranged between 50,000 and 1 million Egyptian pounds.
8. The metric classic trousers method has 20 steps.
9. Small projects are considered training centers for workers and then supply large projects with skilled workers.
10. During the trousers manufacturing process, we can clean all the edges with an overlock machine before starting sewing.

Appendix (2)

the practical and professional skills measurement test

Draw the pattern for the classic women's trouser with metric method in standard measurements that are closest to your personal size, then cut and sew the trouser as you learned from the videos.

Appendix (3)

The observation checklist

	Pattern creating					
	Skill list	Excellent	Very good	Good	weak	Very weak
1	Drawing women classic trousers pattern in standard measurements with metric method (right and left front, right and left back)					
2	Drawing a faced waistband pattern for the front and back of the trousers' waistline					
3	Drawing the hem allowance attached to the trouser back and front pattern.					
	Pattern laying and cutting					
4	Lay out pattern on fabric using pattern guide					
5	Cut out trouser					
	Sewing machines set up and using					
6	clean all the edges of the trouser using the overlock machine					
7	Thread sewing machine Fill & insert bobbin, change and using suitable machine needle with the fabric used, if necessary, recognize balanced stitching, choosing the suitable thread color					
8	apply Fusible interfacings on faced waistband					
	Sewing skills					
9	Control fabric while running the sewing machine					
10	Stitch front and back waist darts					
11	Apply an invisible zipper					
12	Sewing faced waistband using straight lockstitch					
13	Machine hem using regular Stitch for the trouser leg end					
	Pressing					
14	Giving good pressing using the right equipment.					
15	The overall looking					

Appendix (4)

axis			Topic	Agree (No)	%	somewhat agree (No)	%	Disagree (No)	%
First: Teaching evaluation		1	professionalism of lecturer						
		2	The lecturer able to present the material in an interesting and clear way						
		3	Organization of teaching						
		4	Lecturer's ability to help the student acquire knowledge and practical skills to produce women's classic trousers						
Second: Training content evaluation		5	The training learning outcomes helped the student acquire knowledge and practical skills to produce women's classic trousers.						
		6	Distance Training structure (overall structure, content integrity, and clarity)						
		7	Correspondence of material to the program: the content and scope of the material (purpose, tasks, number of hours) correspond to the subject taught.						
		8	Relevance of material: the material has been relevant, and the data and quoted publications are not out-of-date.						
		9	Clarity of videos presentation: The teaching videos was presented clearly and understandably.						
Third: Effective use of innovative information technologies		10	The proposed distance training encourages the trainee to develop his skills and abilities in producing classic women's trousers using information technologies such as YouTube, computers, and smart phones.						
		11	suitable usage of distance learning in learning how to implement women's classic trousers						
		12	Are you interested in starting your own business or being an employee?						