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Computer Aided Design Lessons and Resources for Fashion and Textiles Teachers

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Abstract

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The new syllabus for VET Fashion and Textiles launched in 2019, introduced the subject focus of Digital Media. The VET Fashion and Textiles curriculum is a formative assessment-based syllabus, and it is based on different levels of attainments while at the same time focusing on specific learning outcomes. Educators were offered a four-day training course during October 2019 on the use of Adobe Illustrator®, a CAD software that can be used in the fashion industry. Some of the teachers found the course very challenging and some lost interest after the first session. This research project study adopted a qualitative methodology that assisted the researcher to address the research question: 'How to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD?' Hence, this research aimed to investigate the pedagogies that could be utilised to help VET Fashion and Textiles teachers successfully teach Adobe Illustrator®, and to facilitate the teaching and learning of CAD to subject teachers and their students. A resource pack that includes a teacher's handbook, a set of lesson plans and a number of resources were developed to assist the Fashion and Textiles educators in the teaching of Adobe Illustrator®. An information session for the participants was later organised in order to further explain the use of the handbook, lesson plans and resources before the trialling. An overview of the trialling process and the main aims of the resource pack were given during the session. Feedback was recorded through a form given to VET Fashion and Textiles teachers on each trialled lesson. The trialling of the resource pack among the participants revealed that the teacher's handbook, lesson plans and resources were helpful, attractive and interesting for the teachers to teach this particular subject focus when using Adobe Illustrator® albeit sometimes challenging due to pandemic circumstances and time restrictions.

Keywords

Computer Aided Design	Fashion and Textiles	Adobe Illustrator®
Secondary Schools	Curriculum	Teaching Resources

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List of Abbreviations

BBL	Blackboard Learn
CAD	Computer Aided Design
CPD	Continuing Professional Development
D & T	Design and Technology
DCRILL	Directorate of Curriculum, Research, Innovation and Lifelong Learning
EO	Education Officer
ICE	Institute of Computer Education
IT	Information Technology
MCAST	Malta College of Arts, Science and Technology
MTL	Master in Teaching and Learning
Ppt	PowerPoint Presentation
SEAC	Secondary Education Applied Certification
SEC	Secondary Education Certification
TADF	Textile, Art, Design & Fashion
VLE	Virtual Learning Environment

Chapter 1:

Introduction

1.1 Introduction

In this introductory chapter, the rationale, the aims of the research project and the researcher's interest in the area are discussed. This chapter shall present an overview of the chapters that will follow after this introduction.

1.2 Interest in the Area of the Research Project

The area of Computer Aided Design (CAD) was always an area of interest for the researcher and the idea for this project study emanated in October 2019, during a postgraduate training course. In October 2019, the Department of Health, Physical Education and Computer Studies at the University of Malta together with the Education Directorate organised a four-day training course in Adobe Illustrator® for Fashion and Textiles teachers and Master in Teaching and Learning (MTL) Fashion and Textiles students. This course was delivered by a local expert and an experienced foreign trainer who introduced Adobe Illustrator® in Fashion to the participants. Some of the teachers found the course very challenging and some lost interest after the first session. Hence, the researcher wanted to address this problem through this dissertation. One of the objectives behind this research project was to investigate how the learning and teaching of CAD to Fashion and Textiles teachers and their students can be facilitated.

According to Záhorec (2018) "a good teacher should understand the difficulties of learning CAD and should be able to counteract these problems in various ways" (p. 155). A teacher must be confident enough in his/her approach to the subject in order "to ensure that the students do not develop a dislike for these systems, or a feeling that their study is too difficult or complicated" (Záhorec, 2018).

CAD is a digital software used in many different industries and occupations with the aim of designing products. CAD is also especially used in the fashion industry, to construct sketches and designs for clothing, accessories and shoes. This software reduces the demand for manual sketches as it saves time by using computer technology in the process of design. Internationally, CAD software is used by "retail businesses; fashion designers; textile corporations; apparel manufacturers; design studios; costume designers; fashion students; fashion teachers and pattern makers"

(Computer-Aided Designer, para.2). Locally, CAD has been recently introduced in the Fashion and Textiles Syllabus for both Secondary Education Certificate (SEC) and Secondary Education Applied Certificate (SEAC) (Matsec, 2019).

Adobe Illustrator® was identified as the software that shall be used in Maltese secondary schools in the Fashion and Textiles curriculum. Adobe Illustrator® is a vector-based software ideal to create artwork which can be scaled and published at any desired size, whilst maintaining precision and clarity (Adobe Illustrator CS6, training wordbook, 2019). One of the learning outcomes of the SEAC syllabus includes the “Use of digital media to design ideas for fashion and textiles" (SEAC 09 Syllabus, Fashion and Textiles [2022], pg. 24). Adobe Illustrator ® was planned to be taught for the first time in the scholastic year 2020-2021, in the second year of the subject option for both SEC and SEAC syllabi.

1.3 Aim of the Research Project

The two main aims of the researcher’s dissertation were to investigate the pedagogies that could be used to help Fashion and Textiles teachers to teach Adobe Illustrator® successfully and secondly, to create a resource pack, including a teacher’s handbook, a set of lesson plans and accompanying resources. These lesson plans and resources shall then be trailed by the VET Fashion and Textiles teachers. The researcher's goal was to facilitate the learning and teaching of CAD to VET Fashion and Textiles teachers, and their students.

1.4 The Organisation of the Dissertation

The first chapter is to provide an overview of the interest and aims in this area of study. This chapter also presents a general overview of the rationale behind the research project.

Chapter 2 consists of the literature review. Different pedagogical strategies to teach software are discussed in this chapter. Chapter 3 then illustrates the qualitative methodology adopted for this research project in order to collect feedback from the VET Fashion and Textiles teachers. An overview of the development of the teacher’s handbook, lesson plans and resources are presented in Chapter 4.

The feedback collected from the VET Fashion and Textiles teachers was indispensable and was therefore thoroughly analysed in Chapter 5 where a detailed analysis of the feedback of the resource pack is given. Lastly, Chapter 6 points out the limitations related to conducting this research project. In addition, some recommendations for further research shall be outlined in the concluding chapter.

Chapter 2:

Literature Review

2.1 Introduction

This literature review aims to provide an overview of Computer Aided Design (CAD) and the use of CAD in an educational context. It also aims to explain the importance of this software in relation to CAD in fashion, and the teaching of CAD. It also seeks to reveal the positive impact of training teachers to teach the software as well as train the trainer.

2.2 Overview of CAD

CAD is described as the “use of information technology (IT) in the design process.” (Chaudhari, Malani, Sambhe, 2014, para.4). A CAD system generally consists of an IT specialised software which very often relies on a particular range of application. These systems are utilised to assist the area of sketching and the construction of practical documentation. “CAD enables the development, modification and optimization of the project process” (Bernstein, 2020, para. 7).Furthermore, the function of CAD is to assist the user by stipulating the possibility to generate and transform graphical representations of the merchandise, to view the authentic creation on display. This is done to achieve a complex project in a short period of time and to store the design. This is moreover done to manage history for future reuse and improvement (Bilalis, 2000, para. 8). The use of CAD is considered as an important employability tool for Fashion, Design and Textile Art. However, Gault (2017) noticed that it has always been demanding to teach a CAD program, with the diversity of teacher and student experiences onto the software content.

2.2.1 CAD in the Fashion Industry

CAD is a software used across many different industries and occupations. It is used in the apparel industry, particularly in the production of sketches and designs for clothing, accessories and shoes. This fast and extremely effective software decreases the demand for manual sketches by using computer technology in the process of design (Andy, 2017). Internationally, CAD software is used by “retail businesses,

fashion designers, textile companies and apparel manufacturers" (Computer-Aided Designer, para.2). It is also used by costume designers, fashion students, fashion teachers, pattern makers and in design studios. When compared to pen-paper design, CAD has been an asset in the fashion industry, as it allows efficiency and productivity. Most if not all employees in the fashion industry, namely "fast fashion makers, designers and traditional manufacturers own a CAD system" (Saha, 2020, para.1), and this is because its tools have become a vital piece of apparel manufacturing. It is a set of software tools registered in a computer software programme aimed at aiding the designer in designing a virtual illustration of the artwork one is planning.

Moreover, it assists in giving measurements to any project, and it allows for experimenting with changes on it. CAD permits the construction of the design according to one's needs and archiving designs. The elaborated process of designing has now been transformed to a common and easily user-friendly process on computer software. It can be useful "to design curves and figures in two-dimensional (2D) space; curves, surfaces and solids in three-dimensional (3D) space" (Saha, 2020, para.4). According to the application's specific conventions, the production of CAD can transfer information, such as materials, processes and dimensions. The application of CAD was launched when computer designing reached a level that allowed its integration with the clothing industry, the result of which led to a transformation in the fashion industry, whereby **"**a week's work could be done within a day" (Saha, 2020, para.7).

Saha (2020) stated that CAD systems became a vital device for fashion creators, as it allows the creator to focus more on pattern creation, virtual test fitting, pattern grading, and marking making. Furthermore, one of the most communal functions of CAD software is drafting and designing.

This section of the literature shall focus on the benefits of CAD systems. CAD mainly aims to increase productivity and improve the quality of the design. Furthermore, it benefits for better communications, mostly because any modifications that are made can be simply shifted back. Lastly, it helps in recording the process of design. In the fashion and textile industry, CAD can be characterised in fabric design, apparel design, pattern making and cutting room operations (Saha, 2020).

2.3 Comparing Different CAD Software for Fashion and Textiles

Some of the most well-known types of CAD software used in the fashion and textiles industry include but are not limited to: Adobe Illustrator®, Optitex®, CLO®, Corel Draw®, Digital Fashion Pro®, Browzwear®, Fashion CAD®, PAD system®, AutoCAD® and Speed Step®.

Adobe Illustrator®, Speed Step® and AutoCAD® are the three main software which are ideal to utilise within the fashion industry and education. Burke (2006) indicated that these three software are used in fashion education as they are more affordable than other CAD programmes, and are specifically designed to be used in the fashion industry (Oppong et al., 2013, p.74).

Centner and Vereker (2008) argued that Adobe Illustrator® is an outstanding software used for practical drawings and fashion artworks. It is the ideal system for developing detailed sketches and fashion garments which can be saved and used later on. Furthermore, Adobe Illustrator® enables the use of icons and brush stroke libraries to produce and store configurations, attire shapes, accessories and stitches. It has been adopted by many universities, due to its simplicity in use, ease in learning and inexpensive cost. With proper training, one can adapt generic tools on Adobe Illustrator® that assists in producing fast and accurate fashion illustrations. For instance, this software allows one to generate libraries of garment sections for buttons and pockets, which can be used to any sketched garment, using a drag and drop function. Therefore, the basic essentials will not need to be designed again in the future, but with Illustrator one can build his/her library of tools (Hughes, 2013). Hume (2016) has defined Adobe Illustrator®, as an indispensable tool, though it is not aimed specifically for activities of the design applications.

Speed Step software is a contemporary tool used in the fashion and textiles industry and offers a section on fashion design. Speed Step® software targets students in the education sector, who aspire to work in the fashion, textile and design industry. With Speed Step® software, one can easily create and modify sketches of garments, incorporate great drawing tools and libraries with stitches, colours and swatches. It is a well-organised interface which allows the user to develop new styles, and modify

and reuse existing illustrations (Fashion Design Education Solutions, n.d.). Speed Step® has created an educational program in collaboration with universities and schools around the world, namely in Finland, Turkey, Australia, Belgium, New Zealand, Germany and also in Malta (Fashion Design Education Solutions, n.d.).

Another software used in the fashion and textile industry is AutoCAD®. Leach (2002) remarked that the AutoCAD® software was the first-ever system to have given the foundation to learn other CAD applications since most commands are applied by other software. Wikimedia foundation (2008) stated that AutoCAD® is a comprehensive software for pattern construction and designing (Burke,2006). Kiron (2021) states that AutoCAD® enables the user to create two- or three-dimensional drawings. He outlines that this software is very accurate and precise, it also allows the creator to work in full scale and to modify designs promptly. Moreover, AutoCAD® is an intangible development for sketching and design devotions, in relation to pattern drafting, offering the use of measurements and the area for seam allowance. Lastly, this program allows the creator to coordinate all garment pieces in different sizes.

2.4 The Importance of CAD in Fashion

The relation between computers and fashion designing has evolved over time, according to taste and the rapid pace of fashion and style. The knowledge of CAD software is fundamental for a person aspiring to work in the fashion industry. Ahmedabad (2020) noted that CAD is the technology by the use of a computer, mostly used for the process of design and collection development. It saves the user the trouble of spending a great amount of time sketching manually and other fashion designing aspects.

One of the benefits of using CAD software is that it allows the designer to rapidly create new sketches, prints and patterns. In using CAD, one can create multiple alternatives of a single design and style while adapting it to different patterns and materials. It also allows the designer to experiment with colours or a print. Another prime advantage in using CAD is that the process of designing can be done on a virtual version, while the

whole process of an actual physical collection development can be reduced, and costs are minimal (Ahmedabad, 2020).

All of the design information can be easily recorded, conveyed and transported through computer files. Digital fabric and coloured swatches can be conserved on various storage devices, which save enough of the physical space. Another advantage of using a CAD software is that the creators have no need to constantly produce different swatches for different colours as a CAD program allows one to see how a particular fabric or attire looks in different shapes and colours on the virtual screen itself. Ultimately, the entire design can be easily customised and personalised within a short time, without any significant interruptions or cost (Benefits of Using CAD, 2020).

2.5 CAD in Fashion & Textiles Education

Internationally, CorelDraw, Photoshop and Lectra are the three main programmes used in Diplomas on fashion education (Diploma in CAD for Fashion Design Courses, n.d). A University in New York offers courses on CAD for Fashion Design, in which, Photoshop® and Adobe Illustrator® are being used (Fashion Design-Art, n.d). Oppong et al., (2013) highlight that “Gerber, Lectra Polygon, Apparel Computer Aided-Design (CAD), Snap Fashun, CADTERNS, CAD Fashion, Fashion Computer Aided-Design (CAD), Design concept 3D, Assyst Bullmer, Investronica, and APS-ethos embroidery software” (Oppong et al., 2013, p.74) are the modern CAD software used in the fashion industry. However, most universities, colleges, courses and educational programmes around the world tend to make use of Adobe Illustrator®, Adobe Photoshop®, CorelDraw® and AutoCAD®, this is because these software are more user-friendly to be taught, more easily accessible by students and low in cost.

Locally, in the past, the Faculty of Education, in the Bachelor's Degree of Education, made use of Speed Step® as one of the digital software for the teaching of Textiles Studies. This formed part of a study unit until 2016 which was related to teaching strategies (Fashion and Textiles lecturer - personal communication, September 7, 2020). Currently, Adobe Illustrator® is the main CAD software used within the

University of Malta as well as in secondary schools, within the vocational subject of Fashion and Textiles. In the Fashion and Textiles syllabus (SEC/SEAC) [1] educators are requested to teach the CAD software used in schools, using Adobe Illustrator® which is provided by the Education Directorate.

The *Malta College of Arts, Science and Technology* (MCAST) and the *Institute of Computer Education* (ICE), both make use and offer courses using CAD, aiming to educate digital media students using the AutoCAD® software (Art, design and crafts & AutoCAD User Course, 2020).

In Malta, Design and Technology, a secondary school subject, incorporates a section for the use of CAD in the curriculum (MATSEC, 2021). In the past, Speed Step® software was used in this subject (Fashion and Textiles lecturer, personal communication, September 7, 2020). On the other hand, in the Design and Technology syllabus for 2021, there is an indication that students are required to produce a final project using a Computer Aided Design software. The following are the CAD software included in the SEC 33 Design and Technology syllabus: "word processor, Sketchup, Autodesk AutoCAD, Inkscape, Draftsight, Autodesk 123D Design and Autodesk Sketchbook" (Design & Technology SEC 33 Syllabus, 2021, p. 18).

2.6 Teaching CAD

2.6.1 The Teaching and Learning Process

Learners tend to develop a complex, mental model through a cycle of segments which includes physical/mental action, reflection and abstraction (Battista, 2007). Another important aspect of the learning experience is informal learning, which is

[1] *SEC signifies to Secondary Education Certification by MATSEC and replaced the traditional word O'Level

*SEAC signifies to Secondary Education Applied Certification, which is a new certification issued by MATSEC

generally brought about by the learner's maturity, intellectual ability, past experiences and performances, learning styles, attitudes towards the subject and social adjustment.

Although it is the educator's responsibility to make learning for students effective, educators encourage student engagement through learning activities (Bergeson, 2000). According to Rosenshine & Furst (1971), effective teachers are those who plan, organise and adopt appropriate activities and tasks, while engaging themselves in continuous self-improvement and reflective practices. Moreover, being optimistic is a contributing factor to teaching and learning.

2.6.2 Challenges Faced by the Educator while Teaching the Software

In 2007, England's national curriculum anticipated that in the Design and Technology (D&T) subject, scholars should combine the "practical and technological skills with creative thinking to design" (Winn & Banks, 2012, p.1). Over the years, the use of CAD systems has become a substantial part of teaching for students from the ages of 11 to 16. Winn & Banks (2012) stated that for teaching the functionality of a CAD program, the teaching strategy must have a new approach to the training of CAD. According to this study, Winn and Banks (2012) remarked that the new teaching methods when using a CAD software have enhanced both the teachers' and students' self-confidence in using the program, resulting in more complex and creative outcomes (Winn & Banks, 2012, p.488).

To determine a working environment and to encourage creativity, Isaksen & Ekvall (2010) identified a nine-dimension model on what is important to follow when teaching CAD during lessons. This model includes:

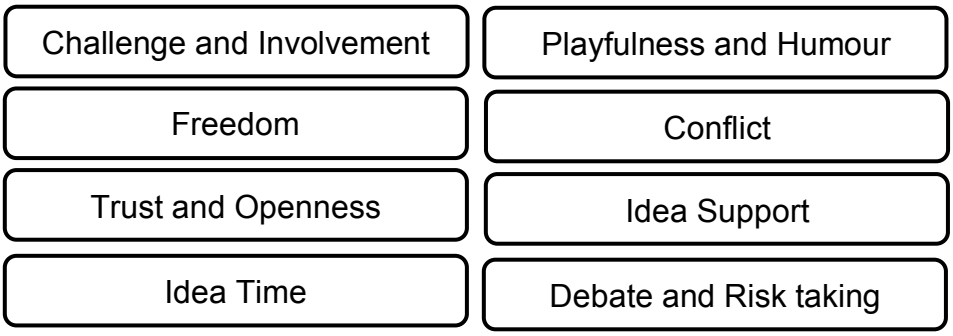


Figure 2.1 Nine-dimension model (Isaksen & Ekvall, 2010)

Since CAD programmes are rapidly advancing and are perhaps slightly difficult to learn, these might discourage students to be creative. This apprehension is compounded by the lack of confidence in educators, when teaching CAD. Consequently, the teaching of CAD is just a minor component of lessons that needs to be taught, so educators do not have the time to become professionals or even remotely familiar with using the program. (Winn & Banks, 2012, p.489)

Contemporary pedagogies of teaching CAD in the classroom tend to focus “on the teaching of command knowledge” (Bhavani et al., 2001, p.229), which provides learners the information of classifications and commands in order to design a sketch on the display. However, teachers do not often teach “strategic knowledge” (Bhavani et al, 2001, p.229). Chester (2006) stated that “strategic knowledge is knowing the best types and the best order for features to create the desired design” (Winn & Banks, 2012, p.489). Bhavani et al. (1993), describe that educators as well as learners are busy absorbing commands, that a very short time is dedicated to acquire other knowledge such as “procedural knowledge” (Bhavani et al., 1993, p.93).

Furthermore, embracing the usual step-by-step approach of teaching CAD commands, will not allow the “students to take ownership of their work or else develop it in their own way” (Winn & Banks, 2012, p.489). Therefore, it is necessary to inspire the pupil to become more imaginative when using CAD software.

Gault (2017) remarks that the ‘Flipped Classroom Model’ should be used where the educator shall be giving step-by-step instructions, however, it was argued that this blended approach must be used with the Blackboard Learn Approach (BBL) and the Virtual Learning Environment (VLE). It was discussed that with this approach, students

can engage with tasks at their own stride within a lesson intended to be available for assistance if they encounter struggle in finishing a project or need further explanation on how to use the tools and how to appropriately make use of the CAD program (Gault, 2017).

CAD can improve an individual's learning skill, being able to recapitulate and pause at one's pace, as well as provides an inclusive experience for students with physical or learning challenges. The flipped classroom is defined as an educational model, during which typical lessons and homework basics are inverted. The benefits of a flipped classroom model are explained in the following terms: "the provision of multi-media resources not only facilitate own-pace learning but it is also inclusive of all different types of learners, including those with different learning difficulties, disabilities and international students" (Lage et al. 2000, para.4). The use of digital media in a flipped classroom model, can contribute in making the learners experience more engaging lessons, which also adheres to collaborative learning and the use of co-curricular learning. When a person is encouraged to distribute their knowledge with others, it reflects pedagogical views and the hierarchy of knowledge as described in Bloom's Taxonomy Model. Difficulties in engaging students in textile, art, design and fashion (TADF) class correspond to the on-going issues with the teacher's competency and knowledge in CAD education (Gault, 2017). Gault (2017) touched on the importance for training and on-going staff development in the use of CAD. With the correct training, educators can create a positive student experience which will be reflected in the student's performance. Furthermore, case studies have revealed that the application of the flipped classroom in eLearning had a positive outcome (Gault, 2017).

Habibu, Al Mamun & Clement (2012) outlined a number of factors faced by teachers while teaching a computer software. These were the educators' lack of experience and competencies for teaching software; and a lack of acceptance of the new software. As proof of this, educators' approaches have been found to be the key forecasters while there was also lack of learning equipment, tools and resources, as well as sufficient training, implying the reluctance of teachers.

Other challenges faced by teachers include time limitation, lack of knowledge and lack of confidence. All in all, the two main reasons why there was a lack of confidence were

namely due to the risk of failure and anxiety to demonstrate and perform in front of the whole class (Habibu, Al Mamun & Clement, 2012).

2.7 Training Teachers to Teach a CAD Software

2.7.1 Pedagogical Strategies to Teach a Software

The term pedagogy is described as the technique and practice of how educators teach it and how the curriculum content is delivered in class. It embraces different teaching styles, teaching theories, feedback and assessment. While planning lessons, teachers always consider ways to convey the content to their students. The delivery method will be constructed on personal teaching inclinations, in relation to their knowledge within the field, and the context in which they have to tutor.

According to literature, the difference in students' age, their behaviour and the content that has to be covered, influence the pedagogical styles an educator will choose to practise. Teachers frequently rely on academic sources and on the syllabus to plan lessons, and to decide which teaching styles shall be used. The explanations behind the planning and decision making will become pedagogical ideologies, which every educator will acquire over time (Editorial, Cowan, Gibbons, Stannard & Bates, 2020).

Behaviourism, constructivism, social constructivism and liberationism, are the four different pedagogical approaches that teachers may follow to conduct their lessons (Editorial et al., - Pedagogy, 2020). The behaviourist approach is considered to be teacher-centred in which each lesson is lecture based, involving the use of direct instruction. Thorndike (1911), Pavlov (1927) and Skinner (1957), came up with the Behaviourism Theory, whereby the educator leads the lesson and is the only authority figure within the classroom setting (Mcleod, 2017). This approach may also be known as the traditional teaching approach.

The second approach, known as constructivism, is defined as a progressive teaching pedagogy, in which pupils learn through experiences and reflection. This theory sets the student at the midpoint of learning and may encompass inquiry-based learning and project work. Piaget (1971) outlines an idea that pupils come in class eager to discover and therefore, the educator needs to construct activities to ease their

learning. He states that young learners work things through physical actions, while older students challenge symbolic and abstract thoughts (Piaget, 1971). Constructivism characterizes the knowledge theory found in psychology that clarifies how students in school may obtain information and learn. Therefore, constructivism has a direct purpose for teaching. Furthermore, this theory recommends that teachers build knowledge and meaning from their own skills. Constructivist Learning of Piaget's theory portrayed an extensive influence on learning theories and teaching approaches (Editorial et al., 2020).

Moreover, constructivism is effective learning that contextualises the development of constructing information rather than receiving it. Ertmer and Newby (1993) state that knowledge is assembled and grounded on respective experiences and hypotheses of the setting. Furthermore, every individual has a distinctive understanding and construction of the knowledge process. Constructivism pretends that all information is composed from the student's former knowledge, irrespective of how one is trained (Ertmer & Newby, 1993). A class with a constructivist approach may incorporate "individualisation, a slower pace, hidden outcomes, the mantle of the expert and less teacher talk" (Editorial et al., - Pedagogy, 2020, para. 14). Some researchers of this theory focus more on conducting outdoor lessons and engaging with nature.

Lev Vygotsky (1987), a cognitive psychologist describes social constructivism as a mix of two significances; it is student-centred and involves the guidance of teachers. He argues that the learning process must be a collaborative approach between the educator and the pupils, such as involving group work activities. Furthermore, the educator could practise tutor modelling, questioning, and a blend of individual, pair and an entire class training (Mcleod, n.d).

The fourth pedagogical approach is liberationism. This pedagogy was established by Paulo Freire, upon realising that the two main barriers of learning were poverty and hunger, after having instructed a group of uneducated adults to read for forty-five days. He explained that a liberationist pedagogy is when the term of democracy is applied within the classroom and the pupil's voice is given great importance. Within this approach the teacher is the learner, whereby s/he would explore themes with the entire class. Nevertheless, within this pedagogy, the educator must deliver space and

prospect for the learners to stage their explorations of knowledge, either through a role play, speech, or through a dance, among other activities (Editorial et al., 2020).

An educator can teach through various methods and the approach may change depending on the context, teaching phase and the content one is conducting. '*Direct instruction'* leads onto *'guided instruction'* where learners' begin independent practice. The following sections present different teaching styles that are used when teaching a new software.

With regard to teaching how to use a software, the teacher would often be the '*model'* of what is expected in the learner's work. In live *'modelling'*, the educator might employ the thoughtful method behind the brief and take response from the pupils. Another style that may be used as an introduction to test and assess the knowledge of students on a specific topic, or lesson closures is the *'low stakes quizzing'*. This style can take the form of multiple-choice questions or close-ended questions in a quiz. *'Scaffolding'* can be another teaching style that involves teacher-led explanations of the thought behind an idea, before the learner's attempt to try answering. With a student-centred approach, educators might use Bloom's Taxonomy to urge learners to reflect and think through *'questioning'* techniques, in order to generate memory, apply knowledge and evaluate the learning process.

In the *'inquiry-based learning'* approach, the teacher assigns students a task and facilitates the learners in their discovery of knowledge. Alternatively, *'expeditionary-based learning'* can take place when teaching a software, in which the learning takes place outside of the classroom rather than the usual classroom setting. For example, if the educator is teaching students how to use a software, enabling the students to use computers while learning the software will help them better understand the process. This is because pupils would have the advantage of getting first-hand experience.

Collaborative learning through *'Pair work and group work'* permits the learners to work on an activity in pairs or groups, all of whom will be in charge of their own learning, while the educator takes the position as a helper. Asking learners to demonstrate something on the software involves *'active learning'*, in which the teacher uses the

student “experts” to share content with the other class members. This approach will promote collaboration skills within the classroom. Furthermore, when the educator allows students to choose their learning method for themselves and will eventually produce their own work according to their choice, the educator is considered to have adopted a *‘personalised learning approach’*.

The last approach is *‘project-based learning’* whereby learners are instructed to work independently on a task until a deadline set by the mentor. (Editorial et al., - Teaching Styles, 2020).

2.7.2 Constructivism and the Teachers’ Use of Technology

According to Gilakjani, Haiyan & Hairul (2013), technology has altered the way one teaches and the way one learns. It is said that there is a familiar connection between constructivism and technology. Constructivism refers to the learning that takes place in settings, whilst technology signifies the design and upbringings that engage pupils. Technology provides several opportunities for matters such as learning styles, student-centred approaches and the promotion of higher-level thinking. However, the educators’ outlooks and beliefs frequently limit them from fully integrating technology into their teachings (Teo, 2008). Occasionally, technology is used as a replacement for other tools in their usual teaching pedagogies instead of a new style to a student-centred approach (Judson, 2006). Several dynamics demand educators to use computer technology within their class or to follow the curriculum. These aspects comprise: “computer self-efficacy, personal technology use, positive teacher attitudes and beliefs, and access to professional development in the computer technology area” (Gilakjani, Haiyan & Hairul, 2013, p.54), The mentioned dynamics are substantial in engaging educators to incorporate technology, nevertheless, using technology within the class itself may not be highly effective unless the educator has a theory to model their teaching with.

According to Schunk, constructivism is based on the psychological and philosophical approach to social cognitivism that undertakes the individuals, behaviours and environments interacting in a reciprocal technique. Constructivism refers to the learning that occurs in contexts and those students form what they have learnt and

understand as a purpose of their practices in a setting (Schunk, 2000). Constructivism recognises that education is a dynamic and socially dependent construction unlimited by age or developmental stage. It particularly lays stress on the necessity to engage students (Harel & Papert, 1991). The well-acknowledged and quality of the teachers are essential factors when it comes to student performance. In fact, the educator's knowledge, beliefs and actions, affect the success of the student. The most valuable eminence of an educator is applying teaching established on constructivism (Brooks, 1993). The teacher should become one of the many resources that the learner looks for as their role model, more so, the educators must engage learners in skills that test previous thoughts of their existing experiences and must allow students comebacks to seek elaboration. The teacher should also dedicate some time to think after posing questions, in order to encourage the spirit of questioning. This can be done by questioning considerate and open-ended questions. Moreover, the educator shall inspire students' autonomy and creativity, must promote the "learner leadership, collaboration, location of data and take actions as an outcome of the learning process" (Hanley, 1994, para.2).

Within a classroom, the constructivist approach of learning supports learners to use active practices, such as experiments, realia and problem solving to enhance their knowledge. This would benefit them to reflect and chat about what they are working on and how their knowledge is shifting. In a constructivist approach, the educator ensures to comprehend the learners pre-existing thoughts and is there to direct the activity and enhance students' knowledge. Constructivist educators support their pupils to continuously evaluate how the activity is guiding them to obtain understanding by questioning them and their strategies. Therefore, pupils in the constructivist classroom may very likely become "expert learners who give them ever-broadening tools to keep learning". In a well-planned classroom setting, the learners will learn strategies, most of which are subconscious, how to acquire more knowledge (Constructivism as a Paradigm, 2004, para.3).

One important aspect of constructivist learning is the scaffolding process which provides learners with a step-by-step guide from what is presently known to what is unknown. This process supports clear structure and process, and includes precise expectation. It keeps students engaged on tasks, interactivity and assessment to

clarify by making use of worthy sources, realistic and relevant experiences. According to Goldman (2004), the constructivist ideologies and their application stipulate a valuable set of fundamental theoretical values that emphasise to improve the features of the development and the pedagogies for education.

Constructivism is the philosophical theory of knowledge, constructed on three propositions. Firstly, understanding the purpose of the content, the context, the activity and the goals of the learner. The second proposition focuses on the cognitive conflict or puzzlement which is the incentive for learning. It also decides the organization of what is educated and the prior experience the student brings to bear in constructing an understanding. The third and final proposition involves the knowledge that develops through social negotiation and through the assessment of the individual understandings. When a constructivist approach is taken in a classroom, pupils become part of the learning process at a greater level, students will “feel actively involved in the process and take on ownership for their own learning”. In addition, the student, before the educator, becomes the centre of the learning environment. Hence, the constructivist theory of learning strives to widen the knowledge of each student, prior to the “experiences of learning, their perceptions of their learning situation, and their approaches to learning and their learning outcomes” (Goldman JDG, 2004, p.12).

Koh and Frick (2009) pointed out that there are various factors that influence educators who use software in their classrooms; it is either pre-service teaching, whereby educators would already be familiar with a type of software prior to starting their teaching career, or else start using software during their teaching career. The importance of software training prior teaching is a vital factor that influences the teacher’s effectiveness of the lesson. Furthermore, if the educators are given the appropriate training on how to use a software before entering a classroom and teaching it to students, the teacher’s computer self-efficacy will increase, resulting in a more effective lesson. Research has shown that training teachers and attending educational technology courses that emphasise on the use of the technology uses these skills as part of the curriculum and in the process, the teacher’s computer self-efficacy improves (Koh and Frick,2009). Several studies have been conducted to discover whether the combination of technology within the lessons and curriculum

assists learners, and if so, which aspects contribute to a positive result (Dawson, Cavanaugh & Ritzhaupt, 2008).

2.7.3 The Similarity in Pedagogies when Teaching CAD and Languages

As is mentioned, words and graphics are both means of communication, nevertheless, teaching these two modes is a challenge and requires new ideas in order to communicate. An individual may know what they want to say but may not know how to teach it to others or may lack the means to express it. Consequently, as in the case of language learning, CAD requires "good practice towards mastery, with the goal of clarity and ease of expression in a variety of situations" (Cheng, 1997, p.2).

The language training includes three accents which may be conveyed to a computer aided design. These include the "study of structure, communication and context" (Finegan,1992, para.2). Structural linguistics, foreign language educators and sociolinguistics, look at these accents differently, in various learning styles. Thus, addressing these three emphases in CAD teaching can improve the teaching effectiveness. Faerch (1994) stated that to fully know something, the person must recognise its full potential, that is, to know about the appropriate settings for using the tool, acknowledge the many ways a specific tool can be combined with others, and lastly, to know the relations between one tool and another.

2.7.4 Learning Styles in Teaching CAD

Teaching CAD to beginners can be like educating a child how to talk, while teaching CAD to teachers, specifically Fashion & Textiles educators, can be tough since these educators are learning and teaching a foreign language at the same time. However, the teaching experience of the teacher's previous knowledge in the subject can be applied when learning CAD; it will ease its use and guide the learning of CAD (Cheng, 1997).

Cheng states that the propensity of using particular strategies, is approvingly dependent on the student's personality. It is remarked that lessons can be more effective so long as different learning styles are addressed, in order to cater for each personality. If students are more rule-oriented, they would prefer step by step guidance and explanations, while result-oriented students are more likely to ignore the

commands but rather work by trial and error. Consequently, in a class one can have a mix of students, some who would prefer a clear tutorial prior to creating something, while other students would prefer to start creating innovative work immediately (Cheng, 1997).

Cheng listed four learning styles, all of which are appropriate for implementing activities when teaching a CAD program. The *Analytic Learning Style* is about structure, theory, concepts and organisation. Within this learning style activities such as planning layers, comparing and contrasting methods, and summarizing principles are all activities which can be used in CAD. The second learning style is The *Concrete Learning Style*, whereby direct experience and practical examples are given. Activities may include observing, copying and conducting small group demonstrations or sketches from experts. The *Communicative Learning Style* is the third learning style mentioned in Cheng's journal, which involves an interactive group process. Activities may include either group projects or video-conferencing and virtual design studios. The fourth and final learning style is The *Authority Oriented Learning Style*. It implicates hierarchies' predictability which is appropriate for structured tutorials, textbooks, lectures and constrained mimetic problems. Cheng states that "teachers naturally gravitate towards activities according to their own styles and beliefs" therefore, using categories to develop the range of activities can be effective for a large and diverse class (Cheng, 1997, p.16).

2.8 Train-the-Trainer

Literature identifies that educators do not always have the prospects to learn, discover and practise instructional developments. In relation to the use of technology, educators may have learnt how to use technological devices and familiarise their pedagogy from different sources such as, *"teacher preparation programmes, professional development activities and informal learning opportunities such as assistance from classmates, colleagues or students"* (Teachers- Use of Technology, 2000, para.9).

Cserti (2020) claims that Train-the-Trainer is a context for training potential trainers or teachers to assist them in training others within the field. The main goal of the Train-

the-Trainer framework is its effectiveness to explain new skills and knowledge by relating to training delivery. To train-the-trainer, a set of points need to be addressed in order to have an effective outcome. First, one must clarify the purpose and aims that want to be achieved. Secondly, one must set measurable goals to figure out the outcomes, track the progress of the trainer and trainee to designate the effectiveness of the lessons. In order to maintain an effective delivery, one should design and provide the trainees with all the necessary resources (Cserti, 2020).

Training is a development of obtaining knowledge, skills and attitudes that are desirable to teach others what they can do and acknowledge what they are capable of doing in the present. In order to educate a trainer to successfully train others, an ideal approach would be the 'learning by doing' approach. Training plays a significant role in improving team building and leadership skills, enhancing knowledge and it also aids in impressing and motivating the trainees. It also helps to enrich self-esteem and gain confidence, and to build and express internal values.

To be a successful trainer to others, one must be an individual by integrity of his/her behaviour and knowledge, must be a helpful and unbiased person and must try to act fairly and create an inclusive environment. A worthy trainer should have a methodical outset of the subject she or he is teaching. A good trainer must have a clear communication with the audience and should possess practical knowledge. A respectful relation should be established between the trainers and trainees, one which is based on patience to deal with different abilities in relation to grasping what is being taught (Basu, 2013).

2.8.1 Standards of Effective Pedagogy

Research conducted at the University of California, comprises five standards for effective pedagogy that teachers must include in their teaching plan. These include "joint productive activity, language development, contextualisation, challenging activities and instructional conversation" (Standards of Effective Pedagogy, n.d, para.2).

The first standard occurs when specialists and trainees work together to achieve a common goal, therefore it contributes to being motivating and providing assistance to

one another through a joint productive activity. This activity aids to create a common context of practice and is significant when teaching a new topic that students may not be familiar with. The second standard, the development of language and literacy requests the specialized terminology required for the study of that field. “Reading, writing, speaking and listening can be taught and learned in every subject matter” (Standards of Effective Pedagogy, n.d, para.8). Contextualisation develops the learner’s knowledge and skills for the new knowledge that is being taught. Teaching with a challenging curriculum requires careful levelling of tasks, in order to keep the learners motivated. Therefore, the class teacher has a challenging task of balancing and providing adequate assistance. The last standard of instructional conversation advises the educator to listen carefully, to make guesses about intended meaning and to adjust responses so as to support the learners’ efforts (Standards of Effective Pedagogy, n.d).

2.9 Conclusion

The purpose of this literature review is to situate this research study within existing literature and to highlight prior work that has been carried out in this area. This chapter has also discussed the context and current use of CAD within the Fashion and Textiles subject. There are several ways how to improve the pedagogies when teaching CAD, which is why, the end product of this study will entail the creation of an information guidebook for Fashion and Textile teachers, comprising a set of lesson plans with accompanying resources, in order to help educators, teach the subject focus of digital media.

Chapter 3:

Methodology

3.1 Introduction

This chapter shall describe the epistemology and methodology adopted in relation to the research question. It will comprise an overview of the methodology adopted for the study, a qualitative approach. This chapter shall provide the research design, followed by an overview of the recruitment of the participants. Thereafter, an explanation of the ethical considerations adopted shall be presented, followed by an analysis of the data collection.

3.2 Research Question and Methodological Approach

Giddens (2001) stated that qualitative research "is more concerned with subjective understandings than numerical data" (p.647). One of the fundamental beliefs which Marshall and Rossman (2006) discussed was that this kind of research occurs in natural settings and is based upon the lived experiences of people.

To address the research question, different methodological approaches were considered in order to determine which approach is the most appropriate for the purpose of this study. Due to the fact that VET Fashion and Textiles is a new subject with a small cohort of teachers, this research project shall focus on one type of methodology - the qualitative approach. Qualitative methodology is "used to gain an understanding of underlying reasons, opinions and motivations" (DeFranzo, 2011, p.2). Moreover, "it provides insights into the problem and helps to develop ideas for potential quantitative research" (DeFranzo, 2011, p.2). Qualitative research is concerned with the collection of detailed information through open-ended questions that provide direct responses. This type of data involves unstructured or semi-structured techniques such as interviews, focus groups, participation, feedback and observations (DeFranzo, 2011).

Consequently, this methodological framework shall be adopted for the purpose of this study, to answer the research question, which reads 'How to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD?'

3.3 Research Design

The purpose of this study is to investigate the pedagogies in order to help Fashion and Textiles educators effectively teach CAD using Adobe Illustrator®. A handbook and a set of lesson plans with accompanying resources including interactive handouts for Fashion and Textiles teachers were developed in order to reach the aim, while investigating the pedagogies that may be used to help Fashion and Textiles teachers successfully teach Adobe Illustrator®.

Creswell (2014) discussed research design strategies of inquiry in which several styles are presented for a qualitative approach. The researcher conducting this study had two main roles, as an investigator and as a developer.

The research design adopted in this study was exploratory design. This approach was regarded as the most suitable form to answer the aims and objectives of this study. As Fashion and Textiles is a new, vocational subject introduced locally in 2019, so far, there are no local studies that the researcher could refer to in order to locate any methodology to apply for this research. Hence, the design was to generate new ideas and develop the pedagogy of using Adobe Illustrator®. Moreover, the exploratory design was a useful approach for acquiring information on the particular topic of 'Digital Media' using Adobe Illustrator®. Thus, this approach was necessary to address the research question.

This study is divided into five phases: the development of the handbook, lesson plans and resources, the information session, the trialling of the handbook by the subject teachers, collection of feedback provided by the Fashion and Textiles educators; and the analysis of the feedback including possible modifications. Therefore, the handbook, the trialled lesson plans and the resources were crucial components for this study in order to answer the posed research question.

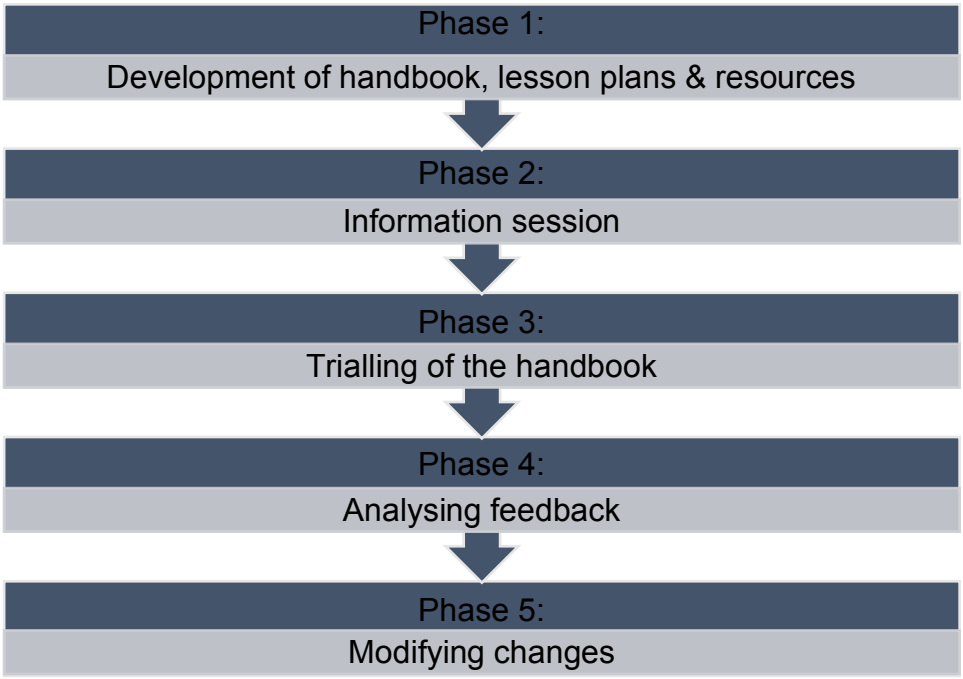


Figure 3.1 The Study in Five Phases

3.4 Epistemology

Epistemology relates with "possibilities, nature, sources and limitations of knowledge in the field of study" (Hallebone & Priest 2009). In research, there are sources associated with research in particular, these can be divided into four categories. The first category is intuitive knowledge which is mainly based on faith and beliefs. Secondly, authoritarian knowledge relies on the information acquired from books, research papers and professionals. The third category in research is logical knowledge which is the creation of a new knowledge through the application of logical reasoning. The fourth category, empirical knowledge, relies on objective facts that have been established and can be demonstrated.

This study relied on two out of these four mentioned categories, namely authoritarian knowledge and logical knowledge. The authoritarian knowledge related to the information for the creation of the lesson plans and resources. These were obtained from books, reliable online sources, and from one of the undergraduate study units related to the use of Adobe Illustrator® given by an international expert. Furthermore, this study is related to logical knowledge, because the resources created were relatively new to the subject teachers of Fashion and Textiles.

3.4.1 Analytic Methods

Analytic Methods is the procedure used for the analysis of problem, status or fact (Kadlecova, 2017). These techniques are usually “time-limited and task-limited and are used to solve a specific issue”. The analytic technique that was applied and used in this research was the ‘Six Questions’ which is also known as Five W’s and one H. This method is about asking the questions starting with who, what, where, when, how and why (Kadlecova 2017, para 1).

Who?	The group of participants	Subject teachers of VET Fashion and Textiles.
What?	The objects, things and entities	The resource pack (handbook, lesson plans and resources) that were trialled.
Where?	The location where the information session and the lessons were trialled	The location was the prospective institution where the subject teachers work. *
When?	The day when the information session took place and when the trialling was held	Organised for each participant in mid-November. Lessons were trialled between end of November 2020 up to May 2021, depending on the scheme of work of the educators.
How?	The relation to the research question	How to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD.
Why?	The main aim of this study	To investigate the pedagogies that may be used to help VET Fashion and Textiles teachers to teach Adobe Illustrator®. This was done by creating a teachers’ handbook and a set of lesson plans together with resources, including handouts and simple activities. A feedback form was provided and had to be completed after each trialled lesson, which was then collected and analysed to get an understanding of whether these lesson plans, handbook and resources were effective and helpful for the subject teachers of Fashion and Textiles to teach this area.

*Due to Covid-19 pandemic the information sessions were held online

Table 3.2 Six Questions Model (Kadlecova, B, 2017).

3.5 Data Collection Process

3.5.1 Recruitment of Participants

For this study, the researcher requested permission from the Education Officer (EO) responsible for Fashion and Textiles to act as an intermediary, and to recruit the educators in State Schools on behalf of the researcher by distributing an information letter and a consent form. Permission was granted by the Secretariat for Catholic Education responsible for this subject in church schools and by the Directorate of Curriculum, Research, Innovation and Lifelong Learning (DCRILL) for state schools to act as an intermediary and to recruit the teachers in the Church and State sector. The whole cohort of VET Fashion and Textiles teachers were invited to take part in this project and to trial the handbook and lesson plans with resources. Participants were recruited by receiving a letter of invitation, together with a consent form. Additionally, those educators who accepted the invitation were asked to virtually attend the information session at a later phase.

In the following stage of this study, the handbook and lesson plans with resources were developed to cover the subject focus 'Fashion Paper Patterns and Digital Media' using Adobe Illustrator® for Unit 2 (year 10's SEC and SEAC).

3.5.2 Information Session for Fashion & Textiles Teachers

Prior to the trialling of the lessons, an information session for the participants was organised in order to further explain the use of the handbook, lesson plans and resources. The original plan was to conduct the information session in their prospective institution, in order to accommodate the participants, however due to the COVID-19 pandemic, sessions had to be conducted virtually, using Zoom as a platform and organised at a convenient time for the participants. An overview of the trialling process, the main aims of the resource pack were given, and the VET Fashion and Textile teachers were able to ask any questions. During the information session, the consent form (Appendix 8), the resource pack* and the feedback form (Resource Pack, p. 307) were distributed to each participant.

3.5.3 Post-lesson Feedback Form

For every lesson, the VET Fashion and Textile teacher was presented with a feedback form to be completed after every lesson plan. Oppenheim (1992) claimed that when the respondents “have understood that intent of the question, they can let their thoughts roam freely, unencumbered by a prepared set of replies” (Oppenheim, 1992, p.113). However, the feedback form provided consisted of a mix of close and open-ended questions which the teachers were required to answer. Therefore, this led to richer and more reliable feedback. The questions were related to the lessons, asking for the educators’ opinion about each trialled lesson. Some of the questions were related to the usefulness of the resources, challenges faced, and the effectiveness of the lessons. Finally, the participants were required to provide some general comments and recommendations for the trialled lessons.

The collected data from the feedback forms was necessary to address the research question, to investigate the pedagogy used and to identify whether the lesson plans and resources were effective and enjoyable for students. Furthermore, the data collection assisted the researcher in recognising whether the lesson plans and resources were helpful for the teachers to teach this particular subject focus using Adobe Illustrator®.

The data gathered from the feedback forms was manually analysed, first on a paper, then in a Microsoft Word document where all the questions were listed down. As the sample was very small, a software was not used to analyse this data. The data was further analysed by checking each question answered in all the feedback forms, where different responses were noted on a paper and in a Microsoft Word document according to the question answered by the participants. This procedure was conducted for each feedback form and for every question to sum up the key findings from this methodology. Therefore, to compare feedback, data was inputted manually in a Word document and presented in bar graphs and pie charts. The response collected from the feedback forms in the Word document was securely stored.

3.6 Ethical Considerations

Throughout the accomplishment of this project-study, the researcher considered all the ethical issues. In fact, all the steps required by the Faculty of Education, Ethics Committee (FREC) (See Appendix 10) were accepted in this project. Since participants had to conduct the trialling of the lessons in schools, institutional permission was requested and granted by the Secretariat for Catholic Education (Appendix 12) and by the Directorate of Curriculum, Research, Innovation and Lifelong Learning (DCRILL) (Appendix 11). This approval was also granted by the main gatekeeper of this study, the Educational Officer.

Due to the fact that the cohort of VET Fashion and Textiles teachers is small, participants were recruited by the Educational Officer responsible for VET Fashion and Textiles. The researcher considered the fact that participants may feel obliged to accept the invitation because they were invited by their Educational Officer, thus, to avoid any pressure and to preserve confidentiality, the researcher asked the Educational Officer to contact the teachers on her behalf. Therefore, their participation remained confidential and not discoverable by the Educational Officer.

A consent form with the information and recruitment letter was presented to the participants, in order to indicate the purpose of this study. It also clarified what was required from each teacher and to indicate issues of confidentiality. The consent form ensured the participants that they were free to opt-out at any time, and participation was to be kept confidential (See Appendix 8).

Voluntary involvement of all VET Fashion and Textiles educators was guaranteed. To protect the teacher's anonymity, each feedback form was coded, in order to keep the identity of the participants anonymous.

In the development of the feedback forms, the researcher kept in mind not to stigmatise but to target most of the individuals with relation to ethics. Moreover, since the lesson plans were presented to the subject teachers, participants were informed that they could utilise the lesson plans and resources according to their students' ability and background; permission was also granted to modify anything according to the students' needs and level. While executing this small-scale project, the researcher

followed four key issues “protection from physical or psychological harm; prevention of deception; protection of privacy; and informed consent” (Lichtman, 2006, p.58).

3.7 Validity & Reliability

In qualitative methodology, validity is vital, due to the fact that it establishes whether the findings are precise from the viewpoint of both the researcher and the participant (Creswell & Miller, 2010). However, Cohen et.al, (2007) claimed that validity is not a supreme state because the subjectivity of contestants, their perceptions and mindsets contribute to a level of bias in the analysis. In order to ensure validity in this study, the researcher included written feedback for the participants whereby they were free to answer and write down their honest thoughts. Paton (2002) indicated that validity and reliability were two main aspects which a researcher must look into while conducting a qualitative study. Reliability signifies how reliably a process is, so each participant was given the same copy of the resource pack to trial the results. Every participant was free to trial the lessons and adapt accordingly, therefore, trustworthiness was achieved.

3.8 Methodological Limitations

This section highlights the limitations encountered while conducting this study.

The main drawback while conducting this study was the COVID-19 pandemic, as this resulted in a longer process to complete the data collection. Schools were physically closed for a period of time during the trialling, and the teaching of CAD was not recommended to be conducted online, though some participants actually managed to teach the topic remotely. Therefore, some Fashion and Textiles educators had to postpone the trialling of the lessons. Moreover, the information sessions had to be conducted online, since the institutions had strict restrictions not to allow visitors outside the school bubble.

The whole cohort of Fashion and Textiles educators were invited to participate in this study, however not everyone participated. In fact, eight out of ten participants,

contributed to this project study. Since, this was a small-scale study, programmes to collect data could not be used and the researcher recorded the data manually.

The researcher had originally planned to pilot the project-study (first trial) with a Fashion and Textiles educator that was not a participant, in order to ensure more validity towards this study. However, the critical friend (Fashion and Textiles teacher) for the pilot study withdrew to participate, therefore the handbook, lessons plans, and resources were checked by the researcher's tutor, since the other Fashion and Textile teachers were participants.

Additionally, the researcher was limited to keeping the feedback form easy and hence, the number of questions the teachers were required to answer was restricted in order not to be time consuming. If this study involved more participants, it would have been even more interesting to analyse more feedback and different perspectives.

The level of stress and time constraints were also an issue, considering the fact that the researcher was carrying out the teaching practice, attending online MTL lectures and working part-time. Despite the pandemic, some of the participants managed to successfully complete the trialling of the project-study.

3.9 Conclusion

A qualitative methodology was used for this small-scale study, to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD. This chapter provided an overview of qualitative inquiry, the research design adopted and the recruitment of participants. This study followed all of the necessary procedures in order to be morally and ethically correct. The data collection process, ethical considerations and limitations were also explained in this chapter. The following chapter emerges on the development of the handbook, lesson plans and resources.

Chapter 4:

Development of the Resource Pack

4.1 Objectives

The researcher's main goal was to design a resource pack to help and guide the Fashion and Textiles educators in teaching the subject focus of Digital Media using a CAD programme to Year 10 students. For this project-based study, a teacher's handbook and a set of lesson plans with accompanying resources were developed to help educators teach this area successfully and also to assist them in making their lessons student-centred and engaging. While planning and creating the resource pack, the researcher kept in mind the constructivist approach, in order to put the students at the centre of learning and to include hands-on activities.

4.2 The Resource Pack

The resource pack included a handbook with a complete guide on how to use and teach Adobe Illustrator® and the design of four lesson plans with accompanying resources for SEC and another set of four lesson plans for SEAC. The latter were created after the production of the handbook. Lastly, attached with this pack, the researcher created a photo library which included different sketches of garments and saved swatches of prints. After the development of the resources, the researcher prepared three digital folders of the resource packs (Figure 4.1).

	Trialling	**Relevant pack included:**			
		Handbook*	**Lesson plans with resources for SEC**	**Lesson plans with resources for SEAC**	**Photo library***
Folder 1:	Both SEC & SEAC	✓	✓	✓	✓
Folder 2:	SEC	✓	✓		✓
Folder 3:	SEAC	✓		✓	✓

Figure 4.1 The Content of the Resource Pack

*The handbook and photo library for SEC and SEAC required the same information.

The folder SEC and SEAC was handed over to the participant teachers who taught both groups.

4.3 Development of the Handbook

This handbook was aimed for Fashion and Textiles teachers in order to serve as a guide on how to teach Adobe Illustrator®. 'A complete guide to the use of Adobe Illustrator® for Fashion and Textiles' (Figure 4.2), the handbook, included all the necessary information required by the subject teachers to teach this topic successfully. It provides information and step-by-step guidance for the basic use of Adobe Illustrator® and develops what needs to be taught for the application criteria, which is completely practical.

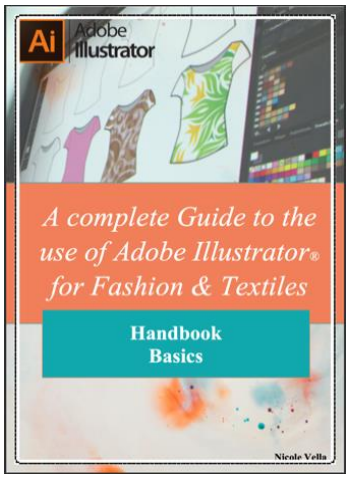


Figure 4.2 Handbook Title

4.3.1 Design and Presentation

The handbook is divided in ten sections in order to tackle the basic use of Adobe Illustrator® and also focused on what needs to be taught and achieved at SEC and SEAC level. The lesson plans and resources were linked with the teacher's handbook. The researcher designed an appropriate layout of this handbook so as to serve its main purpose, to serve as a guide from the basic use to what is expected to cover in terms of the curriculum and also to be beneficial for the VET Fashion and Textiles teachers to teach this area. Aspects such as, right font style, font size, colours, layouts and use of screenshots were considered as important. Several dynamics were taken into consideration to make this handbook clear, sequential and interesting. For a user-friendly guide, the researcher highlighted the action keys of the screenshots in orange to be clearly visible, steps were numbered and listed in text boxes.

The screenshots of the interface were adjusted to a dark interface as Sinha (2019) stated that dark mode interface "enhances visual ergonomics by reducing eyestrains" (Sinha, 2019, para.1). For headings, subheadings and documentation text, different fonts were used for the user to easily identify sections of the handbook.

The guidebook included a set of useful shortcut keys that can be used to facilitate the use of Adobe Illustrator®, a section explaining the home screen interface. A chapter

was included on some useful preferences of how to set up the interface, that should be used by the teachers, such as how to create and set-up the document, how to save, set-up the working space on the Illustrator, how to add colour and pattern and a clarification on the stroke and layers. The second part of this guidebook focused on learning outcome 1 of the SEAC Syllabus which states: “Use of digital media to design ideas for fashion and textiles” (Fashion & Textiles SEAC 09 Syllabus, 2022, p.24). It included a step-by-step approach on how to create a digital image for SEAC. The last section contained clear guidance on how to create a 4-panel skirt which is a topic that is required by students following the SEC stream. This was based on the learning outcome No. 2 “Understand the purpose of paper patterns and the use of appropriate software in clothing” (Fashion & Textiles SEC 44 Syllabus, 2022, p.26).

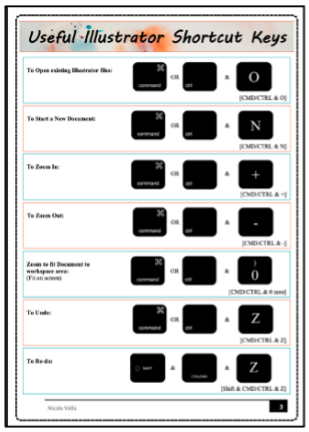


Figure 4.3 Shortcut Keys

Figure 4.4 Home screen Interface

Figure 4.5 Preferences

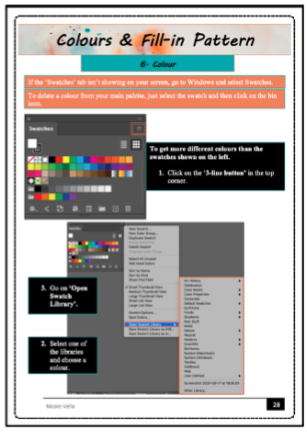


Figure 4.6 Colour & Fill-in Pattern

Figure 4.7 Creating a New Document

Figure 4.8 Saving a Document

4.4 Development of the Lesson Plans and Resources

4.4.1 Design

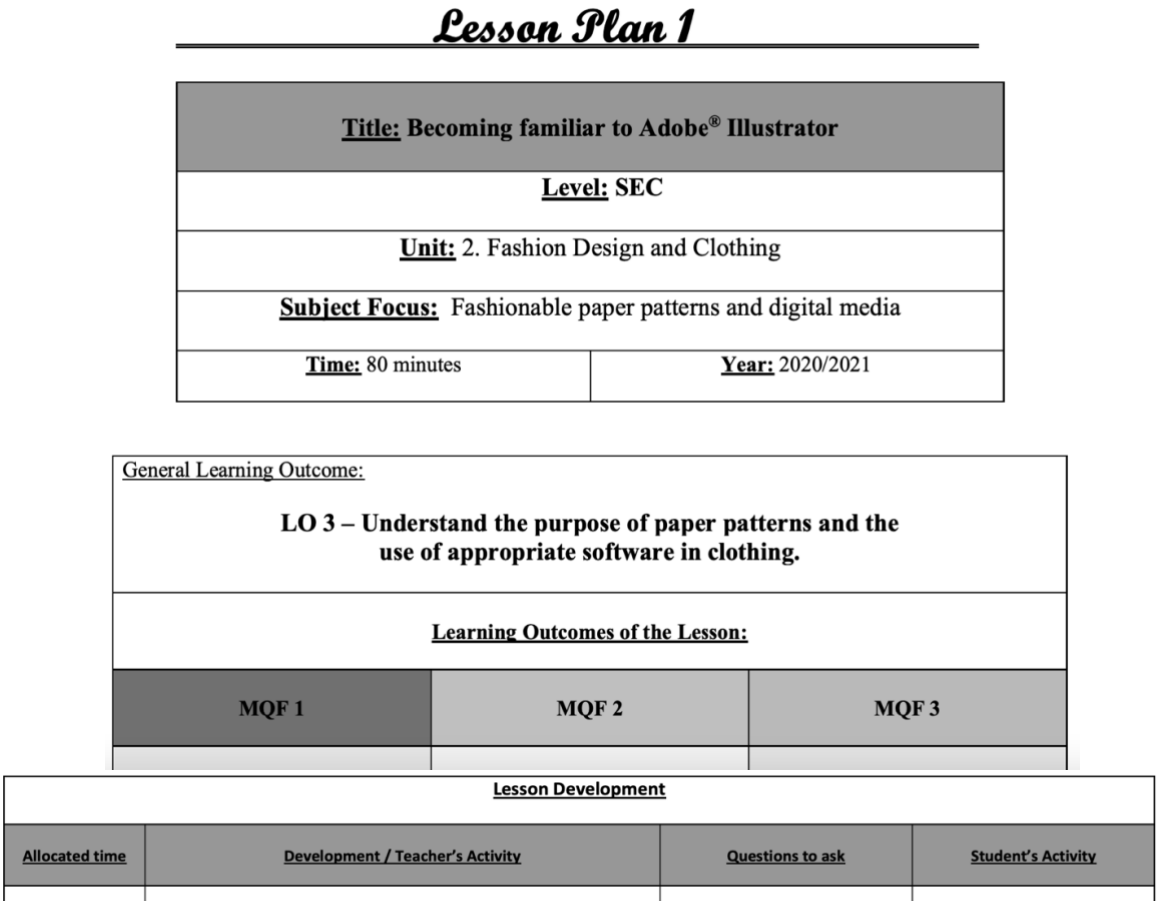
Four lesson plans with combined resources for both SEC and SEAC were developed and then trialled by the participants, the Fashion and Textiles teachers. While planning these lessons, the researcher deliberated the student's knowledge on using this CAD software. Since, this is a completely new topic and a new area to teach, the students may not be familiar with the software, and the teachers might also struggle to teach the subject focus of digital media. Hence, the main aim was to start teaching the students the very basics up to what they will actually need to learn for their assessment. Lesson plans and resources were developed for mixed ability students, and therefore learning outcomes for different abilities were set to be achieved by the end of each lesson. The assessment criteria was an important guide while planning these lessons as it provided an indication of what the teachers had to target to reach the specific learning outcome.

Editorial, Cowan, Gibbons, Stannard & Bates (2020) remarked that teachers must follow different pedagogical approaches, hence, the researcher emphasised in using different pedagogical styles in the development of lesson plans and resources, in order to maximise the interest by students and also to entice the educators teaching it.

The first fundamental step in the development of lesson plans was a good layout and design. All lesson plans had an interactive and informative student's handout, with information found in the teacher's handbook. The student's handouts were divided into a simpler format and given according to the topic of the lesson. The interactive handouts were aimed to be used as a resource during the lesson or as a recapitulation exercise. Differentiated questioning techniques were planned to be asked in order to cater for the mixed ability classes. Activities, such as quizzes, exercises on the interactive handout and additional resources were aimed for the teacher to be able to test the students' learning and also to challenge their knowledge. Figure 4.13 outlines the distribution of lessons and the resources developed for each.

Each lesson plan was very detailed and included all the necessary information presented in clear steps. For most of the lesson plans, the researcher followed Lev Vygotsky's (1987) approach of social constructivism for the planning of the lessons, whereby lessons worked in a collaborative manner, were student-centred, involving the educator's assistance and activities (Mcleod, n.d). Tutor modelling, questioning and a blend of pair-work and an entire class instruction was the pedagogical style used. The tutorial videos used as a resource in lessons number No. 3 were created to assist the subject teachers, to save time and also to incorporate a different learning style using IT.

The style font used was Times New Roman, Size 12 was mostly used since it is an easy-to-read font style and size (Siteimprove,2021). Main keywords and steps of the lesson were highlighted in bold, in order to be easy to follow by the teachers. Lesson plans were divided into four columns, Figure 4.9 shows a template design of the lesson plans.



Lesson Plan 1

Title: Becoming familiar to Adobe® Illustrator	
Level: SEC	
Unit: 2. Fashion Design and Clothing	
Subject Focus: Fashionable paper patterns and digital media	
Time: 80 minutes	**Year:** 2020/2021

General Learning Outcome:		
LO 3 – Understand the purpose of paper patterns and the use of appropriate software in clothing.		
Learning Outcomes of the Lesson:		
MQF 1	**MQF 2**	**MQF 3**

Lesson Development			
Allocated time	**Development / Teacher's Activity**	**Questions to ask**	**Student's Activity**

Figure 4.9 Lesson Plan Design Template

4.4.2 Photo Library

The main aim of the photo library was to be useful and to serve as a time saver for both the teachers and students. In this way, all the digital images and prints needed were saved and organised in folders. Figure 4.10 shows different items created in the photo library.

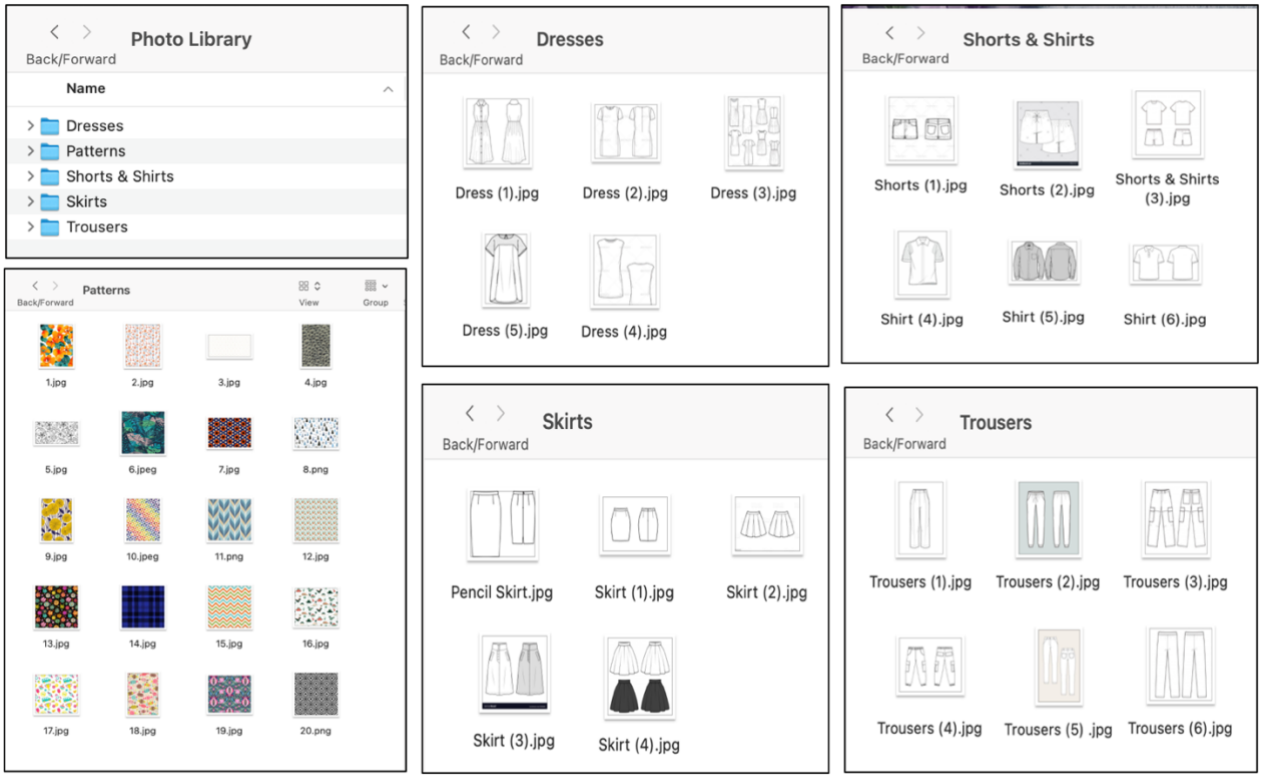


Figure 4.10 Photo Library

4.5 Content

The researcher made use of the Fashion and Textiles syllabi of both SEC and SEAC, in order to collect information of what the teachers have to teach for this subject focus. Figure 4.11 indicates the content covered in the trialled lessons of SEC and Figure 4.12 shows the content covered with the SEAC lessons. The handbook entailed all the information necessary that the teachers could follow while teaching and preparing for the lessons, which was linked to the lesson plans and resources. This study comprised four lessons for the SEC group and another four lessons for the SEAC group, the resource pack was designed with care to cater for mixed ability classes. For every lesson, different questioning techniques and tasks for differentiated abilities were reflected.

Subject Focus	Fashionable paper patterns and digital media
LO 3.*	Understand the purpose of paper patterns and the use of appropriate software in clothing.
K-6.	Fashion patterns: individual ready-made commercial patterns in standard sizes; multi-sized patterns in commercial magazine; bespoke; software-created pattern.
	Fashion pattern markings: e.g. fold, straight grain, dart, pleats, numbers, button and button hole, zip fastener, notches.
	Body measurements for making patterns: • Upper garment: e.g. bust/chest, waist, shoulder, length, arm length, neck; • Lower garment: e.g. waist, hips, length.
K-7.	CAD functions: image and pattern manipulation; effects with filters and colours; fitting proportions and sizing; stylising and drafting; 2D and 3D modelling.
	Importance of digital technology in the fashion and textiles industry: e.g. • design and illustration of fabrics, patterns and styles, • garment, textiles and accessory construction, • apparel and collection design, • preparation of toiles, • visualisation and presentation, • sizing and costings, • pattern drafting, • research.
A-2.	Transferring of a flat paper pattern of a four-panel skirt: choose size according to given measurements; trace all pattern pieces onto paper; transfer all pattern markings.
	Drafting a paper patter of a four-panel skirt using a T-square: use of proper scale; correct use of formulas and calculations; accurate drawing.
	Producing a pattern of a four-panel skirt using CAD: setting correct dimensions; use of adequate paths and properties in drawing the pattern; inclusion of all markings; accuracy and neatness. ***N.B.*** *For assessment purposes, students should present a soft copy and a hard copy of the pattern in the indicated file format.* ***N.B.*** *It is highly suggested that a demonstration of printing to-scale CAD patterns using a plotter should be provided during delivery.*

Figure 4.11 Covered content in SEC lessons

Unit Content

Subject Focus	Digital media
LO 1.	Use digital media to design ideas for fashion and textiles.
K-1.	CAD functions: image and pattern manipulation; effects with filters and colours; fitting proportions and sizing; stylising and drafting; 2D and 3D modelling.
	The importance of digital technology in the fashion and textiles industry: e.g. • design and illustration of fabrics, patterns and styles, • garment, textiles and accessory construction, • apparel and collection design, • preparation of toiles, • visualisation and presentation, • sizing and costings, • pattern drafting, • research.
A-1.*	An outline of a digital image of a garment: sharp; true to original image; good use of CAD tools.
	Using CAD to create separate layers of a garment with different features: clearly labelled layers; good use of CAD tools; neatly drawn features of the garment.
	Sketch of a given garment using CAD: coherent; sharp; different colours for particular features; neat; digital copy saved according to requested file format.

Figure 4.12 Covered content in SEAC lessons

The main resource for all lessons was the software of Adobe Illustrator®, since it is the CAD program available in schools and the one which is currently used for the teaching of the vocational subject of Fashion and Textiles. Short PowerPoint (PPT) presentations were developed in order to assist both the teachers and the students. The short PPT presentations were also used for the subject teachers to quickly access the links for the resources, such as a game on Activinspire, quizzes or polls. The aim of the resource pack was to be a useful guide for the Fashion and Textiles teachers while at the same time, have interesting interactive lessons and resources for the students. Teacher's demonstration and student activity time was the approach for most lessons, in order to engage students and to keep them on task. Figure 4.13 Shows the distribution of the lessons and the resources used for both SEC and SEAC classes.

	Lesson Number:	Lesson Plan Title:	Resources:
SEC	1	Becoming familiar to Adobe Illustrator®	▪ Student's handout (1) ▪ Teacher's Answer sheet (1) ▪ PPT (1) CAD ▪ Kahoot Quiz
	2	Shapes and Colours	▪ Student's handout (2) ▪ Teacher's Answer sheet (2) ▪ PPT (2) Shapes & Colours ▪ Pencil Skirt image
	3	Copying and Creating a digital image of a trousers	▪ Student's handout (3) ▪ PPT (3) Quiz Link ▪ Kahoot Quiz ▪ Clip (1) Placing, Cropping & Resizing an image ▪ Clip (2) Creating the trousers outline ▪ Clip (3A) Elasticated casing & Ankle cuffs ▪ Clip (3B) Pockets ▪ Clip (3C) Stitching ▪ Clip (3D) Details Back ▪ Clip (3E) Details Front ▪ Clip (4) Organizing & Grouping Layers ▪ Clip (5) Adding Colour & Pattern Using Live Paint ▪ Clip (6) Saving the digital Image
	4	Creating a digital image of a 4-panel skirt	▪ Student's handout (4) ▪ Teacher's Answer sheet (4) ▪ PPT (4) Quiz Link ▪ Kahoot Quiz
SEAC	1	Becoming familiar to Adobe Illustrator®	▪ Student's handout (1) ▪ Teacher's Answer sheet (1) ▪ PPT (1) CAD ▪ Kahoot Quiz
	2	Shapes and Colours	▪ Student's handout (2) ▪ Teacher's Answer sheet (2) ▪ PPT (2) Shapes & Colours ▪ Pencil Skirt image
	3	Creating the trousers outline	▪ Student's handout (3) ▪ PPT (3) Quiz Link ▪ Quiz on Quizziz ▪ Clip (1) Placing, Cropping & Resizing an image ▪ Clip (2) Creating the trousers outline ▪ Clip (3A) Elasticated casing & Ankle cuffs ▪ Clip (3B) Pockets
	4	Creating details, colour & pattern to the trousers	▪ Student's handout (4) ▪ Teacher's Answer sheet (4) ▪ PPT (4) Poll Links ▪ Activity on Activinspire: Labelling Trousers details ▪ Clip (3C) Stitching ▪ Clip (3D) Details Back ▪ Clip (3E) Details Front ▪ Clip (4) Organizing & Grouping Layers ▪ Clip (5) Adding Colour & Pattern Using Live Paint ▪ Clip (6) Saving the digital Image ▪ Conclusion Activity: Poll links

Table 4.1 Distribution of Lessons and Resources

4.6 Language

The vocational subject of Fashion and Textiles is taught and assessed in English. So, English was used in the creation of the handbook, lesson plans and resources. Subject terminology and clear language were used to facilitate the learning process and understanding.

4.7 Distribution of the Resource Pack

Eight out of twelve Fashion and Textiles teachers currently teaching in State and Church schools, participated in this study and trialled the resource pack on the subject focus of *Digital Media* using a CAD software. The resource pack was trialled during the COVID-19 pandemic, so some lessons had to be conducted online. The resource pack was digitally forwarded to the participants using a cloud-based file sharing tool called 'WeTransfer'. The researcher contacted the teachers in order to see whether they were able to trial the SEC, SEAC or both levels, in order to send the relevant pack. Educators had sufficient time to conduct the trialling, in which they were also free to trial the lessons on the desired time period. Originally, the plan was that the teachers trialled the lessons between November 2020 to February 2021. However, due to the COVID-19 partial lockdown, some of the trials had to be postponed. Fashion and Textiles teachers were asked to trial and deliver the lessons by making use of the handbook, the set of lesson plans and resources provided by the researcher. After each trialled lesson, the teachers were asked to complete a feedback form, which was collected remotely by the researcher at a convenient time for the participants.

4.8 Conclusion

This chapter has presented an overview on the development of resources. The main objectives of the resource pack, the development of the handbook lesson plans and resources were outlined throughout this chapter. In addition, a description of the use of language and distribution of the resource pack was given. In the following chapter the researcher shall discuss an analysis of feedback on the resource pack which was completed by the participants of this project study, the VET Fashion and Textiles teachers.

Chapter 5:

Analysis of Feedback on the Resource Pack

5.1 Introduction

This chapter discusses and presents an analysis of feedback completed by the participants of this study, the Fashion and Textiles teachers. Four feedback forms were designed for each trialled lesson in order to obtain information about the resource pack which included a teacher's handbook, lesson plans and resources in order to understand the participants' perception and to check whether the trialling was beneficial in the teaching of this area. The main aim for the resource pack was to evaluate whether it was effective and beneficial for the teachers to teach Adobe Illustrator®. Written feedback was sent to the researcher after the trialling of the lessons. Three participants trialled the lessons for both SEC and SEAC. Four out of the eight participants only trialled the SEC lessons, while one teacher trialled just the SEAC lessons. In total, 66% (2/3) of the Fashion and Textiles teachers took part in this study.

5.2 Post-Lesson Feedback

The first section of the feedback form was aimed at discovering the participants' main views with regard to the trialling of the lessons. The respondents were asked to rate the following statements: the specific learning outcomes of the lessons; whether the lessons included a variety of activities; whether the lesson plans were easy to follow and to deliver; whether the resources were interesting and attractive; if there is a link between the lessons and the Fashion and Textiles curriculum and whether the lessons involved students' engagement. Table 5.1 and Table 5.2 present an overview of the ratings given by the participants on the four lessons, both at SEC and SEAC level.

*SEC lesson No. 3 with the title of 'Copying and Creating a Digital Image of a Trousers' was only trialled by three out of seven participants. The researcher planned this extra lesson so that the teachers and the students could have more time to practise in using the software. Due to the COVID-19 pandemic, mitigating measures and the restricted number of lessons available for option subjects, only three Fashion and Textiles teachers mentioned that since lesson number 3 included the creation of a trousers

and was not part of the SEC curriculum, they had to skip the trialling of this particular lesson. However, these participants pointed out that if they had more time available, they would have planned to use it as an extra activity to practise using the software. Moreover, it was suggested to leave Lesson number 3 - Copying and Creating a Digital Image of a Trousers, as an optional activity for the students.

SEC		*Learning outcomes are specific*	*Lessons planned to include a variety of activities*	*Interesting & attractive teaching resources*	*Linked to Fashion & Textiles curriculum*	*Timing allocated for development of the lesson plan*	*Student engagement*	*Lesson plan was easy to follow*	*Lesson plan was easy to deliver*
	Scale								
Lesson 1	**1**								
	2								
	3								
	4		2 (29%)			3 (43%)	1 (14%)		1 (14%)
	5	7 (100%)	5 (71%)	7 (100%)	7 (100%)	4 (57%)	6 (86%)	6 (86%)	6 (86%)
Lesson 2	**1**								
	2								
	3	1 (14%)							
	4				1 (14%)	3 (43%)			2 (29%)
	5	5 (71%)	6 (86%)	6 (86%)	5 (71%)	3 (43%)	6 (86%)	6 (86%)	4 (57%)
Lesson 3	**1**				1 (14%)				
	2					1 (14%)			
*	**3**			1 (14%)					
	4				2 (29%)				
	5	3 (47%)	3 (47%)	2 (29%)		2 (29%)	3 (47%)	3 (47%)	3 (47%)
Lesson 4	**1**								
	2					1 (14%)			
	3					2 (29%)			1 (14%)
	4	1 (14%)		1 (14%)		2 (29%)		2 (29%)	3 (43%)
	5	6 (86%)	7 (100%)	6 (86%)	7 (100%)	2 (29%)	7 (100%)	5 (71%)	3 (43%)

Table 5.1 SEC-Summary of Feedback

SEAC		*Learning outcomes are specific*	*Lessons planned to include a variety of activities*	*Interesting & attractive teaching resources*	*Linked to Fashion & Textiles curriculum*	*Timing allocated for development of the lesson plan*	*Student engagement*	*Lesson plan was easy to follow*	*Lesson plan was easy to deliver*
	Scale								
Lesson 1	**1**								
	2								
	3								
	4					1 (25%)			2 (50%)
	5	4 (100%)	4 (100%)	4 (100%)	4 (100%)	3 (75%)	4 (100%)	4 (100%)	2 (50%)
Lesson 2	**1**								
	2								
	3								1 (25%)
	4					1 (25%)	1 (25%)		3 (75%)
	5	4 (100%)	4 (100%)	4 (100%)	4 (100%)	3 (75%)	3 (75%)	4 (100%)	
Lesson 3	**1**								
	2								
	3								
	4						1 (25%)		2 (50%)
	5	4 (100%)	4 (100%)	4 (100%)	4 (100%)	4 (100%)	3 (75%)	4 (100%)	2 (50%)
Lesson 4	**1**								
	2					1 (25%)			
	3						1 (25%)		
	4								2 (50%)
	5	4 (100%)	4 (100%)	4 (100%)	4 (100%)	3 (75%)	3 (75%)	4 (100%)	2 (50%)

Table 5.2 SEAC-Summary of Feedback

5.2.1 Specific Learning Outcomes

The learning outcomes describe what students will be able to achieve by the end of each lesson (Glossary of Terms, MATSEC, 2020, p. 4). The feedback obtained from the participants on the trialling of the SEC lessons, was that all lessons created by the researcher consisted of specific learning outcomes. All participants rated that the learning outcomes were appropriate and gave the maximum rating of 5. The same feedback was given for the SEAC lessons. 4 (100%) out of 4 respondents rated that lesson plans consisted of clear and specific learning objectives; this is evident in Table 5.2.

5.2.2 Variety of Activities

Bergeson (2000) emphasised that it is the teacher's responsibility to create meaningful lessons for students. Teachers should encourage students to engage through different learning activities. Therefore, lessons were planned to include a variety of interesting activities related to the subject focus of digital media.

The response for both SEC and SEAC on the variety of activities was positive, teachers were satisfied since the activities achieved the teachers' expectations; all participants rated this very highly. The most popular response was that the Fashion and Textiles teachers should create a student-centred learning environment and come up with activities that entice the students and keep them focused.

5.2.3 Interesting and Attractive Teaching Resources

In another statement the teachers were asked to rate whether they found the teaching resources interesting and attractive. The majority of the participants for both SEC and SEAC lessons, ticked that most of the resources were particularly interesting and attractive. However, it was noted that some additional information on functions of CAD and the importance of digital technology in the Fashion and Textile industry could

be useful and given more importance during one of these lessons. The reason behind this was explained in the feedback forms where educators highlighted that this section forms part of the assignment criteria. Therefore, respondents believed that this could be improved, and it can include more detail in order to ease the learning process for students.

Teachers teaching SEC and SEAC pointed out that the teaching resources, such as the student's handout, PowerPoint presentation, the quiz and video clips were useful, interesting and easy to follow.

5.2.4 Link to the Fashion and Textiles Curriculum

The combination of technology within the lessons and the curriculum concords with Dawson, Cavanaugh & Ritzhaupt's (2008) studies that these assist students in learning, hence these aspects contributed to a positive result. The feedback obtained from the SEAC trialling was that all teachers (100%) stated that the four lessons were directly linked to the Fashion and Textiles curriculum.

Consequently, the same feedback was given on lesson No. 1, No. 2 and No. 4 of the SEC lessons, whereby the majority clarified that these three lessons were linked to the subject's curriculum. However, participants highlighted that lesson 3 for SEC on copying a digital image of a trousers was not part of the SEC curriculum, therefore they felt that this lesson was not necessary. The researcher was aware of this, though the implementation of this lesson in SEC lessons was developed in order to allocate more practise in using the software. Furthermore, since the syllabus is assessment-based, the researcher moved beyond the curriculum and added the opportunity for students to learn something else beyond what is expected out of the syllabus. Nonetheless, due to the pandemic, mitigating measures and restricted time for lessons, it was understandable that lesson 3 had to be missed.

5.2.5 Timing Allocated for the Development of the Lesson Plan

Time allocated for the development of the lessons could be improved. The participants pointed out that lessons No. 3 and No. 4 for at SEC level and lesson No. 4 at SEAC level needed some adjustments with regard to their length of time. These lessons were planned for a double lesson of 1 hour 20 minutes; however, it was stated by some of the participants that due to the COVID-19 situation, lessons were reduced to 1 hour, therefore time was an issue to successfully complete the whole lesson as initially planned.

A participant claimed that “due to some software issues, and different student abilities, time is always a problem, especially when using something completely new”.

5.2.6 Student Engagement

Respondents did not observe any changes in the student’s behaviour when conducting these lessons, even if some teachers commented that they conducted their lessons online. Those who trialled the lessons in schools, used their Fashion and Textiles Studio and not the computer labs, as had been proposed by the researcher. Teachers were not allowed to change classes and one respondent stated that the Adobe Illustrator® licence was not obtained for all the computers available in the computer lab in her school. Another note was that since the classes were small, no particular changes in behaviour were noted, possibly since students were in their natural classroom environment.

Question 2 on the feedback form was aimed at discovering the student’s reaction towards the resources. For SEC lessons, the feedback obtained was that since some of the lessons were delivered online, the handouts were passed to students remotely. Therefore, they could see the coloured version. Most teachers commented that their students remarked that the handouts were “attractive, positive and worthwhile”. The participants noted that students were excited and engaged using the resources. The quiz was also enjoyed by the students and overall, they found the resources interesting.

For the SEAC lessons, the feedback given was that resources were “very useful and positive”. Students also remarked that they had enjoyed the quiz. Since lessons were based on social constructivism (Lev Vygotsky, 1987), where the teacher demonstrates and then allocates time for the students to replicate each step, keeping the students occupied at all times, promoted student engagement.

5.2.7 Use and Delivery of Lessons

All participants replied that all the lesson plans were designed in a way that facilitates the teaching and learning process. Four (100%) out of four SEAC respondents and most of the SEC participants highly rated this statement.

The responses with regard to lesson delivery varied. For the SEC lessons, teachers found lessons No.1, 2 and 3 easy to deliver, however, lesson 4 could be improved. A suggestion by some of the participants in relation to lesson No. 4 ‘Creating a Digital Image of a 4-Panel Skirt’, was related to time; it was recommended to divide the *construction of the 4-panel skirt,* with another lesson “especially with a larger group of students with different abilities”.

Overall, the SEAC feedback on time development was quite positive, one out of four respondents outlined that due to technical issues with the software, time was a problem, and it was not enough to finish lesson No. 4. This participant suggested that to finish the digital image of a trousers, two double lessons were needed, one double lesson on MQF Level 2 and another double lesson on MQF Level 3.

5.2.8 Areas of Strengths & Challenges Encountered During the Trialling

Question 5 sought to discover what the participants think about the trialling of these resources in terms of learning outcomes, introduction, explanation, conclusion and activities. The participants highlighted that the SEC learning outcomes were specific and could be easily achieved through different tasks. Moreover, students were actively involved throughout the lesson and the introduction enticed the students. Furthermore, the activities were fun for their students, good resources were used, and lesson plans were very well-explained and easy to follow. Another note was that

lessons involved suitable questioning techniques while teacher's instructions were short, straight to the point and adequate to follow during the lesson. Moreover, the feedback from the participants was that lessons had an appropriate lesson closure, and the lessons recapitulated the main points. Table 5.3 represents the general comments of SEC participants in relation to the areas of strengths and challenges encountered during the trialling period.

The feedback obtained from the same question for the SEAC lessons was that both the teachers and the students found this lesson very interesting. Some listed that lessons were well-planned with specific learning outcomes. It was also commented that these lessons consisted of a proper introduction and conclusion. Respondents outlined that this topic was introduced well and that the content showed preparation and detail. However, one participant commented that the teaching of Adobe Illustrator® was still a difficult topic for SEAC students. Table 5.4 shows the general feedback of SEAC participants related to the areas of strengths and challenges.

SEC	
Areas of Strengths	***Challenges encountered during the trialling***
"Students were actively involved"	"Keeping in mind that we do not have enough contact lessons with students due to the pandemic situation. Time was really a challenge"
"Hands on, students could experiment"	"Working online!"
"I liked the flow of the lesson. One step building onto the other. It is interesting that you gave them extra information on the colours –PANTONE chart"	"Only 1 computer with Adobe installed and two students in class"
"Student handout was interactive"	"Lesson conducted online and hiccups until students settles"
"Very good handout, easy to follow and student engaging"	
"Lesson was flowing. Good introduction to the Adobe Illustrator"	"Lesson was carried out in the Fashion and Textiles Lab with only one computer for students to work on. Only 1 student could work given that both students in class were from different bubbles and so they could not mix. This is unfair for the student who was not engaged with using a computer"
"Lesson was very clear, started from the very basic"	
"Great way to introduce such a complex software before actually started working on the four-panel skirt"	
"Good lesson closure using an interactive quiz"	"Our lessons are 1 hour long, therefore, I used two lessons to cover the material"
"Interesting lesson"	
"Planned in a systematic way"	"Teaching at a church school, obtaining the software was a struggle, especially to make sure that the students have it on their personal laptops. This was a setback to start delivering these lessons"
"Easy for the students to follow and for teacher to deliver the lesson"	
"Step by step guide is very useful"	"Due to COVID-19 circumstances, the regular timetable changed so the number of students was limited. Unfortunately, group work activities couldn't be carried out. Also, such activities were completed before the scheduled time of the lesson -for example to show the ruler and measurements took less than 5 minutes (with one student)
"Step-by-step guide on how to change settings and preferences together with screenshots was really helpful. I also liked the labelling of the interface and naming of different tools. The shortcuts were also useful"	

Table 5.3 SEC Participants' General Comments – Areas of Strengths & Challenges Encountered

SEAC	
Areas of Strengths	***Challenges encountered during the trialling***
"Good introduction and conclusion"	"Challenging to deliver online during quarantine"
"Informative ppt"	"Technical terms were difficult for certain students; however, they are as listed in the syllabus"
"Interactive student handouts"	"Due to time constraints did not have time to do the quiz"
"Engaging kahoot quiz"	"The students were not so confident with the use of computer, and one hasn't even got a computer at home"
"Explanation of shortcuts and how to prepare the software settings"	"I had to revise and get confident with the program before every lesson as it is a new area in Fashion and Textiles"
"The lesson was very engaging, and the students were interested in learning a new way of designing using CAD"	"Having two lessons a week, the time was very limited for the students to get familiar with the program"
"The student was keen to get hands on in designing using CAD"	"Had to use the class computer as the Lab was not available"
"The Kahoot quiz was really interesting, and my students love to use Kahoot, so they were very familiar with it and really looked forward to it"	"One double lesson per week is not enough"
"Activities engaged the students throughout the lesson"	"I think that time was my biggest challenge. Since some students worked slower, they did not manage to do all of the details"
"Well explained steps for students to follow"	"Some steps took a bit longer for student to complete"

Table 5.4 SEAC Participants general comments – Areas of strengths & Challenges encountered

5.2.9 Improvements and Modifications

From the feedback obtained, Fashion and Textiles educators teaching CAD suggested that more detail should be allotted for K7 MQF 3 on "The importance of digital technology in the fashion and textiles industry" (Fashion & Textiles SEC 44 Syllabus, 2021, p.21). In lesson number 3 for SEC, the researcher had included the copying of the trousers and to improve this after trialling and feedback; it should be indicated to leave this as an optional lesson. This can be used as an extra lesson or included as an additional activity to practise. There was a technical detail regarding SEC lesson 4 'Creating a digital image of a 4-panel skirt'. This was related to the 4-

panel skirt. A participant pointed out that a 0.6cm extension at the waistline and reducing the hemline by 0.6 cm should be included. To further improve this resource pack, SEC lesson 4 could be split into two lesson plans, in order to allocate more time to complete the drafting of the skirt.

For the SEAC lessons, some modifications that could be done after the trialling process were to allocate more time for the completion of the digital image of the trousers in order to adapt to students' different learning abilities.

Table 5.5 below indicates the modifications for improvements that were made to further expand the quality of this resource pack.

Table 5.5 Post-trialling modifications on the resource pack

SEC	***SEAC***
Lesson Plan 1 & resources Further detail for K7 MQF 3 on "The importance of digital technology in the fashion and textiles industry"	Lesson Plan 3 & 4 Allocate more time in the lesson plan development to copy the digital image of the trousers. Add another lesson plan to allocate more room for the teacher to teach the replication of the trousers using CAD.
Lesson Plan 3 Add a note that it's an optional lesson, which can be used before; the construction of the 4-panel skirt, can be used as an extra lesson or as an extra activity if time is permitted.	
Lesson Plan 4 Divide the development of lesson plan number 4 and implement lesson plan 5.	
Handbook 4-panel skirt - 0.6cm extension at the waistline and reducing the hemline by 0.6 cm	

5.2.10 Using the Resource Pack for Future Lessons

One of the final questions was aimed at finding out whether the Fashion and Textiles teachers would consider using this resource pack again in the future. All of the participants from SEC and SEAC reported that they will use it again.
Some other reasons why participants considered using these lessons again were that;

- it allowed students to become familiar with the CAD program
- it allocated room for practise
- lessons and resources were well-developed, structured and resourceful
- notes were very detailed, interesting
- hands-on, gave the opportunity for more practise
- the resources were useful and also interesting
- the participants noted that teaching this topic was an interesting experience, although somewhat challenging but intriguing.

As previously mentioned, some participants made a number of minor changes in the order of conducting certain steps. The most popular modification was to dedicate more lessons focusing on certain aspects.

5.3 Conclusion

The implementation of the handbook together with the SEC and SEAC lesson plans were successful and well-designed. This reflects that the resource pack satisfied its purpose for which it was developed. In fact, most of the respondents marked that the learning outcomes were specific, included a variety of activities, the lesson plan was easy to follow, and overall, it was easy to deliver. Moreover, it was commented that the resource pack consisted of interesting and attractive resources, the lesson was linked to the Fashion and Textiles curriculum and entailed appropriate student engagement. Hence, certain points for recommendations obtained from the feedback forms were improved upon, in order to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD.

Chapter 6:

Conclusion and Recommendations

6.1 Introduction

This chapter brings this research project to an end by summarising the obtained conclusions. Moreover, this chapter shall discuss the main themes that emerged from the data collected and put forward recommendations for further research. This research project successfully managed to address the research question through literature, a qualitative methodological approach and the development of the resource pack for VET Fashion and Textiles teachers.

6.2 Main Conclusions

The main aim behind this study was to investigate the pedagogies that may be used to help VET Fashion and Textiles teachers teach Adobe Illustrator®. Hence, the research question on how to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD was another goal to achieve. The research method which was employed, enabled the researcher to reach the aim of this research project. The information session prior to the trialling period, provided detailed information about the resource pack that was specifically created with the aim in mind. The feedback forms assisted the researcher to identify whether the resource pack was beneficial for the VET Fashion and Textiles teachers in teaching Adobe Illustrator® successfully. The teacher's feedback was particularly helpful in evaluating the effectiveness of the handbook, lesson plans and resources developed.

The handbook was created to guide the subject teachers in teaching this topic, starting from how to teach the very basics up to what was expected to teach the students with regard to the curriculum. Lessons were planned to use different pedagogical approaches which were highlighted in the literature as the most effective pedagogies to teach a software. The most effective model to use was socio-constructivism, in which a live tutor modelling approach, questioning, quizzes and scaffolding were used to teach the required material prepared by the researcher. Inquiry-based learning, and collaborative and project-based learning were other pedagogies used in order to address the research question (Editorial et al., - Teaching Styles, 2020).

Overall, the researcher found out that the resource pack was effective and helpful for the teachers to teach the subject focus on Digital Media and for the students' learning. With the support of research in the area, the researcher was convinced that these pedagogies improve and facilitate the teaching of software such as Adobe Illustrator®. Most of the lessons trialled by the VET Fashion and Textiles teachers had an overall positive outcome and it was also proved that the resource pack was useful and effective for the majority of teachers. The only lesson that contributed some different opinions by the participants was Lesson 3 at SEC level, 'Copying and Creating a Digital Image of a Trousers'. Teachers commented that as the lesson was not part of the SEC curriculum, they were not obliged to deliver it. However, the general feedback given by the teachers was taken into account, and modifications to the resource pack were made and presented in Table 5.4.

6.3 Limitations of the Study

This research project is characterised by some limitations. The COVID-19 pandemic was the main struggle with regard to the completion of the data collection; in fact, initial plans for this study had to be improvised. Secondly, information sessions had to be conducted online. Furthermore, since this was a small-scale study, participation of the VET Fashion and Textiles teachers was of utmost importance, however, not the whole cohort accepted to participate in this study. In addition, the feedback offered insights from the teachers' perceptions and their actual practices. Finally, anxiety and time constraints were also an issue for the researcher.

6.4 Summary of the Research Project Findings

In conclusion, with the resource pack including the teacher's handbook, lesson plans and resources, the main outcome from this study revealed that the resource pack was effective, constructive and valuable in teaching the subject focus of Adobe Illustrator successfully®. Therefore, the key findings of this research project met the needs of the proposed research question, as the resource pack managed to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD. Although some modifications were suggested and implemented after the trialling period, the resource

pack was still useful for the subject teachers of Fashion and Textiles, so much so that a number of participants commented that they will use the resources in future lessons. Moreover, the pedagogies in teaching a digital software, such as socio-constructivism, inquiry-based learning, collaborative and project-based learning, concord with the literature as these were successful in teaching the CAD software used in Fashion and Textiles.

6.5 Recommendations for Further Studies

After completing this research project other recommendations shall be considered for further studies in order to further develop the research question, 'How to enhance the pedagogies of Fashion and Textiles teachers in relation to CAD'. The role and the skills of Vocational Education and Training is necessary in closing the skills gap, as digitalisation is one of the global trends that contributes to the skills gap. Initial training during the teacher's full-time employment can be taken for "an apprentice, or as a combination of formal education and workplace learning" (Closing the Skills Gap, 2021, p.7, para. 1). In order to close the skills gap in the VET subject of Fashion and Textiles, adopting new technologies will contribute to improving the skills and competencies in adult education. It is suggested that teachers should have some work experience related to their area of expertise in the industry to develop the quality of teaching and to ensure that they are abreast with the latest practices and technologies. In addition, to link the industry, work-based learning can widen the opportunity for both teachers and students to work in the fashion and interior design sector or as a fashion consultant in their area of specialisation.

Since the teaching of CAD using Adobe Illustrator® involves hands-on practice, courses in 'Continuing Professional Development' (CPD) for teachers on CAD in Fashion can be offered by MEDE and the University of Malta. This is recommended to further the skills of VET Fashion and Textiles teachers when using Adobe Illustrator® or other CAD software suitable for this area.

Additionally, MEDE can liaise with ICE Malta, a private educational institution, to collaborate on offering courses specifically related to Fashion and Textiles, in which the subject teachers can further their skills, practise and specialise in the use of

different software. This will result in enhancing the educator's pedagogy and also offers reliable teaching and learning opportunities for the students.

Furthermore, internships in the fashion industry may be more widely available in enticing teachers to further develop their skills in relation to the software used in the industry. These internships can be carried out locally or internationally during the summer recess. Lastly, Erasmus+ is the European Commission programme to support education and training. It offers mobility and cooperation opportunities in adult education, higher education and for vocational education and training (European Commission, 2021). Therefore, courses for the Erasmus+ exchange on CAD for teaching or working in the fashion industry can be recommended so as to offer educators who wish to pursue and further their skills, the maximum opportunities.

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Appendices

Appendix 1

Permission Letter for Secretariat for Catholic Education

Dear Director,
I am Nicole Vella, a second-year student at the University of Malta, reading for a Master degree in Teaching and Learning in Fashion and Textiles/Home Economics. For my dissertation I am conducting research with the title: 'Computer Aided Design lessons and resources for Fashion and Textiles teachers' under the supervision of Dr. Lorraine Portelli.

The purpose of this dissertation is to investigate the pedagogies that may be used to help Fashion and Textiles teachers to teach Adobe Illustrator® by making use of a set of five to six lesson plans with additional resources. Secondly, the trialling of the lesson plans and resources will facilitate the delivery of the subject focus 'Fashion paper patterns and Digital Media' using Adobe Illustrator® for Year 10 students.

To collect my data, I shall be organising an information session to explain what is required by the participating teachers in order to deliver the lessons and use the resources successfully. Following the trialled lessons, teachers will be asked to complete a feedback form, after every trialled lesson for each lesson plan provided. This shall take about 10 to 15 minutes to complete. Each feedback form shall be completely anonymous.

Given the above, I would like to kindly ask for your permission to conduct part of the study in one of your schools: _____, during October and November 2020, depending when the Fashion and Textiles teacher will plan to conduct the lesson on Adobe Illustrator®. I would also like to visit the school a few weeks before the lesson to explain the lesson plan and resources created to the prospective participant (Fashion and Textiles teacher/s).

There are no risks or costs if you accept that your school participates in this study. The school and all participants involved will remain anonymous, the participation and feedback obtained will remain confidential and will be analysed for the sole purpose of the study. Furthermore, your school college participation in this study is fully voluntary, and the Fashion and Textiles teacher is free to opt out at any time should s/he feel to do so.

Thank you for finding the time to read my letter and I look forward to hearing from you.

Regards,

Nicole Vella

Dissertation Supervisor
Dr. Lorraine Portelli

Appendix 2

Permission Letter for Head of School

Dear Sir/Madam,

I am Nicole Vella, a second-year student at the University of Malta, reading for a Master degree in Teaching and Learning in Fashion and Textiles/Home Economics. For my dissertation I am conducting research with the title: 'Computer Aided Design lessons and resources for Fashion and Textiles teachers' under the supervision of Dr. Lorraine Portelli.

The purpose of this dissertation is to investigate the pedagogies that may be used to help Fashion and Textiles teachers to teach Adobe Illustrator® by making use of a set of five to six lesson plans with additional resources. Secondly, the trialling of the lesson plans and resources will facilitate the delivery of the subject focus 'Fashion paper patterns and Digital Media' using Adobe Illustrator® for Year 10 students.

To collect my data, I shall be organising an information session to explain what is required by the participating teachers in order to deliver the lessons and use the resources successfully. Following the trialled lessons, teachers will be asked to complete a feedback form, after every lesson for each lesson plan provided. This shall take about 10 to 15 minutes to complete. Each feedback form shall be completely anonymous.

Given the above, I would like to kindly ask for your permission to conduct part of the study in your school, during October and November 2020, depending when the Fashion and Textiles teacher will plan to conduct the lesson on Adobe Illustrator®. I would also like to ask for your permission to visit your school a few weeks before the trial of the lessons, in order to explain the lesson plan and resources created to the prospective participant (Fashion and Textiles teacher/s).

There are no risks or costs if you accept that your school participates in this study. The school and all participants involved will remain anonymous, the participation and feedback obtained will remain confidential and will be analysed for the sole purpose of the study. Furthermore, your school's participation in this study is fully voluntary, your school and the participants are free to opt out at any time should you feel to do so.

Thank you for finding the time to read my letter and I look forward to hearing from you.

Regards,

Nicole Vella

Dissertation Supervisor
Dr. Lorraine Portelli

Appendix 3

Letter for Education Officer (intermediary)

Dear Education Officer for Fashion and Textiles,

I am Nicole Vella, a second-year student at the University of Malta, reading for a Master degree in Teaching and Learning in Fashion and Textiles/Home Economics. As part of my studies for my dissertation, I am conducting research with the title: 'Computer Aided Design lessons and resources for Fashion and Textiles teachers' under the supervision of Dr. Lorraine Portelli.

The purpose of this dissertation is to investigate the pedagogies that may be used to help teachers of Fashion and Textiles teach Adobe Illustrator® by making use of a set of five to six lesson plans with additional resources. Secondly, the trialling of the lesson plans and resources will facilitate the delivery of the subject focus "Fashion paper patterns and Digital Media" using Adobe Illustrator® for Year 10 students.

To collect my data, I shall be organising an information session to explain what is required by the participating teachers in order to deliver the lessons and use the resources successfully. Following the trialled lessons, teachers will be asked to complete a feedback form after every lesson for each lesson plan provided, which shall take about 10 to 15 minutes to complete. Each feedback form shall be completely anonymous.

Given the above, I would like to kindly ask you if you can act as intermediary in this study by recruiting all the Fashion and Textiles teachers in the State School sector. Your role will be to forward an information letter to all the teachers regarding this study together with a consent form, as I would like the teachers to trial out these lessons. Your acceptance and the teachers' participation are highly appreciated.

Thank you for finding the time to read this letter and I look forward to hearing from you.

Kind regards,

Nicole Vella

Dissertation Supervisor: Dr. Lorraine Portelli

Appendix 4

Consent Form for Education Officer (intermediary)

I have read the Information Letter about the research study on 'Computer Aided Design lessons and resources for Fashion and Textiles teachers' by Ms. Nicole Vella.

By signing this sheet, I declare that I have understood the information above and that I consent to act as an intermediary in this study out of my free will.

Thank you for your time and cooperation.

If you require any additional information with regards to this study, do not hesitate to contact me on: nicole.vella.16@um.edu.mt

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Name and Surname of Education Officer: _____

Signature: _____ Date: _____

Researcher's name: Nicole Vella

Signature: Date: _____

Research Supervisor's name: Dr. Lorraine Portelli

Signature: _____ Date: _____

Appendix 5

Letter for the person responsible for Fashion and Textiles in Church Schools

To the person responsible for Fashion and Textiles in Church School Education,

I am Nicole Vella, a second-year student at the University of Malta, reading for a Master degree in Teaching and Learning in Fashion and Textiles/Home Economics. As part of my studies for my dissertation I am conducting research with the title: 'Computer Aided Design lessons and resources for Fashion and Textiles teachers' under the supervision of Dr. Lorraine Portelli.

The purpose of this dissertation is to investigate the pedagogies that may be used to help teachers of Fashion and Textiles to teach Adobe Illustrator® by making use of a set of five to six lesson plans with additional resources. Secondly, the trialling of the lesson plans and resources will facilitate the delivery of the subject focus 'Fashion paper patterns and Digital Media' using Adobe Illustrator® for Year 10 students.

To collect my data, I shall be organising an information session to explain what is required by the participating teachers in order to deliver the lessons and use the resources successfully. Following the trialled lessons, teachers will be asked to complete a feedback form after every lesson for each lesson plan provided, which shall take about 10 to 15 minutes to complete. Each feedback form shall be completely anonymous.

Given the above, I would like to kindly ask you if you can recruit the Fashion and Textiles teachers in the Church School sector by forwarding an information letter to the teacher regarding this study together with a consent form, as I would like the teacher to trial out these lessons. Your help is highly appreciated.

Thank you for finding the time to read this letter and I look forward to hearing from you.

Kind regards,

Nicole Vella

Dissertation Supervisor: Dr. Lorraine Portelli

Appendix 6

Invitation for Fashion & Textiles Teachers (English Version)

Dear Fashion and Textiles teacher,

I am Nicole Vella, a second-year student at the University of Malta, reading for a Master degree in Teaching and Learning in Fashion and Textiles/ Home Economics. As part of my studies, I am conducting a dissertation with the title: *'Computer Aided Design lessons and resources for Fashion and Textiles teachers.'*

I would like to invite you to take part in my study. The main aim of my study is to investigate the pedagogies that may be used to help Fashion and Textiles teachers to teach Adobe Illustrator® successfully, by making use of a set of lesson plans and additional resources. As participants you will be required to trial five to six of lesson plans and their accompanying resources, which include handouts and simple activities, created on the subject focus of 'Fashion paper patterns and Digital Media' using Adobe Illustrator®for Year 10 students. You are free to modify the lesson plans if you think the lessons need to be more adjusted to your learners. Your participation will help me trial the set of lesson plans and resources in order to make the lessons using Adobe Illustrator® easier to deliver and less stressful. Moreover, these lessons and resources should also be effective and enjoyable for students.

Prior to the trial of the lessons on Adobe Illustrator®, you will be asked to attend an information session whereby practical information about how to deliver the lesson and use the resources will be given. Furthermore, this information session will be organised for each participant in order to explain clearly the whole process of the trialling of lesson plans and resources. The information session shall take place in the respective institution where you teach and shall take about 30 minutes to 1 hour. Participation in this study is voluntary and you are free to withdraw at any time.

Following the trialling of the lessons, you will be asked to complete a feedback form after every trialled lesson, which shall take between 10 to 15 minutes to complete. The feedback provided that shall be given will only be used for the purpose of this study which will be accessed by myself and possibly by my research supervisor Dr. Lorraine

Portelli. Each feedback form will be completely anonymous, and the results obtained from your feedback will be used to improve the lessons and resources.

Your participation in this study is highly appreciated and you are free to utilise the lesson plans and resources according to the ability of your students. Also, you are free to opt-out from this study at any time and your identity will remain anonymous. If you wish to participate in this study, please sign the consent form provided with this letter. Should you have any queries or concerns about this study, you are free and welcome to contact the researcher or the research's supervisor.

Thank you for finding the time to read this letter, I look forward to hearing from you.

Kind regards.

Researcher: Nicole Vella

Signature:

Date: _____

Supervisor: Dr Lorraine Portelli

Supervisor's signature: _____

Date: _____

Appendix 7

Invitation for Fashion & Textiles Teachers (Maltese Version)

Għażież għalliem tal-Fashion & Textiles,

Jiena Nicole Vella, studenta Universitarja li qiegħda fit-tieni, u l-aħħar sena fil-Grad ta' Masters, fit-tagħlim u l-edukazzjoni fis-suġġetti *Fashion and Textiles*, u fil- Home Economics. Bħala parti mill-istudji tiegħi, qiegħda nagħmel t-teżi tiegħi, bl-isem '*Computer Aided Design lessons and resources for Fashion and Textiles teachers.'*

Għandi pjaċir nistiednek sabiex tieħu sehem f'dan l-istudju. L-għan tal-istudju tiegħi hu sabiex ninvestiga l-pedagoġija li tista' tintuża sabiex tkun ta' għajnuna għall-għalliema ta' dan is- suġġett, ħalli jkunu jistgħu jgħallmu l- *"Adobe Illustrator®".* Bħala parteċipant inti meħtieġ li tuża u tipporova ħames jew sitt lezzjonijiet u riżorsi, li jinkludu, karti bin-noti u attivitajiet sempliċi maħluqa fuq il-fokus tematiku *"Fashion paper patterns and Digital Media"* bl-użu tal- "*Adobe Illustrator®"* għall-istudenti li qegħdin fl-għaxar sena. Inti ser tkun libera biex tbiddel il-lezzjonijiet jekk tħoss il-bżonn li għandhom jiġu immodifikati għall-istudenti tiegħek. Il-parteċipazzjoni tiegħek ser isservi ta' għajnuna għal-prova tal- lezzjonijiet u riżorsi, sabiex il-lezzjonijiet tal- *"Adobe Illustrator®"* ikunu aktar faċli biex tgħallimhom u inqas stressanti. Barra minn hekk, dawn il-lezzjonijiet u riżorsi għandhom ikunu effettivi u ta' pjaċir għal-istudenti.

Qabel il-prova tal-lezzjonijiet se tkun mistiedna tattendi sessjoni ta' informazzjoni, fejn ser tingħata informazzjoni prattika ta' kif tista tgħallem u tuża l-lezzjonijiet u r- riżorsi. Din is-sessjoni ta' informazzjoni ser tiġi organizzata għal-kull parteċipant, dan sabiex l-għalliem ikun jista' jifhem sewwa il-proċess ta' prova tal-lezzjonijiet u r-riżorsi. Din is-sessjoni ta' informazzjoni ser issir fl-iskola ta' fejn inti tgħallem u bejn wieħed u ieħor għandha tieħu madwar 30 minuta jew siegħa. Il-parteċipazzjoni tiegħek f'dan l-istudju hija fuq bażi volontarja u inti libera li tieqaf min dan l-istudju x'ħin trid.

Wara l-prova tal-lezzjonijiet, inti ser tiġi mitlub timla formula bil-kummenti tiegħek rigward il-lezzjonijiet u r-riżorsi li tkun użajt, bejn wieħed u ieħor għandha tieħu madwar 10 jew 15 minuta sabiex timtela. Il-kummenti mogħtija rigward dan l-istudju ser jintużaw għall-fini ta' dan l-istudju li ser jiġi evalwat minni u mit-tutur tat- teżi Dr.

Lorraine Portelli. Kull formula ser tkun anonima u r-riżultati tal-kummenti tiegħek ser jiġu użati sabiex biex itejbu l-lezzjonijiet u r- riżorsi.

Il-parteċipazzjoni tiegħek f'dan l-istudju hija apprezzata mmens. Tajjeb li tkun taf ukoll, illi la darba taċċetta tieħu sehem, inti tinsab libera sabiex jekk tħoss il-bżonn li trid tbiddel xi punti mill-lezzjonijiet jew mir-riżorsi speċifikament għall-istudenti tiegħek tista tagħmel dan jew tadatta l-lezzjonijet ghall-istudenti tiegħek. Nixtieq ninfurmak li inti tista' tiddeċiedi li tieqaf tieħu sehem f'dan l-istudju x'ħin trid. L-identita' tiegħek ser tibqa' kunfidenzjali. Jekk tixtieq tipparteċipa f'dan l-istudju, jekk jogħġobok iffirma l-ittra ta' kunsens mehmuża ma' din l-ittra. Ikollok xi mistoqsijiet jew kummenti rigward dan l-istudju, tista' wkoll tikkuntatja lili jew lit- tutur tiegħi.

Grazzi talli sibt il- ħin taqra din l-ittra. Nistenna bil- ħerqa li nisma' mingħandek.

Tislijiet.

Isem ir-riċerkatur: Nicole Vella

Numru ta' kuntatt:

Firma:

Data: _____

Isem it-tutur tat- teżi: Dr. Lorraine Portelli

Numru ta' kuntatt:

Firma: _____

Data: _____

Appendix 8

Consent Form to Fashion & Textiles Teachers (English Version)

I have read the Information Letter about the research study of 'Computer Aided Design lessons and resources for Fashion and Textiles teachers' by Ms. Nicole Vella and have had the opportunity to ask questions and have any queries answered.

Guarantees: By agreeing to participate in this research,

1. I understand that my name will not be used at any point throughout the participation or final study report.
2. I am free to withdraw from this study at any point throughout for whatever reason. In case I decide to withdraw, all records and information will be destroyed.
3. I am free to refrain from trailing resources I am not comfortable using or answering any question I do not wish to answer.

By signing this sheet, I declare that I have understood the information above and that I consent to participate in this study out of my free will.

Moreover, with my signature I am also declaring that I acknowledge the guarantees.

Thank you for your time and cooperation. If you require any additional information with regards to this study, do not hesitate to contact me on: nicole.vella.16@um.edu.mt

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Name and Surname of Participant: _____

Signature: _____ Date: _____

Researcher's name: Nicole Vella

Signature: Date: _____

Research Supervisor's name: Dr. Lorraine Portelli

Signature: _____ Date: _____

Appendix 9

Consent Form to Fashion & Textiles Teachers (Maltese Version)

Jiena qrajt l-ittra ta' informazzjoni rigward l-istudju *'Computer Aided Design lessons and resources for Fashion and Textiles teachers' ta* Ms. Nicole Vella u kelli l-opportunita` nistaqsi mistoqsijiet.

Garanziji: Jekk taċċetta li tieħu sehem f'dan l-istudju,

1. Jien nifhem li ismi mhux ser jiġi użat matul ir-riċerka biex tiġi protetta l-identita' tiegħi.
2. Jiena libera nirtira min dan l-istudju meta nixtieq. F'każ illi nagħżel li nirtira, l-informazzjoni tiġi meqruda immedjatament.
3. Jiena ser inkun libera li ma nużax riżorsi li miniex komda nuża jew nwieġeb mistoqsijiet li miniex komda nirrispondi..

Bil-firma tiegħi fuq din il-formula, jien ser inkun qiegħda niddikjara li fhimt l-informazzjoni mogħtija lili u ser nagħti kunsens li nieħu sehem f'dan l-istudju bil-volonta' tiegħi.

Barra min hekk, bil-firma tiegħi ser tiddikjara illi qiegħda naqbel mal-garanziji msemmija hawn fuq.

Grazzi ħafna tal-ħin u l-kooperazzjoni tiegħek. Jekk ikollok bżonn iktar informazzjoni rigward l-istudju tiegħi tiddejjaqx tikkuntattjani fuq: nicole.vella.16@um.edu.mt

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Isem u Kunjom il-Parteċipant: _____

Firma: _____ Data: _____

Isem ir-riċerkatur: Nicole Vella

Firma: Data: _____

Isem it-tutur tat- teżi: Dr. Lorraine Portelli

Firma: _____ Data: _____