# AN OVERVIEW ON COMPUTER SUPPORTED COLLABORATIVE LEARNING IN TEXTILE TESTING

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**ABSTRACT**

*Computer Supported Collaborative Learning is becoming an increasingly common and accepted form of learning as the introduction of Information Communication Technologies (ICT) makes the possibilities of Communicating across distances of space and time. It encourages a more flexible learner centric approach and provides opportunities for learning anywhere and anytime. Therefore, today, there are many private and public, non-profit and for-profit institutions worldwide education courses from the most basic instruction through to the highest levels of degree and doctoral programs. The aim of this paper is to present a review of computer supported collaborative learning in textile testing . The report represent 3 examples from college of Textiles at North Carolina State University , School of Design at the University of Leeds , Association of Textile , Apparel & Material Professionals .*

***Keywords: Computer Supported Collaborative Learning , Textile Testing***

## I. INTRODUCTION

Computer-supported collaborative learning (CSCL) is a pedagogical approach wherein learning takes place via social interaction using a computer or through the Internet. This kind of learning is characterized by the sharing and construction of knowledge among participants using technology as their primary means of communication or as a common resource.[1]The textile industry is becoming an increasingly competitive environment. Differentiating products by quality is particularly important. Testing can be performed both to improve product quality and achieve compliance to international, regional or retailer specific standards.

One of the biggest challenges nowadays is to establish new forms of participation, achievement and development of people and organizations as well as learning and returning to individual ownership of the act of learning . For such, has greatly contributed the recent and innovative way of organizing the training, called e-Learning - distance learning through Internet - which has proved efficient implementation in various public and in different areas.

## II. ZEIS TEXTILE EXTENSION EDUCATION FOR ECONOMIC DEVELOPMENT CENTER [2]

The Zeis Textile Extension Education for Economic Development Center is located in the college of Textiles at North Carolina State University . It conducts awide variety of training courses for industry professionals ranging from basic textiles to six sigma .

### 2.1 Fundamentals of Textile Testing course

The Textile Testing web-based education course was developed by North Carolina State University College of Textiles in response to the demands of industry and academic institutions worldwide. It's a valuable resource for anyone who deals with technical quality issues of textile products or who would benefit from a working knowledge of textile testing. This eLearning course details a comprehensive range of test methods with application to textile fibers, yarns, fabrics, and garments.

### 2.2 Features of Fundamentals of Textile Testing Course

A valuable resource to anyone who deals in with technical quality issues of textile products or who would benefit from a working knowledge of textile testing

Emphasizes the relationships between product structure and test results

Details a comprehensive range of test methods with application to textile fibers, yarns, fabrics and garments

Presents information on professional standards organizations, published test methods and basic statistics

Contains illustrations, detailed photographs and simulation videos

Available online 24 hours a day; access anywhere internet is available

### 2.3 Topics of Fundamentals of Textile Testing course

Textile Testing Overview

Basic Statistical Applications to Testing

Textile Testing: Fibers

Textile Testing: Yarns

Textile Testing: Fabric Construction

Textile Testing: Fabric Appearance

Textile Testing: Fabric Performance

Woven Fabric Analysis

Knit Fabric Analysis

Figures ( 1 – 7 ) are screenshots from Topics of Fundamentals of Textile Testing course

**Textile Testing Overview**


**Fig 1. Screenshots from Textile Testing Overview**

**Basic Statistical Applications to Testing**

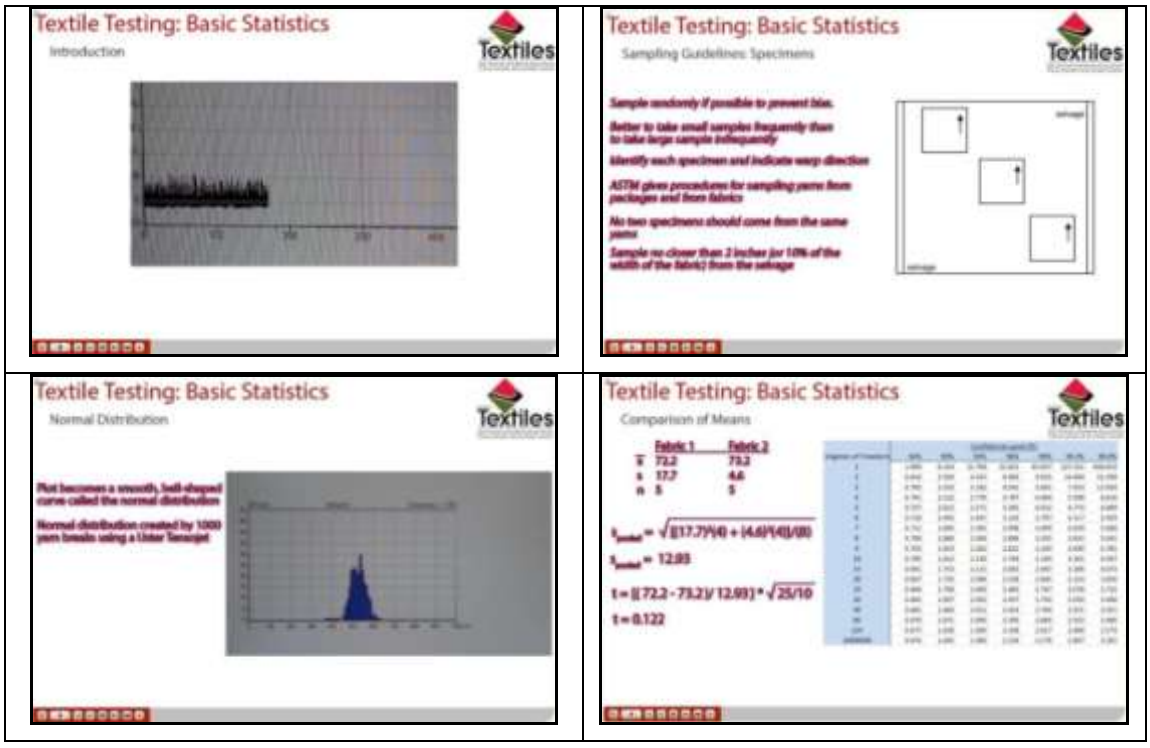



**Fig 2. Screenshots from Basic Statistical Applications to Testing**

**Textile Testing: Fibers**

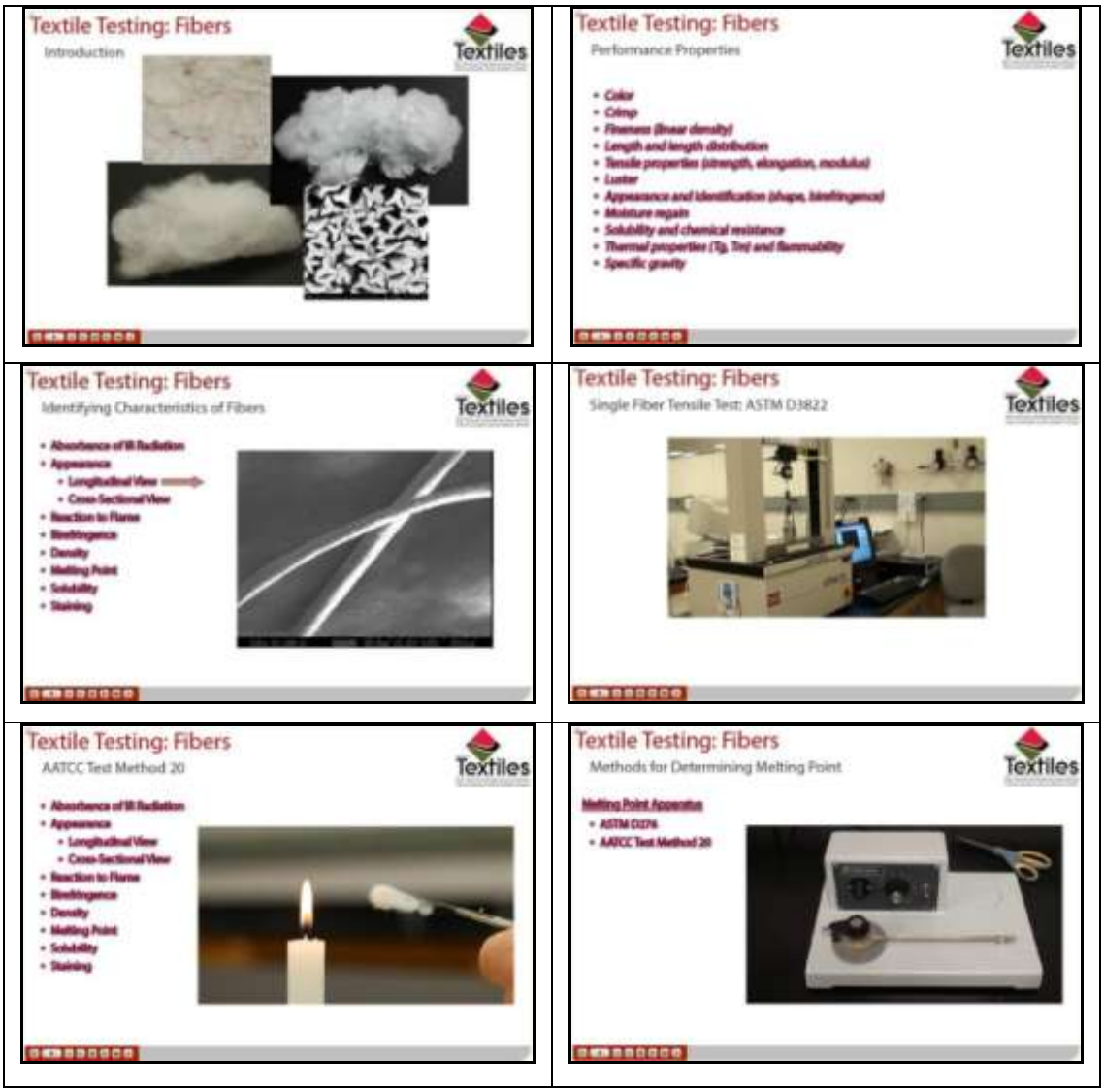



**Fig 3. Screenshots from Textile Testing: Fibers**

**Textile Testing: Yarns**


**Fig 4. Screenshots from Textile Testing: Yarns**

**Textile Testing: Fabric Construction**


**Fig 5. Screenshots from Textile Testing: Yarns**

**Textile Testing: Fabric Appearance**


**Fig 6. Screenshots from Textile Testing: Fabric Appearance**

**Textile Testing: Fabric Performance**

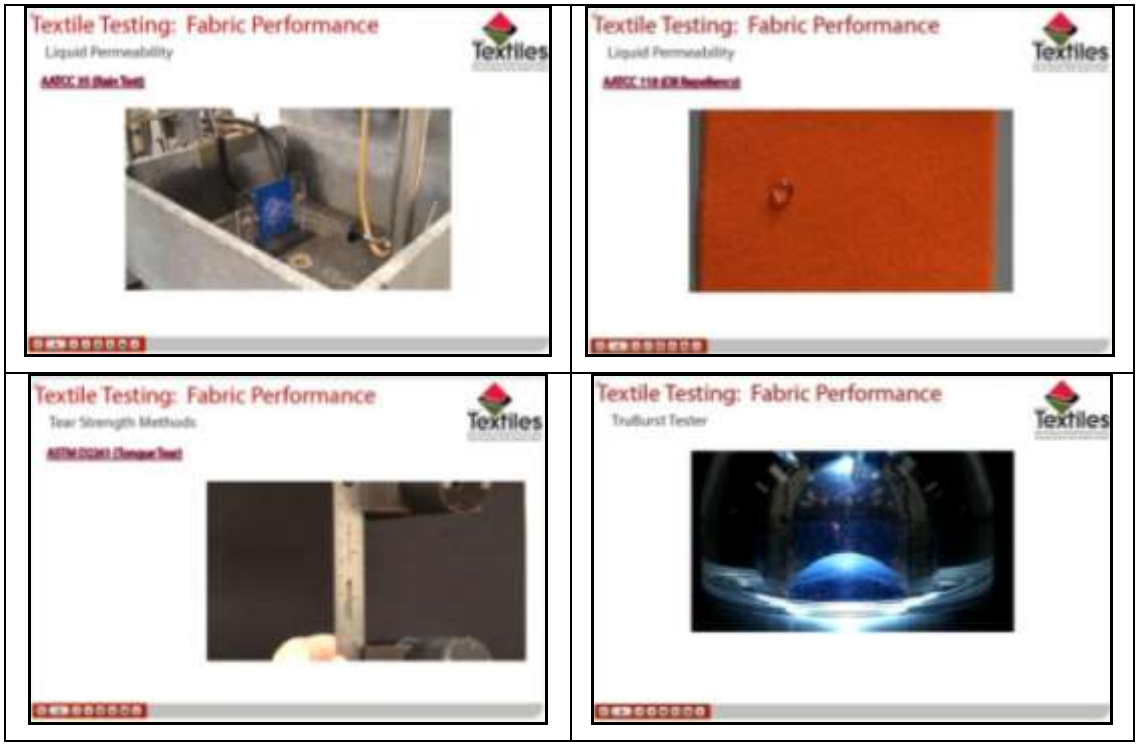



**Fig 7. Screenshots from Textile Testing: Fabric Performance**

## III. TEXTILES AND APPAREL E-LEARNING CENTRE [3]

The Textiles and Apparel e-learning centre is owned by Media Innovations. The company was established in 2003 and, in addition to textiles educational modules, produces self-help training and diagnostic software for medical applications.

The Textiles and Apparel e-learning centre was created to deliver and market "Introduction to Textiles" a suite of computer based learning modules. These modules were originally developed for undergraduateand postgraduate students studying at the University of Leeds to enable them to study concepts that are often difficult to explain in a lecture, at their own pace and time

The development work was pioneered in 1994 by Dr Simon Harlock and his colleagues in the then, Department of Texile Industries, now the School of Design, at the University of Leeds.

### 3.1 Textile Testing 2.0 Module

Textile Testing 2.0' is intended to provide fundamental underpinning knowledge on textile testing. It is complementary to the elementary introduction to the Physical Testing and Quality Assurance 1.0 module in Introduction to Textiles in that it covers similar basic concepts but this module provides significantly more detailed information about test methods used.

The module covers some elementary statistical methods, fibre and yarn testing, fabric testing including, fabric handle, serviceability, care and other tests, flammability testing of fabrics and textile products, notably furniture, carpets and soft toys.It was developed in collaboration with textile testing organizations and textile testing equipment manufacturers. It provides an estimated 20 hours of structured learning material or a browseable resource. It contains over 590 graphics, photographs, animations and video to explain and illustrate methods used to measure many of the properties of fibres, yarns and fabric.

### 3.2 Beneficiaries of Textile Testing 2.0 Module

- Textile trainees and students
- Non-textile professionals who are now working in the industry
- Textile staff who have not completed formal training
- Textile and apparel specialists who wish to broaden their knowledge

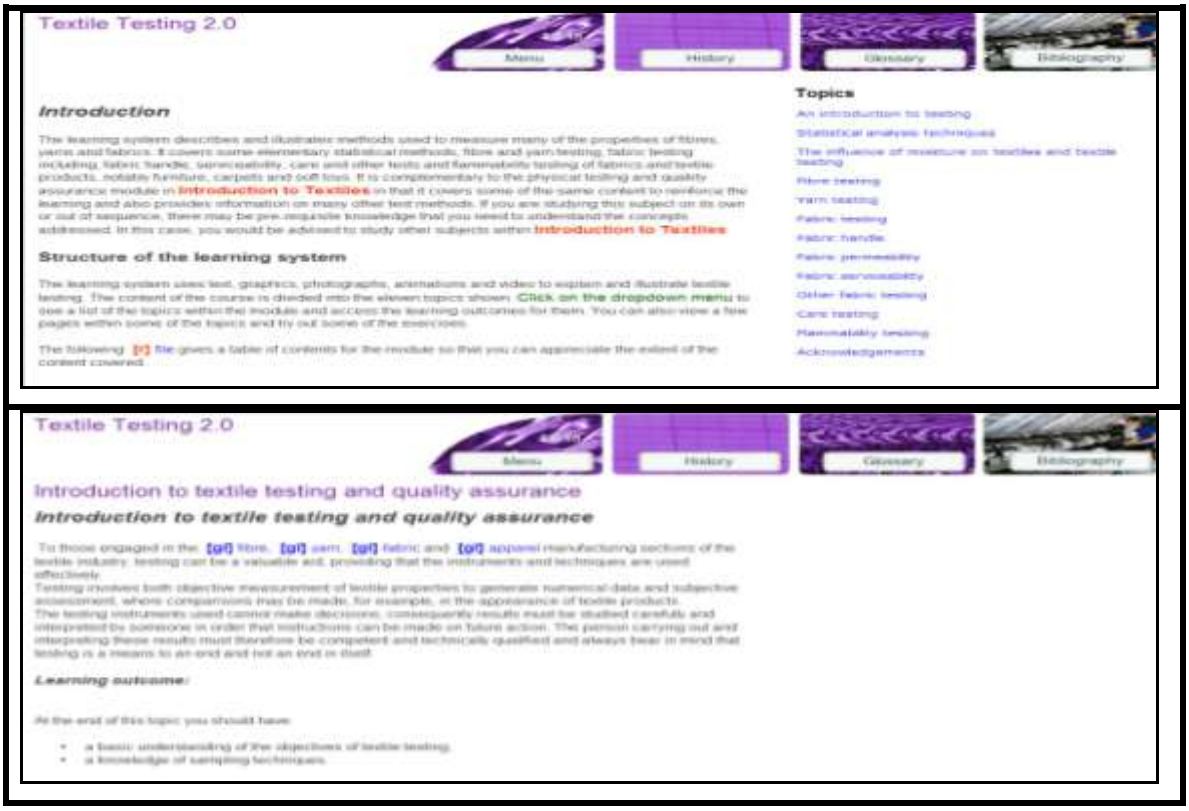
### 3.3 Featuresof Textile Testing 2.0 Module

- All video and animation sequences have pause and rewind functionality
- Learning material is linked to a glossary of terms
- Tests are available at the end of each completed section
- The content may studied systematically or browsed for specific information

### 3.4 Benefits of Textile Testing 2.0 Module

- Provides comprehensive knowledge on the principles and methods used in textile testing on an industrial scale
- Provides learning "on demand" at a convenient time and place

Figure ( 8 ) is screenshots from Textile Testing 2.0 module




Textile Testing 2.0
Menu
History
Glossary
Bibliography
Statistical analysis techniques
Statistical analysis techniques
Learning outcome:
At the end of this topic you should
be able to define the terms mean, mode and median, standard deviation and coefficient of variation and know how to determine or calculate them;
understand the concepts of quality control charts and the use of 't' tests to compare means.
Textile Testing 2.0
Menu
History
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The influence of moisture on textiles and textile testing
The influence of moisture on textiles and textile testing
Learning outcome:
At the end of this topic you should
be able to define standard atmospheric conditions for textile testing;
understand the concept of "Regain" and how to measure it.
Textile Testing 2.0
Menu
History
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Fibre testing
Fibre testing
Learning outcome:
At the end of this topic you should be familiar with methods used
to measure fibre fineness, fibre length and fibre strength;
to measure yield and vegetable content and coloured fibres in wool fibres;
to assess maturity in cotton fibres.
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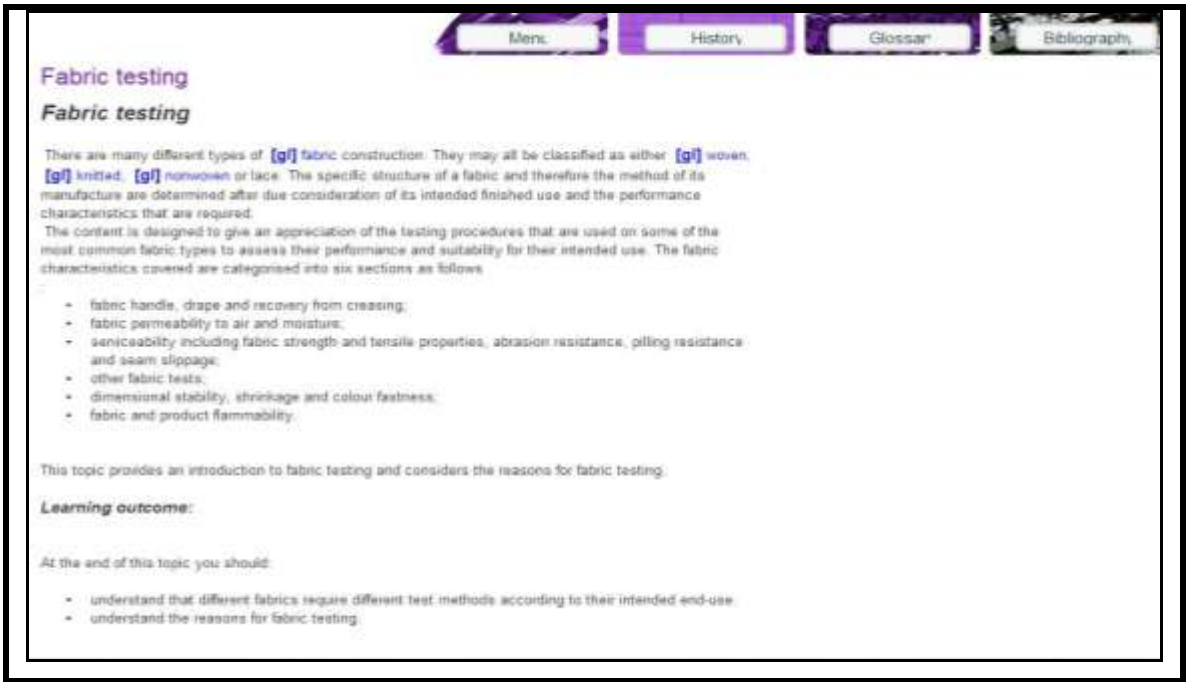
Yarn testing
Yarn testing
Learning outcome:
At the end of this topic you should
be familiar with methods use to measure yarn strength, regularity and twist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Fabric testing
Fabric testing
There are many different types of [gl] fabric construction. They may all be classified as either [gl] woven, [gl] knitted, [gl] nonwoven or lace. The specific structure of a fabric and therefore the method of its manufacture are determined after due consideration of its intended finished use and the performance characteristics that are required.
The content is designed to give an appreciation of the testing procedures that are used on some of the most common fabric types to assess their performance and suitability for their intended use. The fabric characteristics covered are categorised into six sections as follows:
fabric handle, drape and recovery from creasing;
fabric permeability to air and moisture;
serviceability including fabric strength and tensile properties, abrasion resistance, pilling resistance and seam slippage;
other fabric tests;
dimensional stability, shrinkage and colour fastness;
fabric and product flammability.
This topic provides an introduction to fabric testing and considers the reasons for fabric testing.
Learning outcome:
At the end of this topic you should:
understand that different fabrics require different test methods according to their intended end-use;
understand the reasons for fabric testing.


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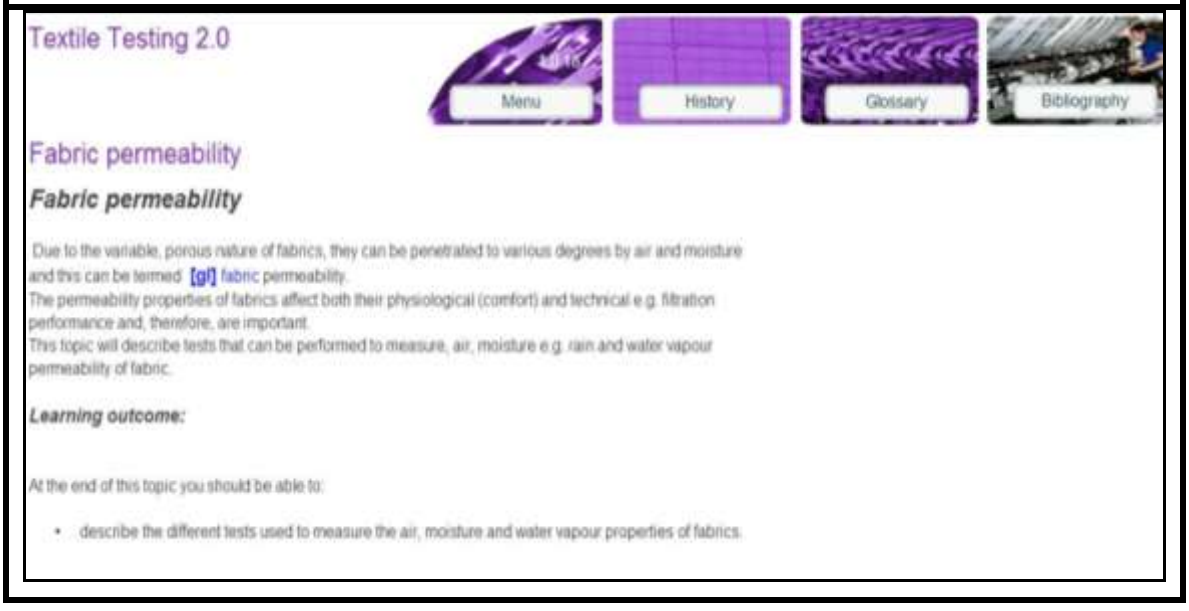
Fabric handle, drape, stiffness and crease recovery
Fabric handle, drape, stiffness and crease recovery
Apparel fabrics require suitable aesthetic and appearance characteristics. These include the hang of a [gl] fabric or [gl] garment during use or wear and this is normally termed drape. This is also a requirement for household textiles such as curtains. Stiffness may be an important characteristic of fabrics used for technical applications.
A satisfactory feel or fabric [gl] handle is also required for [gl] apparel wear and certain household textiles.
The propensity of a fabric to crease and pucker affects the appearance of garments and their ease of making-up into garments household products.
This topic considers those fabric properties associated with fabric handle, drape and crease recovery and how they may be measured.
Learning outcome:
At the end of this topic you should be able to:
define the fabric properties that influence fabric handle and describe how to measure them;
describe how to measure fabric drape and crease recovery.


Textile Testing 2.0
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Fabric permeability
Fabric permeability
Due to the variable, porous nature of fabrics, they can be penetrated to various degrees by air and moisture and this can be termed [gl] fabric permeability.
The permeability properties of fabrics affect both their physiological (comfort) and technical e.g. filtration performance and, therefore, are important.
This topic will describe tests that can be performed to measure, air, moisture e.g. rain and water vapour permeability of fabric.
Learning outcome:
At the end of this topic you should be able to:
describe the different tests used to measure the air, moisture and water vapour properties of fabrics.

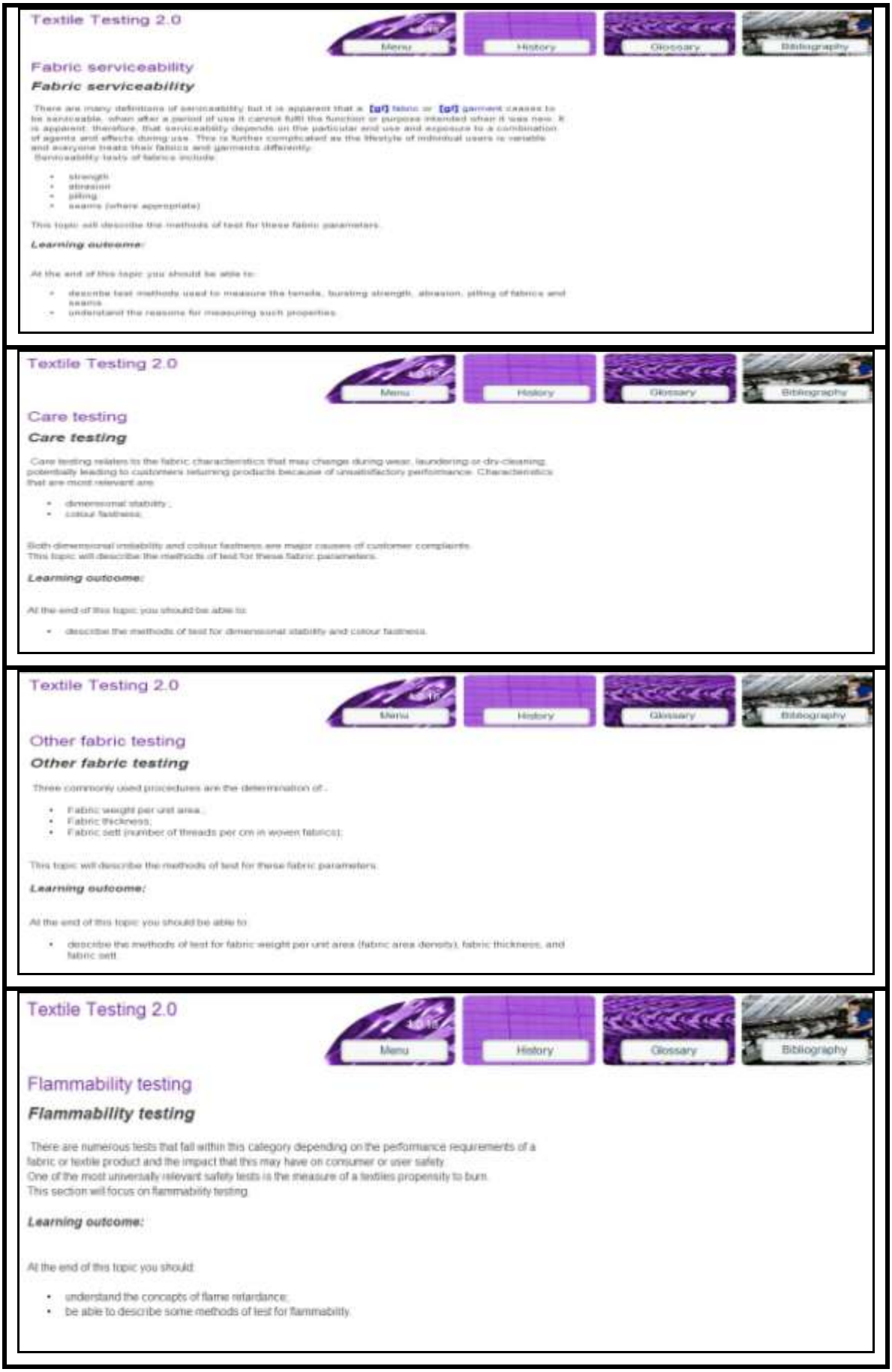



**Fig 8. Screenshots from Textile Testing 2.0 module**

## IV. ASSOCIATION OF TEXTILE , APPAREL & MATERIAL PROFESSIONALS TEST METHOD ONLINE TRAINING[4]

AATCC is offering a series of online training videos designed to explain and demonstrate the more commonly used AATCC Test Methods and Evaluation Procedures. This training promotes consistent and accurate testing and evaluation of textile materials throughout the industry by offering step-by-step instruction of AATCC test methods and demonstrating correct techniques for performing the methods.

### 4.1 Features of AATCC Test Method Online Training

• Visual demonstrations
• 4 separate training modules
• 11 test methods & 6 evaluation procedures
• Text & audio narration
• Step-by-step instruction
• Demonstrations of correct techniques

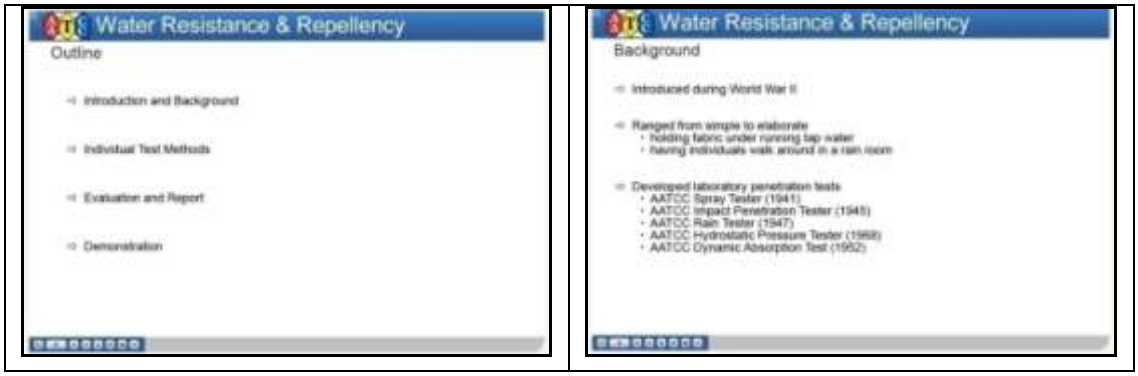
### 4.2 Benefits of AATCC Test Method Online Training

Practical knowledge for the workplace
Learn from the comfort of your office, home, or anywhere internet access is available
Learn at your own pace
No travel expense
Zero nights away from home
View & pay for only the modules you need

### 4.3 Water Resistance and RepellencyModule Descriptions

Water Repellency: Spray Test (TM 22)
Water Resistance: Rain Test (TM 35)
Water Resistance: Impact Penetration Test (TM 42)
Water Repellency: Tumble Jar Dynamic Absorption Test (TM 70)
Water Resistance: Hydrostatic Pressure Test (TM 127)

**Figure ( 9 ) is screenshots from Water Resistance and Repellency Module**



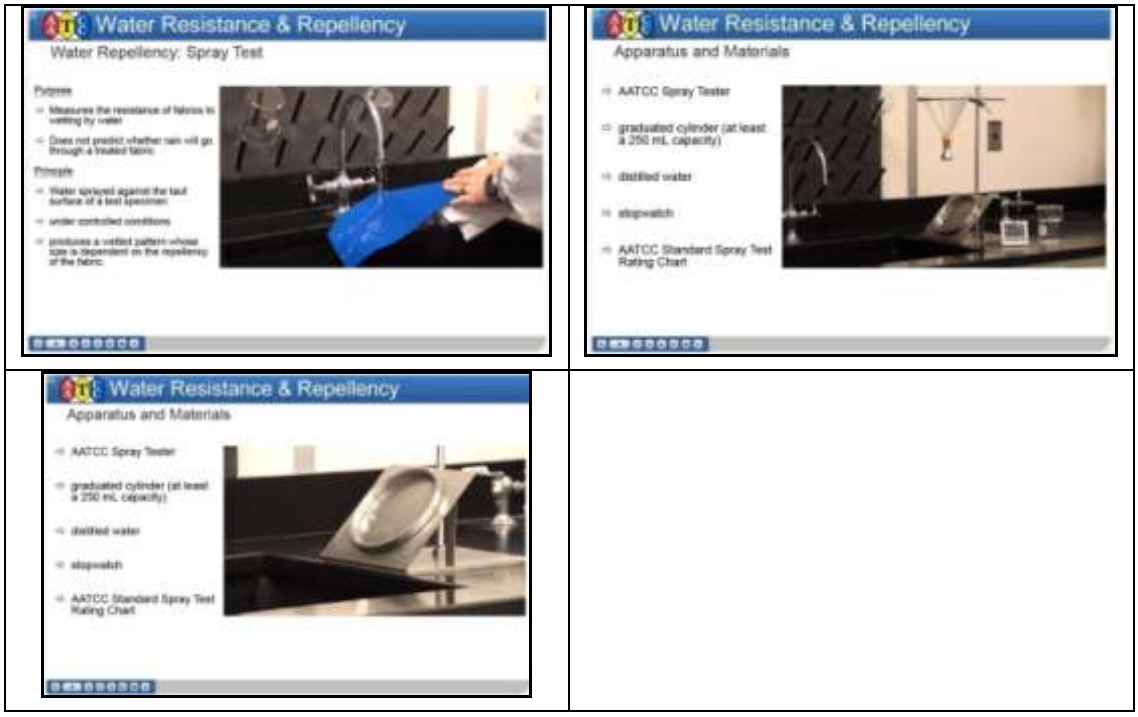



**Fig 9. Screenshots from Water Resistance and Repellency Module**

## V. SUMMARY AND CONCLUSION

There is no doubt that computer supported collaborative learningoffers many benefits in terms of providing cost-effectiveeducation and training that suits both the time conscious needs of the learner and theemployer when used to support training in the workplace. However it is also clear that,whilst it is very good in presenting factual and visual descriptive information and, as alearning portal, can provide ready access to other sources of information, it needs to becomplemented by other modes of delivery. Therefore a blended learning approach isadvocated incorporating: E-learning, Video delivery, Classroom, Books, Synchronousand asynchronous communication .The aim of such an approach is to utilize the most appropriate learning tool for thetype of knowledge and information to be imparted. This paper has presented an overview of Computer Supported Collaborative Learning in textile testingby representing 3 examples from college of Textiles at North Carolina State University , School of Design at the University of Leeds , Association of Textile , Apparel & Material Professionals .

It is essential therefore, that computer supported collaborative learningtools, such as those in the presented examples, are developed if the workforce is to be recruited, educated and trained to the level required to enable companies , universities, mills …etc to compete globally.

## VI. REFERENCES

[1] Stahl, G., Koschmann, T., &Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective. In R. K. Sawyer (Ed.), Cambridge handbook of the learning sciences (pp. 409-426). Cambridge, UK: Cambridge University Press.

[2] http://www.tx.ncsu.edu/departments/texed/elearningTT.cfm

[3] http://www.elearning-textiles.co.uk/Home/tabid/36/Default.aspx

[4] http://www.aatcc.org/events/online/test_method_training.htm