

# Developing Technical Skills through Digital Learning For the Garment Manufacturing Industry



## Final Internal Report

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## **ACKNOWLEDGEMENTS**

We are very grateful to the employers and learners who engaged with this project and for sharing their knowledge, views and experience. We are thankful to the University for Industry VocTech for providing the funds for the project and we are grateful for their support and assistance.

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# 1 Introduction, aims and objectives

## 1.1 INTRODUCTION

Fashion-Enter Ltd, working in partnership with UCL Institute of Education, has created a pilot interactive digital resource to support learners to develop the technical skills needed for the modern garment manufacturing industry. Modules from a Skills and Education Group (SEG) level one qualification were converted into digital learning content, with interactive assessment processes embedded. Analysis of the data shows that the concept more broadly, has the potential to promote the rapid development of learners' technical proficiency through interactive self-assessment, learners' ability to repeat theory/technical processes as their practice develops and orientate new employees and school leavers to the industry. The concept has the future potential to be developed for different types of garment manufacturers, providers of clothing as well as colleges of FE and higher education. For example, one of the team has already discussed concept development for school leavers with a large manufacturer in Derbyshire. The Programme was led by Fashion-Enter Ltd and commissioned UCL Institute of Education to provide continuous support for the Programme team and undertake a progress and final evaluation report.

Fashion-Enter Ltd is a not for profit social enterprise, which strives to be a centre of excellence for sampling, grading, production and for the learning and development of skills within the fashion and textiles industry. They have three units on Crusader Estate Haringey London; a factory for large scale production and a fashion studio in Unit 14; A fashion Technology Academy in Unit 13 and a Tailoring Academy in Unit 4. The factory was established in 2010, with funding from ASOS.com and current clients include Tesco, ASOS.com, Mackays and more recently contracts for PPE. Core production centres on ladieswear soft separates in both jersey and woven, being manufactured by a team of 50 machinists. Most of the Programme was undertaken before the COVID-19 lock down, however the final evaluation of the Programme was impacted by the closure of FE colleges and the furloughing of apprentices working in the sector. To support the fight against COVID-19, Fashion-Enter diverted their normal production of garments to focus on government requirements for Personal Protective Equipment (PPE), yet they successfully continued with the Ufi VocTech Programme.

Digital learning within vocational programmes of study is common but developing the technical skills of apprentices, new employees and learners on programmes of study, within a garment factory setting, is novel. Teaching technical skills for the garment manufacturing industry has traditionally been based on learning through practice (Billet, 2010), a combination of on-the-job and off-the-job learning (Rainbird et al, 2004) and mentoring in the workplace. Looking to the future, the Fourth Industrial Revolution will require companies, and employees, to become more flexible, creative and quickly learn and adapt to the new skills required. Fashion-Enter is a leading training provider for levels 1 – 5 qualifications, including apprenticeships and in-house programmes, in technical garment construction. The company identified a need for digital resources that provide additional support and assessment for learners, as they grappled with the skills to work within a modern factory setting and earn qualifications. They also wanted to attract a new generation of professional stitchers that are technical savvy and of the digital age. The skills shortage in the UK is widely reported and is set to grow in the coming years, as a result of Brexit and the Fourth Industrial Revolution (Edge, 2018). Jane Gratton, Head of Business Environment and Skills Policy at the British Chamber of Commerce said that there is: “...*persistent and pervasive skills shortages in the economy. Firms across all sizes, sectors and regions are struggling to find the skills and labour they need to fill job vacancies, damaging not only the individual firms, but also the wider supply chain*” (Edge, 2018). This challenge is compounded by the current COVID-19 situation.

Traditional digital and social media platforms such as You-Tube, provide learners with access to numerous step-by-step guides to areas such as fashion, design, garment construction and the creative industries. However, there are few digital and interactive resources that provide accessibility to step-by-step technical skills and assessment within an ethical, audited, manufacturing environment that complies to stringent health and safety rules. This report outlines the development and testing of a pilot digital interactive resource as a concept for learners entering the garment industry, who wish to gain qualifications. The first part of this report offers a context to the Programme. The second part of the report presents the outcomes of an analysis of data, collected from learners and teachers at Fashion-Enter Ltd and a range of companies related to garment manufacturing. Owing to Covid-19, we were

unable to collect data from learners within manufacturing companies, apart from Fashion-Enter.

## 1.2 CONTEXT OF THE PROGRAMME

### ***Manufacturing in the UK***

The UK is the ninth largest manufacturing nation globally, following China, US, Japan, Germany, South Korea, India, Italy and France (Make UK, 2019). However, the sector has seen significant decline in terms of jobs and output since the 1980s. In 2010, after the economic crisis, the UK government aimed to ‘rebalance’ the economy, placing more emphasis on enabling the growth of manufacturing, rather than financial services (SPERI, 2016). George Osborne’s plan for growth, within high-tech and ‘advanced’ manufacturers, proclaimed in 2011 the ‘*march of the makers.*’ However, between 2011-2016, there is evidence of only a slight increase of 5% in manufacturing output. Many suggest that this may be owing to a short-term bounce back after job losses witnessed by the economic crisis. According to the TUC (2020), after many years of ‘de-industrialising,’ the UK cannot reindustrialise quickly. Furthermore, they state that the advances of the Fourth Industrial Revolution, such as artificial intelligence and digitalisation, require that:

*“...the workforce is digital ready, meaning a skills revolution from preschool years to college education, while expanding access to apprenticeships, and widening the pool of science, technology, engineering and maths talent to cover more women and other sections of society currently under-represented in STEM; and supporting the adaptation of the workforce.” (TUC, 2017: 6)*

Technological Skills Obsolesces (TSO), founded on the developments in artificial intelligence and digitisation, will affect the labour market in some occupations, particularly areas of skilled manual labour (CEDEFOP, 2017). The future of manufacturing, outlined by the government, lies in areas of technology such as mobility – driverless cars and electric vehicles. This requires an increased and rapid production of new technologies, such as the digital resource created by Fashion-Enter, and workforce skills to compete with economies globally.

### ***Fashion and garment manufacturing in the UK***

The fashion and clothing industry in the UK encompasses the manufacture of knitwear, hosiery, apparel and garments such as workwear, underwear and outerwear, plus the wholesale of

clothing. The industry contributes approximately 4.8bn to the UK economy each year, employing around 156, 000 people. There are around 35,000 businesses, of which approximately 20,000 of these are sole traders (Institute for Employment Research, 2019). In 2017, 64,000 people were employed in the manufacture of textiles, whilst 45, 000 in the manufacture of apparel. According to the UK Fashion and Textiles Association (UKFT, 2019) the data, before COVID-19, demonstrated an upward trajectory of retail sales. The Index of Production or producer turnover is 20 per cent higher than 2016. The manufacturing of textiles and wearing apparel has remained steady since 2010-2018, with a slight increase. To place this in context, UKFT suggest that the fashion and textiles industry is dominated by micro-firms, highlighting the niche nature of many companies. Data from the Inter-Departmental Business Registry (2017), cited by UKFT, suggests that within fashion and textiles manufacturing 80.6% of companies employ approximately 0-9 people, 15.9% employ 10-49 people, 3.2% employ 50-249 and 0.3% employ over 250 people.

Employment within manufacturing includes a range of jobs such as sewing machinist, pattern cutter, garment cutter, garment presser, knitting operative, handcraft tailor, milliner and couturier and production manager. In general, employers require workers who are skilled and reliable. Technical skills are most sought after, such as knowledge of garment technology, construction, pattern cutting, sewing machine skills, production and finishing methods. Yet, workforce development within the clothing industry is limited and wages remain low. The Environmental Audit Committee (EAC, 2019) suggest that pay rates differ substantially.

*“Made in the UK’ should mean workers are paid at least the minimum wage. But we were told it is an open secret that some garment factories in places like Leicester are not paying the minimum wage.”*

These challenges have been compounded since the 1980s, as UK fashion retailers have sourced clothes from countries with low labour costs and poor environmental governance. Imported clothes are expected to continue to dominate the UK market.

Garment production is one of the world’s largest and most labour intensive manufacturing industries. Since the 1980, leading fashion retailers in the West have sourced their clothes from other countries with low labour costs (EAC, 2019). Issues of health and safety, slave labour and sustainability within some overseas manufacturers, have been well reported (EAC, 2019). Fortunately, the apparel and footwear market in the UK has grown steadily over the

last seven years. For example, Haringey Council confirmed that growth of garment manufacturing within their borough had increased by 136% over the last five years. They recognised that to keep this growth sustained there needed to be a progression of skills at higher levels of 3 - 5 qualifications and apprenticeships. The Greater London Authority (GLA) and Haringey Council have supported the growth of technical skills, with Fashion-Enter following the successful application of the Good Growth Fund to develop a Tailoring Academy that opened in November 2019. According to Williamson (2020) a lack of workforce skills is hampering a renaissance in UK manufacturing. Outlined by FashionUnited (2019) *“the last generation of people who possess hands-on experience in factories is now between 55 to 75 years old, and not enough skilled labour is coming through that can fill the growing void.”* British consumers are expected to demand more domestically manufactured products, encouraging reshoring activity. Demand trends have shifting consumer attitudes towards sustainable living, as more people seek out locally produced goods due to issues such as climate change. The concept of the pilot digital resource, if developed more extensively, has the potential to support the increase in workforce skills in the clothing industry nationally.

### **1.3 Occupational development and digital learning**

The concept of Fashion-Enter’s pilot interactive resource aimed to test the skills development of learners within employment and enrolled on a SEG qualification. An important aspect of the teams’ approach to blended learning was the relationship and combination of face to face and digital learning. The assessment component, embedded within each of the five modules of the digital resource, aimed to support the teachers’ assessment of learners’ progress. Laurillard et al. (2016) argues that within digital technologies, assessment is a critical factor in innovation for learning. Research studies demonstrate the potential for improvements in formative assessment, with greater use of automatically tracked learning analytics. Learners’ digital traces can be used to add to learner opportunities for formative assessment, and to improve human-based assessment rather than to replace it. Digital self-assessment allows learners to repeat technical processes at their own pace, as their practice and speed develops.

Concepts of occupational development based on traditional theories of learning focus on the individual practitioner and their ability to make judgments, recognise situations in practice, improvise and to understand phenomena. Influenced by cognitive theories of learning, concepts such as reflective practice (see Schön, 1983) and Hubert and Stuart Dreyfus’s (1986)

staged model of professional development, have been coined the 'fluency' accounts. Winch (2010) suggests that this is owing to their emphasis on the experience of individual practitioners, the acquisition of practical knowledge and the development of expert performance within an occupational field. The development of practical knowledge or Knowing-How, he suggests, in contrast to explicit or propositional knowledge is much more complex and involves procedural knowledge, technical knowledge, experiential knowledge as well as knowledge described as tacit.

Authors such as Dreyfus and Dreyfus (1986) propose a practitioner becomes more proficient within an occupation, they pass through five-stages of skills acquisition. These are: Novice, Advanced Beginner, Competent, Proficient and Expert. Acquiring occupational skills in complex, real-life situations requires an individual to make decisions and choices which become more intuitive and refined with experience. This involves a 'stepwise' improvement in a practitioner's mental processing. In contrast other authors suggest that the development of occupational practice is more individual, based on their disposition, agency and the environment in which they learn (Billet, 2001). Fashion-Enter's concept of digital technical skills development is based on a personalised approach to the development of occupational skills. Learners are able to access and repeat abstract information and technical processes as they gain more experience and face tricky challenges on the shop floor.

The concept supports learners' passion for the industry and eagerness to progress into work or within work. In other words, individuals have ongoing access to technical information within the workshop, classroom, at home or whilst travelling, as they progress their studies and practice. Learning digitally, in conjunction with occupational practice, arguably will enhance learners' ability to solve and reflect on the challenges they face within production. As Schön (1983) argues the development of Know-How involves knowledge-in-action and continual reflection. The concept produced by Fashion-Enter will enable learners to reflect on the individual errors made within production and access the technical information or processes needed through the interactive resource. Occupational development as Schön suggests lies in intuitive processes that an individual brings to situations. The act of reflection enables the practitioner/learner to make sense of new situations/technical processes in practice and evaluate their personal and tacit understanding of their actions. Fashion-Enter's concept supports this iterative process of learning, reflection and individual change.

## **1.4 AIMS AND OBJECTIVES OF THE PROGRAMME**

The overall aim of the concept was to create and evaluate an inclusive digital resource, utilising interactive videos to support the development of learners' technical skills for garment manufacturing. Based on the learning outcomes of SEG qualifications, the concept involved orientating new employees/learners to the industry by providing basic skills and assessment. Combined with existing learning strategies, i.e. learning from mentors/teacher and workplace practice, the resource aimed to support the rapid and confident development of students' technical proficiency. The Programme set out to test a scalable, replicable model for improving the job prospects and qualification of low-paid or unemployed adults for the fashion and garment manufacturing industry. The grant funding provided the means to:

- To identify and plan an innovative learning resource to engage underrepresented groups into education and employment.
- To develop a blended learning programme in stitching, that will be assessed within the interactive programme.
- To develop an assessment resource for the fashion and garment construction industry.
- To implement a product with engaged employers and selected groups
- To finalise and price a commercial product
- To evaluate the journey and ensure sustainability of the project

By addressing these aims the potential of the concept for learners to develop technical skills and competency, through blended learning, relates to large organisations, niche producers, school leavers, colleges of further education, University Technical Colleges and higher education. The Programme has been able to reach out to a range of business contacts within the fashion and textiles industry and gauge their interest in future products.

## **1.5 Programme Development**

The Programme was led and strategically managed by Fashion-Enter Ltd, with partners taking responsibility for technical development, support and Programme evaluation. A collaborative approach was taken to the development process, drawing on the experience of teachers,

experts in the industry, managers at Fashion-Enter, a technical company and the Centre for Post 14 Education and Work at UCL Institute of Education. The management of the Programme changed during the year, which impacted slightly on the design of the resources, particularly modules 3 and 4. However, the change process was managed well by the CEO of Fashion Enter. Regular meetings were held to gain feedback from staff and aid the developmental process. For example, staff at Fashion-Enter had taught the Skills and Education Group (SEG) award, level one garment construction qualification and apprenticeship qualifications for several years. The teaching staff made a collective decision about which units were appropriate to develop for online learning, within a blended programme of study.

The programme team at Fashion-Enter decided to develop and test five units from the SEG level one and two qualifications. The modules included:

- Safe Working Practices
- Identify Machine Parts
- Machine Operation
- Using Scissors and Snips
- Maintenance

The team targeted the content and development of the resource at learners who were beginners within the industry, with limited prior knowledge. The content of the resource, outline in the SEG Level One qualification document, were interpreted by the teaching staff into a sequence of online activities and assessments. The content, teacher explanations and sequencing of the resources were developed collaboratively with a contracted technical company. To begin this process, an E-Learning flow diagram was created to provide a plan for the staged filming and sequence of learning, illustrated below.




Watch changes\_17\_18(Autosaved) | Votesh changes\_17\_18 (Revised) | 2019-11-11\_CGIC-47\_AgamaGobal... | LusatardCustomHow to teach vocal... | LusatardCustomHow to teach vocal... | Votesh changes\_17\_18

Full Screen  
Close Full Screen

### Fashion Enter Digital Learning Outline of changes 17/10/2019

Add introduction for tutor Ana to increase engagement




Anna Cover  
Tutor/Assessor, The Stitching Academy at Fashion Enter

Watch changes\_17\_18(Autosaved) | Votesh changes\_17\_18 (Revised) | 2019-11-11\_CGIC-47\_AgamaGobal... | LusatardCustomHow to teach vocal... | LusatardCustomHow to teach vocal... | Votesh changes\_17\_18

Full Screen  
Close Full Screen


### Fashion Enter Digital Learning Outline of changes 17/10/2019

Bobbin case - showing it full of loose fibres & fluff



Before

Wide shot - teacher explains but fluff is not visible




After

New close-up shot clearly shows bobbin full of fluff prior to cleaning

Full Screen  
Close Full Screen

Fashion Enter Digital Learning  
Outline of changes  
17/10/2019

Safety procedure when carrying large fabric scissors



Before

After


Voice only highlights scissors to be pointing downward for safety

Green arrow - blades must be carried pointing downward

Full Screen  
Close Full Screen

Fashion Enter Digital Learning  
Outline of changes  
17/10/2019

Add clearer video control buttons as they are too small on mobiles



Before


After

Full Screen  
Close Full Screen

Fashion Enter Digital Learning  
Outline of changes  
17/10/2019


Make MCQ's less ambiguous

Choose the safety hazard in this picture?



Before

Choose the safety hazard in this picture?




After

Full Screen  
Close Full Screen


Fashion Enter Digital Learning  
Outline of changes  
17/10/2019

Sequence of sequential sections with no signposting

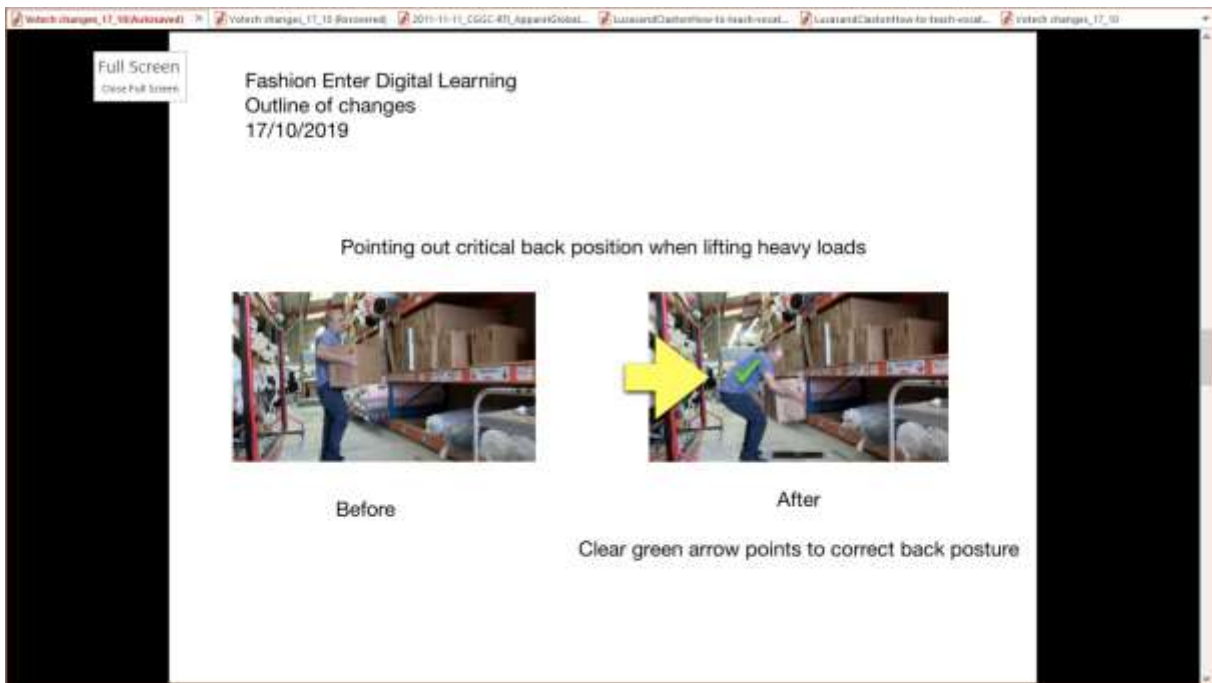


Before

Numbered sections now 'signposted' for learners



After



Once the digital resource was adapted and the assessment process tested, a second review was undertaken by the CEO and senior managers at Fashion-Enter. The following is an example of some of the documented changes:

**Monday 23<sup>rd</sup> December** Learning - Jenny Holloway's feedback & corrective actions

First video health and safety at 2.46 - are the snips attached?

Not relevant - as snips are not being used in this shot. It is relevant because it's health and safety protocol but looking at it again you can't see if they are attached or not so fine to let this go

AT 5.33 the same - are the snips attached? New shot inserted – snips now attached to sewing machine Thank you

6.45 sign for defibrillator not completed...is this right. Should we show it completed?

Now fixed – form is filled in - and replaces old version! Thank you

Ana's intro is fab!

Overlocker machine I don't think we have shown the on off procedure? Can we use the close up clip of Ana turning it off with RED button? YES PLEASE DO

Flatbed video

Where Ana is talking about the second part of the Reverse mechanism do we need an arrow saying '2nd Reverse'. it's hard to see what she is talking about. See 0.34 seconds in to second video

I did see that but thought it should be done first but fine to leave this. I am not trying to make additional work.

At 1.43 of flat bed video Ana says this part of the machine Should we have a sign saying 'Machine Pulley Hand Wheel'to compound the learning. Presume this has been done? I will watch video now

She says "this one here"

At 1.44 Ana says this part here...can we have signs saying what that part is...She does say it is Needle Bar and we have a title in place – no action required!

It's a shame we did not clean the inside of the machine as there is lint in the machine...too late now.

Overlocker threading film 11.52...Ana says Line it up...but how do you line it up...is there any film showing how to line up the three areas?Film of Ana turning the wheel on overlocker - maybe from earlier filming days - Ian will look at earlier footage? OK thank you

0.46 Ana is calling it a plate...is it a plate or a stool...?Ask Ana I can't believe I called this a stool!!! So funny. Yes it's a spool pin. Thank you please amend with signage

0:54 Spool pin

1:06 Pre tension

At 1.52 Ana says right there...is there a name - can we have a sign up please?'Pre-tension' see slide Thank you

2.06 Ana says in this needle area - again should there be a sign saying exactly what it is – Ana to see slide re two thread guides upper and lower, what are they called? Ian can you help here. Ana has been off ill for the best part of two weeks with flu. She is not in today either or tomorrow.

2.52 is it the right plate or is it the right stool. We can use the word stool if necessary.'Left & Right Thread plates' Thank you

3.33 Ana says place right inside here...but what is here?'Bobbin Winding Spindle' Thank you please add in

3.55 What is that...? Ana clearly talks about winding the bobbin here.

Does volume dip and change around time 4.96. There is no '4:96'! ??? I will check again – apologies!

5.45 Ana says 'Little door over there'...is there a name for this that we can put on? Bobbin Access Door? Arrow on slide – Thank you – Ana to inform name – she is not in so this will not be done.

7.32 Gathering...please can we have a sign saying pucker? Ian do you agree that the fabric swatch shows puckering?YES – 'Pucker' Please put in the word

8.18 the same A bit of puckering?'Seam pucker now reduced' Thank you – please put in the wording

The part when Ana threads it wrong is brilliant. Absolutely spot on well done

Scissors...should we have used the metal glove. I am hoping you are going to say no. We are going to leave this now as is.

AT this point I had a telecom and stopped the video but then the video stopped and disappeared so how long do you have until the video stops. I then had to upload again and then the whole video started from the beginning. Is that correct? Shouldn't it start from when you finish? Please can you reply here...?

SteveModule 5 - can't use that image of Leyla as she has her long hair not tied up.Which image of Leyla? It is the opening image on the front of the Module

IanAna talks about fibres when cleaning the bobbin case they are fibres but the correct word is Lint. Can we have a sign saying lint please...'Lint inside bobbin case' Thank you

Also it just stops...there is no ending. Don't we need to finish off in some way?

Suggest new closing V/O as follows:

Show full menu of E-Learning Content as at opening of E-Learning

V/O: Well done, you have now completed the first E-Learning module from Votech on sewing factory safety procedures, and sewing machine threading and maintenance. Check your scores.


Please share with your line manager, and encourage your colleagues to also sign up, and try out this E-learning for themselves.

Fashion-Enter is the UK's leading apprenticeship provider for technical skills using the backdrop of an industrial factory to compound up-to-date learning. They provide both apprenticeships and six to ten week courses. A recent Ofsted Monitoring report (<https://www.fashioncapital.co.uk/insights/an-excellent-result-from-ofsted/>) commented that:

*“Leaders and managers have developed a well-structured apprenticeship for the fashion industry. The chief executive officer uses her extensive experience in the sector to work with leading fashion firms and design bespoke programmes that meet the technical and traditional skills they need. This has provided apprentices with a range of levels and pathways into different roles within fashion design and production. FE is set within a busy garment production factory and this provides an inspiring training environment where apprentices gain hands-on experience and exposure to all aspects of the design to production cycle.”*

To integrate the resource within the curriculum, members of staff discussed and planned schemes of work, considering the sequencing and connections between the content of the resources and face to face teaching and mentoring in the factory. The example below shows schemes of work prepared by the staff for formal teaching, with resources embedded within the curriculum.

## Scheme of work for Level One Stitching programme



File | Text | View | Scheme of Work SAI - 2020.docx - Saved to this PC

**Scheme of Work 2019**

**Course:** ABC Awards L1 Award Fashion and Textiles  
**Day & Time:** Weekdays, 9:00am – 1:00pm / 1:00pm – 5:00pm  
**Venue:** Stitching Academy - FTA

**QAN:** 50043080  
**Duration:** 4 Hours  
**Assessor/Tutor:** Ana Cover  
**Tutors/Technicians:** Ana Cover

**Integrating Equality and Diversity**

**Equality & Diversity:** examples used within the course will reflect a range of ages, gender, race and cultures, access to the studio and classroom can be accessed for staff or students with mobility issues, handouts will be designed for learners who have declared specific learning needs i.e. dyslexia: coloured sheets, different typeface, option to voice record and have work transcribed where needed. All units will need evidence obtained from the classroom. All units will include an observation.

*This Scheme of Work has been designed to include – Functional Skills (literacy) technical words, key terms (numeracy) measuring, addition*

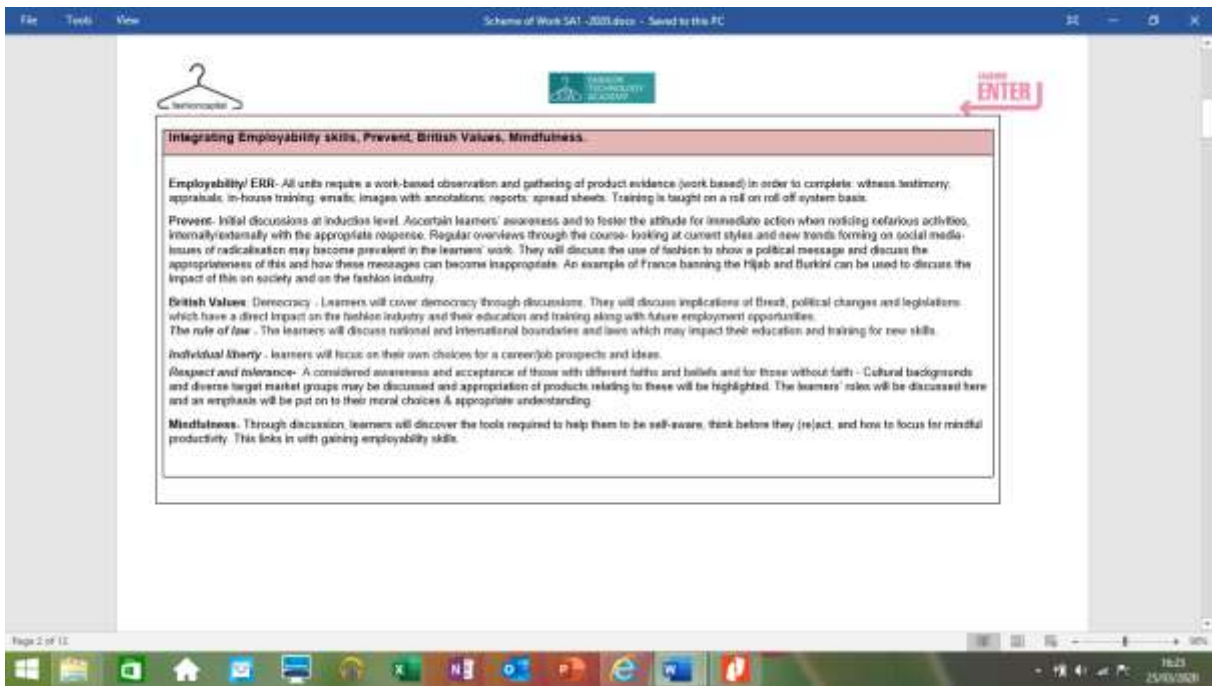
**Personal, Learning and Thinking Skills and Differentiation**

**PTLS:** The learners will have the opportunity to communicate their learning in relevant ways for different audiences (reflective learners), ask questions to extend their thinking (creative thinkers), identify questions to answer and problems to solve (independent enquirers), take responsibility, showing confidence in themselves and their contribution (team workers), deal with competing pressures, including personal and work-related demands (self-managers)

**Differentiation:** the curriculum caters for a range of learning styles and abilities, questioning can be extended for higher level learners, reflective notes can be in greater depth to challenge learners. There are opportunities for written work – reflective notes and workbooks, IT, practical activity, lectures, O – observation, WT – witness testimony, PE – product evidence, Q&A – question and answer, PD – professional discussion, VR – voice recording, videos and presentation, 1-1 tutorials, peer and group assessment.

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16:23 25/06/2020



Be able to operate an industrial sewing machine	<p>3.1 Thread a machine correctly.</p> <p>3.2 Wind and position a bobbin on the machine correctly.</p> <p>3.3 Check the tension on the machine and adjust as necessary.</p> <p>3.4 Demonstrate the following sewing tests on a straight stitch machine</p> <ul style="list-style-type: none"> <li>-Straight lines</li> <li>-Springs</li> </ul>	<p>Recap using handout- identify the main parts of a flatbed straight stitch machine.</p> <p>Take images for portfolio.</p> <p>Q&amp;A- what was easy / difficult?</p> <p>Take images.</p>		Stitches per centimetre. Measuring accurately.	
Lesson 3 Be able to identify machine parts Be able to operate an industrial sewing machine	<p>3.1 Thread a machine correctly.</p> <p>3.2 Wind and position a bobbin on the machine correctly.</p> <p>3.3 Check the tension on the machine and adjust as necessary.</p> <p>3.4 Demonstrate the following sewing tests on a straight stitch machine:</p> <ul style="list-style-type: none"> <li>-curves</li> <li>-scales</li> </ul>	<p>Tutor demo, 1-1, practical: thread a machine correctly, sewing tests: work accurately and safely</p> <p>Recap using handout- identify the main parts of a machine.</p> <p>Completed practical tasks.</p> <p>Q&amp;A- what was easy / difficult?</p> <p>Take images.</p>	<p>Students demonstrate to the tutor on how to thread the machine and check the tension.</p> <p>Ask student what would happen if I did this. 7 Get differentiated feedback. Why?</p>	<p>1-1 feedback the results of the literacy and numeracy test- what was completed well, what needs practice.</p> <p>E- Take notes.</p> <p>M- Measure angles, and as directed accurately.</p>	Identify and photograph a garment with a straight stitch
Lesson 4 Be able to identify machine parts	<p>3.1 Thread a machine correctly.</p>	<p>Tutor demo, 1-1, practical: thread a machine correctly, sewing tests: work</p>	<p>Reviewing the needs of the learners, identifying support.</p>	<p>E- During 1-1 observation, explain and demonstrate how</p>	Identify and photograph a garment with a curved stitch.

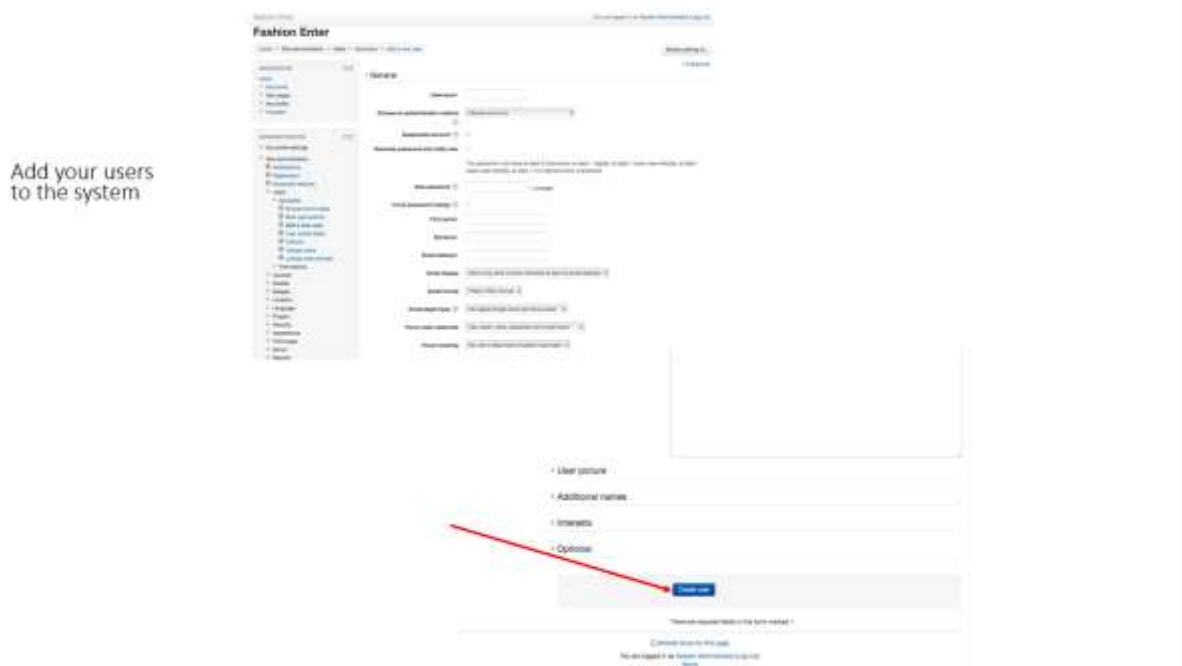
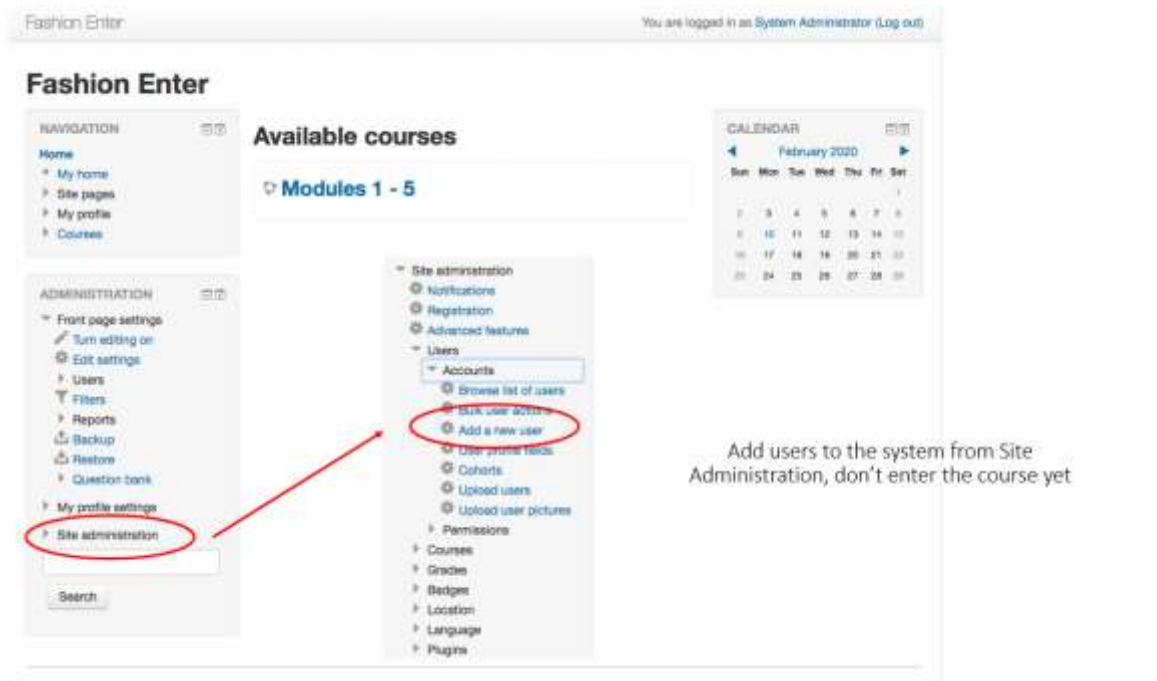
	<p>3.2 Wind and position a bobbin on the machine correctly.</p> <p>3.3 Check the tension on the machine and adjust as necessary.</p> <p>3.4 Demonstrate the following sewing tests on a straight stitch machine:</p> <ul style="list-style-type: none"> <li>-straight lines</li> <li>-spirals</li> <li>-curves</li> <li>-boxes</li> </ul>	<p>accurately and take images of learners.</p> <p>Recap using feedback from the learners</p> <p>Group critique-comment on each other's samples.</p> <p>Q&amp;A- what was easy / difficult?</p> <p>Take images</p>	<p>Practical tasks can be extended to the skill of the learner</p> <p>During critique learners may give suggestions of how to improve</p>	<p>to produce the sewing tests</p> <p>M- measuring accurately</p>	<p>Answer questions/complete tasks as directed.</p>
Lesson 5 Carry out stitching tasks	<p><b>Formative assessment</b></p> <p>4.1 Using scissors correctly safety cut fabric marked on a lay.</p> <p>4.2 Using snips clean a seam (hem correctly and safety.</p> <p>Continue practical stitching tests 3.4 as for above lesson</p>	<p>Tutor demo, 1-1, practical: use scissors correctly and safety, use snips accurately and safety.</p> <p>Group discussion-what do we need to be aware of when cutting fabric.</p> <p>Q&amp;A- what was easy / difficult?</p> <p>Practical: firm threads, use snips correctly and safety, recap.</p> <p>Take images-</p>	<p>Reviewing each learner, identifying strengths and what needs improving (written and verbal feedback).</p> <p>Feedback can be differentiated, reflective notes can be in greater detail i.e. scenarios</p> <p>Practical skills can be developed by introducing a range of fabrics.</p> <p>Feedback can be differentiated, reflective notes can be in greater detail i.e. scenarios.</p>	<p>E- Verbal critique of work, explain what went well, what was difficult.</p> <p>M- Stitches per cm.</p> <p>E- During 1-1 observation, explain and demonstrate how to perform basic</p>	<p>Identify and photograph the different cutting tools for fabric.</p> <p>answer questions/complete tasks as directed</p>
Week No 2 Lesson 6	<p>5.1 Check off levels</p> <p>5.2 Remove, replace and discard machine needles.</p>	<p>Take images-</p>			<p>Research- why is it important to maintain a sewing machine?</p>

Be able to use scissors and snips Be able to perform basic maintenance procedures on sewing machines and other equipment.	<p>5.3 Clean and replace a bobbin case</p> <p>5.4 Clean machinery and equipment using correct procedure.</p>	<p>Tutor feedback: success and achievements seen this week. Take images</p> <p>Expert demo: Kyri, Q&amp;A, 1-1, practical, recap, learner demo, learner feedback</p>		<p>maintenance on the machines.</p> <p>M- measuring accurately</p>	<p>List 2 reasons for health and safety.</p>
	Learning intentions	How learning will be checked	Equality and Diversity / Differentiation/Prevent/British Values	Developing English and Mathematics	Independent and Directed Study
Lesson 7 Be able to operate an overlocker machine	<p>2.2 Identify the main parts of an overlocker.</p> <p>6.3 Adjust tension for lockers.</p> <p>5.4 Overlock the following:</p> <ul style="list-style-type: none"> <li>-Straight edge</li> <li>-Curved edge</li> </ul>	<p>Expert demo: Kyri, Q&amp;A, 1-1, practical, recap, learner demo, learner feedback</p>	<p>Individual support and feedback during 1-1</p> <p>Feedback can be differentiated to each student, instruct a peer</p>	<p>E- During 1-1 observation, explain and demonstrate how to produce the sewing tests.</p> <p>M- measuring accurately</p>	<p>Study the range of overlockers in the SA and those models in the corridor and compare.</p> <p>Answer questions/complete tasks as directed</p>
Lesson 8 Be able to operate an overlocker machine	<p>2.2 Identify the main parts of the overlocker.</p> <p>5.1 Thread 3, 4 and 5 thread overlockers correctly.</p> <p>6.3 Adjust tension for lockers</p>	<p>Tutor: Q&amp;A, 1-1, practical, recap, learner demo, learner feedback</p> <p>Produce samples to demonstrate correct threading</p>	<p>individual support and feedback during 1-1</p> <p>feedback can on differentiated to each student, peer instructor</p>	<p>E- Reflective notes and annotations of photos.</p> <p>M- Stitches per cm.</p>	<p>Identify and photograph a garment that has been overlocked with 3 threads. Identify and photograph a garment that has been overlocked with 4 threads.</p>

Some delay in the technical development of the resource meant that a slight mismatch occurred between the learners' access to the resource and the teaching curriculum. In some instances, integration of the digital resource allowed the learners to access the resources before, within and after face to face sessions. At other times, the learners had already covered the content of the resource within face to face teaching. However, learner feedback suggests that revisiting parts of the content helped them to reinforce their learning. For those entering

employment in the factory, it is envisaged that the resources could be used before starting work, and within the first few weeks of employment.

Once the production of the resource was complete, the technical company disseminated the log-in process to teaching and support staff. Examples of the Power Point instructions presented by the technical company are included below:



# 2 Methodology

## 2.1 INTRODUCTION AND OVERVIEW

This section describes the methodological approach taken to evaluate the design and development of the resources, as well as the transferability of the resource to other workplaces. The collection of qualitative, with some quantitative data, enabled an analysis of learners' feedback, such as change in learners' approach to skills development. Feedback from professionals within the industry provided an insight into how the concept may be utilised in other settings.

The evaluation was designed in two phases: semi structured interviews with learners and teachers within the manufacturing environment of Fashion-Enter, as well as an analysis of a pilot questionnaire. The aim of the first phase of data collection was to collect information in order to adapt the resource, based on feedback from a sample of students and teachers. The sample also gave the opportunity to evaluate the validity of the approach taken to data collection. Phase two gained feedback from managers, CEO's and employees within fashion and textiles companies, to evaluate the transferability of the concept to other companies/workplaces. The two strands of this evaluation were interconnected and fed into each other.

### **Phase one of the evaluation**

The design of the Programme evaluation was linked to both the objectives stated in the Project Initiation Document (PID) and requirements for each Work Package. The first objective is described on (PID) as follows:

*To create a blended learning programme using interactive videos for Unit 1 for the Award in Textiles at Level 1. Initially appropriate technical skills from within the qualification units will be identified. FEL has extensive support for qualified teachers and skilled technicians currently employed. The videos will involve machinists to be filmed making deliberate mistakes and setting unethical scenarios for the learner to identify. The resource will be adapted for mobile use and PC use. The blended learning resource will be uploaded onto a platform and a unique access code given to the learner that can be accessed via a smart phone or PC. UCL IOE and other partners will at this beginning stage assess the outputs.*

The resource, and blended approach to teaching and learning, was developed and assessed by the CEO and senior staff at Fashion-Enter Ltd and Dr. Jeanes from UCL IOE.

The second objective described the type of evaluation required to assess the resources.

*Once the resource has been created it will be introduced to the programme leaders of FTA. Students will be recruited in line with ethical guidelines (BERA) and GDPR regulations. The resource will be embedded within the programme for the students use. The learners' progression and feedback will be evaluated through quantitative and qualitative approaches. Surveys will be conducted, and the progress of students monitored. The reason for engaging with people through JCP/long term unemployed through the first and second stage testing is so that adjustment can cover all needs making the resource accessible to all.*

Phase one of the evaluation involved recruiting students to use and evaluate the resources. The digital resource was embedded into the curriculum at Fashion-Enter. Schemes of work provided evidence of how the pedagogical attributes of teaching and learning were approached. For example, how the digital resource was introduced to the students, how the assessment of learning, through the interactive resource, related to their general programme. Learners' progress was monitored by teacher assessment and feedback from the digital assessments within the resource.

The pilot questionnaire provided feedback from the learners before and after using the resource, within the programme. The initial learner questionnaire contained questions such as:

- Please tell us which parts of the resource that you found the most useful and why.
- Please tell us which parts of the resource that you found least helpful and why.
- Did you feel confident to use the resource on your own?
- Please rate how confident you felt about health and safety procedures before using the resource.
- Please rate how confident you felt about health and safety procedures after using the resource.
- How easy was it to access the product?
- How engaging was it?
- How easy was it to assess your knowledge, understanding and skills?
- How does the product look?
- How easy is it to navigate?

Once the data was collected semi-structured interviews were conducted to understand the learners' reasoning for entering the programme, and how the resource might aid the development of their technical skills. The research schedule incorporated questions concerning the accessibility, design and perceived benefits. The interview questions focused on the wider characteristics of learning, such as:

- Seeing the bigger picture
- Changing and improving
- Making effective decisions
- Developing self and others

In addition, some interview questions focused on the practical aspects of the resource, such as the ease of navigation, the visual interface and accessibility for learners. Two teachers were interviewed in relation to their pedagogical approach to teaching and learning, and their strategies to embed the resource into the curriculum.

### **Phase two: online questionnaire**

In phase two managers, trainers and those associated with garment manufacturing were asked to complete an online questionnaire. The aim of the questionnaire was to gain an understanding of the transferability of the resources to different workplaces, to evaluate the design and ways in which the resources may be used in future. The questionnaire was sent via an e-mail to companies and organisations such as UK Fashion and Clothing Association, ASOS, SEG ABC Awards, Association of Suppliers to the British Clothing Association, Caren Downie, M&S, Mountain Warehouse, Ralph and Russo, Optitex, Gerber Technology, John Lewis, Tesco, J Barbour & Sons Ltd, David Nieper, Joules, Dimensions Clothing Manufacturer as well as other manufacturers.

The content of the online questionnaire was informed by the initial small pilot at Fashion-Enter and literature based on digital and work-based learning. Two online questionnaires were created, aimed at employees/learners and managers/employers. Using Likert rating scales, categorical and open responses, the questions focused on:

- The appropriateness of the digital resources for learning within garment manufacture
- The challenges of employing staff within the industry
- The skills required by new employees within the industry

- The practical aspects of the resource, such as navigation and interface

The response rate from the manager/employer questionnaire was 40%. Owing to COVID-19 and the closure of learning programmes responses were gained from learners/employees at Fashion-Enter but not from learners in other companies.

## **2.2 ANALYSIS**

The analysis of data, including online questionnaires and interviews, was guided by the phases of thematic analysis proposed by Braun and Clarke (2006). This iterative process of categorisation seeks to continually refine and test the description as it unfolds. Interview transcripts were fully transcribed, and all the transcripts were coded by the researcher. The use of codes enabled the data to be chunked into themes and sub-themes. In identifying the quotations for the report, care has been taken to anonymise individuals and companies.

## **2.3 ETHICAL APPROACH TO THE PROJECT**

The research was undertaken within the ethical guidelines of the British Educational Research Association and approval sought from the ethics committee of UCL Institute of Education. The learners taking part within interviews were provided with a consent form with details and intentions of the Programme. The students opted-into the interviews via the team at Fashion Enter, and participation in the Programme was optional. All participants were informed of the right to withdraw and given contact details of the researcher, in case they wished to withdraw after the interviews had taken place. The questionnaire sent online to companies via Fashion-Enter incorporated information about GDPR, consent and approach to ethics. The first page detailed information about the project. The last page included permission for their responses to be analysed and confirmed that the participants were aware that all responses were anonymous and may be used in publications.

# 3 Findings

## 3.1 INTRODUCTION

Data from phase one and two of the evaluation was coded through a thematic analysis. Several main themes and associated sub-themes were created, these are set out in the table below. Data collected before COVID-19 lock down, provided rich and detailed information about the learners’ responses to the resources. In phase two, in order to gain more detailed narrative, as well as an online questionnaire, it was decided to interview professionals such as CEOs and trade body representatives within the sector.

### *Themes and sub-themes*

Main Theme	Sub-Themes
<b>Phase ONE</b> <b>Learners and teachers at Fashion Enter Ltd</b>	
Personalised learning	<i>Understanding complex technical skills through repetition and independent study</i> <i>Access to higher level technical skills</i> <i>Adapting content for different learning needs</i> <i>Personal learning ahead of the class/training</i>
Supporting learners to develop English and mathematics	<i>Embedding English and maths within the content of the resource.</i>
Pedagogical approach by mentors and teachers	<i>Ability to differentiate teaching to individual skill needs</i> <i>Self-assessment of progress</i> <i>Supporting teacher assessments</i>
<b>Phase TWO</b> <b>Sector evaluation and feedback</b>	
Orientation towards the industry	<i>Building the confidence of learners</i> <i>Gaining basic skills and understanding</i>
Sector diversity and technical skills development	<i>In-work progression through qualifications</i> <i>Delivery of technical skills for individuals</i>
Flexibility and extension	<i>Sector skill requirements</i> <i>Adapting content</i>

## **Phase One**

Twelve students, enrolled on a ten-week programme, trialled the resource at Fashion-Enter Ltd. In February 2020, feedback was gained in the first instance from student questionnaires. In March 2020 feedback was gained from semi-structured interviews with eight of the students and two members of teaching staff. Some mismatch occurred between testing of the resources and the sequence of curriculum planning yet owing to the flexibility of the provision, beginners as well those who had completed some taught sessions were included. The learners participating in the Programme evaluation ranged between 18-54 years old.

### ***Learners***

The highest qualifications earned by the learners, before beginning the programme, was a level three qualification. Most of the learners had earned level two qualifications at school or college, such as: Level 1 Diploma in Photography, GCSE, Level 1 or 'O' Levels. The learners participating in this evaluation were from a range of backgrounds and identified themselves as: British – Caribbean, Vietnamese, White-European, English and Latin American. The learners were either unemployed or working in low paid employment, such as waitressing. At the time the interviews took place, the learners were at the beginning of two ten week SEG modules including, level one and two programmes in Perfect Pattern, Stitching Skills and Stitchery. The learners' decision to study, and develop their technical skills in garment construction, were based on the following reasons:

- To gain employment within the fashion and clothing industry.
- To improve their knowledge and practice of industrial machines.
- To gain knowledge and skills in order to develop their own small enterprise.
- To revisit a skill that they had started to learn earlier in their life.

Many of the learners interviewed had some experience of fashion and garment construction, at a basic level. For example, some had made their own garments at home and others had family working in the business. The learners aimed to enter a manufacturing environment or other jobs within the fashion and clothing industry but needed basic technical skills for their job applications or business development. The learners described that barriers to their entry

within the industry mainly included, their level of their skills, child-care responsibilities and support from others.

### **Findings: Main Themes - Phase One:**

#### **3.2 Personalised learning**

The questionnaire, using a combination of Likert scales and narrative, aimed to explore the support that the resource provided to develop the learners' technical skills. Results from the first question, *Did you find that the digital resource helped you to learn new techniques?* Suggested that 90% of the learners found the resource excellent, whilst 10% said that the resource was very good. The first most helpful aspect of the resource for learners were the online step-by-step explanations of materials and processes. For example, using visuals of a teacher threading the over locker and flat bed, machine maintenance and a staff member pointing out parts of the machines. The second most helpful aspect of the resource for learners was the ability to repeat sequences, watch and listen to the content when needed. One student identified as ESOL, said that the use of an interactive resources helped her to relate English language to machine parts, processes and techniques. She was able to go back to different stages of the resource, repeating language and connecting images to words. In general, the students said:

*"The videos were very clear. I enjoyed the interactive sections. It helps to solidify what I have learnt in class."*

*"For a beginner it's easy to follow."*

*"The videos are simple and straight forward, which makes it easier to follow."*

*"I liked the detail, the way we were taken through the process using videos."*

*"A lot of people don't know how to thread an industrial sewing machine, but I do now."*

*"When I saw the videos it is more clearer than the class because English is my second language. Some words are new to me and I find it difficult to understand in the class. But, if I see and listen using the videos it helps me to learn better."*

The sequencing of the curriculum for blended learning and embedding the resources within schemes of work was an essential part of the teaching and learning process. As two learners reported, *'Scissors and snips was the least helpful module as we had covered this in Module*

One.’ The learners reported that the digital resource helped them to gain a stronger connection between their learning in the classroom and the practice of pattern cutting, and stitching. They said:

*“The videos taught me the basic knowledge and health and safety hazards I need to know, when operating in an industrial factory.”*

*“Yes, I have learnt a lot about how the factory operates, correct procedures and methods. It gave me more confidence to learn in class.”*

*“I believe the digital resources are a good way to start training people, but I don’t think it would be enough. It needs to go hand in hand with learning from a teacher.”*

*“Yes, by explaining to me basic skills of machine handling in a factory and usage.”*

To gain a better understanding of the learners’ use of the resources and the impact on the development of their technical skills, semi-structured interviews with eight learners were conducted. The themes that emerged through analysis, across the transcripts, consisted of the following: understanding complex technical skills through repetition, wanting to access higher level technical skills, learning ahead of the class, adapting content for learning requirements and recognising language and process.

- *Understanding complex technical skills through repetition and independent study*

The technical skills of pattern cutting, block making and adapting patterns for novices are complex. The learners found that using the resource, alongside face-to-face teaching, helped them to understand processes and techniques more easily. Within the classroom or factory setting teachers have limited time to repeat demonstrations to individual learners. Using the digital resource outside of the classroom/workshop enabled the learners to observe aspects of processes and techniques more slowly. They were able to repeat content and repeat the embedded assessment until they were sure they had understood. Working independently, they gained more confidence and refined skills through engaging with the resource at their own pace. Assessment processes embedded within the resources helped the learners to test their understanding of processes.

- *Access to higher level technical skills*

Most of the learners had tried to learn the skills of garment construction and some pattern cutting, before joining Fashion-Enter through watching online clips and You Tube videos. They

reported that on their own, they had not been able to access higher level technical skills required for employment within garment manufacturing. For future development of the concept, the learners suggested that although the digital resources were useful, they would like the content to focus on the most complex techniques and skills of pattern cutting, darting, tailoring and garment construction i.e. block making, pattern adaptation etc. Two students who had used the resource prior to classroom content found that it helped them to orientate themselves to the teaching sessions and techniques. For example, simple actions such as opening a flat bed machine and identifying how to insert a spool into a machine. This gave the learners more confidence to enter the factory and classroom setting.

- *Adapting content for learning needs*

The learners suggested that future digital resources needed to be tailored to different student requirements. For example, the learners would have liked to access resources for learning independently at home on domestic sewing machines or focused on other requirements of working in a factory setting.

- *Learning ahead of the class*

Motivation to learn was based on the learners' enthusiasm for the fashion and clothing. For many of the students attending a stitching and pattern cutting class/apprenticeship had been an ambition, in order that they could produce their own garments, create a small business or work in the industry. The digital resources enabled some students to learn ahead of the class and gain some understanding of the processes involved. This provided the learners with more confidence in their practice, and the ability to learn at a quicker pace. The learners were eager to master new skills however they had lacked self confidence in their abilities. Some learners were anxious about the complex techniques required within industry.

### **3.3 Supporting learners to develop English and mathematics**

For ESOL learners or those with learning difficulties, the digital resource provided the opportunity to make connections between words, processes, techniques and objects. One learner for example said that:

*'Sometimes I find it hard to connect the word spoken with the meaning, it's not the same in my language. When people are speaking sometimes I just nod, and I don't understand the what to do. The modules helped to repeat sequences.'*

The learners said that they were able to repeat sequences of Ana's speech within the resources, which helped to develop their language skills. During the interviews, learners discussed the challenges they faced with mathematics. Creating patterns, blocks and adapting patterns requires the learners to use mathematics at or above level two. The learners felt that future resources could include some of the calculations used in garment construction. For example, embedding the calculations or a teacher giving a presentation of complex calculation to change pattern sizes or blocks etc. The learners said that the teachers' approach within the modules was important. They found that Ana's approach to teaching in the resources was welcoming and calming. They said that her gentle manner gave them the confidence to try new approaches and ask more questions in class.

### **3.4 Pedagogical approach of mentors and teachers**

Teaching vocational subjects, such as fashion and clothing, requires teachers and mentors to differentiate their teaching strategies to different skill levels (Simpson, 1972). For many vocational teachers and mentors this can prove difficult. For example, after demonstrating a technique to a group of students each learner is required to recall and repeat exact sequences. In sessions the students are learning a number of different skills within the same lesson or workshop activity. For example, in one classroom the students may be learning block making, others maybe learning how to create a pleated garment, whilst more advanced students may be adapting patterns for blouses and skirts. Although studying for the same qualification students work at different skill levels (Simpson, 1972). One teacher stated that:

*'It gets chaotic in the factory and classroom, we deliver different skills at any one time, that's the nature of the job. It's not like a history class, where information can be delivered to the whole class. The learners need different skills depending on what they decide to make, and practical skills.'*

Feedback from the teachers within this evaluation suggested that the digital resource could be used in the classroom, as well as at home, to support individual learners who struggle. Conversely, the creation content at a higher level, will provide challenge for more able learners so that they can move forward in their learning more quickly.

- *Learning outside of the factory /classroom*

One of the key features of digital learning is the ability to learning outside of the manufacturing /classroom environment. The learners participating in this evaluation were keen to develop their technical skills and progress to higher levels. Using the digital resource enabled the learners to grasp and understanding of techniques and then apply to classroom/workshop practice. The learners particularly enjoyed the interactive element of the resource, being able to drag and click on multichoice questions and listen to videos and then chose correct elements. Many of the learners enjoyed learning ‘visually’ and described themselves as ‘hands-on’ learners. The teachers said that the assessment embedded into the resource would help to collating student assessments. They suggested that the ability for students to repeat assessments, within the learners’ own time and at their own pace, will support their progress within a qualification.

## **Findings: Main Themes - Phase Two**

### **3.5 Introduction**

In phase two of the evaluation, two online questionnaires for employers/managers and employees/learners were prepared and sent to a range of companies by Fashion-Enter and Ian Morris, Technical Director of the Association of Suppliers to the British Clothing Industry (ASBCI). In total, the questionnaire was sent to thirty companies and individuals, with a response rate of 40%. Respondents were anonymised but described their job roles, these included: consultant within the garment industry, QLS auditor, pattern and fit development, software and hardware CAD CAM, garment manufacturer and trainer, trade body representatives. Unfortunately, owing to COVID-19, most companies had furloughed apprentices and colleges of FE closed at the beginning of the lock down. In addition to these data collection strategies, it was decided to interview professionals working in the sector. The findings set out below offer an analysis of the feedback gained from managers, CEOs, sector organisations and trade bodies.

### 3.6 Orientation towards the industry

Respondents strongly agreed that Fashion-Enter's concept and digital assessment process would help to develop workforce skills and to encourage people into the industry. One responded said:

*"Online learning will become increasingly important and widely used. It should provide clear information to learners prior to practical experience."*

Other respondents suggested that:

*"I think a digital resource could support beginner into the manufacturing industry as there is not much opportunity for beginners to understand the different aspects of the end to end process and what's involved. "*

*" If you are a complete beginner you can stop and go back anytime. I could only review three modules but they're as starting point and a good concept. "*

Online and interview responses agreed that there is the potential to expand the concept further into other areas of garment manufacturing, qualifications and training. More importantly a blended approach to technical skills development, whereby learners engage in practice as well as learning online, can improve learners' understanding of detail and the sequence of processes. Adam Mansell CEO of UK Fashion and Textile Association said:

*"As CEO of the government appointed Sector Skills Body for the industry, I have reviewed the videos and acknowledge that the garment manufacturing industry needs to move into digital platforms in line with the digitally aware youth of today to attract new entrants into industry. In my capacity as CEO I do not have the detail of lesson plans and schemes of work however as a concept, I can endorse the need for any video and learning platform that attracts new users. Upon the return of John West our Director of Skills and Training I will request a deeper review of the subject matters and assessments for learning."*

Katherine O'Driscoll the Director of ASOS reviewed the resources and stated that:

*"The training model concept is excellent with clearly defined module stages and flexibility for students at all levels.*

*Online accessibility allows students to learn at their own pace and in a safe environment which is a very important development for the future of training. The structure and pace with continual "testing of understanding modules" is a good format for giving the student appreciation for their continual learning.*

*As a proof of concept, the training modules programme is an excellent demonstration and allows a platform for future development and expansion."*

The responses gained from employers online suggested that the concept would be helpful to orientate employees to the industry and provide support to develop basic technical skills required for garment construction. They commented that the assessment process was excellent, providing learners with feedback and being able to repeat sequences. For example, they said:

*“...if you are a complete beginner can you stop and go back at any time? I could only view three modules but from those I saw they looked good. Testing the learning is interesting but could add why you got it wrong.”*

*“Digital resources are a great tool to jumpstart the learning process and get students to a similar understanding of the skills needed. They also act as a constant reference as the course progresses.”*

*“I think a digital resource could support beginners into the manufacturing industry as there is not much opportunity for beginners to understand the different aspects of the end to end process and what’s involved.”*

*“Great introduction to the machines and how to get started.”*

*“We need a new generation of stitchers that are used to the digital age. We need to float their boat!”*

Learners in the first phase of the evaluation described how they felt nervous entering a factory for the first time or entering into the classroom. Some students had not experienced a formal learning environment for many years, since they were at school. The resources provided learners with knowledge of the practical aspects of sewing machines and how to keep themselves safe. Learners said that the digital resources had the potential to support the link between the theory and practice of complex technical skills, such as pattern cutting and sampling.

### **3.7 Sector diversity and technical skills development**

Garment manufacturing in the UK is diverse and includes large scale production, such as ASOS to small niche enterprises. The skills required within each part of the industry are different, for example, the skills required to make clothing samples and bespoke garments are different to the mass production of clothing. Within larger scale production new technologies have been introduced, such as 3D sampling and garment design, however as the Chairperson of the Association of Suppliers to the British Clothing Industry commented:

*“...it’s difficult to replace sewing machinist and their skills. Technology cannot replace the human hand to eye coordination as machinists work and solve tricky problems with different fabrics and designs.”*

Employers suggested they face three key challenges within garment manufacturing. These included challenges of employee consistency, in other words each garment needs to be produced to a high standard. Speed of work, to ensure employers are able to produce the quantity of good required by the end of the working day and employing people with specialist skills. As one manufacturer suggested, recruitment of employees with the necessary skills is difficult:

*“We cannot attract a younger workforce into manufacturing – they regard the sector as old fashioned and dated. Digital will mean that we are offering a more vibrant learning and assessment methodology, that will be a better fit to their way of life and learning styles.”*

Another manufacturer suggested that:

*“Specialisms like lingerie pattern cutters & machinist are very difficult to recruit but in the main we have not had problems employing machinist or pattern cutters. The future challenges would be that sample garments are being created in 3D and we cannot currently find pattern cutters that already have those skills.”*

The diversity of skills required for the sector was reflected in the qualifications earned by employees. Some employees had degree level qualifications in fashion technology or textiles/clothing, whilst other employees held level one and two qualifications, such as ‘O’ levels or GCSE. For example, one employer said:

*“Very low skills and they do not even know how to thread up a machine. This is why digital will help as they can play and replay time and time again. The videos are easy to use and easy to apply into the working environment.”*

Many of the employers said that they were focused on skills rather than qualifications. Further development of the digital resources has the potential to support employees to gain qualifications for in-work progression or career development within the industry.

### **3.8 Proof of concept and future adaptations**

The response to the concept from learners and employers was extremely positive. During interviews both employers, trade body representatives and learners said that practical interactive resources would target the heart of skill requirements needed in the industry and

support workforce and learners’ progression. The pilot resources were aimed at beginners within the industry, as one responded said:

*“ We cannot attract a younger workforce into manufacturing – they regard the sector as old fashioned and dated. Digital will mean that we are offering a more vibrant learning and assessment methodology that will be a better fit to their way of life and learning styles.”*

Respondents suggested that the concept could be adapted and developed for different functions such as training and different parts of the industry. Respondents either strongly agreed or agreed that digital resources are helpful to new entrants to the industry. The diversity of the sector is reflected in the second question, *Is the content of the resource too simple?* The responded when interviewed understood that this was a pilot Programme and recommended that further resources are created that are linked to a skills assessment conducted within a range of companies. The respondents online either strongly agreed or agreed that the assessment process, embedded within the resource, will help the learning process of learners and employees. Within interviews respondents suggested the ability of learners to repeat parts of the modules, will support the learners’ practice and induct new managers into the sector.

### Employer/Manager Responses

	Strongly agree % (N)	Agree % (N)	Neither agree nor disagree % (N)	Disagree % (N)	Strongly disagree % (N)
Do you think that the resource is easily accessible for beginner in the industry.	36.36% 4	54.55% 6	9.09% 1	0	0
Is the content of the resource too simple?	20.00% 2	10.00% 1	30.00% 3	40.00% 4	0
Would you like the content of the resource to involve more complex techniques and processes?	18.18% 2	36.36% 4	9.09% 1	36.36% 4	0

Do you think that a digital resource would be helpful to beginners in the industry?	63.64% 7	36.36% 4	0	0	0
Is the resource easy to navigate?	36.36% 4	27.27% 3	18.18% 2	9.09% 1	9.09% 1
Is the assessment component of the resource useful?	63.64% 7	36.36% 4		0	0

Many of the respondents interviewed thought that the concept of an integrated or blended form of learning for garment manufacturing was excellent. They suggested that future developments might be broadened to include higher level and more complex technical skills. This would help to address the diverse range and level of skills required within companies. As highlighted in the table above, the interface, structure and navigation of the resources need to be refined.

### 3.9 Lessons learnt from the pilot Programme

All learners involved in the evaluation spoke of their passion to improve and develop their technical skills for the fashion and clothing industry. Although some of the practical elements of the digital resource needed refining, such as the log-in process, navigation and assessment, the interactive content engaged the learners and supported their progress. The important factors of the concept were the learners' ability to work and use the resources at their own pace, repeat sections of the content and connect workplace practice to technical information. Similarly, mentors and teachers found that teaching became more differentiated. For example, learners could refer to stitching processes online, repeating sections, rather than waiting for the teacher/mentor to demonstrate. The learners suggested that integrating English and mathematics in relation to technical skills, would be helpful. In general, the resource provided the opportunity for learners to orientate themselves to the industry and gain more confidence.

Feedback from employers and managers suggested that the resources created by Fashion-Enter are useful not only for those entering the industry such as apprentices, but also for new managers, trainers and officers. New managers joining the industry may have no experience

of a factory setting nor the end-to-end production process. The concept has the potential to support managers and officers to gain more knowledge of the process and assess their understanding. The resource could be used in training classes and induction processes within organisations. The technical skills required within the industry are varied, from basic machine skills to complex production techniques. There is a growing mismatch between the technological developments in manufacturing, as a result of AI and digitisation and workforce skills. Although the resources created for this Programme are at a basic level, the respondents agreed that if the concept were to be developed it would provide a pathway for employees and novices to rapidly update their skills and apply to workplace practice.

Many of the learners' suggested that further development of the resource might focus on the navigational aspects of the platform and lighting. For example, the learners said that the resource *'had a habit of jumping back to the previous questions'* and *'no demonstration of the answer, if I got it wrong.'* Two students with limited prior knowledge of the clothing industry logged-on at home, to help them with a class. Without teacher support they struggled with access. The students suggested the following improvements:

*"Improve the log-in process."*

*"In parts, higher production quality".*

*"At first now all the links came up and I spent a while clicking on the home page, to find the course. When I've gone back in, the modules show themselves."*

*"The videos keep stopping and I got frustrated."*

*"I think that the click to show an error in the threading section could be improved slightly, to allow you to click as soon as you see the error."*

*"When threading the over locker, I found it difficult to see what was happening. It needs some sort of map at the side of the screen."*

*"To cover more stitching techniques to give us more knowledge."*

*"To make the videos more interactive."*

The respondents pinpointed the challenges faced by some learners. For example, access to technology, time and opportunity for learning online. Employers suggested that the content, even for basic skills, might be more detailed within the resources. For example, the correct use of thread for garments and weights of cloth. Employers said that:

*“Good resource for those with no prior knowledge or skill. However, I experienced considerable difficulties as a result of poor internet connection with the videos stopping repeatedly. Not all workplaces or homes benefit from superfast broadband or fibre connection.”*

*“Better structure and navigation”*

*“Depending on timescales a mixture of interactive and face to face would help with the understanding and more interesting to have both.”*

*“Include a run through of next steps”*

*“I think a section on why the machines are used for specific tasks would be beneficial i.e. when you use a 5 thread a 3 thread etc. and why certain thread types are used.”*

## 5 Conclusions

Analysis of the data, including interviews with learners, professionals in the sector and questionnaire responses, shows a definitive need for more online learning that provides learners with an interactive approach to the development of technical skills. The concept has the potential to increase and promote a more rapid development of proficient technical skills of learners and employees across the industry. Digital learning enables learners to repeat sequences, conduct self-assessment and make more thorough connections between theory/technical processes and their practice. Assessments embedded within the resources enable learners to repeat technical processes they find trickier and work at their own pace. Developing occupational skills is traditionally viewed as ‘time served’ within an industry and the repetition and personal dialogue between materiality, practice and an individual’s thinking (Sennett, 2008). Fashion-Enter’s concept has the potential to enable learners to gain more confidence in their abilities and to make judgments more quickly and understand processes more thoroughly. Ultimately, a progressive approach to skills development may support in-work progression and help learners to earn qualifications.

Furthermore, the concept has the potential to enable school leavers and those returning to work to experience the skills required and orientate themselves towards the industry. The fashion and clothing industry is diverse and requires employees to adapt to

different environments and skills requirements, during their careers. Future work is uncertain, and the UK workforce needs to be prepared for jobs that may rapidly change and require up-to-date technical skills. To provide employees with the necessary skills for a constantly changing industry, a different approach to teaching and learning and assessment is required. One that enables the workforce to learn to solve problems and adapt to new ways of working. Digital learning may entice younger learners into the industry.

The data suggests that the concept has the potential to:

- Support learners/employees to link theory/process to their practice
- Enable more rapid development of learners' technical proficiency. Learners have the option to access resources and assessment outside of the factory/classroom setting
- Engage younger learners in the industry, through the use of digital technology
- Learners can work at their own pace and target the skills/process they find tricky
- Enable the self-assessment of technical skills and support teacher assessment of learners enrolled on study programmes
- Orientate learners towards the garment manufacturing industry and support learners' confidence in the workplace
- The concept can be used in schools to show learners some of the skills required in the garment industry
- Support employees in-work progression
- Training and assessment for those entering management and other roles within the industry

To develop the concept to the next phase, the following aspects may be considered:

1. To undertake a wider scoping exercise to identify the specific range of production skills required in the UK garment manufacturing industry. This will enable digital resources to target skills needs/gaps within small and large companies. At the moment the resources are focused on basic skills from a SEG qualification. The concept could expand to Apprenticeship qualifications and the training needs of other manufacturers in the industry.

2. Connection with other organisations such as Apprenticeships UK and the Gatsby Foundation, as well as employers.
3. Further development of resources with more complex content and assessments
4. To include aspects of mathematics and English into the resource content, related to garment construction.
5. To differentiate future developments between large scale production and small to medium sized enterprises.

## 6 References

Braun, V. & Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.

Billet, S. (2010) *Learning Through Practice: Models, Traditions, Orientations and Approaches*. London: Springer.

CEDEFOP (2017). Machines, robots, people and skills Changing jobs, work and skills. Presentation by Konstantinos POULIAKAS & Jiri BRANKA, Department for Skills and Labour Market. Available online at: [https://www.cedefop.europa.eu/files/machines\\_robots\\_people\\_and\\_skills\\_konstantinos\\_pouliakas\\_and\\_jiribranka.pdf](https://www.cedefop.europa.eu/files/machines_robots_people_and_skills_konstantinos_pouliakas_and_jiribranka.pdf)

Dreyfus H.L. and Dreyfus, S.E. (1986) *Mind over Machine: the power of human intuition and expertise in the age of the computer*, Oxford: Basil Blackwell.

Environmental Audit Committee (2019), *Fixing Fashion, Clothing Consumption And Sustainability: Fashion, it shouldn't cost the earth*. House of Commons (1952).

Edge Foundation (2020) *Our Plan for Further Education: Defined, Career and Skill Focused, Collaborative*. Available online at: [https://www.edge.co.uk/sites/default/files/documents/2020\\_fe\\_brochure\\_web-2.pdf](https://www.edge.co.uk/sites/default/files/documents/2020_fe_brochure_web-2.pdf) [last accessed 19th May 2020]

Edge Foundation (2018) *Skills Shortages in the UK Economy*. Available online at: [https://www.edge.co.uk/sites/default/files/documents/final\\_skills\\_shortage\\_bulletin\\_web\\_2.pdf](https://www.edge.co.uk/sites/default/files/documents/final_skills_shortage_bulletin_web_2.pdf) [last accessed 19th May 2020]

FashionUnited (2019) Apparel Industry Faces Critical Shortage of Skills. Online available at: <https://fashionunited.uk/news/business/apparel-industry-faces-critical-shortage-of-skills/2019112046286> [last accessed 03/2020]

Institute for Employment Research. Available on line at <https://warwick.ac.uk/fac/soc/ier/ngrf/lmifuturetrends/sectorscovered/clothing/sectorinfo/subsectors>. [last accessed 20/03/20]

Institute for Employment Research, The University of Warwick. Available online at: <https://warwick.ac.uk/fac/soc/ier/ngrf/lmifuturetrends/sectorscovered/clothing/sectorinfo/subsectors/> [last accessed 19/03/2020]

Laurillard, D., Derrick, J. and Doel, M. (2016) *Building digital skills in the FE Sector*. Crown copyright. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/634181/Skills\\_and\\_lifelong\\_learning\\_-\\_digital\\_skills\\_in\\_further\\_education\\_-\\_Laurillard\\_-\\_final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/634181/Skills_and_lifelong_learning_-_digital_skills_in_further_education_-_Laurillard_-_final.pdf)

Make UK: The Manufacturers Organisation (2019) *UK Manufacturing: The Facts 2019/20*. Available at: <https://www.makeuk.org/insights/publications/uk-manufacturing-the-facts-2019-20>

- OECD (2018) *The future of education and skills: Education 2030*. Paris: OECD publishing.
- Rainbird, H., Fuller, A. and Munro, A. (2004) *Workplace Learning in Context*, London: Routledge.
- Rasool, H. (2006) New Skills Development and Challenges for the Clothing and Textiles Sector. Available online at: [www.fibre2fashion.com](http://www.fibre2fashion.com) [last accessed 05/03/2020]
- Schön, D. A. (1983) *The Reflective Practitioner, How professionals think in action*, England: Ashgate.
- Sennett, R. (2008) *The Craftsman*, Britain: Allen Lane.
- Simpson E.J. (1972) *The Classification of Educational Objectives in the Psychomotor Domain*. Washington, DC: Gryphon House.
- Sheffield Political Economy Research Institute (2016) British Political Economy Brief No 25. UK Manufacturing decline since the crisis in historical perspective. The University of Sheffield.
- Statista. Available online at: <https://www.statista.com/statistics/294774/apparel-clothing-industry-employment-in-the-united-kingdom-uk-by-sector/>
- TUC (2017) *Shaping Our Digital Future: A TUC Discussion Paper*. Trade Union Congress. Available online at: <https://www.tuc.org.uk/sites/default/files/Shaping-our-digital-future.pdf> [Last accessed 20th May 2020]
- UKFT (2019) *Compendium of UK Fashion and Textiles Information*. Available online at: [UKFT%20Industry%20Statistics%202019%20%20%20\(1\).pdf](https://www.ukft.org.uk/wp-content/uploads/2019/04/UKFT%20Industry%20Statistics%202019%20%20%20(1).pdf)
- Williamson, J. (2018) Lack of skills hampering renaissance of UK fashion industry. Available online at: <https://www.themanufacturer.com/articles/lack-of-skills-hampers-renaissance-of-uk-fashion-industry/>
- Winch, C. (2010) *Dimensions of Expertise: A Conceptual Exploration of Vocational Knowledge*, London: Continuum.

